

## CONGRESS SESSION BY DAY

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Mon, Oct 02, 2006

15:30 hrs • Technical Sessions		Room	Session #
A1.1.	Behavioral Issues and Space Exploration	11	1
A2.1.	Gravity and Fundamental Physics	7	2
A3.1.	Space Based Astronomy	6	3
A4.1.	SETI I - Technical Aspects	8	4
B1.1.	International Cooperation in Earth Observation Missions	3	5
B3.1.	Near-Earth and Interplanetary Communications Systems	5	6
B4.1.	Space Stations Overview	1	7
B5.2.	Small Space Science Missions	13	8
C1.1.	Attitude Dynamics, Modelling and Determination	10	9
C2.1.	Space Structures I - Development and Verification (Space Vehicles and Components)	15	10
C4.1.	Propulsion Systems I	9	11
D2.1.	Launch Vehicles in Service or in Development	2	12
D3.1.	Strategies to Establish a Stepping Stone Approach to our Future in Space	12	13
D4.1.	Bases and Space Colonization	4	14
E1.1.	Hands-On Space Education	17	15
E3.1.A.	Policies for a New Era in Space - Part 1	14	16

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Tue, Oct 03, 2006

10:10 hrs • Technical Sessions		Room	Session #
A1.2.	Nutrient and Metabolic Effect in Actual and Simulated Space Flight	11	17
A2.2.	Fluid and Materials Sciences	7	18
A3.2.	Solar System Exploration	1	19
A4.2.	SETI II - Interdisciplinary Aspects	8	20
B1.2.	Future Earth Observation Systems	3	21
B3.2.	Advanced Technologies	5	22
B5.1.	7th UN/IAA Workshop on Small Satellite Programmes at the Service of Developing Countries	13	23
B6.1.	Measurements and Space Surveillance	6	24
C1.2.	Attitude Control, Sensors and Actuators	10	25
C2.2.	Space Structures II - Development and Verification (Deployable and Dimensionally Stable Structures)	15	26
C4.2.	Propulsion systems II	9	27
D1.1.	Innovative and Visionary Space Systems Concepts	12	28
D2.2.	Launch Services, Missions, Operations and Facilities	2	29
D4.2.	Space Elevator Systems, Engineering and Science	4	30
E2.1.	Student Conference I	17	31
E3.1.B.	Policies for a New Era in Space - Part 2	16	32
E6.1.	Legal Aspects of Space Transportation and Launching	14	33

15:30 hrs • Technical Sessions		Room	Session #
A1.3.	Sensorimotor Effects of Spaceflight: Mechanisms and Countermeasures	11	34
A2.3.	Microgravity Experiments from Sub-orbital to Orbital Platforms	7	35
A3.3.	Mars Exploration	1	36
B1.3.	Earth Observation Sensors and Technology	3	37
B4.2.	Space Stations Assembly and Operations	13	38
B6.2.	Risk Analysis and Modelling	6	39
C1.3.	Multibody Dynamics	10	40
C2.3.	Space Structures - Dynamics and Microdynamics	15	41
C3.1.	Space Power Systems, Concepts and Architectures	8	42
C4.5.	Hypersonic and Combined Cycle Propulsion	9	43
D2.3.	Upper Stages, Space Transfer and Reentry Systems	2	44
D3.2.	Novel Concepts and Technologies for the Exploration and Utilization of Space	12	45
D4.3.	Space Elevators and Advanced Tethers: Programs and Applications	4	46
D5.1.	Knowledge Management	16	47
E2.2.	Student Conference II	17	48
E4.4.	History of Spanish Contribution to Astronautics	5	49
E6.2.	Legal Aspects of Disaster Management	14	50
E6.2.A.	The Moon, Property Rights and Legal Issues	14	51

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Wed, Oct 04, 2006

10:10 hrs • Technical Sessions		Room	Session #
A1.4.	Cellular and Molecular Mechanisms Underlying Spaceflight Responses	11	52
A3.4.	New Mission Concepts for Space Exploration	6	53
A5.2.	Human and Robotic Partnerships to Realize Space Exploration Goals	1	54
B1.4.	Earth Observation Data Management Systems	3	55
B4.3.	International Utilization of Space Stations	13	56
B5.3.	Small Satellite Operations	4	57
C1.4.	Optimization	10	58
C2.4.	New Materials and Structural Concepts	15	59
C3.2.	Space Power Technologies and Components	8	60
D1.2.	Enabling Technologies for Space Systems	12	61
D2.4.	Future Space Transportation Systems	2	62
E2.3.	Student Conference III	17	63
E3.4.	Space Tourism: Keeping the Dream Alive	5	64
E4.1.	Memoirs	7	65
E5.1.	Social Benefits of Space Spin-Offs	16	66
E6.3.	International Cooperation in Space Activities, with Special Focus on Remote Sensing	14	67

15:30 hrs • Technical Sessions		Room	Session #
A1.5.	Life Support Systems for Long Duration Human Spaceflight	11	68
A2.4.	Science Results from Ground Based Research	7	69
A3.5.	Small Bodies Missions and Technologies	1	70
B1.5.	Earth Observation Applications and Economic Benefits	3	71

B3.3.	Fixed and Broadcast Services	5	72
B5.4.	Small Satellites for Earth Observation and Lessons Learned and New Generation Missions	4	73
C1.5.	Orbital Dynamics	10	74
C2.5.	Smart Materials and Adaptive Structures	15	75
C3.3.	Space Power Experiments and Demonstrations	8	76
C4.3.	Propulsion Technology	9	77
D2.5.	Future Space Transportation Systems Technologies	2	78
D3.3.	System-of-Systems Infrastructures to Enable Ambitious Future Exploration and Utilization of Space	12	79
E1.2.	Structures for Space Education	17	80
E3.2.	Enabling Commercial Opportunities in Space	16	81
E4.2.	Organisational Histories	13	82
E5.2.	Space Spin-Offs: Investment Opportunities	6	83
E6.4.	Space Law at Times of Armed Conflict	14	84

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Thu, Oct 05, 2006

10:10 hrs • Technical Sessions		Room	Session #
A1.6.	Astrobiology in the Solar System	11	85
A2.5.	Facilities and Operations of Microgravity Experiments	7	86
A3.6.	Moon Exploration	1	87
B1.6.	Global Earth Observation Initiatives	3	88
B3.4.	Communication Satellite Infrastructure and Economics	5	89
B4.4.	Space Stations Evolution, Enhancement, New Programs	13	90
B5.5.	Small Spacecraft Launch, Injection, and Orbit Transfer Systems	4	91
B6.3.	Hypervelocity Impacts and Protection	6	92
C1.6.	Mission Operations	10	93
C2.6.	Space Environmental Effects and Spacecraft Protection	15	94
C3.4.	Joint Session on Advanced Concepts for Space Power: Enabling Ambitious Space Exploration and Utilization with D3.4.	8	95
C4.4.	Electric Propulsion	9	96
D1.3.	System Engineering Tools, Processes & Training	12	97
D2.6.	Future Space Transportation Systems Technologies In-Flight Experimentation	2	98
D3.4.	Joint Session on Advanced Concepts for Space Power: Enabling Ambitious Space Exploration and Utilization C3.4.	8	95
E1.3.	Educational Outreach	17	99
E3.5.	Scientific-Legal Roundtable: Nuclear Power Systems in Space - The New Reality (IAA.5.13/IISL)	14	100
E5.3.	Popularization of Space	16	101
14:20 hrs • Technical Sessions		Room	Session #

A1.P.1.	Poster Session on Space Life Sciences - Part I	11	102
A2.P.	Poster Session on Microgravity Sciences and Processes	2	103
A3.P.	Poster Session on Space Exploration	13	104
A3.P.1.	Poster Session on Space Based Astronomy	13	105
A3.P.2.	Poster Session on Solar System Exploration	13	106
A5.P.	Poster Session on Integrated Approaches to the Exploration and Utilization of the Moon and Mars	1	107
B1.P.1.	Poster Session on Earth Observation	3	108
B3.P.1.	Poster Session on Near-Earth and Interplanetary Communications Systems	5	109

B3.P.4.	Poster Session on Communication Satellite Infrastructure and Economics	5	110
B3.P.6.	Poster Session on Mobile Communications and Satellite Navigation	5	111
B6.P.1.	Poster Session on Space Debris - Part I	6	112
C1.P.1.	Poster Session Attitude Dynamics, Modelling and Determination	4	113
C1.P.2.	Poster Session on Attitude Control, Sensors and Actuators	4	114
C1.P.3.	Poster Session on Multibody Dynamics	4	115
C1.P.4.	Poster Session on Optimization	10	116
C1.P.5.	Poster Session on Orbital Dynamics	10	117
C1.P.6.	Poster Session on Mission Operations	10	118
C2.P.1.	Poster Session on Materials and Structures - Part I	15	119
C4.P.1.	Poster Session on Propulsion Systems I	Auditorium	120
C4.P.2.	Poster Session on Propulsion Systems II	Auditorium	121
D1.P.1.	Poster Session on Space Systems	12	122
D2.P.1.	Poster session on Space Transportation	8	123
D2.P.2.	Poster session on Space Transportation	9	124
E1.P.1.	Poster Session on Hands-On Space Education	17	125
E1.P.2.	Poster Session on Structures for Space Education	17	126
E3.P.1.	Poster Session on Policies for a New Era in Space	14	127
E3.P.3.	Poster Session on Space and Global Security	14	128
E3.P.4.	Poster Session on Space Tourism: Keeping the Dream Alive	14	129
E4.P.	Poster Session on History of Astronautics	7	130
E5.P.	Poster Session on Space Activity and Society	7	131

15:30 hrs • Technical Sessions

		Room	Session #
A1.7.	Joint session on Life and Physical Sciences for Space Exploration with A2.7.	11	132
A2.7.	Joint session on Life and Physical Sciences for Space Exploration with A1.7.	11	132
A3.P.3.	Poster Session on Mars Exploration	13	133
A3.P.5.	Poster Session on Small Bodies Missions and Technologies	13	134
A3.P.6.	Poster Session on Moon Exploration	13	135
A5.1.	Strategies to Establish Lunar and Mars Colonies	1	136
B3.5.	Advanced Systems	5	137
B5.6.	Design and Technology for Small Satellites	4	138
B6.4.	Mitigation and Standards	6	139
C1.7.	Guidance and Control	10	140
C2.7.	Space Vehicles, Mechanical/Thermal/Fluidic Systems	15	141
C3.5.	Joint session on Nuclear Propulsion and Power with C4.7 D2.8 and D3.5	9	146
C4.7.	Joint Session on Nuclear Propulsion and Power with C3.5 D2.8 and D3.4.	9	146
C4.P.3.	Poster Session on Propulsion Technology	Auditorium	142
C4.P.4.	Poster Session on Electric Propulsion	Auditorium	143
C4.P.5.	Poster Session on Hypersonic and Combined Cycle Propulsion	Auditorium	144
D1.4.	Space Systems Architectures	12	145
D2.8.	Joint session on Nuclear Propulsion and Power with C3.5 C4.7 and D3.5.	9	146
D3.5.	Joint session on Nuclear Propulsion and Power with C3.5 C4.7 and D2.8.	9	146
D3.P.	Poster Session on Novel Concepts and Technologies for the Exploration and Utilization of Space	8	147
D5.2.	Coping with Space Environment in Near-Earth and Exploration Missions	16	148

E1.4.	Beyond Education	17	149
E3.3.	Space and Global Security	14	150
E4.3.	Scientific & Technical Reviews	7	151

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18:40 hrs • Technical Sessions Room    Session #

A1.P.2.	Poster Session on Space Life Sciences - Part II	16	152
B6.P.2.	Poster Session on Space Debris - Part II	6	153
C1.P.7.	Poster Session on Guidance and Control	10	154
C1.P.8.	Poster Session on Mission and Constellation Design	10	155
C2.P.2.	Poster Session on Materials and Structures - Part II	15	156
D1.P.2.	Poster Session on Space Systems	12	157
E1.P.3.	Poster Session on Educational Outreach	17	158
E1.P.4.	Poster Session on Beyond Education	17	159
E1.P.5.	Poster Session on Space Exploration Education	17	160

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Fri, Oct 06, 2006

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10:10 hrs • Technical Sessions Room    Session #

A3.7.	Joint session on Access to Space for New Exploration Missions with D2.7.	1	167
B3.6.	Mobile Communications and Satellite Navigation	5	161
B5.7.	Interface Standards for Small Robotic Explorers	4	162
C1.8.	Mission and Constellation Design	10	163
C2.8.	Specialized Technologies, including Nanotechnology	15	164
C4.6.	Advanced Propulsion - Non Chemical, non Electric	9	165
D1.5.	Lessons Learned in Space Systems	12	166
D2.7.	Joint session on Access to Space for Exploration Missions with A3.7.	1	167
E1.5.	Space Exploration Education	17	168
E6.5.	Other Legal Matters, including the Relationship between Government and Private Sector in Space Activities	14	169

## CONGRESS SESSION BY SYMPOSIUM

<b>A1.</b>	<b>SPACE LIFE SCIENCES SYMPOSIUM</b>	<b>Session #</b>
1.	Behavioral Issues and Space Exploration	1
2.	Nutrient and Metabolic Effect in Actual and Simulated Space Flight	17
3.	Sensorimotor Effects of Spaceflight: Mechanisms and Countermeasures	34
4.	Cellular and Molecular Mechanisms Underlying Spaceflight Responses	52
5.	Life Support Systems for Long Duration Human Spaceflight	68
6.	Astrobiology in the Solar System	85
7.	Joint session on Life and Physical Sciences for Space Exploration with A2.7.	132
P.1.	Poster Session on Space Life Sciences - Part I	102
P.2.	Poster Session on Space Life Sciences - Part II	152
<b>A2.</b>	<b>MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM</b>	<b>Session #</b>
1.	Gravity and Fundamental Physics	2
2.	Fluid and Materials Sciences	18
3.	Microgravity Experiments from Sub-orbital to Orbital Platforms	35
4.	Science Results from Ground Based Research	69
5.	Facilities and Operations of Microgravity Experiments	86
7.	Joint session on Life and Physical Sciences for Space Exploration with A1.7.	132
P.	Poster Session on Microgravity Sciences and Processes	103
<b>A3.</b>	<b>SPACE EXPLORATION SYMPOSIUM</b>	<b>Session #</b>
1.	Space Based Astronomy	3
2.	Solar System Exploration	19
3.	Mars Exploration	36
4.	New Mission Concepts for Space Exploration	53
5.	Small Bodies Missions and Technologies	70
6.	Moon Exploration	87
7.	Joint session on Access to Space for New Exploration Missions with D2.7.	167
P.	Poster Session on Space Exploration	104
P.1.	Poster Session on Space Based Astronomy	105
P.2.	Poster Session on Solar System Exploration	106
P.3.	Poster Session on Mars Exploration	133
P.5.	Poster Session on Small Bodies Missions and Technologies	134
P.6.	Poster Session on Moon Exploration	135
<b>A4.</b>	<b>35TH SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – THE NEXT STEPS</b>	<b>Session #</b>
1.	SETI I - Technical Aspects	4
2.	SETI II - Interdisciplinary Aspects	20
<b>A5.</b>	<b>SYMPOSIUM ON INTEGRATED APPROACHES TO THE EXPLORATION OF THE MOON AND MARS</b>	<b>Session #</b>
1.	Strategies to Establish Lunar and Mars Colonies	136
2.	Human and Robotic Partnerships to Realize Space Exploration Goals	54
P.	Poster Session on Integrated Approaches to the Exploration and Utilization of the Moon and Mars	107

<b>B1.</b>	<b>EARTH OBSERVATION SYMPOSIUM</b>	<b>Session #</b>
1.	International Cooperation in Earth Observation Missions	5
2.	Future Earth Observation Systems	21
3.	Earth Observation Sensors and Technology	37
4.	Earth Observation Data Management Systems	55
5.	Earth Observation Applications and Economic Benefits	71
6.	Global Earth Observation Initiatives	88
P.1.	Poster Session on Earth Observation	108
<b>B3.</b>	<b>SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM</b>	<b>Session #</b>
1.	Near-Earth and Interplanetary Communications Systems	6
2.	Advanced Technologies	22
3.	Fixed and Broadcast Services	72
4.	Communication Satellite Infrastructure and Economics	89
5.	Advanced Systems	137
6.	Mobile Communications and Satellite Navigation	161
P.1.	Poster Session on Near-Earth and Interplanetary Communications Systems	109
P.4.	Poster Session on Communication Satellite Infrastructure and Economics	110
P.6.	Poster Session on Mobile Communications and Satellite Navigation	111
<b>B4.</b>	<b>SPACE STATIONS SYMPOSIUM</b>	<b>Session #</b>
1.	Space Stations Overview	7
2.	Space Stations Assembly and Operations	38
3.	International Utilization of Space Stations	56
4.	Space Stations Evolution, Enhancement, New Programs	90
<b>B5.</b>	<b>SMALL SATELLITES MISSIONS SYMPOSIUM</b>	<b>Session #</b>
1.	7th UN/IAA Workshop on Small Satellite Programmes at the Service of Developing Countries	23
2.	Small Space Science Missions	8
3.	Small Satellite Operations	57
4.	Small Satellites for Earth Observation and Lessons Learned and New Generation Missions	73
5.	Small Spacecraft Launch, Injection, and Orbit Transfer Systems	91
6.	Design and Technology for Small Satellites	138
7.	Interface Standards for Small Robotic Explorers	162
<b>B6.</b>	<b>SPACE DEBRIS SYMPOSIUM</b>	<b>Session #</b>
1.	Measurements and Space Surveillance	24
2.	Risk Analysis and Modelling	39
3.	Hypervelocity Impacts and Protection	92
4.	Mitigation and Standards	139
P.1.	Poster Session on Space Debris - Part I	112
P.2.	Poster Session on Space Debris - Part II	153
<b>C1.</b>	<b>ASTRODYNAMICS SYMPOSIUM</b>	<b>Session #</b>
1.	Attitude Dynamics, Modelling and Determination	9
2.	Attitude Control, Sensors and Actuators	25
3.	Multibody Dynamics	40
4.	Optimization	58
5.	Orbital Dynamics	74

6.	Mission Operations	93
7.	Guidance and Control	140
8.	Mission and Constellation Design	163
P.1.	Poster Session Attitude Dynamics, Modelling and Determination	113
P.2.	Poster Session on Attitude Control, Sensors and Actuators	114
P.3.	Poster Session on Multibody Dynamics	115
P.4.	Poster Session on Optimization	116
P.5.	Poster Session on Orbital Dynamics	117
P.6.	Poster Session on Mission Operations	118
P.7.	Poster Session on Guidance and Control	154
P.8.	Poster Session on Mission and Constellation Design	155
<b>C2.</b>	<b>MATERIALS AND STRUCTURES SYMPOSIUM</b>	<b>Session #</b>
1.	Space Structures I - Development and Verification (Space Vehicles and Components)	10
2.	Space Structures II - Development and Verification (Deployable and Dimensionally Stable Structures)	26
3.	Space Structures - Dynamics and Microdynamics	41
4.	New Materials and Structural Concepts	59
5.	Smart Materials and Adaptive Structures	75
6.	Space Environmental Effects and Spacecraft Protection	94
7.	Space Vehicles, Mechanical/Thermal/Fluidic Systems	141
8.	Specialized Technologies, including Nanotechnology	164
P.1.	Poster Session on Materials and Structures - Part I	119
P.2.	Poster Session on Materials and Structures - Part II	156
<b>C3.</b>	<b>SPACE POWER SYMPOSIUM</b>	<b>Session #</b>
1.	Space Power Systems, Concepts and Architectures	42
2.	Space Power Technologies and Components	60
3.	Space Power Experiments and Demonstrations	76
4.	Joint Session on Advanced Concepts for Space Power: Enabling Ambitious Space Exploration and Utilization with D3.4.	95
5.	Joint session on Nuclear Propulsion and Power with C4.7 D2.8 and D3.5	146
<b>C4.</b>	<b>SPACE PROPULSION SYMPOSIUM</b>	<b>Session #</b>
1.	Propulsion Systems I	11
2.	Propulsion systems II	27
3.	Propulsion Technology	77
4.	Electric Propulsion	96
5.	Hypersonic and Combined Cycle Propulsion	43
6.	Advanced Propulsion - Non Chemical, non Electric	165
7.	Joint Session on Nuclear Propulsion and Power with C3.5 D2.8 and D3.4.	146
P.1.	Poster Session on Propulsion Systems I	120
P.2.	Poster Session on Propulsion Systems II	121
P.3.	Poster Session on Propulsion Technology	142
P.4.	Poster Session on Electric Propulsion	143
P.5.	Poster Session on Hypersonic and Combined Cycle Propulsion	144
<b>D1.</b>	<b>SPACE SYSTEMS SYMPOSIUM</b>	<b>Session #</b>
1.	Innovative and Visionary Space Systems Concepts	28
2.	Enabling Technologies for Space Systems	61
3.	System Engineering Tools, Processes & Training	97
4.	Space Systems Architectures	145
5.	Lessons Learned in Space Systems	166



P.1.	Poster Session on Space Systems	122
P.2.	Poster Session on Space Systems	157
<b>D2.</b>	<b>SPACE TRANSPORTATION SYMPOSIUM</b>	<b>Session #</b>
1.	Launch Vehicles in Service or in Development	12
2.	Launch Services, Missions, Operations and Facilities	29
3.	Upper Stages, Space Transfer and Reentry Systems	44
4.	Future Space Transportation Systems	62
5.	Future Space Transportation Systems Technologies	78
6.	Future Space Transportation Systems Technologies In-Flight Experimentation	98
7.	Joint session on Access to Space for Exploration Missions with A3.7.	167
8.	Joint session on Nuclear Propulsion and Power with C3.5 C4.7 and D3.5.	146
P.1.	Poster session on Space Transportation	123
P.2.	Poster session on Space Transportation	124
<b>D3.</b>	<b>SYMPOSIUM ON STEPPING STONES TO THE FUTURE: STRATEGIES, ARCHITECTURES, CONCEPTS AND TECHNOLOGIES</b>	<b>Session #</b>
1.	Strategies to Establish a Stepping Stone Approach to our Future in Space	13
2.	Novel Concepts and Technologies for the Exploration and Utilization of Space	45
3.	System-of-Systems Infrastructures to Enable Ambitious Future Exploration and Utilization of Space	79
4.	Joint Session on Advanced Concepts for Space Power: Enabling Ambitious Space Exploration and Utilization C3.4.	95
5.	Joint session on Nuclear Propulsion and Power with C3.5 C4.7 and D2.8.	146
P.	Poster Session on Novel Concepts and Technologies for the Exploration and Utilization of Space	147
<b>D4.</b>	<b>SYMPOSIUM ON THE FAR FUTURE: RENEWED VISIONS</b>	<b>Session #</b>
1.	Bases and Space Colonization	14
2.	Space Elevator Systems, Engineering and Science	30
3.	Space Elevators and Advanced Tethers: Programs and Applications	46
<b>D5.</b>	<b>39TH SYMPOSIUM ON SAFETY AND QUALITY IN SPACE ACTIVITIES</b>	<b>Session #</b>
1.	Knowledge Management	47
2.	Coping with Space Environment in Near-Earth and Exploration Missions	148
<b>E1.</b>	<b>SPACE EDUCATION AND OUTREACH SYMPOSIUM</b>	<b>Session #</b>
1.	Hands-On Space Education	15
2.	Structures for Space Education	80
3.	Educational Outreach	99
4.	Beyond Education	149
5.	Space Exploration Education	168
P.1.	Poster Session on Hands-On Space Education	125
P.2.	Poster Session on Structures for Space Education	126
P.3.	Poster Session on Educational Outreach	158
P.4.	Poster Session on Beyond Education	159
P.5.	Poster Session on Space Exploration Education	160
<b>E2.</b>	<b>36TH STUDENT CONFERENCE</b>	<b>Session #</b>
1.	Student Conference I	31

2.	Student Conference II	48
3.	Student Conference III	63
<b>E3.</b>	<b>SYMPOSIUM ON WHICH DIRECTION IN SPACE? BALANCING APPLICATIONS AND EXPLORATION</b>	<b>Session #</b>
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1.A.	Policies for a New Era in Space - Part 1	16
1.B.	Policies for a New Era in Space - Part 2	32
2.	Enabling Commercial Opportunities in Space	81
3.	Space and Global Security	150
4.	Space Tourism: Keeping the Dream Alive	64
5.	Scientific-Legal Roundtable: Nuclear Power Systems in Space - The New Reality (IAA.5.13/IISL)	100
P.1.	Poster Session on Policies for a New Era in Space	127
P.3.	Poster Session on Space and Global Security	128
P.4.	Poster Session on Space Tourism: Keeping the Dream Alive	129
<b>E4.</b>	<b>40TH SYMPOSIUM ON THE HISTORY OF ASTRONAUTICS</b>	<b>Session #</b>
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1.	Memoirs	65
2.	Organisational Histories	82
3.	Scientific & Technical Reviews	151
4.	History of Spanish Contribution to Astronautics	49
P.	Poster Session on History of Astronautics	130
<b>E5.</b>	<b>17TH SYMPOSIUM ON SPACE ACTIVITY AND SOCIETY</b>	<b>Session #</b>
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1.	Social Benefits of Space Spin-Offs	66
2.	Space Spin-Offs: Investment Opportunities	83
3.	Popularization of Space	101
P.	Poster Session on Space Activity and Society	131
<b>E6.</b>	<b>49TH COLLOQUIUM ON LAW OF OUTER SPACE (IISL)</b>	<b>Session #</b>
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1.	Legal Aspects of Space Transportation and Launching	33
2.	Legal Aspects of Disaster Management	50
2.A.	The Moon, Property Rights and Legal Issues	51
3.	International Cooperation in Space Activities, with Special Focus on Remote Sensing	67
4.	Space Law at Times of Armed Conflict	84
5.	Other Legal Matters, including the Relationship between Government and Private Sector in Space Activities	169

# TECHNICAL SESSION PAPERS ORDERED BY SESSION NUMBER

## 1

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**October 02 2006, 15:30 - Room 11**

### **A1. Space Life Sciences Symposium**

*Coordinators: Gerda Horneck (Germany), Inessa Kozlovskaya (Russia)*

#### **A1.1. Behavioral Issues and Space Exploration**

*Chairmen: Nick Kanas (United States), Gro M. Sandal (Norway)*

*Rapporteur: Peter Graef (Germany)*

### **IAC-06-A1.1.01**

#### **Assessing Group Identity in a Mars Simulation Environment**

*Dr. Sheryl Bishop, The University of Texas Medical Branch, Galveston, United States*

*Dr. Katherine Reynolds, Australian National University, Canberra, Australia, Dr. Rachael Eggins, The Australian National University, Canberra, Australia, Dr. Steve Dawson, Canberra, ACT, Australia, Dr. Nishi Rawat, The John Hopkins University, Baltimore, United States, Ms. Kelly Bunzeluk, International Space University (ISU), Illkirch-Graffstaden, France*

### **IAC-06-A1.1.02**

#### **Do Psychosocial Decrements Occur During the 2nd Half of Space Missions?**

*Dr. Nick Kanas, University of California and Veterans Affairs Medical Center, San Francisco, CA, United States*

*Dr. Jennifer Boyd Ritsher, University of California and Veterans Affairs Medical Center, San Francisco, CA, United States, Ms. Stephanie Saylor, University of California and Veterans Affairs Medical Center, San Francisco CA, United States*

### **IAC-06-A1.1.03**

#### **Cultural and language backgrounds of International Space Station program personnel**

*Dr. Jennifer Boyd Ritsher, University of California and Veterans Affairs Medical Center, San Francisco, CA, United States*

*Dr. Nick Kanas, University of California and Veterans Affairs Medical Center, San Francisco, CA, United States, Dr. Vyacheslav Salnitskiy, Institute for Biomedical Problems, Moscow D-7, Russia, Dr. Vadim Gushin, Institute for Biomedical Problems, Moscow, Russia, Ms. Stephanie Saylor, University of California and Veterans Affairs Medical Center, San Francisco CA, United States, Dr. Daniel S. Weiss, University of California, San Francisco CA, United States, Dr. Charles Marmar, University of California and Veterans Affairs Medical Center, San Francisco CA, United States*

### **IAC-06-A1.1.04**

#### **Patterns in Crew-Initiated Photography of Earth from ISS—is Earth Observation a Salutogenic Experience?**

*Dr. Julie A. Robinson, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States*

*Dr. Kelley Slack, Wyle Laboratories, Houston, TX, United States, Ms. Valerie A. Olson, National Space and Biomedical Research Institute, Houston, TX, United States, Mr. Mike Trenchard, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States, Ms. Kim Willis, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States, Ms. Pam Baskin, Wyle Laboratories, Houston, TX, United States, Dr. Jennifer Boyd Ritsher, University of California and Veterans Affairs Medical Center, San Francisco, CA, United States*

### **IAC-06-A1.1.05**

#### **Strangers and Brothers: Psychological Reactions Among Multinational Space Crews**

*Dr. Peter Suedfeld, The University of British Columbia, Vancouver, BC, Canada*

*Ms. Katarzyna Wilk, The University of British Columbia, Vancouver, BC, Canada*

### **IAC-06-A1.1.06**

#### **Leadership challenges in ISS operations: Lessons learned from junior and senior mission control personnel**

*Mr. James Clement, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, United States*

*Dr. Jennifer Boyd Ritsher, University of California and Veterans Affairs Medical Center, San Francisco, CA, United States, Ms. Stephanie Saylor, University of California and Veterans Affairs Medical Center, San Francisco CA, United States, Dr. Nick Kanas, University of California and Veterans Affairs Medical Center, San Francisco, CA, United States*

### **IAC-06-A1.1.07**

#### **A Two-Man Arctic Kayak Expedition: Implications for Planetary Surface Exploration and Post-Mission Family Re-Integration**

*Prof. Gloria Leon, University of Minnesota, Minneapolis, Minnesota, United States*

## 2

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**October 02 2006, 15:30 - Room 7**

### **A2. Microgravity Sciences and Processes Symposium**

*Coordinators: Antonio Viviani (Italy), Rainer Willnecker (Germany)*

#### **A2.1. Gravity and Fundamental Physics**

*Chairmen: François Gonzalez (France), Joachim Richter (Germany)*

*Rapporteur: Marcus Dejmek (Canada)*

### **IAC-06-A2.1.01**

#### **The MICROSCOPE instrument realisation challenge and performance assessment**

*Mr. Manuel Rodrigues, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Châtillon, France*

*Mr. Ratana Chhun, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Châtillon, France, Ms. Danya Hudson, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Châtillon, France, Mr. Pierre Touboul, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Châtillon, France*

### **IAC-06-A2.1.02**

#### **MICROSCOPE modelisation and results of the calibration phase**

*Ms. Emeline Guiu, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Châtillon, France*

*Mr. Manuel Rodrigues, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Châtillon, France, Mr. Pierre Touboul, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Châtillon, France*

### **IAC-06-A2.1.03**

#### **The Atomic Clock Ensemble in Space (ACES) Experiment**

*Mr. Giuseppe Reibaldi, European Space Agency/ESTEC, Noordwijk, The Netherlands*

*Mr. Rosario Nasca, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Philippe Goudy, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mr. Christian Sirmain, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

### **IAC-06-A2.1.04**

#### **PHARAO's Cesium Tube**

*Mr. Stephane Thomlin, EADS-Sodern, Limeil-Brévannes, France*

*Mr. Christian Mace, EADS-Sodern, Limeil-Brévannes, France, Mr. Salem Belmana, EADS-Sodern, Limeil-Brévannes, France, Mr. Olivier Grosjean, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

### **IAC-06-A2.1.05**

#### **Correlation of the earth microseism background with space objects distribution and gravity waves velocity**

*Prof. Vladimir Dubrovskiy, Moscow Lomonosov State University, Moscow, Russia*

*Prof. Dr. Nickolay N. Smirnov, Moscow Lomonosov State University, Moscow, Russia*

### **IAC-06-A2.1.06**

#### **Using magnetic field gradients to simulate variable gravity in fluids and materials experiments**

*Dr. Narayanan Ramachandran, BAE SYSTEMS Analytical Solutions, Huntsville, United States*

### **IAC-06-A2.1.07**

#### **The fluids and Combustion facility and first payloads, the multi-user droplet combustion apparatus and the light microscopy module: enabling research on the iss**

*Mr. Terence O'Malley, National Aeronautics and Space Administration (NASA)/Glenn Research Center, Cleveland, United States*

*Dr. Karen Weiland, National Aeronautics and Space Administration (NASA)/Glenn Research Center, Cleveland, OH, United States, Mr. Frank Gati, National Aeronautics and Space Administration (NASA)/Glenn Research Center, Cleveland, OH, United States, Dr. Myron Hill, National Aeronautics and Space Administration (NASA)/Glenn Research Center, Cleveland, OH, United States, Mr. Robert Corban, National Aeronautics and Space Administration (NASA)/Glenn Research Center, Cleveland, OH, United States, Mr. John Snead, National Aeronautics and Space Administration (NASA)/Glenn Research Center, Cleveland, OH, United States, Mr. Craig A. Myhre, National Aeronautics and Space Administration (NASA)/Glenn Research Center, Cleveland, OH, United States*

### **IAC-06-A2.1.08**

#### **Comparison between the total ozone data from satellite-borne and ground-based measurements at Stara Zagora, Bulgaria**

*Mrs. Bogdana Mendeva, Solar-Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Stara Zagora, Bulgaria*

*Dr. Tsvetana Gogosheva, Solar-Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Stara Zagora, Bulgaria, Dr. Boyan Petkov, Solar-Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Stara Zagora, Bulgaria, Dr. Dimitar Krastev, Solar-Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Stara Zagora, Bulgaria*

## **3**

### **October 02 2006, 15:30 - Room 6**

#### **A3. Space Exploration Symposium**

*Coordinators: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)*

##### **A3.1. Space Based Astronomy**

*Chairmen: Roger Malina (France), Henk Olthof (The Netherlands)*

*Rapporteur: Karoly Szego (Hungary)*

### **IAC-06-A3.1.01**

#### **SIM-PlanetQuest Mission: Progress Report and Current Status**

*Mr. James C. Marr, Jet Propulsion Laboratory, Pasadena, CA, United States*

*Mr. Stephen Edberg, Jet Propulsion Laboratory, Pasadena, CA, United States, Dr. Stephen Unwin, Jet Propulsion Laboratory, Pasadena, CA, United States, Dr. Wesley Traub, Jet Propulsion Laboratory, Pasadena, CA, United States, Dr. Robert Laskin, Jet Propulsion Laboratory, Pasadena, CA, United States, Dr. Jeffery Yu, Jet Propulsion Laboratory, Pasadena, CA, United States*

### **IAC-06-A3.1.02**

#### **The Herschel / Planck Programme – Technical Challenges for two Science Missions – The Spacecraft**

*Mr. Jean-Jacques Juillet, Alcatel Alenia Space, Cannes la Bocca, France*

### **IAC-06-A3.1.03**

#### **The GAIA astrometry mission**

*Dr. Charles Koeck, EADS Astrium, Toulouse, France*

*Mr. Vincent Poinson, EADS Astrium, Toulouse, France, Mr. Rudolph Schmidt, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Frédéric Faye, EADS Astrium, Toulouse, France*

## IAC-06-A3.1.04

### Wide field imager technology reference study

Mr. Aleksander Lyngvi, European Space Agency/ESTEC, Noordwijk, The Netherlands

Mr. Philippe Gondoin, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Volker Kirschner, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Alex Jeanes, European Space Agency/ESTEC, noordwijk, The Netherlands, Ms. Sandra Mangunson, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Luis Venancio, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Joao Pereira Do Carmo, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Andrea Santovincenzo, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Alex Short, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Udo Telljohann, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Pierre Fabry, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Peter Holsters, European Space Agency/ESTEC, Noordwijk, The Netherlands, Ms. Alexa Figgess, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Michael Khan, European Space Agency/ESOC, Darmstadt, Germany, Ms. Agnes Mestreau-Garreau, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Paolo de Pascale, European Space Agency/ESOC, Darmstadt, Germany, Mr. Jose-Luis Pellon-Bailon, European Space Agency/ESOC, Darmstadt, Germany, Mr. Shufan Wu, European Space Agency/ESTEC, Noordwijk, The Netherlands

## IAC-06-A3.1.05

### Far infrared interferometer technology reference study

Mr. Aleksander Lyngvi, European Space Agency/ESTEC, Noordwijk, The Netherlands

Dr. Göran Pilbratt, European Space Agency/ESTEC, Noordwijk, The Netherlands, Dr. Timo Prusti, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Nicola Rando, European Space Agency/ESTEC, Noordwijk, The Netherlands

## IAC-06-A3.1.06

### Dune, the dark universe explorer mission

Dr. Charles Koeck, EADS Astrium, Toulouse, France

Mr. Sébastien Boulade, EADS Astrium, Toulouse, France, Mr. Laurent Georges, EADS Astrium, Toulouse, France, Dr. Alexandre Réfrégier, CEA, Gif sur Yvette, France, Mr. Joel Michaud, Centre National d'Etudes Spatiales (CNES), Toulouse, France

## IAC-06-A3.1.07

### XEUS: Payload Accommodation with the Detector Spacecraft

Ms. Kelly Geelen, Technical University of Delft (TUDelft), Delft, The Netherlands

Mrs. Marie-Claire Perkinson, EADS Astrium Ltd., Stevenage, United Kingdom, Dr. Paolo D Arrigo, EADS Astrium Ltd., Stevenage, United Kingdom, Ms. Elizabeth Seward, EADS Astrium Ltd., Stevenage, United Kingdom

## IAC-06-A3.1.08

### SIMBOL-X : an Hard X-Ray Formation Flying Mission

Mr. Jean-Paul Aguttes, Centre National d'Etudes Spatiales (CNES), Toulouse, France

Mr. Rodolphe Cledassou, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mr. Philippe Ferrando, CEA, Gif-sur-Yvette, France, Mr. Paul Duchon, Centre National d'Etudes Spatiales (CNES), Toulouse, France

## IAC-06-A3.1.09

### On the Characterization of Ultraluminous X-ray Sources

Ms. Diane Wong, University of California at Berkeley, Berkeley, United States

# 4

## October 02 2006, 15:30 - Room 8

### A4. 35th Symposium on The Search for Extraterrestrial Intelligence (SETI) – The Next Steps

Coordinators: Claudio Maccone (Italy), Seth Shostak (United States)

#### A4.1. SETI I - Technical Aspects

Chairmen: Ray P. Norris (Australia), H. Paul Shuch (United States)

Rapporteur: Seth Shostak (United States)

## IAC-06-A4.1.01

### Updating the San Marino Scale

Dr. H. Paul Shuch, The SETI League, Inc., Cogan Station, PA, United States

Dr. Ivan Almar, MANT- Hungarian Astronautical Society, Budapest, Hungary

## IAC-06-A4.1.02

### Large-size Message Construction for ETI: Aristotelian Syllogisms

Dr. Alexander Ollongren, Leiden University, Leiden, The Netherlands

## IAC-06-A4.1.03

### The Evolutionary Epic as an Integrative Theme for Interstellar Message Composition

Prof. Douglas A. Vakoch, SETI Institute and California Institute of Integral Studies, Mountain View, CA, United States

## IAC-06-A4.1.04

### Speeding Up SETI Searches by Hundreds of Times: The Allen Telescope Array

Dr. Seth Shostak, The SETI Institute, Mountain View, CA, United States

Dr. Jill Tarter, The SETI Institute, Mountain View, CA, United States

## IAC-06-A4.1.05

### Six Berkeley SETI Programs: SETI@home II, SERENDIP V, Astropulse, Spock, SEVENDIP and DYSON

Dr. Dan Werthimer, University of California, Berkeley, CA, United States

## IAC-06-A4.1.06

### Astropulse: a SETI radio sky survey on microsecond time scales

Mr. Joshua Von Korff, University of California at Berkeley, Berkeley, CA, United States

Dr. Dan Werthimer, University of California, Berkeley, CA, United States, Mr. Eric Korpela, University of California, Berkeley, CA, United States

## IAC-06-A4.1.07

### The ITASEL Project (Italian Search for Extraterrestrial Life)

Prof. Dr. Cristiano Cosmovici, IFSI/INAF, Rome, Italy

Dr. Stelio Montebugnoli, INAF - National Institute for Astrophysics, Villafontana Bo, Italy, Dr. Claudio Maccone, Member of the International Academy of Astronautics, Turin, Italy, Dr. Jader Monari, INAF - National Institute for Astrophysics, Villafontana, Italy, Dr. Enrico Flamini, Rome, Italy, Ing. Luca Zoni, INAF - National Institute for Astrophysics, Villafontana, Italy

## IAC-06-A4.1.08

The ITASEL/SETI-Italia new programmable spectrum analyser

*Dr. Stelio Montebugnoli, INAF - National Institute for Astrophysics, Villafontana Bo, Italy*

Ing. Luca Zoni, INAF - National Institute for Astrophysics, Villafontana, Italy, Dr. Jader Monari, INAF - National Institute for Astrophysics, Villafontana, Italy, Dr. Claudio Maccone, Member of the International Academy of Astronautics, Turin, Italy, Prof. Dr. Cristiano Cosmovici, IFSI/INAF, Rome, Italy, Dott. Daniele Biancu, National Institute for Astrophysics, Bologna, Italy, Mr. Nicolo Antonietti, Politecnico di Torino, Turin, Italy, Mr. Salvatore Pluchino, Visiting Research Fellow, IRA-INAF Radiotelescopes, Medicina (Bologna), Italy

## IAC-06-A4.1.09

SETI@GRID: exploiting computational grids to boost SETI data analysis

*Dr. Marco Cecchi, INAF - National Institute for Astrophysics, Bologna, Italy*

*Dr. Jader Monari, INAF - National Institute for Astrophysics, Villafontana, Italy*

## IAC-06-A4.1.10

Challenges in the First All-sky Optical SETI

*Mr. Curtis Mead, Harvard University, Cambridge, MA, United States*

Mr. Andrew Howard, Harvard University, Cambridge, MA, United States, Mr. Pratheev Sreetharan, Harvard University, Cambridge, MA, United States, Mr. Jason Gallicchio, Harvard University, Cambridge, MA, United States, Mr. Steve Howard, Harvard University, Cambridge, MA, United States, Dr. Charles Coldwell, Harvard University, Cambridge, MA, United States, Mr. Joseph Zajac, Harvard-Smithsonian, Cambridge, MA, United States, Mr. Alan Sliski, Harvard University, Cambridge, MA, United States

## IAC-06-A4.1.11

Initial Results from Harvard All-sky Optical SETI

*Mr. Andrew Howard, Harvard University, Cambridge, MA, United States*

Mr. Paul Horowitz, Harvard University, Cambridge, MA, United States, Mr. Curtis Mead, Harvard University, Cambridge, MA, United States, Mr. Pratheev Sreetharan, Harvard University, Cambridge, MA, United States, Mr. Jason Gallicchio, Harvard University, Cambridge, MA, United States, Mr. Steve Howard, Harvard University, Cambridge, MA, United States, Dr. Charles Coldwell, Harvard University, Cambridge, MA, United States, Mr. Joseph Zajac, Harvard-Smithsonian, Cambridge, MA, United States, Mr. Alan Sliski, Harvard University, Cambridge, MA, United States

## IAC-06-A4.1.12

Challenges of "cosmic archaeology" searches for ETI

*Dr. Richard Carrigan, Fermi National Accelerator Laboratory, Batavia, United States*

## IAC-06-A4.1.13

SETI, Extrasolar Planets Search and Interstellar Flight: When are they going to Merge?

*Dr. Claudio Maccone, Member of the International Academy of Astronautics, Turin, Italy*

# 5

October 02 2006, 15:30 - Room 3

B1. Earth Observation Symposium

*Coordinators: W. John Hussey (United States), Pierre Ranzoli (Germany)*

B1.1. International Cooperation in Earth Observation Missions

*Chairmen: W. John Hussey (United States), Pierre Ranzoli (Germany)*

*Rapporteur: Jan Kolar (Czech Republic)*

## IAC-06-B1.1.01

Committee on Earth Observation Satellites (CEOS): Affirmation and Expansion of CEOS as the Space Agency Forum

*Dr. Conrado F. Varotto, CONAE, Buenos Aires, Argentina*

## IAC-06-B1.1.02

Earth Observations in Environmental Diplomacy

*Dr. Shaida Johnston, National Aeronautics and Space Administration (NASA)/Goddard Space Flight Center, Greenbelt, MD, United States*

## IAC-06-B1.1.03

European Earth Observation Ground Segment Coordination

*Mrs. Eugenia Forcada, European Space Agency (ESA), Frascati (Rome), Italy*

*Mrs. Sylvie Berland, Canadian Space Agency, St-Hubert, QC, Canada, Mr. Yves Lavergne, Eumetsat, Darmstadt, Germany, Mr. Giovanni Rum, Italian Space Agency (ASI), Rome, Italy, Mr. Gunter Schreier, DLR DFD, Wessling, Germany, Mr. Maurice Winterholer, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

## IAC-06-B1.1.04

The Pléiades High Resolution Program

*Mr. Michel Arnaud, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

*Mr. Benoit Boissin, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mr. Eric Boussarie, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mr. Alain Gleyzes, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mr. Lionel Perret, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

## IAC-06-B1.1.05

Advanced Russian- Kazakh Earth Remote Sensing System

*Mr. Vladimir Verhoturov, S.P. Korolev Rocket and Space Corporation Energia, Moscow, Russia*

## IAC-06-B1.1.06

GMES Poland – a new EU Member State contribution to cooperation in the EO domain

*Ms. Anna Badurska, Université Paris sud-11, Orsay, France*

## IAC-06-B1.1.07

Grand Challenges for Disaster Reduction: The Role of Earth Observations

*Ms. Helen Wood, National Oceanic and Atmospheric Administration (NOAA), Silver Spring, MD, United States*

## **IAC-06-B1.1.08**

### **Gaps in EO based International Cooperation for Disaster Management : Issues and Perspectives**

*Dr. V Jayaraman, Indian Space Research Organization (ISRO), Bangalore, India*

*Dr. S.K. Srivastava, Indian Space Research Organization (ISRO), Bangalore, India, Dr. D. Gowrisankar, Indian Space Research Organization (ISRO), Bangalore, India*

## **IAC-06-B1.1.09**

### **Remote Sensing for Emergency Mapping of Areas with Water Seepage through Levees and of Zones with Dangerously High Groundwater Level**

*Dr. R. Kancheva, Solar-Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Sofia, Bulgaria*

*Mr. Anatoly Shutko, Institute of Radioengineering and Electronics, RAS, Moscow, Russia, Mr. A. Haldin, Institute of Radioengineering and Electronics, RAS, Fryazino, Moscow region, Russia, Mr. V. Krapivin, Institute of Radioengineering and Electronics, RAS, Fryazino, Moscow region, Russia, Mr. E. Novichikhin, Institute of Radioengineering and Electronics, RAS, Fryazino, Moscow region, Russia, Mr. Yu. Tishchenko, Institute of Radioengineering and Electronics, RAS, Fryazino, Moscow region, Russia, Mr. H. Nikolov, Solar-Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Sofia, Bulgaria, Mr. D. Petkov, Solar-Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Sofia, Bulgaria, Mrs. D. Borisova, Solar-Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Sofia, Bulgaria*

## **IAC-06-B1.1.10**

### **Consequences of major Space Weather hazards on Humans daily life**

*Dr. Isabelle Scholl, International Space University (ISU), Illkirch-Graffenstaden, France*

*Mr. Morten Hansen, International Space University (ISU), Strasbourg, France, Mr. Vladimir Ivkovic, Institute for Anthropological Research (Zagreb, Croatia) & International Space University, Illkirch-Graffenstaden, Croatia*

# **6**

## **October 02 2006, 15:30 - Room 5**

### **B3. Space Communications and Navigation Symposium**

*Coordinators: Robert D. Briskman (United States), MG Chandrasekhar (United States)*

#### **B3.1. Near-Earth and Interplanetary Communications Systems**

*Chairmen: Patrick T. Anglin (United States), Ramon P. De Paula (United States)*

*Rapporteur: Makoto Kajii (Japan)*

## **IAC-06-B3.1.01**

### **Coverage Time Variation in a Near-Earth Data Relay Satellite System**

*Mr. Robert Lundin, Technical University of Munich, Garching, Germany*

## **IAC-06-B3.1.02**

### **Space Communication Concepts for Remotely Operated Systems**

*Dr. Peter Hofmann, Kayser-Threde GmbH, Munich, Germany*

*Dr. Wolfgang Griethe, Kayser-Threde GmbH, Munich, Germany, Mr. H. Dodel, Germany*

## **IAC-06-B3.1.03**

### **Key Telecommunications Technologies for Increasing Data Return For Future Mars Exploration**

*Dr. Charles D. Edwards, Jet Propulsion Laboratory, Pasadena, CA, United States*

*Mr. Ramon P. De Paula, National Aeronautics and Space Administration (NASA), Washington, DC, United States*

## **IAC-06-B3.1.04**

### **Pulsar-based timing for an Interplanetary Internet Protocol**

*Dr. William Marshall, Space Policy Institute, George Washington University, Washington, United States*

*Ms. Jessy Cowan-Sharp, Washington, United States, Mr. Robbie Schingler, Space Generation Advisory Council (SGAC), Washington, United States, Mr. Paul Reilly, Space Generation Advisory Council (SGAC), Ranelagh, Dublin 6, Ireland*

## **IAC-06-B3.1.05**

### **The European delta-DOR correlator.**

*Prof. Luciano Iess, University of Rome "La Sapienza", Rome, Italy*

*Mr. Ricard Abello, European Space Agency/ESOC, Darmstadt, Germany, Dr. Alessandro Ardito, University of Rome "La Sapienza", Rome, Italy, Dr. Giovanni Comoretto, INAF - National Institute for Astrophysics, Firenze, Italy, Mr. Marco Lanucara, European Space Agency/ESOC, Darmstadt, Germany, Dr. Roberto Maddè, European Space Agency/ESOC, Darmstadt, Germany, Mr. Mattia Mercolino, European Space Agency/ESOC, Darmstadt, Germany, Dr. Gabriele Rapino, University of Rome "La Sapienza", Rome, Italy, Mr. Massimo Sensi, University of Rome "La Sapienza", Rome, Italy, Dr. Paolo Tortora, University of Bologna, Forli, Italy*

## **IAC-06-B3.1.06**

### **Implementation of an ESA delta-DOR capability**

*Mr. Nick James, BAE Systems, Chelmsford, United Kingdom*

*Mr. Ricard Abello, European Space Agency/ESOC, Darmstadt, Germany, Mr. Marco Lanucara, European Space Agency/ESOC, Darmstadt, Germany, Mr. Mattia Mercolino, European Space Agency/ESOC, Darmstadt, Germany, Dr. Roberto Maddè, European Space Agency/ESOC, Darmstadt, Germany*

## **IAC-06-B3.1.07**

### **A New Technology For Orbit Determination From Navigation Data And Its Advantages Over Conventional Ones**

*Dr. Anatoly Sheptun, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine*

*Dr. Michael Zhechev, Institute of Technical Mechanics, Dnepropetrovsk, Ukraine, Mr. Oleg Ventskovsky, Yuzhnoye SDO European Representation, Brussels, Belgium, Mr. Igor Mashtak, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine, Dr. Nikolay Gorev, Institute of Technical Mechanics, Dnepropetrovsk, Ukraine*

## **IAC-06-B3.1.08**

### **New generation ground segment architecture for LEO satellites**

*Mr. Alberto Torre, INSA, Madrid, Spain*

*Dr. Jesus Gonzalo, Aeronautical School of University of León, León, Spain, Mrs. Rosa María Pulido Puerto, INSA, Madrid, Spain, Mr. Ramón Martínez Rodríguez-Osorio, Polytechnic University of Madrid, Madrid, Spain, Mr. Leandro de Haro Ariet, Polytechnic University of Madrid, Madrid, Spain*

## **IAC-06-B3.1.09**

### **A study of LEO constellation with figure-of-eight shape ring network**

*Dr. Ryutaro Suzuki, National Institute of Information and Communications Technology, Koganei, Japan*

## **IAC-06-B3.1.10**

### **Ad Hoc Satellite Communication Networks' Application & Technical Challenge in Near-Earth and Interplanetary Communication**

*Mr. Song Han, Harbin Engineering University, Beijing, China*

**October 02 2006, 15:30 - Room 1****B4. Space Stations Symposium**

*Coordinators: Mag Iskander (Canada), Carlo Mirra (The Netherlands)*

**B4.1. Space Stations Overview**

*Chairmen: Graham Gibbs (United States), Terrence G. Reese (United States)*

*Rapporteur: Carlo Mirra (The Netherlands)*

**IAC-06-B4.1.01****The International Space Station in Space Exploration**

*Mr. William Gerstenmaier, National Aeronautics and Space Administration (NASA), Washington, DC, United States*

*Ms. Meredith McKay, National Aeronautics and Space Administration (NASA), Washington, DC, United States*

**IAC-06-B4.1.02****The ESA ISS Programme: Status and Outlook**

*Mr. Daniel Sacotte, European Space Agency/ESTEC, Noordwijk, The Netherlands*

**IAC-06-B4.1.03****Canada and the International Space Station Program: Overview and Status since IAC 2005**

*Mr. Savinder Sachdev, Canadian Space Agency, Saint-Hubert, QC, Canada*

*Mr. Graham Gibbs, Canadian Embassy, Washington, DC, United States, Mr. Benoit Marcotte, Canadian Space Agency, St Hubert, QC, Canada, Dr. Nicole Buckley, Canadian Space Agency, St. Hubert, QC, Canada, Mr. James Doherty, Canadian Space Agency, Saint-Hubert, Quebec, Canada, Mr. William Harvey, Canadian Space Agency, Saint-Hubert, QC, Canada*

**IAC-06-B4.1.04****Japan's ISS Program Status**

*Dr. Kuniaki Shiraki, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan*

*Mr. Norihito Tsuji, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan*

**IAC-06-B4.1.05****The Current Situation of China Manned Space Technology and the Direction for its Further Development**

*Mr. Zhu Zong Peng, China Academy of Space Technology (CAST), Beijing, China*

**IAC-06-B4.1.06****Concept For The Development Of Human Cosmonautics (Plenary Session)**

*Mr. Nikolay Sevastyanov, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Russia*

**IAC-06-B4.1.07****NASA Utilization of the International Space Station and the Vision for Space Exploration**

*Dr. Julie A. Robinson, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States*

*Dr. Donald A. Thomas, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States*

**October 02 2006, 15:30 - Room 13****B5. Small Satellites Missions Symposium**

*Coordinators: Rhoda Shaller Hornstein (United States), Rainer Sandau (Germany)*

**B5.2. Small Space Science Missions**

*Chairmen: Tom Krimigis (United States), Denis J.P. Moura (France)*

**IAC-06-B5.2.01****Scientific and Technological Satellites at INPE/BRAZIL**

*Dr. Marco Chamon, Instituto Nacional de Pesquisas Espaciais (INPE), São José dos Campos, Brazil*

**IAC-06-B5.2.02****A proposed space mission around the moon to measure the Moon Radio-Quiet Zone.**

*Mr. Guido Pagana, Politecnico di Torino, Turin, Italy*

*Mr. Nicolo Antonietti, Politecnico di Torino, Turin, Italy, Mr. Salvatore Pluchino, Visiting Research Fellow, IRA-INAF Radiotelescopes, Medicina (Bologna), Italy, Dr. Claudio Maccone, Member of the International Academy of Astronautics, Turin, Italy*

**IAC-06-B5.2.03****Near Earth Object Surveillance Satellite (NEOSSAT)**

*Capt. Donald Bedard, Defence R&D Canada (DRDC), Ottawa, Canada*

*Mr. William Harvey, Canadian Space Agency, Saint-Hubert, QC, Canada, Mr. Brad Wallace, Defence R&D Canada (DRDC), Ottawa, ON, Canada, Mr. Robert Scott, Defence R&D Canada (DRDC), Ottawa, ON, Canada, Mr. Serge Garon, Canadian Space Agency, St Hubert, QC, Canada, Mr. Siamak Tafazoli, Canadian Space Agency, St Hubert, QC, Canada, Mr. Gilles Brassard, Canadian Space Agency, St-Hubert, QC, Canada, Mr. Stephane Martens, Canadian Space Agency, St-Hubert, QC, Canada, Mr. Marden Souza, Canadian Space Agency, St-Hubert, QC, Canada*

**IAC-06-B5.2.04****A high-energy sample return Earth re-entry demonstrator to address planetary protection issues**

*Mr. Alex da Silva Curiel, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom*

*Mr. Andy Phipps, Surrey Satellite Technology Ltd., Guildford, United Kingdom, Mr. Max Meerman, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom*

**IAC-06-B5.2.05****A Flexible Extension for Pico-Satellite Communication Based on Orbit Operation Results of UWE-1**

*Mr. Florian Zeiger, Wuerzburg University, Wuerzburg, Germany*

*Mr. Marco Schmidt, Wuerzburg University, Wuerzburg, Germany, Prof. Dr. Klaus Schilling, Wuerzburg University, Wuerzburg, Germany*

**IAC-06-B5.2.06****Tugsat-1 / Brite- Austria - the first Austrian Nanosatellite**

*Prof. Otto Koudelka, Graz University of Technology, Graz, Austria*



## IAC-06-B5.2.07

### The BRITE Space Telescope: Using a Nanosatellite Constellation to Measure Stellar Variability in the Most Massive Stars

Mr. Norman Deschamps, University of Toronto Institute for Aerospace Studies, Toronto, Canada

Mr. Stuart Eagleson, University of Toronto Institute for Aerospace Studies, Toronto, Canada, Mr. Cordell Grant, University of Toronto Institute for Aerospace Studies, Toronto, Canada, Mr. Daniel Foisy, University of Toronto, Toronto, ON, Canada, Dr. Werner Weiss, University Vienna, Wein, Austria, Dr. Anthony Moffat, Université de Montréal, Montreal, Canada, Dr. Robert E. Zee, University of Toronto, Toronto, ON, Canada

## IAC-06-B5.2.08

### FORTUNA – first Ukrainian students nanosatellite

Prof. Valery Korepanov, Lviv Centre of Institute of Space Research, Lviv, Ukraine

Dr. Ludmila Kozak, Kiev National University, Kyiv, Ukraine, Dr. Georgy Lizunov, Institute of Space Research, Kyiv, Ukraine

## IAC-06-B5.2.09

### Micro-Spacecraft Formation-Flying Cluster — A new approach to distributed space sensing missions

Mr. Chao Bei, R&D Center of Academy of Information Technology, Beijing, China

Ms. Jin Jiang, R&D Center of Academy of Information Technology of China Aerospace Science & Industry Corp., Beijing, China

# 9

October 02 2006, 15:30 - Room 10

## C1. Astrodynamics Symposium

Coordinators: Alberto Foni (Italy), Arun Misra (Canada)

### C1.1. Attitude Dynamics, Modelling and Determination

Chairmen: Uwe Feucht (Germany), Shinichi Nakasuka (Japan)

Rapporteur: Paolo Teofilatto (Italy)

## IAC-06-C1.1.03

### Attitude Control of Asteroid Orbiting Spacecraft

Dr. Gianmarco Radice, University of Glasgow, Glasgow, United Kingdom

Mr. Imran Ali, University of Glasgow, Glasgow, United Kingdom

## IAC-06-C1.1.04 (WITHDRAWN)

### From Divergence to Convergence: Symplectic Estimation for Satellite Attitude

Lt. James Valpiani, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom

Dr. Philip L. Palmer, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom

## IAC-06-C1.1.05

### Passive magnetic attitude stabilization of the UNISAT-4 microsatellite

Mr. Fabio Santoni, Scuola di Ingegneria Aerospaziale, Rome, Italy

Dr. Mauro Zelli, Scuola di Ingegneria Aerospaziale, Rome, Italy

## IAC-06-C1.1.06

### Attitude dynamics of the first Russian nanosatellite TNS-0

Prof. Michael Yu. Ovchinnikov, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia

Mr. Andrey Ilyin, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia, Dr. Vladimir Penkov, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia, Prof. Arnold Selivanov, Russian Research Institute of Space Device Engineering, Moscow, Russia, Mrs. Nadezhda Kupriyanova, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia

## IAC-06-C1.1.07

### Stability and Control Response of Spinning Solar Sail-craft containing A Huge Membrane

Mr. Shuhei Nishimaki, University of Tokyo, Sagami-hara, Japan

Dr. Junichiro Kawaguchi, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan

## IAC-06-C1.1.08

### Attitude dynamics of a compound solar sail

Dr. Anna Guerman, University of Beira Interior, Covilha, Portugal

Dr. Georgi Smirnov, University of Porto, Porto, Portugal

## IAC-06-C1.1.09

### Numerical simulation study of flow induced nutation instability in spinning solid propellant rocket

Mr. Weiping Zhang, China Aerospace Science and Industry Corporation, Huhhot, China

# 10

October 02 2006, 15:30 - Room 15

## C2. Materials and Structures Symposium

Coordinators: Constantinos P. Stavrinidis (The Netherlands), Pavel M. Trivailo (Australia)

### C2.1. Space Structures I - Development and Verification (Space Vehicles and Components)

Chairmen: Alwin Eisenmann (Germany), Andreas Rittweger (Germany)

Rapporteur: Jean-Alain Massoni (France)

## IAC-06-C2.1.01

### A Review of Space System Structures Evolution and Future Challenges

Mr. Vicente Gómez-Molinero, EADS CASA Espacio, Madrid, Spain

## IAC-06-C2.1.02

### Structural Flight Qualification of the Solar Terrestrial Relations Observatory

Ms. Teresa Betenbaugh, The John Hopkins University Applied Physics Laboratory, Laurel, United States

## IAC-06-C2.1.03

### The design of space structures in the frame of a concurrent engineering approach

Prof. Paolo Gaudenzi, University of Rome "La Sapienza", Rome, Italy

## IAC-06-C2.1.04

**Qualification to Shock Environment in VEGA Program, by full scale tests, models and similarity**

*Dr. Marino Fragnito, ELV S.p.A., Colleferro (Roma), Italy*  
Mr. Josè Luis Leofanti, ELV S.p.A., Colleferro (Roma), Italy, Mr. Roberto Mancini, ELV S.p.A., Colleferro (Roma), Italy, Mr. Michel Bonnet, European Space Agency/ESRIN, Frascati (Roma), Italy, Mr. Jean-Luc Parquet, European Space Agency/ESRIN, Frascati (Roma), Italy

## IAC-06-C2.1.05

**Fracture Load Assessment in Composite Structures**

*Dr. R. Ramesh Kumar, Indian Space Research Organization (ISRO), VSSC, Thiruvananthapuram, India*  
Dr. Dileep P.N., TKM College of Engineering, Kerala, India

## IAC-06-C2.1.06

**Mechanical qualification testing of SMOS payload module**

*Mr. Jose Bajo, EADS CASA Espacio, Madrid, Spain*  
Mr. Miguel A. Plaza, EADS CASA Espacio, Madrid, Spain, Mr. Miguel A. Gil, EADS CASA Espacio, Madrid, Spain

## IAC-06-C2.1.07

**Demonstration by test of the fulfilment of damage tolerance requirements for an oxygen feeding line bracket of the main cryogenic stage of Ariane 5 launcher**

*Mr. Bernard Campion, EADS SPACE Transportation, Les Mureaux, France*

## IAC-06-C2.1.08

**Contact sensitivity analysis of a coupling pin for the nose cap of a launch re-entry vehicle**

*Mr. Michele Ferraiuolo, C.I.R.A. Italian Aerospace Research Centre, Capua, Italy*  
Dr. Aniello Riccio, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy, Mr. Domenico Tescione, C.I.R.A. Italian Aerospace Research Centre, Capua, Italy, Mr. Roberto Gardi, Second University of Naples, Aversa, Italy, Dr. Giuliano Marino, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy

## IAC-06-C2.1.09

**Flight Model Development of Small Tether Deployment Mechanism for Nano-Satellite Cute-1.7 + APD**

*Prof. Saburo Matunaga, Tokyo Institute of Technology, Tokyo, Japan*  
Mr. Tomio Yamanaka, Tokyo Institute of Technology, Tokyo, Japan

## IAC-06-C2.1.10

**Simplified modelling of Printed Circuit Boards for spacecraft applications**

*Mr. Robin Amy, University of Southampton, Southampton, United Kingdom*

## IAC-06-C2.1.11

**Empirical models of the decisive rules of the control for space vehicles on basis of orthonormal polynomial series**

*Ms. Nataliya Lysenko, Dnepropetrovsk National University, Dnepropetrovsk, Ukraine*

# 11

**October 02 2006, 15:30 - Room 9**

**C4. Space Propulsion Symposium**

*Coordinators: Dana G. Andrews (United States), Giorgio Saccoccia (The Netherlands)*

**C4.1. Propulsion Systems I**

*Chairmen: Masahiro Atsumi (Japan), Max Calabro (France)*  
*Rapporteur: Marcel F.M. Poulighen (France)*

## IAC-06-C4.1.01

**Practical Uses of Liquid Methane in Rocket Engine Applications**

*Mr. Todd Neill, Aerojet, Folsom, United States*  
Mr. Eric M. Veith, Aerojet, Sacramento, CA, United States, Mr. Donald Rousar, Aerojet, Sacramento, CA, United States, Mr. Donald Judd, Aerojet, Sacramento, CA, United States

## IAC-06-C4.1.02

**Vulcain X technological demonstration roadmap**

*Mrs. Valerie De Korver, SAFRAN, Vernon, France*

## IAC-06-C4.1.03

**Ariane 5 launcher - buckling phenomena of stiffened structures in the dimensioning and qualification of engines nozzle**

*Mrs. Laura Appolloni, Centre National d'Etudes Spatiales (CNES), Evry-Courcouronnes, France*

## IAC-06-C4.1.04

**Main engine for the fourth stage of European Vega LV**

*Dr. Vladimir Shnyakin, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine*

## IAC-06-C4.1.05

**Experimental research on key technologies for future launcher propulsion**

*Mr. Sebastian Soller, Technical University of Munich, Garching, Germany*  
Mr. Robert Wagner, Technical University of Munich, Garching, Germany, Prof. Dr.-Ing. Hans-Peter Kau, Technical University of Munich, Garching, Germany, Mr. Chris Maeding, EADS Space Transportation GmbH, Munich, Germany, Mr. Philip Martin, EADS Space Transportation GmbH, Munich, Germany

## IAC-06-C4.1.06

**A TVC system for liquid oxygen-kerosene launch vehicle**

*Mr. Zeng Guangshang, China Academy of Launch Vehicle Technology, Beijing, China*  
Mrs. Zhang Xiaosha, China Academy of Launch Vehicle Technology, Beijing, China

## IAC-06-C4.1.07

**Propulsion System on Hydrogen Peroxide Mono-Propellant for Panel ExTension SATellite (PETSAT)**

*Dr. Hironori Sahara, University of Tokyo, Tokyo, Japan*  
Prof. Shinichi Nakasuka, University of Tokyo, Tokyo, Japan, Ms. Chisato Kobayashi, Astro-Technology SOHLA, Higashi Osaka, Japan

## IAC-06-C4.1.08

**Green propulsion for spacecraft -Towards the first flight of ADN-based propulsion on PRISMA in 2008**

*Mr. Tor-Arne Grönland, NanoSpace AB, Solna, Sweden*  
Mr. K.S. Anflo, Swedish Space Corporation, Solna, Sweden, Mr. Rolf Möllerberg, Swedish Space Corporation, Solna, Sweden

## IAC-06-C4.1.09

### Liquid Propulsion with Altitude Compensation Concept Trade Study

Prof. Vasily Semenov, Moscow Aviation Institute (State Technical University), Moscow, Russia

Prof. Sergey L. Finogenov, Moscow State Aviation Institute, Moscow, Russia, Dr. Igor Ivanov, Moscow State Aviation Institute, Moscow, Russia, Dr. Andrew Talalaev, Moscow Aviation Institute, Moscow, Russia

## IAC-06-C4.1.10

### System Design of Propulsion Systems for Moon or Planetary Descent Vehicles

Mr. Markus Peukert, EADS SPACE Transportation, Moeckmuehl, Germany

Mr. Martin Riehle, EADS Space Transportation GmbH, Möckmühl, Germany

# 12

October 02 2006, 15:30 - Room 2

## D2. Space Transportation Symposium

Coordinators: Christophe Bonnal (France), Richard Tyson (United States)

### D2.1. Launch Vehicles in Service or in Development

Chairmen: Ray F. Johnson (United States), Ulf Palmnäs (Sweden)

Rapporteur: Terrence G. Reese (United States)

## IAC-06-D2.1.01

### Ariane 5 ECA - Entering the operational phase

Mr. Laurent Jourdainne, Arianespace, Evry, France

Mr. Louis Laurent, Arianespace, Evry, France

## IAC-06-D2.1.02

### Soyuz 2-1b - An upgrade of the Soyuz launch vehicle

Mr. Pascal Claudel, Starsem, Evry, France

Mr. Thierry Fahem, Starsem, Evry, France

## IAC-06-D2.1.03

### Development of H-2B launch vehicle with high reliability

Mr. Hidenori Hara, Mitsubishi Heavy Industries-Nagoya Aerospace Sys., Nagoya, Japan

Mr. Tomohiko Goto, Mitsubishi Heavy Industries, Ltd., Nagoya, Japan, Mr. Eijiro Namura, Japan Aerospace Exploration Agency (JAXA), Ibaragi, Japan

## IAC-06-D2.1.04

### Yuzhnoye Perspective Launch Systems

Mr. Oleg Ventskovsky, Yuzhnoye SDO European Representation, Brussels, Belgium

Mr. Alexander Degtyarev, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine

## IAC-06-D2.1.05

### The Boeing Delta IV Launch Vehicle - Pulse Settling Approach for Second Stage Hydrogen Propellant Management

Mr. Michael Berglund, The Boeing Company, Huntington Beach, CA, United States

Mr. Mark Wilkins, Boeing Integrated Defense Systems, Huntington Beach, United States

## IAC-06-D2.1.06

### Atlas V: Safe and Affordable Human Spaceflight

Mr. Michael Holguin, Lockheed Martin Space Systems, Highlands ranch, CO, United States

## IAC-06-D2.1.07

### Atlas Launch Vehicle Integration of the New Horizons/Pluto Mission

Mr. Dirk Schreier, Lockheed Martin Space Systems, Littleton, United States

Mr. Steve Vernon, The John Hopkins University Applied Physics Laboratory, Laurel, MD, United States

## IAC-06-D2.1.08

### An Overview of the Brazilian Launch Vehicle Program Cruzeiro do Sul

Dr. Paulo Moraes Jr., CTA/ Institute of Aeronautics and Space, Sao Jose dos Campos-SP, Brazil

Dr. Domingos S. Carrijo, CTA/ Institute of Aeronautics and Space, Sao Jose dos Campos-SP, Brazil, Mr. Alexandre Garcia, CTA/ Institute of Aeronautics and Space, Sao Jose dos Campos-SP, Brazil, Dr. Luis Eduardo Loures da Costa, CTA-IAE, São José dos Campos-SP, Brazil, Mr. Ulisses C. Oliveira, CTA/ Institute of Aeronautics and Space, Sao Jose dos Campos-SP, Brazil, Mr. Avandelino Santana Jr., Sao Jose dos Campos-SP, Brazil, Mr. Danton J. F. Villas Boas, CTA-IAE, Sao Jose dos Campos-SP, Brazil, Mr. Mauro Kochi Yamamoto, CTA-IAE, Sao Jose dos Campos-SP, Brazil

## IAC-06-D2.1.09

### AirLaunch's QuickReach™ Small Launch Vehicle: Development Status of Phase 2B

Mrs. Debra Facktor Lepore, AirLaunch LLC, Kirkland, WA, United States

# 13

October 02 2006, 15:30 - Room 12

## D3. Symposium on Stepping Stones to the Future: Strategies, Architectures, Concepts and Technologies

Coordinators: John C. Mankins (United States), Dietrich Vennemann (The Netherlands)

### D3.1. Strategies to Establish a Stepping Stone Approach to our Future in Space

Chairmen: John C. Mankins (United States), Dietrich Vennemann (The Netherlands)

Rapporteur: William H. Siegfried (United States)

## IAC-06-D3.1.01

### The Case For Space

Dr. Dana Andrews, Andrews Space & Technology, Seattle, United States

Mr. Brian Bloudek, Andrews Space & Technology, Seattle, United States

## IAC-06-D3.1.02

### The Future of Space: Scenario Based Approach

Prof. Ernesto Vallerani, International Space Pioneers, Miasino, Italy

Mr. John C. Mankins, ARTEMIS Innovation Management Solutions, LLC, Ashburn, Virginia, United States

## IAC-06-D3.1.03

### Value Based Architecture Selection

Mr. Bruce Cameron, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States

Mr. Sandro Catanzaro, Massachusetts Institute of Technology (MIT), Cambridge, United States, Prof. Edward Crawley, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States

## IAC-06-D3.1.04

### Robotic Lunar Exploration - Architectures, Issues and Options

Mr. John Mankins, Artemis Innovation Management Solutions LLC, Ashburn, United States

### **IAC-06-D3.1.05**

**ARGOSY - ARchitecture for Going to the Outer solar SYstem**

*Dr. Ralph McNutt, The John Hopkins University Applied Physics Laboratory, Laurel, MD, United States*

### **IAC-06-D3.1.06**

**Unification of Space Assembly Operations for New Space Exploration Vision**

*Mr. Eduardo Urgoiti, SENER Ingenieria y Sistemas, S.A., Las Arenas Vizcaya, Spain*

*Mr. Eduard M. Belikov, SENER Ingenieria y Sistemas, S.A., Las Arenas, Spain*

### **IAC-06-D3.1.07**

**Novel space infrastructure concepts from LEO to GEO**

*Mr. Bernd Sommer, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Bonn, Germany*

### **IAC-06-D3.1.08**

**A Stepping-Stone Analysis of Human Space Mission Development Strategies**

*Mr. Gordon Woodcock, Gray Research, Inc., Huntsville, AL, United States*

*Dr. George Morgenthaler, University of Colorado at Boulder, Boulder, CO, United States*

## **14**

**October 02 2006, 15:30 - Room 4**

**D4. Symposium on The Far Future: Renewed Visions**  
*Coordinators: Hans E.W. Hoffmann (Germany), George Morgenthaler (United States)*

#### **D4.1. Bases and Space Colonization**

*Chairmen: Claudio Maccone (Italy), Wendell Mendell (United States)*

*Rapporteur: Gordon R. Woodcock (United States)*

### **IAC-06-D4.1.01**

**Protecting the Moon Farside Radiotelescopes from RFI produced at the future Lagrangian-Points Space Stations.**

*Mr. Salvatore Pluchino, Visiting Research Fellow, IRA-INAF Radiotelescopes, Medicina (Bologna), Italy*

*Mr. Nicolo Antonietti, Politecnico di Torino, Turin, Italy, Dr. Claudio Maccone, Member of the International Academy of Astronautics, Turin, Italy*

### **IAC-06-D4.1.02**

**Correlations Between CEV and Planetary Surface Systems Architecture Planning**

*Dr. Larry Bell, Sasakawa International Center for Space Architecture, Houston, TX, United States*

### **IAC-06-D4.1.03**

**Design strategies for sustainable and adaptable lunar base architecture**

*Mrs. Sandra Haeuplik, University of Technology Vienna, Vienna, Austria*

*Ms. Manuela Aguzzi, Politecnico di Milano, Milan, Italy*

### **IAC-06-D4.1.04**

**Military Activities by Human Settlements on the Moon and Mars: Legal and Policy Issues**

*Mr. Ricky J. Lee, Flinders University of South Australia, Adelaide, Australia*

### **IAC-06-D4.1.05**

**The Mars Habitat and Settlement: Utilising Public-Private partnerships to maximize the potential**

*Ms. Bijal Thakore, International Space University (ISU), Strasbourg, France*

### **IAC-06-D4.1.06**

**Sustainable Development of "The Fragile Frontier"**

*Mr. Mark Williamson, International Space Review, Kirkby Thore, Cumbria, United Kingdom*

### **IAC-06-D4.1.07**

**Advanced Mission Systems Concepts in Support of Space Exploration**

*Mr. Jeffery Cardenas, Universities Space Research Association, Houston, United States*

## **15**

**October 02 2006, 15:30 - Room 17**

#### **E1. Space Education and Outreach Symposium**

*Coordinators: Pierre-Louis Contreras (France)*

#### **E1.1. Hands-On Space Education**

*Chairmen: Pierre-Louis Contreras (France), Fernando Stancato (Brazil)*

*Rapporteur: Stephen Brock (United States)*

### **IAC-06-E1.1.01**

**Increasing quality of aerospace education by student's participation in creation and operation of spacecraft**

*Mrs. Vera Mayorova, Moscow State Technical University named Bauman, Moscow, Russia*

### **IAC-06-E1.1.02**

**Education Programs using Small Aerospace Systems**

*Mr. Kenji Ogimoto, Space Club-Kansai, Gifu city, Japan*

*Mr. Akio Naemura, UNICS.Co.Ltd Japan, Higashi-Osaka city, Osaka Pref., Japan, Mr. Masanori Shimoda, Space Club-Kansai, Osaka city, Osaka Pref., Japan, Mr. Shinichi Moriyama, TOIN High School, Daitou City, Osaka Pref., Japan*

### **IAC-06-E1.1.03**

**The STRATospheric PLatform EXperiment (STRAPLEX) a low-cost solution for near-space experiments**

*Mr. Gueric Pont, European Space Agency/ESTEC, Noordwijk, The Netherlands*

### **IAC-06-E1.1.04**

**Technical and educational improvements of the student rocket program at NAROM and Andoya Rocket Range**

*Mr. Amund Nylund, Narom/Andoya Rocket Range, Andenes, Norway*

### **IAC-06-E1.1.05**

**Fotino: design, manufacturing, testing of the capsule of the second Young Engineers' Satellite**

*Mr. Fabio De Pascale, Delta-Utec SRC, Leiden, The Netherlands*

*Mr. Michiel Kruijff, Delta-Utec, Leiden, The Netherlands*

### **IAC-06-E1.1.06**

**Space exploration from a student's point of view - Experiences from working with REXUS II and BEXUS IV**

*Ms. Christina Lövgren, Student, Kiruna, Sweden*  
*Ms. Emma Holst, Student, Kiruna, Sweden*

### **IAC-06-E1.1.07**

**Miniature Drop Tower - An hands-on experiments to perform microgravity experiments**

*Mr. Torsten Bolik, University of Bremen, Bremen, Germany*  
*Mr. Jan - Martin Och, machtwissen.de AG, Bremen, Germany,*  
*Mr. Carsten Holze, machtwissen.de AG, Bremen, Germany*

### **IAC-06-E1.1.08**

**The Perseus launcher project : addressing innovation, education and research**

*Mr. Matthew Bullock, BERTIN Technologies, Saint Quentin en Yvelines, France*

*Mr. Cedric Dupont, BERTIN Technologies, Montigny-le-Bretonneux, France, Mr. Raymond Bec, Centre National d'Etudes Spatiales (CNES), Evry, France, Mr. Nicolas Berend, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Châtillon, France, Ms. Elisa Cliquet, Centre National d'Etudes Spatiales (CNES), Evry, France, Dr. Michel Prevost, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Fauga-Mauzac, France*

### **IAC-06-E1.1.09**

**Tracking LEO remote sensing satellite as a mean to attract young students towards space**

*Mr. Tal Inbar, Russian Academy of Sciences - IMASH, Kadima, Israel*

### **IAC-06-E1.1.10**

**The UNISAT program: lessons learned and achieved results**

*Mr. Fabio Santoni, Scuola di Ingegneria Aerospaziale, Rome, Italy*

*Mr. Fabrizio Piergentili, Scuola di Ingegneria Aerospaziale, Rome, Italy, Mr. Fabio Bulgarelli, Latina, Italy, Prof. Filippo Graziani, University of Rome "La Sapienza", Rome, Italy*

# 16

**October 02 2006, 15:30 - Room 14**

**E3. Symposium on Which Direction in Space? Balancing Applications and Exploration**

*Coordinators: Gérard Brachet (France), Debra Facktor Lepore (United States)*

**E3.1.A. Policies for a New Era in Space - Part 1**

*Chairmen: John M. Logsdon (United States), Serge Plattard (Austria)*

*Rapporteur: Jakub Ryzenko (Poland)*

### **IAC-06-E3.1.A.01**

**An overview of ESA's Strategy and Long-Term Plan consistent with the European Space Policy**

*Mr. Philippe Erhard, European Space Agency/Headquarters, Paris, France*

*Ms. Géraldine Naja, European Space Agency/Headquarters, Paris, France, Mr. Giuseppe Morsillo, European Space Agency/Headquarters, Paris, France*

### **IAC-06-E3.1.A.02**

**European Space Activities: Aspirations, Reality and the Way Forward**

*Dr. Werner Balogh, Eumetsat, Darmstadt, Germany*

### **IAC-06-E3.1.A.03**

**Space Sciences: Underpinning any space policy**

*Prof. David Southwood, European Space Agency/Headquarters, Paris, France*

*Dr. Volker Liebig, European Space Agency/ESRIN, Frascati, Italy, Mr. Daniel Sacotte, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Giuseppe Morsillo, European Space Agency/Headquarters, Paris, France*

### **IAC-06-E3.1.A.04**

**A Turning Point For Europe : A Space Vision is Necessary**

*Mr. Grimard Max, EADS Space, Paris, France*

### **IAC-06-E3.1.A.05**

**Transformation of Japanese Space Policy**

*Dr. Kazuto Suzuki, University of Tsukuba, Tsukuba, Japan*

### **IAC-06-E3.1.A.06**

**Integrating National Space Visions**

*Mr. Brent Sherwood, Jet Propulsion Laboratory, Pasadena, United States*

### **IAC-06-E3.1.A.07**

**"So we have landed on the Moon. And what is next?"**

*Mr. Jakub Ryzenko, Polish Space Office & Institute of International Relations, Warsaw University, Warszawa, Poland*

### **IAC-06-E3.1.A.08**

**Strategies and Policies for New Space Faring Nations**

*Mr. Tirso Velasco, University of Valencia, Valencia, Spain*  
*Mr. Justo Alcazar Diaz, Universidad Politécnica de Madrid, Fuenigirola, Spain*

# 17

**October 03 2006, 10:10 - Room 11**

**A1. Space Life Sciences Symposium**

*Coordinators: Gerda Horneck (Germany), Inessa Kozlovskaya (Russia)*

**A1.2. Nutrient and Metabolic Effect in Actual and Simulated Space Flight**

*Chairmen: Martina Heer (Germany), Irina Larina (Russia)*  
*Rapporteur: Scott Smith (United States)*

### **IAC-06-A1.2.01**

**Nutrition Issues for Space Exploration**

*Dr. Scott Smith, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States*

*Dr. Sara Zwart, Universities Space Research Association, Houston, TX, United States*

### **IAC-06-A1.2.02**

**Effects of Bed Test Rest at Normal and Low Energy Intake on Inflammatory Mediators: Evidence for Inverse Regulation of CRP and PTX3**

*Dr. Gianni Biolo, University of Trieste, Trieste, Italy*  
*Dr. Martina Heer, German Aerospace Center (DLR), Cologne, Germany*

**IAC-06-A1.2.03****Calcium and Vitamin D: Is Supplementation an Efficient Countermeasure to Bone Loss in Immobilization?**

*Dr. Natalie Baecker, German Aerospace Center (DLR), Cologne, Germany*

*Mrs. Andrea Boese, German Aerospace Center (DLR), Cologne, Germany, Mrs. Petra Frings, German Aerospace Center (DLR), Cologne, Germany, Dr. Martina Heer, German Aerospace Center (DLR), Cologne, Germany*

**IAC-06-A1.2.04****Reducing Dietary Acid Load as a Potential Countermeasure for Bone Loss Associated with Spaceflight**

*Dr. Sara Zwart, Universities Space Research Association, Houston, TX, United States*

*Ms. Sarah M. Watts, Universities Space Research Association, Houston, United States, Dr. Clarence F. Sams, Universities Space Research Association, Houston, United States, Dr. Peggy A. Whitson, Universities Space Research Association, Houston, United States, Dr. Scott M. Smith, Universities Space Research Association, Houston, United States*

**IAC-06-A1.2.05****Osmotically inactive sodium retention: How might this affect bone loss in immobilization?**

*Dr. Martina Heer, German Aerospace Center (DLR), Cologne, Germany*

*Mrs. Petra Frings, German Aerospace Center (DLR), Cologne, Germany, Dr. Natalie Baecker, German Aerospace Center (DLR), Cologne, Germany*

**IAC-06-A1.2.06****Possible pooling of osmotically inactive sodium in normal volunteers during extended bed rest**

*Mrs. Irina Larina, Institute for Biomedical Problems, Moscow, Russia*

*Mrs. Tatyana Smirnova, Institute for Biomedical Problems, Moscow, Russia, Dr. Boris Morukov, Institute for Biomedical Problems, Moscow, Russia*

**IAC-06-A1.2.07****A combination of omega-3 fatty acids and a butyrate-producing fiber mitigates colon cancer development**

*Dr. Joanne Lupton, Texas A&M University, College Station, TX, United States*

*Dr. Nancy Turner, Texas A&M University, College Station, TX, United States, Dr. Leslie Braby, Texas A&M University, College Station, TX, United States, Dr. John Ford, Texas A&M University, College Station, TX, United States, Dr. Raymond Carroll, Texas A&M University, College Station, TX, United States, Dr. Robert Chapkin, Texas A&M University, College Station, TX, United States*

**IAC-06-A1.2.08****Gender Differences in Lipid Metabolism Responses to Long-Term Bed-Rest**

*Mrs. Audrey Bergouignan, CNRS, Strasbourg, France*

*Mrs. Sylvie Normand, INSERM, Lyon, France, Dr. Dale Schoeller, University of Wisconsin, Madison, United States, Dr. Claude Gharib, CRNHL, Lyon, France, Dr. Guillemette Gauquelin-Koch, Centre National d'Etudes Spatiales (CNES), Paris, France, Dr. Stéphane Blanc, CNRS, Strasbourg, France*

**IAC-06-A1.2.09****Enzyme Changes in Rat Liver After Space Flight**

*Dr. Peter Stein, University of Medicine and Dentistry of New Jersey, Stratford, United States*

**A2. Microgravity Sciences and Processes Symposium**  
*Coordinators: Antonio Viviani (Italy), Rainer Willnecker (Germany)***A2.2. Fluid and Materials Sciences**

*Chairmen: Raimondo Fortezza (Italy), Nickolay N. Smirnov (Russia)*

*Rapporteur: Peter Hofmann (Germany)*

**IAC-06-A2.2.01****On the space diffusion coefficient measurements**

*Dr. Xavier Ruiz, Universitat Rovira i Virgili, Tarragona, Spain*

*Dr. Jordi Pallares, Universitat Rovira i Virgili, Tarragona, Spain, Dr. Francesc Xavier Grau, Universitat Rovira i Virgili, Tarragona, Spain*

**IAC-06-A2.2.02****Double diffusion convection under sinusoidal modulations of low frequency vibrations**

*Dr. Yu Yan, Ryerson University, Toronto, ON, Canada*

*Dr. M. Ziad Saghir, Ryerson University, Toronto, ON, Canada*

**IAC-06-A2.2.03****"Foton-M" Spacecraft Thermal Conditions.**

*Prof. Dr. Nickolay N. Smirnov, Moscow Lomonosov State University, Moscow, Russia*

*Dr. Oleg Ivashnyov, Moscow Lomonosov State University, Moscow, Russia, Mrs. Anfisa E. Kazakova, Central Specialised Design Bureau of, Samara, Russia, Mrs. Valentina Nerchenko, Moscow Lomonosov State University, Moscow, Russia*

**IAC-06-A2.2.04****Consideration in further experimental investigation of thermocapillary drop migration**

*Mr. Jingchang Xie, Chinese Academy of Sciences, Beijing, China, China*

*Mr. Hai Lin, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China, Mrs. Pu Zhang, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China, Dr. Wen Rui Hu, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China*

**IAC-06-A2.2.05****Thermal Convection in Rotating Spherical Shells: an Experimental and Numerical Approach within GeoFlow**

*Mrs. Birgit Futterer, Brandenburg University of Technology Cottbus, Cottbus, Germany*

*Dr. Marcus Gellert, Brandenburg Technical University of Cottbus, Cottbus, Germany, Mr. Thomas von Larcher, Brandenburg Technical University of Cottbus, Cottbus, Germany, Mr. Christoph Egbers, Brandenburg Technical University of Cottbus, Cottbus, Germany*

**IAC-06-A2.2.06****Heat transfer of thermocapillary convection in a two-layered fluid system under the influence of magnetic field.**

*Dr. Daniele Ludovisi, University of Illinois, Chicago, IL, United States*

*Dr. Soyung Cha, University of Illinois, Chicago, IL, United States, Dr. Narayanan Ramachandran, BAE SYSTEMS Analytical Solutions, Huntsville, United States, Dr. William Worek, University of Illinois, Chicago, IL, United States*

## IAC-06-A2.2.07

### Transformation of Nd-Fe-B Metastable Phase Solidified from Undercooled Melt

*Dr. Shumpei Ozawa, University of Tokyo, Hino, Japan*

Dr. Satoshi Hirose, Research and Development Center, NEOMAX Co., Ltd, Osaka, Japan, Dr. Kazuhiko Kuribayashi, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami, Japan, Dr. Sven Reutzel, Institute of Space Simulation, German Aerospace Center (DLR), Cologne, Germany, Prof. Dieter Herlach, Institute of Space Simulation, German Aerospace Center (DLR), Cologne, Germany, Prof. Taketoshi Hibiya, University of Tokyo, Tokyo, Japan

## IAC-06-A2.2.08

### Self-propagating high-temperature synthesis (SHS) aboard International Space Station

*Dr. Alexander Sytshev, Institute of Structural Macrokinetic and Materials Science, Chernogolovka, Russia*

Mr. S. Vadchenko, Institute of Structural Macrokinetics and Materials Science, Chernogolovka, Moscow Region, Russia, Mr. V. Sanin, Institute of Structural Macrokinetics and Materials Science, Chernogolovka, Moscow Region, Russia, Mr. A. Rogachev, Institute of Structural Macrokinetics and Materials Science, Chernogolovka, Moscow Region, Russia, Mr. V. Yuhvid, Institute of Structural Macrokinetics and Materials Science, Chernogolovka, Moscow Region, Russia, Mr. V. Shkuro, Institute of Structural Macrokinetics and Materials Science, Chernogolovka, Moscow Region, Russia, Mr. N. Kochetov, Institute of Structural Macrokinetics and Materials Science, Chernogolovka, Moscow Region, Russia, Mr. A. Merzhanov, Institute of Structural Macrokinetics and Materials Science, Chernogolovka, Moscow Region, Russia, Mr. V. Levitov, Central Research Institute for Machine Building, Korolev, Russia, Mr. V. Romanov, Central Research Institute for Machine Building, Korolev, Russia, Mrs. M. Maksimova, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Moscow Region, Russia, Mr. A. Ivanov, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Moscow Region, Russia

## IAC-06-A2.2.09

### Measurement of Surface Tension for Molten Silicon by Electromagnetic Levitation Combined with Static Magnetic Field

*Mr. Noriaki Takenaga, University of Tokyo, Hino, Japan*

Dr. Shumpei Ozawa, University of Tokyo, Hino, Japan, Prof. Taketoshi Hibiya, University of Tokyo, Tokyo, Japan, Dr. Hidekazu Kobatake, Tohoku University, Sendai, Japan, Dr. Hiroyuki Fukuyama, Tohoku University, Sendai, Japan, Prof. Masahito Watanabe, Gakushuin University, Tokyo, Japan, Dr. Satoshi Awaji, Tohoku University, Sendai, Japan

## IAC-06-A2.2.10

### Experiments Conducted Aboard the International Space Station: The Pore Formation and Mobility Investigation (PFMI) and the In-Space Soldering Investigation (ISSI): A Current Summary of Results.

*Dr. Richard Grugel, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States*

Mr. Paul Luz, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, United States, Mr. Guy Smith, University of Alabama in Huntsville, Huntsville, AL, United States, Mr. Reggie Spivey, Tec-Masters, Huntsville, AL, United States, Ms. Linda Jeter, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, AL, United States, Dr. Donald Gillies, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, AL, United States, Dr. Fay Hua, Intel Corporation, Santa Clara, CA, United States, Dr. A. Anilkumar, Vanderbilt University, Nashville, TN, United States

# 19

October 03 2006, 10:10 - Room 1

## A3. Space Exploration Symposium

*Coordinators: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)*

### A3.2. Solar System Exploration

*Chairmen: Luc Frecon (France), Marc D. Rayman (United States)*

*Rapporteur: James Middleton (Canada)*

## IAC-06-A3.2.01

### The Cassini Mission at Saturn

*Mr. Robert Mitchell, Jet Propulsion Laboratory, Pasadena, CA, United States*

## IAC-06-A3.2.02

### Europe goes to Venus: the journey of Venus Express

*Mr. Thomas Schirmann, EADS Astrium, Toulouse, France*

Mr. Josian Fabrega, EADS Astrium, Toulouse, France, Mr. Don McCoy, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Philippe Sivic, European Space Agency/ESTEC, Noordwijk, The Netherlands

## IAC-06-A3.2.03

### Few Months around Venus

*Mr. Andrea Accomazzo, European Space Agency/ESOC, Darmstadt, Germany*

## IAC-06-A3.2.04

### Investigation of the surface of Venus with VIRTIS on Venus Express

*Mr. Nils Müller, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Berlin, Germany*

Dr. Jörn Helbert, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Berlin, Germany, Dr. Lucia Marinangeli, IRSPS, Pescara, Italy, Prof. George Hashimoto, Kobe University, Kobe, Japan, Mr. Kevin Baines, Jet Propulsion Laboratory, Pasadena, United States, Mr. Pierre Drossart, Observatoire de Paris, Meudon, France, Mr. Giuseppe Piccioni, INAF/IASF, Rome, Italy

## IAC-06-A3.2.05

### REvolution - A Robotic program for Exploration of Venus to better understanding of planetary evolution

*Ms. Bijal Thakore, International Space University (ISU), Strasbourg, France*

## IAC-06-A3.2.06

### The Juno New Frontiers Mission: A Preliminary Design Phase Update

*Mr. Steve Matousek, Jet Propulsion Laboratory, Pasadena, United States*

## IAC-06-A3.2.07

### BepiColombo - Mission to Mercury

*Dr. Roger Foerstner, EADS Astrium GmbH, Friedrichshafen, Germany*

Dr. Marc Steckling, EADS Astrium GmbH, Friedrichshafen, Germany

## IAC-06-A3.2.08

### Solar orbiter mission and system assessment

*Dr. Charles Koeck, EADS Astrium, Toulouse, France*

Mr. Frédéric Faye, EADS Astrium, Toulouse, France, Mr. Pascal Régnier, EADS Astrium, Toulouse, France, Mr. Romain Peyrou-Lauga, EADS Astrium, Toulouse, France

## IAC-06-A3.2.09

Exploring the solar system galactic frontier in extreme ultraviolet

*Prof. Mike Gruntman, University of Southern California, Los Angeles, United States*

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## October 03 2006, 10:10 - Room 8

**A4. 35th Symposium on The Search for Extraterrestrial Intelligence (SETI) – The Next Steps**

*Coordinators: Claudio Maccone (Italy), Seth Shostak (United States)*

### A4.2. SETI II - Interdisciplinary Aspects

*Chairmen: Kathryn Denning (Canada), Douglas A. Vakoch (United States)*

*Rapporteur: Alexander Ollongren (The Netherlands)*

## IAC-06-A4.2.01

**The Postbiological Universe**

*Dr. Steven Dick, National Aeronautics and Space Administration (NASA)/Headquarters, Washington, DC, United States*

## IAC-06-A4.2.02

**Ten thousand revolutions: conjectures about civilizations**

*Dr. Kathryn Denning, York University, Toronto, Ontario, Canada*

## IAC-06-A4.2.03

**Rethinking ETI**

*Dr. Allen Tough, University of Toronto, Toronto, ONT, Canada*

## IAC-06-A4.2.04

**Sustainability: a tedious path to a galactic colonisation!**

*Mr. Yvan Dutil, ABB Bomem Inc., Quebec, Canada*

## IAC-06-A4.2.05

**What the Fermi Paradox tells us about the dangers of active SETI**

*Prof. Paolo Musso, University of Insubria, Genova, Italy*

## IAC-06-A4.2.06

**A Semantic 'Engine' for Universal Translation**

*Dr. John Elliott, Leeds Metropolitan University, Leeds, United Kingdom*

## IAC-06-A4.2.07

**Describing the Probabilistic Nature of Human Behavior in Interstellar Messages**

*Prof. Douglas A. Vakoch, SETI Institute and California Institute of Integral Studies, Mountain View, CA, United States*

## IAC-06-A4.2.08

**Gamma-Ray Bursters and the Emergence of Life**

*Prof. Ray P. Norris, CSIRO Australia Telescope National Facility, Epping, NSW, Australia*

## IAC-06-A4.2.09

**Search for intelligence**

*Mrs. Päivi Jukola, AJLabs Oy, Helsinki, Finland*

## IAC-06-A4.2.10

**Rules for First Contact: Legal and Policy Issues Arising from Establishing and Maintaining Communications with Extraterrestrials**

*Mr. Ricky J. Lee, Flinders University of South Australia, Adelaide, Australia*

## IAC-06-A4.2.11

**Other Worlds, Other Gods**

*Ms. Shirley Woolf, Henry Cogswell College, Everett, United States*

# 21

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## October 03 2006, 10:10 - Room 3

**B1. Earth Observation Symposium**

*Coordinators: W. John Hussey (United States), Pierre Ranzoli (Germany)*

### B1.2. Future Earth Observation Systems

*Chairmen: Benoit Boissin (France), Mukund Rao (India)*

*Rapporteur: Gilles Corlay (France)*

## IAC-06-B1.2.01

**ESA Earth Observation Future Missions**

*Mr. Amnon Ginati, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-B1.2.02

**Land Observation from Geosynchronous Earth Orbit (Logeo): Mission Concept and Engineering Analysis**

*Mr. Miguel Roman-Colon, NASA Center of Excellence in Remote Sensing, Boston, United States*

*Dr. Alan H. Strahler, NASA Center of Excellence in Remote Sensing, Boston, United States*

## IAC-06-B1.2.03

**Earth Observations Systems for Small National and Regional Programs**

*Dr. Ray A. Williamson, Space Policy Institute, George Washington University, Washington, DC, United States*

## IAC-06-B1.2.04

**Building space systems for operational Earth Observation**

*Mr. Eric Maliet, EADS Astrium, Toulouse, France*

*Mr. Herve Lambert, EADS Astrium, Toulouse, France, Mr. Roland Cantié, EADS Astrium, Toulouse, France*

## IAC-06-B1.2.05

**SMOS Earth's water monitoring mission**

*Mr. Andres Borges, EADS CASA Espacio, Madrid, Spain*

*Mr. Achim Hahne, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Kevin McMullan, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-B1.2.06

**DMC+: High performance small spacecraft based Earth observation at an affordable cost**

*Dr. Adam M. Baker, Surrey Satellite Technology Ltd., Guildford, United Kingdom*

*Mr. Philip Davies, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom, Prof. Sir. Martin Sweeting, Surrey Space Centre, Guildford, United Kingdom*



## IAC-06-B1.2.07

### SVEA – An Affordable Small-size Earth Observation System based on Recent Advances in Satellite Engineering

Mr. Fredrik Sjöberg, Swedish Space Corporation, Solna, Sweden

Mr. Ake Rosenqvist, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan, Mrs. Anna Rathsmann, Swedish Space Corporation, Solna, Sweden, Mr. Sven Grahn, Swedish Space Corporation, Solna, Sweden, Mr. Erik Clacey, Swedish Space Corporation, Solna, Sweden, Mr. Bo Ljung, Swedish Space Corporation, Solna, Sweden

## IAC-06-B1.2.08

### The ADM-Aeolus Mission – the first wind lidar in space

Mr. Richard Wimmer, EADS Astrium Ltd., Stevenage, United Kingdom

## IAC-06-B1.2.09

### Assessment of future operational atmospheric chemistry missions

Mr. François Gonzalez, Centre National d'Etudes Spatiales (CNES), Toulouse, France

Mr. Benoit Beghin, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mr. Philippe-Jean Hebert, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mrs. Carole Deniel, Centre National d'Etudes Spatiales (CNES), Paris, France, Mr. Thierry Phulpin, Centre National d'Etudes Spatiales (CNES), Toulouse, France

# 22

## October 03 2006, 10:10 - Room 5

### B3. Space Communications and Navigation Symposium

Coordinators: Robert D. Briskman (United States), MG Chandrasekhar (United States)

#### B3.2. Advanced Technologies

Chairmen: Edward W. Ashford (United States), Elemer Bertenyi (Canada)

Rapporteur: Bruno Perrot (Luxembourg)

## IAC-06-B3.2.01

### The navigational experiments on microgravitational space platform "Foton-M2"

Dr. Igor Belokonov, Samara State Aerospace University, Samara, Russia

## IAC-06-B3.2.02

### Seamless Handovers in Cobra Teardrop Satellite Arrays

Capt. John Draim, Aerospace Consultant, Vienna, VA, United States

Dr. Paul J. Cefola, Massachusetts Institute of Technology (MIT), Sudbury, MA, United States

## IAC-06-B3.2.03

### Satellite Communication Over Quantum Channel

Mr. Laszlo Bacsardi, Budapest University of Technology and Economics, Budapest, Hungary

## IAC-06-B3.2.04

### Architectures and technologies for broadband satellite systems in the post 2015 time period

Mr. Jean-Didier Gayraud, Alcatel Alenia Space, Toulouse, France

Ms. Isabelle Buret, Alcatel Alenia Space, Toulouse, France, Ms. Katia Leconte, Alcatel Alenia Space, Toulouse, France, Mr. Bruno Perrot, SES-GLOBAL, Luxembourg, Luxembourg

## IAC-06-B3.2.05

### Inflatable Antennas in Terrestrial and Extraterrestrial Environments

Ms. Naomi Mathers, Victorian Space Science Education Centre, Melbourne, Australia

Prof. Lachlan Thompson, Royal Melbourne Institute of Technology (RMIT), Melbourne, Australia

## IAC-06-B3.2.06

### Phase Array Technologies for Mobile Satellite Communications in the K Band

Mr. Sasa Dragas, TTI, Santander, Spain

Mrs. Laura González, TTI, Santander, Spain, Mrs. Ana Ruiz Laso, TTI, Santander, Spain, Mr. Tirso Velasco, TTI, Santander, Spain

## IAC-06-B3.2.07

### Ultra-Lightweight 20m Antenna Reflector and Lightweight 100 Beam Class Feed System for Future Mobile Broadband Communications Satellites

Mr. Satoshi Harada, NTT Access Network Service System Laboratories, Yokosuka-shi, Japan

Dr. Yoshinori Suzuki, NTT Access Network Service System Laboratories, Yokosuka-shi, Japan, Dr. Akira Meguro, Japan Aerospace Exploration Agency (JAXA), Ibaraki, Japan, Dr. Masazumi Ueba, NTT Access Network Service System Laboratories, Yokosuka-shi, Japan

## IAC-06-B3.2.08

### A LPI anti-jam design for satellite communications

Mrs. Li ying, Academy of Equipment Command and Technology, Beijing, China

Mr. Hongli Zhao, Beijing, China

## IAC-06-B3.2.09

### A software based algorithm for demodulating BPSK telemetry signal

Dr. Wenjun Wang, China Academy of Space Technology (CAST), Beijing, China

## IAC-06-B3.2.10

### A Family of Quasi-Cyclic LDPC Codes for Deep Space Communications

Dr. He Shanbao, China Academy of Space Technology (CAST), Beijing, China

# 23

## October 03 2006, 10:10 - Room 13

### B5. Small Satellites Missions Symposium

Coordinators: Rhoda Shaller Hornstein (United States), Rainer Sandau (Germany)

#### B5.1. 7th UN/IAA Workshop on Small Satellite Programmes at the Service of Developing Countries

Chairmen: Sergei Chernikov (Austria), Pierre Molette (France)

Rapporteur: Petr Lala (Czech Republic)

## IAC-06-B5.1.01

### MYRIADE CNES Small Satellites Programme. Performances, Missions, Tool for Education and Cooperation

Mr. Bernard Tatry, Centre National d'Etudes Spatiales (CNES), Toulouse, France

## IAC-06-B5.1.02

### Operational Earth Observation - Continuity of the Disaster Monitoring Constellation

*Mr. Alex da Silva Curiel, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom*

*Mr. David Hodgson, DMC International Imaging Ltd., Guildford, Surrey, United Kingdom, Dr. Wei Sun, Surrey Satellite Technology Ltd., Guildford, United Kingdom, Dr. Craig I. Underwood, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom, Dr. Stephen Mackin, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom*

## IAC-06-B5.1.03

### A Remote Sensing Roadmap for Developing Countries

*Prof. Sias Mostert, University of Stellenbosch, Stellenbosch, South Africa*

## IAC-06-B5.1.04

### Algeria's Space Programme for the Sustainable Development

*Mr. Bekhti Mohammed, Centre National des Techniques Spatiales, Arzew, Algeria*

## IAC-06-B5.1.05

### Vision, development and experience in small satellites for remote sensing: a comparative study

*Dr. Harijono Djojodihardjo, Universitas Al Azhar Indonesia, Jakarta, Indonesia*

*Dr. Md. Azlin Md. Said, Nibong Tebal, Malaysia, Mr. Eriko Nasemudin Nasser, Jakarta Selatan, Indonesia*

## IAC-06-B5.1.06

### New Brazilian Space Projects with Public Private Partnership

*Dr. Otavio S.C. Durao, The Brazilian Institute for Space Research, Sao José dos Campos, Brazil*

*Dr. Alexander Sukhanov, Space Research Institute (IKI), RAS, Moscow, Russia*

# 24

## October 03 2006, 10:10 - Room 6

### B6. Space Debris Symposium

*Coordinators: Christophe Bonnal (France), Walter Flury (Germany), Nicholas L. Johnson (United States)*

#### B6.1. Measurements and Space Surveillance

*Chairmen: Vladimir Agapov (Russia), Fernand Alby (France)*

*Rapporteur: Patrick Seitzer (United States)*

## IAC-06-B6.1.01

### Performance of a proposed instrument for space-based optical observations of space debris

*Mr. Tim Flohrer, Astronomical Institute University of Bern (AIUB), Bern, Switzerland*

*Dr. Thomas Schildknecht, Astronomical Institute University of Bern (AIUB), Bern, Switzerland, Mr. Rudiger Jehn, European Space Agency/ESOC, Darmstadt, Germany, Ms. Edith Stöveken, Astronomical Institute University of Bern (AIUB), Bern, Switzerland, Mr. Michael Oswald, Institute of Aerospace Systems, Braunschweig, Germany*

## IAC-06-B6.1.02

### Survey and Chase: A new method of observations for the Michigan Orbital Debris Survey Telescope (MODEST)

*Dr. Kira Abercromby, ESCG/Jacobs Sverdrup, Houston, Texas, United States*

*Dr. Patrick Seitzer, University of Michigan, Ann Arbor, Michigan, United States, Dr. Ed Barker, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, Texas, United States, Ms. Heather Rodriguez, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, United States*

## IAC-06-B6.1.03

### Current characteristics and trends of the tracked satellite population in the human space flight regime

*Mr. Nicholas L. Johnson, National Aeronautics and Space Administration (NASA), Houston, TX, United States*

## IAC-06-B6.1.04

### Monitoring the Space Debris Environment at High Altitudes Using Data from the ESA Optical Surveys

*Dr. Thomas Schildknecht, Astronomical Institute University of Bern (AIUB), Bern, Switzerland*

*Mr. Reto Musci, Astronomical Institute University of Bern (AIUB), Bern, Switzerland, Mr. Tim Flohrer, Astronomical Institute University of Bern (AIUB), Bern, Switzerland, Prof. Walter Flury, European Space Agency/ESOC, Darmstadt, Germany, Mr. Jyri Kuusela, Turku, Finland, Mrs. Julia de Leon, La Laguna, Tenerife, Spain, Mrs. Lilian de Fatima Dominguez Palmero, La Laguna, Tenerife, Spain*

## IAC-06-B6.1.05

### Optical Observation Technologies for Space Debris

*Dr. Atsushi Nakajima, Japan Aerospace Exploration Agency (ISTA/JAXA), Tokyo, Japan*

*Mr. Hirohisa Kurosaki, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan*

## IAC-06-B6.1.06

### Nanosecond Time-Tagging of Space Objects Images

*Mr. Martin Nemeč, Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Prague 2, Czech Republic*

*Prof. Ivan Procházka, Faculty of Nuclear Sciences and Physical Engineering, Praha 2, Czech Republic, Prof. Karel Hamal, Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Prague 2, Czech Republic, Dr. Georg Kirchner, Institute for Space Research, Graz, Austria, Mr. Franz Koidl, Austrian Academy of Sciences, Graz, Austria, Mr. Wolfgang G. Voller, Austrian Academy of Sciences, Graz, Austria*

## IAC-06-B6.1.07

### Improved FGAN/MPIFR Bi-Static Debris Observation Campaign: Experiment Outline, Analysis Algorithms and First Results

*Mr. Guillermo Ruiz, FGAN, Wachtberg-Werthhoven, Germany*

*Mr. Ludger Leushacke, Research Institute for High Frequency Physics, Wachtberg, Germany, Mr. Rudiger Jehn, European Space Agency/ESOC, Darmstadt, Germany, Dr. Reinhard Keller, Max-Planck-Institut für Radioastronomie, Bonn, Germany*

## IAC-06-B6.1.08

### Real-time Space Object Capture and Handoff Using Wide Field of View Telescope Development at AMOS

*Dr. Thomas Kelecy, Boeing Integrated Defense Systems, Colorado Springs, Colorado, United States*

*Dr. Paul Kervin, Air Force Research Laboratory (AFRL), Kihei, HI, United States, Mr. John Africano, Boeing LTS, Houston, TX, United States, Mr. Bryan Law, Boeing LTS, Kihei, HI, United States, Mr. Paul Sydney, Boeing LTS, Kihei, HI, United States, Dr. Chris Sabol, Air Force Research Laboratory (AFRL), Kihei, HI, United States*

## IAC-06-B6.1.09

### Assessed Cataloguing Performance of a Proposed European Space Surveillance System

*Mrs. Noelia Sánchez-Ortiz, DEIMOS Space S.L., Tres Cantos, Spain*

Mr. Miguel Bello Mora, DEIMOS Space S.L., Madrid, Spain, Mrs. Eva Tresaco, DEIMOS Space S.L., Tres Cantos, Spain, Dr. Heiner Klinkrad, European Space Agency/ESOC, Darmstadt, Germany

## IAC-06-B6.1.10

### The optical space surveillance system at Crimean Observatory. Facility, methods and first results.

*Mr. Vasilij Rumyantsev, Crimean Astrophysical Observatory, Nauchny, Ukraine*

Mr. Vadym Biryukov, Crimean Laboratory of Sternberg Astronomical Institute, Moscow Lomonosov State University, Nauchny, Ukraine, Mr. Gennadij Borisov, Crimean Astrophysical Observatory, Nauchny, Ukraine

## IAC-06-B6.1.11

### Time-resolved Photometric Observations of Satellites: Calibration Spheres and Orbital Debris

*Dr. Doyle Hall, Boeing, Colorado Springs, CO, United States*

Mr. John Africano, Boeing LTS, Houston, TX, United States, Dr. Paul Kervin, Air Force Research Laboratory (AFRL), Kihei, HI, United States

## IAC-06-B6.1.12

### Results of GEO space debris studies in 2004-2005

*Dr. Vladimir Agapov, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia*

Dr. Thomas Schildknecht, Astronomical Institute University of Bern (AIUB), Bern, Switzerland, Dr. Efraim Akim, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia, Dr. Igor Molotov, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia, Dr. Vladimir Titenko, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia, Dr. Vasilij Yurasov, Space Informatics Analytical Systems JSC, Moscow, Russia

# 25

## October 03 2006, 10:10 - Room 10

### C1. Astrodynamics Symposium

*Coordinators: Alberto Foni (Italy), Arun Misra (Canada)*

#### C1.2. Attitude Control, Sensors and Actuators

*Chairmen: Amalia Ercoli Finzi (Italy), Michael Yu. Ovchinnikov (Russia)*

*Rapporteur: Christopher Dean Hall (United States)*

## IAC-06-C1.2.01

### Sun Pointing Attitude Control with Magnetic Torquers Only

*Dr. Huaizu You, National Space Organization, Hsin-Chu, Taiwan, China*

Dr. Ying-Wen Jan, National Space Organization, Hsin-Chu, Taiwan, China

## IAC-06-C1.2.02

### Delfi-C3 control system development and verification

*Mr. Fedde Poppenk, Technical University of Delft (TUDelft), Delft, The Netherlands*

Mr. Rouzbeh Amini, Technical University of Delft (TUDelft), Delft, The Netherlands

## IAC-06-C1.2.03

### 3-axis magnetic control with multiple attitude profile capabilities in the PRISMA mission

*Mr. Camille Chasset, Swedish Space Corporation, Solna, Sweden*

Mr. Sten Berge, Swedish Space Corporation, Stockholm, Sweden, Mr. Per Bodin, Swedish Space Corporation, Solna, Sweden, Mr. Björn Jacobsson, Swedish Space Corporation, Solna, Sweden

## IAC-06-C1.2.04

### Spin-axis stabilization of an underactuated accompanying satellite around the space station

*Dr. Fang Wang, China Academy of Space Technology (CAST), Beijing, China*

Dr. Honghua Zhang, Beijing Institute of Control Engineering, Beijing, China

## IAC-06-C1.2.05

### Ray Trace Ranging

*Mr. Nuno Hagenfeldt, Instituto Superior Técnico, Lisboa, Portugal*

Dr. João Sequeira, Instituto Superior Técnico, Lisbon, Portugal

## IAC-06-C1.2.06

### In-Orbit Calibration Strategies for Drag-Free Satellites

*Mr. Michel Silas Guilherme, University of Bremen, Bremen, Germany*

Dr. Stephan Theil, Center of Applied Space Technology & Microgravity, Bremen, Germany, Dr. Waldemar de Castro Leite Filho, CTA-IAE, São José dos Campos, Brazil

## IAC-06-C1.2.07

### Fluid ring damper for artificial gravity rotating system used for manned spacecraft

*Dr. Paolo Gasbarri, University of Rome "La Sapienza", Rome, Italy*

Prof. Paolo Teofilatto, University of Rome "La Sapienza", Rome, Italy

## IAC-06-C1.2.08

### Spacecraft Optical Beam Pointing and Jitter Control

*Prof. Brij Agrawal, Naval Postgraduate School, Monterey, United States*

## IAC-06-C1.2.09

### Attitude control with FDI for an experimental satellite model

*Mr. Jøran Antonsen, Narvik/Andoya Rocket Range, Andenes, Norway*

Raymond Kristiansen, Narvik University College, Narvik, Norway, Dr. Per Johan Nicklasson, Narvik University College, Narvik, Norway

## IAC-06-C1.2.10

### HYDRA Multiple Heads Star Tracker based on Active Pixel Sensor and the gyrometer assistance option

*Mr. Ludovic Blarre, EADS-Sodern, Limeil Brevannes, France*

Mr. Nicolas Perrimon, EADS-Sodern, Limeil Brevannes, France, Mr. Laurent Majewski, EADS-Sodern, Limeil Brevannes, France

**C2. Materials and Structures Symposium**

*Coordinators: Constantinos P. Stavrinidis (The Netherlands), Pavel M. Trivailo (Australia)*

**C2.2. Space Structures II - Development and Verification (Deployable and Dimensionally Stable Structures)**

*Chairmen: Paolo Gasbarri (Italy), Jean-Alain Massoni (France)*

*Rapporteur: Pierre Rochus (Belgium)*

**IAC-06-C2.2.01**

**Forecasting satellite thermal-vacuum simulation through grey-box fuzzy systems and swarm intelligence**

*Mr. Ernesto Araujo, Instituto Nacional de Pesquisas Espaciais (INPE), Sao Jose Campos, Brazil*

*Mr. Ubiratan Freitas, Instituto Nacional de Pesquisas Espaciais (INPE), Sao Jose Campos, Brazil*

**IAC-06-C2.2.02**

**A tape-spring telescope structure: deployment modelling**

*Mr. Laurent Blanchard, Alcatel Alenia Space, Cannes La Bocca, France*

*Mrs. Gwenaëlle Aridon, INSA de Lyon, Villeurbanne, France, Dr. Didier Rémond, INSA de Lyon, Villeurbanne, France, Pr. Régis Dufour, INSA de Lyon, Villeurbanne, France, Dr. Frédéric Falzon, Alcatel Alenia Space, Cannes la Bocca, France*

**IAC-06-C2.2.03**

**Highly compact deployable and retrievable boom**

*Dr. Manfred Leipold, Kayser-Threde GmbH, Munich, Germany*

*Dr. Walter Naumann, Kayser-Threde GmbH, Munich, Germany*

**IAC-06-C2.2.04**

**Electron Beam curing for manufacturing of high dimensionally stable CFRP structures like space telecommunication satellite antenna reflectors**

*Mr. Ricardo Mezzacasa, INASMET-TECNALIA, San Sebastian, Spain*

**IAC-06-C2.2.05**

**Optical test and measurement methods for mechanical structures used in space flight application and for space telescope applications**

*Prof. Pierre Rochus, Centre Spatial de Liège, Angleur - Liège, Belgium*

*Dr. Stéphane Roose, Centre Spatial de Liège, Angleur, Belgium, Dr. Yvan Stockman, Centre Spatial de Liège, Liège-Angleur, Belgium, Dr. Yvette Houbrechts, Centre Spatial de Liège, Angleur, Belgium, Dr. Marc Georges, Centre Spatial de Liège, Angleur, Belgium, Mr. Cédric Thizy, Centre Spatial de Liège, Angleur, Belgium, Dr. Dominic Doyle, European Space Agency/ESTEC, Noordwijk, The Netherlands, Dr. Graham Coe, European Space Agency/ESTEC, Noordwijk, The Netherlands*

**IAC-06-C2.2.06**

**The Effects of Large Space Micro-Strip Antenna Thermal Distortion to Releasing and Deploying Analysis**

*Ms. Juan-Fang Wei, Xi an Institute of Space Radio Technology, Xi an, China*

*Mr. Bo Gao, Xi'an Institute of Space Radio Technology, Xi'an, China, Mr. Li Zheng-Jun, Xi'an Institute of Space Radio Technology, Xi'an, China*

**IAC-06-C2.2.07**

**Bearing test for mirror support mechanism of space infrared telescope - design and evaluation of rigid spacer for hybrid ball bearing in cryogenic environment -**

*Mr. Masaki Haruma, Mitsubishi Electric Corporation, Amagasaki, Hyogo, Japan*

*Mr. Masaki Tabata, Mitsubishi Electric Corporation, Amagasaki, Japan, Mr. Naoya Tanaka, Mitsubishi Electric Corporation, Amagasaki, Japan, Mr. Takeharu Oshima, Mitsubishi Electric Corporation, Amagasaki, Japan, Prof. Takashi Onaka, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan, Dr. Keigo Enya, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami-hara, Japan, Mr. Hidehiro Kaneda, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami-hara, Japan, Prof. Takao Nakagawa, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami-hara, Japan*

**IAC-06-C2.2.08**

**The local distributed criteria method for multidisciplinary optimization of launcher parameters**

*Dr. Alexander Filatyev, Central Aero-HydroDynamic Institute, Zhukovsky, Russia*

*Mr. Alexander Golikov, Central Aero-HydroDynamic Institute, Zhukovsky, Russia, Dr. Alexander Shanygin, Central Aero-HydroDynamic Institute, Zhukovsky, Russia, Mr. Vladimir Voityshen, Central Aero-HydroDynamic Institute, Zhukovsky, Russia*

**IAC-06-C2.2.09**

**Thermal modelling of ESA Second Young Engineers Satellite**

*Mr. Antonios Vavouliotis, University of Patras, Patras, Hellas, Greece*

*Mr. Angelos Miaris, University of Patras, Rion-Patras, Greece, Mr. Ricardo Patricio, Active Space Technologies, Coimbra, Portugal, Mr. Michiel Kruijff, Delta-Utec, Leiden, The Netherlands, Prof. Vassilis Kostopoulos, University of Patras, Patras, Hellas, Greece*

**IAC-06-C2.2.10**

**Deployment Characteristics of Multi-cellular Inflatable Tubes**

*Dr. Hiroshi Furuya, Tokyo Institute of Technology, Yokohama, Japan*

*Ms. Makiko Nakahara, Tokyo Institute of Technology, Yokohama, Japan, Mr. Satoshi Murata, Tokyo Institute of Technology, Kanagawa, Japan, Mr. Keiki Takadama, Tokyo Institute of Technology, Kanagawa, Japan*

**IAC-06-C2.2.11**

**Deployment analysis and design of large deployable antenna structures constructed from tetrahedral truss units**

*Dr. Mengliang Zhao, Zhejiang University, Hangzhou, China Prof. Fuling Guan, Zhejiang University, Hangzhou, China*

**C4. Space Propulsion Symposium**

*Coordinators: Dana G. Andrews (United States), Giorgio Saccoccia (The Netherlands)*

**C4.2. Propulsion systems II**

*Chairmen: Jean-François Guery (France), John Harlow (United Kingdom)*

*Rapporteur: I-Shih Chang (United States)*

## IAC-06-C4.2.01

### An Hybrid Microcombustor for Regression Rate Measurements

*Dr. Luigi T. DeLuca, Politecnico di Milano, Milan, Italy*

Dr. Luciano Galfetti, Politecnico di Milano, Milan, Italy, Mr. Federico Bosisio, Politecnico di Milano, Milan, Italy, Mr. Hari Raina, Politecnico di Milano, Milan, Italy, Mr. Alessandro Colombo, Politecnico di Milano, Milan, Italy, Mr. Giovanni Colombo, Politecnico di Milano, Milan, Italy

## IAC-06-C4.2.02

### Restartable Hybrid Rocket Motor using Nitrous Oxide

*Dr. Vadim Zakirov, Tsinghua University, Beijing, China*

Mr. Wan Ke, Tsinghua University, Beijing, China, Dr. Haiyun Zhang, Tsinghua University, Beijing, China, Dr. Luming Li, Tsinghua University, Beijing, China

## IAC-06-C4.2.03

### Application of recent technologies for the next generation solid rocket motors

*Mr. Alain Mercier, Snecma Propulsion Solide, Le Haillan, France*

Ms. Aurélie Esnault, Snecma Propulsion Solide, Le Haillan, France, Mr. Didier Boury, Snecma Propulsion Solide, Le Haillan, France, Mr. Philippe Cloutet, SNPE Materiaux Energetiques, Saint-Médard-en-Jalles, France, Mrs. Laurence Guénot, SNPE Materiaux Energetiques, Saint-Médard-en-Jalles, France, Mr. Christophe Talbot, Centre National d'Etudes Spatiales (CNES), Evry, France

## IAC-06-C4.2.04

### Controllable Solid Propulsion for Launch Vehicle and Spacecraft Application

*Mr. John Napior, Aerojet, Folsom, United States*

## IAC-06-C4.2.05

### P80 nozzle low cost technologies

*Mr. Didier Boury, Snecma Propulsion Solide, Le Haillan, France*

## IAC-06-C4.2.06

### Experimental Investigation of a Solid Rocket Ramjet with Central Air-inlet Mode

*Mr. Zheng Kaibin, CASC, Xi'an, China*

Mr. Lin-quan Chen, CASC, Xi'an, China, Mr. Sheng-yong Zhang, CASC, Xi'an, China

## IAC-06-C4.2.07

### Controlled Extinction of Nano-Aluminized Solid Propellants

*Dr. Luigi T. DeLuca, Politecnico di Milano, Milan, Italy*

Dr. Roberto Dondé, CNR, Milan, Italy, Mrs. Alessia Prato, Politecnico di Milano, Milan, Italy, Dr. Luciano Galfetti, Politecnico di Milano, Milan, Italy, Mr. Giovanni Colombo, Politecnico di Milano, Milan, Italy, Mr. Filippo Maggi, Politecnico di Milano, Milan, Italy, Dr. Laura Meda, Polimeri Europa, Novara, Italy, Dr. Gianluigi Marra, Polimeri Europa, Novara, Italy

## IAC-06-C4.2.08

### Experimental and numerical investigation on thrust modulation performance of SRM by vortex valve

*Mr. Yu Xiao-Jing, Northwestern Polytechnical University, Xi'an, China*

Prof. Guoqiang He, Northwestern Polytechnical University, Xi'an, China, Prof. Jiang Li, Northwestern Polytechnical University, Xi'an, China, Prof. Pei-Jing Liu, Northwestern Polytechnical University, Xi'an, China

## IAC-06-C4.2.09

### Recent Progress in Scramjet/Combined Cycle Engines at JAXA Kakuda Space Center

*Mr. Tetsuo Hiraiwa, Japan Aerospace Exploration Agency (IAT/JAXA), Tsukuba, Ibaraki, Japan*

Dr. Katsuhiro Ito, Japan Aerospace Exploration Agency (IAT/JAXA), Kakuda, Miyagi, Japan, Dr. Shigeru Sato, Japan Aerospace Exploration Agency (IAT/JAXA), Kakuda, Miyagi, Japan, Mr. shuichi ueda, Japan Aerospace Exploration Agency (JAXA), Miyagi, Japan, Mr. Kouichiro Tani, Japan Aerospace Exploration Agency (ISTA/JAXA), Kakuda, Miyagi, Japan, Mr. Sadatake Tomioka, Japan Aerospace Exploration Agency (ISTA/JAXA), Kakuda, Miyagi, Japan, Mr. Takeshi Kanda, Japan Aerospace Exploration Agency (ISTA/JAXA), Kakuda, Miyagi, Japan

## IAC-06-C4.2.10

### Development survey of three solid rocket motors used as upper stages of Launch vehicles for space missions

*Mr. Hailong Zhang, China Aerospace Science and Industry Corporation, Huhhot, China*

# 28

## October 03 2006, 10:10 - Room 12

### D1. Space Systems Symposium

*Coordinators: Hans F.A. Roefs (The Netherlands), Lawrence Dale Thomas (United States)*

#### D1.1. Innovative and Visionary Space Systems Concepts

*Chairmen: Moshe Guelman (Israel), Alan Wilhite (United States)*

*Rapporteur: Robert L. Henderson (United States)*

## IAC-06-D1.1.01

### On-Orbit Propellant Resupply Options for Mars Exploration Architectures

*Mr. Christopher Tanner, Georgia Institute of Technology, Atlanta, United States*

Dr. Alan Wilhite, National Institute of Aerospace / Georgia Institute of Technology, Hampton, United States

## IAC-06-D1.1.02

### Double Launch Rocketry Space System

*Mr. Sergey Matvienko, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine*

## IAC-06-D1.1.03

### Advances in Autonomous Orbital Rendez-vous Technology: The XSS-11 Lidar Sensor

*Dr. Robert Richards, Optech Incorporated, Toronto, Canada*

Mr. Jeff Tripp, Optech Incorporated, Toronto, Canada, Dr. Sergey Pashin, Optech Incorporated, Toronto, Canada, Mr. Dan King, MacDonald Dettwiler Space and Advanced Robotics Ltd., Brampton, Ontario, Canada, Mr. James Bolger, MDA, Brampton, Canada, Mr. Menachem (Manny) Nimelman, MacDonald Dettwiler & Associates, Brampton, Canada

## IAC-06-D1.1.04

### Space Webs based on Rotating Tethered Formations

*Prof. Giovanni B. Palmerini, University of Rome "La Sapienza", Rome, Italy*

Prof. Silvano Sgubini, University of Rome "La Sapienza", Rome, Italy, Mr. Marco Sabatini, University of Rome "La Sapienza", Rome, Italy

## **IAC-06-D1.1.05**

### **Prospective on Brain Machine Interfaces for Space System Control**

*Dr. Carlo Menon, European Space Agency/ESTEC, Noordwijk, The Netherlands*

Dr. José del R. Millán, IDIAP Research Institute, Martigny, Switzerland, Mr. Paolo Dario, Scuola Superiore Sant' Anna (SSSUP), Pisa, Italy, Dr. Federico Carpi, University of Pisa, Pisa, Italy, Ms. Cristina de Negueruela, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Pierre W. Ferrez, IDIAP Research Institute, Martigny, Switzerland, Ms. Anna Buttfield, IDIAP Research Institute, Martigny, Switzerland, Dr. Oliver Tonet, Scuola Superiore Sant' Anna (SSSUP), Pisa, Italy, Mr. Luca Citi, Lucca, Italy, Dr. Cecilia Laschi, Pontedera, Italy, Dr. Francisco Sepulveda, University of Essex, Essex, United Kingdom, Prof. Riccardo Poli, University of Essex, Colchester, United Kingdom, Dr. Ramaswamy Palaniappan, University of Essex, Colchester, United Kingdom, Prof. Paolo Maria Rossini, Rome, Italy, Dr. Franca Tecchio, ISTI-CNR, Rome, Italy, Mr. Mario Tombini, Rome, Italy, Prof. Danilo De Rossi, University of Pisa, Pisa, Italy

## **IAC-06-D1.1.06**

### **Novel bio-inspired distributed actuator for space applications**

*Dr. Carlo Menon, European Space Agency/ESTEC, Noordwijk, The Netherlands*

Dr. Federico Carpi, University of Pisa, Pisa, Italy, Prof. Danilo De Rossi, University of Pisa, Pisa, Italy

## **IAC-06-D1.1.07**

### **A Revolutionary Outpost Architecture for Human Mars Exploration**

*Mr. John Christian, Georgia Institute of Technology, Atlanta, United States*

Mr. Christopher Tanner, Georgia Institute of Technology, Atlanta, United States, Mr. John Theisinger, Georgia Institute of Technology, Atlanta, United States

## **IAC-06-D1.1.08**

### **Cost of Safety for Space Transportation**

*Mr. Zachary Krevor, Georgia Institute of Technology, Atlanta, United States*

Dr. Alan Wilhite, National Institute of Aerospace / Georgia Institute of Technology, Hampton, United States

# **29**

## **October 03 2006, 10:10 - Room 2**

### **D2. Space Transportation Symposium**

*Coordinators: Christophe Bonnal (France), Richard Tyson (United States)*

### **D2.2. Launch Services, Missions, Operations and Facilities**

*Chairmen: Laurent Bouaziz (Italy), Patrick M. McKenzie (United States)*

*Rapporteur: Debra Facktor Lepore (United States)*

## **IAC-06-D2.2.01**

### **The Challenges of Integrating NASA's Constellation Systems Launch Vehicles Project Capital: Human, Budget, and Data**

*Mr. Michael L. Burris, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, Virginia, United States*

Mr. Kenneth B Morris, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States, Ms. Kathleen Pollard, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States

## **IAC-06-D2.2.02**

### **The future of European Launchers over the next decade**

*Mr. Christophe Chavagnac, EADS SPACE Transportation, Les Mureaux, France*

Mrs. Catherine Poincheval, EADS SPACE Transportation, Les Mureaux, France, Mr. David Iranzo-Greus, EADS SPACE Transportation, Les Mureaux, France, Mr. Joerg Krueger, EADS Space Transportation GmbH, Bremen, Germany, Mr. Laurent Bouaziz, Next Generation Launcher Prime SpA, Turin, Italy

## **IAC-06-D2.2.03**

### **Next generation launcher studies: preparing the long term access to space**

*Mr. Olivier Gogdet, EADS SPACE Transportation, Les Mureaux, France*

Mr. Yves Prel, Centre National d'Etudes Spatiales (CNES), Evry, France, Mrs. Emilie Arnoud, EADS SPACE Transportation, Les Mureaux, France, Dr. Anton Kolozevny, TSNIIMASH, Korolev, Russia, Mr. Christophe Talbot, Centre National d'Etudes Spatiales (CNES), Evry, France, Mr. Marco Prampolini, EADS SPACE Transportation, Les Mureaux, France, Dr. Yuriy Sumin, TSNIIMASH, Korolev, Russia

## **IAC-06-D2.2.04**

### **Capabilities of the Atlas V Family of Launch Vehicles for Interplanetary Launches**

*Mr. David Miller, Lockheed Martin Space Systems, Denver, Colorado, United States*

Mr. Brian Lathrop, Lockheed Martin Space Systems, Denver, Colorado, United States

## **IAC-06-D2.2.05**

### **The Soyouz in Guyana project: status and perspectives**

*Mr. Jean-Marc Astorg, Centre National d'Etudes Spatiales (CNES), Evry, France*

Mr. Jean-Pierre Haignere, European Space Agency/Headquarters, Paris, France, Prof. Igor Barmin, Design Bureau of General Machine-Building (KBOM), Moscow, Russia

## **IAC-06-D2.2.06**

### **Commercial Space Flight Operations at the Oklahoma Spaceport**

*Mr. Charles Lauer, Rocketplane Ltd., MI, United States*

## **IAC-06-D2.2.07**

### **RLV candidates for European Future Launcher Preparatory Programme**

*Mr. Carlo Tomatis, NGL Company, Turin, Italy*

Mr. Laurent Bouaziz, Next Generation Launcher Prime SpA, Turin, Italy, Mr. Jens Kauffmann, European Space Agency/Headquarters, Paris, France

## **IAC-06-D2.2.08**

### **A New Approach to the Problem of Ensuring Fire and Ecological Safety**

*Mr. Perlik Victor, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine*

Mr. Kremena Andrey, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine

## IAC-06-D2.2.09

### Investigation of Alternate Transportation Architectures for Crewed Mars Missions

*Mr. Matthew Simon, National Institute of Aerospace/Georgia Institute of Technology, Hampton, VA, United States*

*Dr. Alan Wilhite, National Institute of Aerospace / Georgia Institute of Technology, Hampton, United States, Mr. Eammon Bemis, National Institute of Aerospace / North Carolina State, Hampton, VA, United States, Mr. Steven Hough, National Institute of Aerospace / North Carolina State, Hampton, VA, United States, Ms. Sharon Jefferies, National Institute of Aerospace/Virginia Tech, Hampton, VA, United States, Mr. David Penuela, Georgia Institute of Technology, Minot, ND, United States, Mr. Rick Winski, National Institute of Aerospace / Virginia Tech, Hampton, VA, United States, Mrs. Kristina Zaleski, National Institute of Aerospace / North Carolina State, Hampton, VA, United States*

# 30

**October 03 2006, 10:10 - Room 4**

### D4. Symposium on The Far Future: Renewed Visions

*Coordinators: Hans E.W. Hoffmann (Germany), George Morgenthaler (United States)*

### D4.2. Space Elevator Systems, Engineering and Science

*Chairmen: Bradley C. Edwards (United States), Peter A. Swan (United States)*

*Rapporteur: David Raitt (The Netherlands)*

## IAC-06-D4.2.01

### Space Elevator Vision - An Enabler

*Dr. Peter A. Swan, Teaching Science and Technology, Inc., Paradise Valley, AZ, United States*

## IAC-06-D4.2.02

### Earth-Based Space Elevator Research And Technology Development

*Mr. David Smitherman, National Aeronautics and Space Administration (NASA), Huntsville, AL, United States*

## IAC-06-D4.2.03

### Active radiation shielding for the proposed space elevator using magnetic coils

*Dr. Anders M. Jorgensen, Los Alamos National Laboratory, Los Alamos, NM, United States*

*Mr. Blaise Gassend, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States, Dr. Steven Patamia, Los Alamos National Laboratory, Los Alamos, NM, United States*

## IAC-06-D4.2.04

### Space Elevator: Stability

*Dr. Lubos Perek, Astronomical Institute, Czech Academy of sciences, Praha, Czech Republic*

## IAC-06-D4.2.05

### On the Stability of the Track of the Space Elevator

*Prof. Hans Troger, UT Vienna, Vienna, Austria  
Prof. Alois Steindl, UT Vienna, Vienna, Austria*

## IAC-06-D4.2.06

### Space Elevator Cable Dynamics

*Prof. H Benaroya, Rutgers, The State University of New Jersey, Piscataway, United States  
Prof. Seon Mi Han, Texas Tech University, Lubbock, TX, United States, Mr. Mark Nagurka, Marquette University, Milwaukee, Wisconsin, United States*

## IAC-06-D4.2.07

### Loads during Anchoring Dynamics from Earth Orbit

*Dr. Radu Rugescu, Politechnic University of Bucharest, Bucharest, Romania*

## IAC-06-D4.2.08

### Dynamics of the proposed space elevator under the influence of magnetospheric electric and magnetic fields

*Dr. Anders M. Jorgensen, Los Alamos National Laboratory, Los Alamos, NM, United States*

*Mr. David Lang, Mercer Island, WA, United States, Dr. Steven Patamia, Los Alamos National Laboratory, Los Alamos, NM, United States*

## IAC-06-D4.2.09

### Our Answer to NASA's Beam Power Challenge

*Mr. Ivan Lloro Boada, Institut d'Estudis Espacials de Catalunya, Bellaterra (Cerdanyola del Vallès), Spain*

*Mr. José A. Casas, UPC, Barcelona, Spain, Ms. Elisenda Bou, UPC, Barcelona, Spain, Mr. Markus Klettner, Klettner GmbH Space Systems, Salzburg-Goldegg, Austria, Mr. Randy Liebermann, History of Technology, Reston, Virginia, United States*

# 31

**October 03 2006, 10:10 - Room 17**

### E2. 36th Student Conference

*Coordinators: Rachid Amekrane (Germany), Stephen Brock (United States), Bénédicte Escudier (France)*

### E2.1. Student Conference I

*Chairmen: Stephen Brock (United States), Bénédicte Escudier (France)*

*Rapporteur: Carsten Holze (Germany)*

## IAC-06-E2.1.01

### Large scale epitaxial deposition reactors for production of high purity SiC for space devices

*Mr. Alessandro Fiorucci, Politecnico di Milano, Origgio (Va), Italy*

## IAC-06-E2.1.02

### Manufacturing cost and lead time calculation applied to highly miniaturized systems for space

*Ms. Theres Gustafsson, Uppsala University - Dept. Of Materials Sciences, and Kalogi AB, Uppsala, Sweden*

*Dr. Greger Thornell, Uppsala University - Dept. Of Materials Sciences, and Kalogi AB, Uppsala, Sweden*

## IAC-06-E2.1.03

### Electron-beam irradiation effects on silica glass studied by cathodoluminescence for solar battery of spacecraft

*Mr. Takuya Harada, Shibaura Institute of Technology, Tokyo, Japan*

*Dr. Hiroyuki Nishikawa, Shibaura Institute of Technology, Tokyo, Japan*

## IAC-06-E2.1.04

### Sensitivity analysis using fixed basis function finite element technique in structural shape optimization

*Ms. Tahoura T. Soltani, University of Toronto Institute for Aerospace Studies, Toronto, Canada*

*Prof. J. H. Hansen, University of Toronto, Toronto, Canada*

### **IAC-06-E2.1.05**

Analysis of satellite formation flying models including j2 effect

Mr. Giuseppe Del Gaudio, University of Rome "La Sapienza", Rome, Italy

### **IAC-06-E2.1.06**

Eternal footprints on cosmic bodies - how human impact affects the cosmic environment

Ms. Timea Csengeri, Eötvös Loránd University, Budapest, Hungary

### **IAC-06-E2.1.08**

Lunar Brick Habitats

Ms. Lucy-Ellen Smalley, University of Bristol, Loughborough, Leics, United Kingdom

### **IAC-06-E2.1.10**

Design and Implementation of In Orbit Experiments for the Pico Satellite UWE-1

Mr. Marco Schmidt, Wuerzburg University, Wuerzburg, Germany

Mr. Florian Zeiger, Wuerzburg University, Wuerzburg, Germany

## **32**

**October 03 2006, 10:10 - Room 16**

**E3. Symposium on Which Direction in Space? Balancing Applications and Exploration**

Coordinators: Gérard Brachet (France), Debra Faktorf Lepore (United States)

**E3.1.B. Policies for a New Era in Space - Part 2**

Chairmen: John M. Logsdon (United States), Serge Plattard (Austria)

Rapporteur: Jakub Ryzenko (Poland)

### **IAC-06-E3.1.B.01**

Assessment of the factors that could lead to a productive future international partnership in space exploration

Dr. Alain Dupas, Collège de Polytechnique, Paris, France

Dr. John M. Logsdon, Space Policy Institute, George Washington University, Washington, United States

### **IAC-06-E3.1.B.02**

International Cooperation for Sustainable Space Exploration: the role and place of the European Space Exploration Programme "Aurora"

Mr. Piero Messina, European Space Agency/Headquarters, Paris, France

### **IAC-06-E3.1.B.03**

Sustaining Space Exploration over the Long Term

Mr. Ian Pryke, George Mason University, Falls Church, Virginia, United States

Ms. Peggy Finarelli, George Mason University, Arlington, VA, United States

### **IAC-06-E3.1.B.04**

Evaluating Win-Win Aspects of Technological Cooperation in Space Exploration

Dr. Annalisa Weigel, Massachusetts Institute of Technology (MIT), Cambridge, United States

### **IAC-06-E3.1.B.05**

Security aspects of civil space programmes

Mr. Michael Dillon, CEO ESYS plc, Guildford, Surrey, United Kingdom

### **IAC-06-E3.1.B.06**

Legal and Policy Issues Relating to the Military Uses of Commercial Dual Use Satellite Applications

Mr. Ricky J. Lee, Flinders University of South Australia, Adelaide, Australia

Ms. Kristie Blase, Hyattsville, United States

### **IAC-06-E3.1.B.07**

Threats from Near-Earth Objects and the Collective Action Dilemma

Mr. Mark Avnet, Massachusetts Institute of Technology (MIT), Boston, MA, United States

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**October 03 2006, 10:10 - Room 14**

**E6. 49th Colloquium on Law of Outer Space (IISL)**

Coordinators: Tanja Masson-Zwaan (The Netherlands)

**E6.1. Legal Aspects of Space Transportation and Launching**

Chairmen: Alvaro Azcarraga (Spain), Peter van Fenema (Canada)

### **IAC-06-E6.1.01**

Vision for Space Exploration

General Michael Wholley, National Aeronautics and Space Administration (NASA)/Headquarters, Washington DC, United States

### **IAC-06-E6.1.02**

Third Party Liability for Space Transportation

Mrs. Maria Ejova, Paris, France

### **IAC-06-E6.1.03**

Regulatory aspects for launch activities in a future space traffic management regime

Dr. Kai-Uwe Schrögl, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Cologne, Germany

### **IAC-06-E6.1.04**

Powering the Race: Industry Perspectives on Commercial Space Transportation.

Ms. Indra Heed, MDA, Richmond, Canada

### **IAC-06-E6.1.05**

International Trade Regulations for Space Launching Services

Ms. Sagee Geetha Sasikumar, Vrindavan, Kadaikkal House, Kerala, India

### **IAC-06-E6.1.06**

Space for Tourism? - Legal Aspects of Private Spaceflight for Tourist Purposes

Dr. Frans G. Von der Dunk, International Institute of Air and Space Law, Leiden, The Netherlands



### **IAC-06-E6.1.07**

**Space tourism, suborbital flights and air transport: where is the delimitation?**

*Mrs. Caroline Smoczarski, University of Paris XI, Paris, France*

### **IAC-06-E6.1.08**

**Space Tourism: Regulatory Framework of the Private Initiatives and Projects with a Special Interest on RLV regulations**

*Ms. Azelle Cartier, LL.M., Leiden University / Campus The Hague, The Hague, The Netherlands*

*Ms. Ioana Cristoiu, LL.M., Hitter Law Offices, Brussels, Belgium*

### **IAC-06-E6.1.09**

**Commercial Spaceport Development: The Role of Domestic and International Space Law and Regulations**

*Mr. Kenneth M. Weidaw III, Weidaw Peck & Associates, L.L.P., McMurray, United States*

### **IAC-06-E6.1.10**

**Advertising of private commercial space services in the european community**

*Ms. Zeldine OBrien, Trinity College, County Dublin, Ireland*

### **IAC-06-E6.1.11**

**Minimizing regulation of space tourism to stimulate commercial, private launch capabilities**

*Ms. Rachel Yates, Holland and Hart, LLP, Greenwood Village, CO, United States*

### **IAC-06-E6.1.12**

**Is the Rocket Supposed to Be Spinning Like This? Informed Consent and the Development of Space Tourism**

*Mr. Nathanael Horsley, IISL, Gainesville, GA, United States*

### **IAC-06-E6.1.13**

**U.S. Law Governing Commercial Space Launches**

*Dr. Paul Dempsey, McGill University, Montreal, Canada*

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## **October 03 2006, 15:30 - Room 11**

### **A1. Space Life Sciences Symposium**

*Coordinators: Gerda Horneck (Germany), Inessa Kozlovskaya (Russia)*

#### **A1.3. Sensorimotor Effects of Spaceflight: Mechanisms and Countermeasures**

*Chairmen: Inessa Kozlovskaya (Russia)*

*Rapporteur: William H. Paloski (United States)*

### **IAC-06-A1.3.01**

**Neurotransmitter-Based Countermeasures for Post-Spaceflight Vestibular Deconditioning**

*Mr. Vladimir Ivkovic, Institute for Anthropological Research (Zagreb, Croatia) & International Space University, Illkirch-Graffenstaden, Croatia*

*Dr. Chiaki Mukai, International Space University (ISU), Illkirch-Graffenstaden, France*

### **IAC-06-A1.3.02**

**Efficacy of physical exercises in long-term space flights on ISS**

*Dr. Inessa Kozlovskaya, Institute for Biomedical Problems, Moscow, Russia*

*Dr. Anatoly I. Grigoriev, Institute for Biomedical Problems, Moscow, Russia, Mr. Valery V. Bogomolov, Institute for Biomedical Problems, Moscow, Russia*

### **IAC-06-A1.3.03**

**Mental Representation of Spatial Cues in Microgravity**

*Dr. Gilles Clement, Centre National de la Recherche Scientifique, Toulouse, France*

*Dr. Corinna E. Lathan, AnthroTronix, Inc., Silver Spring, MD, United States, Mrs. Anna Lockerd, AnthroTronix, Inc., Silver Spring, MD, United States, Mrs. Angie Bukley, Ohio University, EECS, Athens, OH, United States*

### **IAC-06-A1.3.04**

**Skeletal muscle tone characteristics in upright, supine and partial water immersion conditions**

*Dr. Ragnar Viir, Rheumatism Foundation Hospital, Heinola, Finland*

*Dr. Arved Vain, Tartu, Estonia, Dr. Ahti Virkus, Kuu-sankoski, Finland, Ms. Anne Selart, Student, Tartu, Estonia, Ms. Kristiina Rajaleid, Student, Stockholm, Sweden*

### **IAC-06-A1.3.05**

**Artificial Gravity During Bed Rest Deconditioning: A Case Report**

*Mr. William H. Paloski, National Aeronautics and Space Administration (NASA), Houston, TX, United States*

*Mr. Laurence R. Young, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States*

### **IAC-06-A1.3.06**

**The effect of the support afferentation on the parameters of the electromyographic activity and muscle tone of postural muscles in support unloading conditions**

*Dr. Irina Sayenko, Institute for Biomedical Problems, Moscow, Russia*

*Mrs. Tatiana Miller, Institute for Biomedical Problems, Moscow, Russia*

### **IAC-06-A1.3.07**

**Muscle hypertrophy induced by heat-stress with low-intensity exercise in healthy humans**

*Dr. Toshiyada Yoshioka, Hirosaki Gakuin University, Hirosaki, Japan*

*Dr. Atsushi Kojima, St.Marianna University School of Medicine, Kawasaki, Japan, Dr. Shigeta Morioka, St.Marianna University School of Medicine, Kawasaki, Japan, Dr. Toshihito Naito, St.Marianna University School of Medicine, Kawasaki, Japan, Dr. Takao Sugiura, Yamaguchi University, Yamaguchi, Japan, Prof. Katsumasa Goto, Toyohashi SOZO University, Aichi, Japan*

### **IAC-06-A1.3.08**

**Verification of Fitts' Law in Different Gravitational Environments**

*Dr. Gianni Ciofani, Scuola Superiore Sant' Anna (SSSUP), Pontedera (Pisa), Italy*

*Dr. Vito Lombardo, Scuola Superiore Sant' Anna (SSSUP), Pontedera, Italy, Dr. Daniele Mazzei, University of Pisa, Pisa, Italy, Dr. Antonio Migliore, University of Pisa, Pisa, Italy, Prof. Maria Chiara Carrozza, Scuola Superiore Sant' Anna (SSSUP), Pontedera, Italy, Mr. Paolo Dario, Scuola Superiore Sant' Anna (SSSUP), Pisa, Italy, Dr. Silvestro Micera, Scuola Superiore Sant' Anna (SSSUP), Pontedera, Italy*

## IAC-06-A1.3.09

### Studies of the Efficacy of Physical Exercises in Long Term Space Flight

*Dr. Dilyara Khussnutdinova, Institute for Biomedical Problems, Moscow, Russia*

*Dr. Inessa Kozlovskaya, Institute for Biomedical Problems, Moscow, Russia*

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**October 03 2006, 15:30 - Room 7**

## A2. Microgravity Sciences and Processes Symposium

*Coordinators: Antonio Viviani (Italy), Rainer Willnecker (Germany)*

### A2.3. Microgravity Experiments from Sub-orbital to Orbital Platforms

*Chairmen: M. Ziad Saghir (Canada), Raffaele Savino (Italy)*

*Rapporteur: Marcus Dejmeck (Canada), Vladimir Pletser (The Netherlands)*

## IAC-06-A2.3.01

### Between two Fotons: status of ESA's multi-disciplinary scientific program on these missions

*Mr. Antonio Verga, European Space Agency/ESTEC, Noordwijk, The Netherlands*

*Dr. Josef Winter, EADS SPACE Transportation, Immenstaad, Germany, Mr. René Demets, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Philippe De Gieter, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-A2.3.02

### CDIC and CDIC-2 experiment modules

*Mr. Michael Lundin, Swedish Space Corporation, Solna, Sweden*

*Mr. Christian Lockowandt, Swedish Space Corporation, Solna, Sweden, Mr. Gunnar Florin, Swedish Space Corporation, Solna, Sweden, Mr. Kenneth Loeth, Swedish Space Corporation, Solna, Sweden*

## IAC-06-A2.3.03

### Heat Pipes with Binary Mixtures and Inverse MARANGONI Effects for Microgravity Applications

*Mr. Raffaele Savino, University of Naples "Federico II", Naples, Italy*

*Dr. Nicola Di Francescantonio, University of Naples "Federico II", Naples, Italy, Dr. Raimondo Fortezza, MARS s.r.l., Naples, Italy, Dr. Yoshiyuki Abe, National Institute of Advanced Science and Technology (AIST), Tsukuba, Japan*

## IAC-06-A2.3.04

### Experiment on indium antimonide crystal growth by detached Bridgman onboard the FOTON-M2 spacecraft (preliminary results)

*Dr. Alexander Senchenkov, Design Bureau of General Machine-Building (KBOM), Moscow, Russia*

*Prof. Igor Barmin, Design Bureau of General Machine-Building (KBOM), Moscow, Russia, Prof. Victor Zemskov, Institute of Metallurgy and Material Sciences (IMET) of Russian Academy of Sciences, Moscow, Russia, Mr. Alexander Egorov, Design Bureau of General Machine-Building (KBOM), Moscow, Russia, Dr. Valery Shalimov, Institute of Metallurgy and Material Sciences (IMET) of Russian Academy of Sciences, Moscow, Russia, Dr. Mark Raukhan, Institute of Metallurgy and Material Sciences (IMET) of Russian Academy of Sciences, Moscow, Russia, Mrs. Irina Sleptsova, Design Bureau of General Machine-Building (KBOM), Moscow, Russia, Mr. Nikolay Gorev, Design Bureau of General Machine-Building (KBOM), Moscow, Russia, Mr. Andrey Kiryanov, Design Bureau of General Machine-Building (KBOM), Moscow, Russia, Mrs. Irina Nikhezina, Institute of Metallurgy and Material Sciences (IMET) of Russian Academy of Sciences, Moscow, Russia*

## IAC-06-A2.3.05

### Cavitation Bubble Dynamics In Isolated Water Drops In Microgravity

*Mr. Danail Obreschkow, European Space Agency/Student Participation Programme, Oxford, United Kingdom*

## IAC-06-A2.3.06

### Establishment of the Unmanned Space Experiment Infrastructure for the Wide Range of User's Demands

*Dr. Koichi Ijichi, Institute for Unmanned Space Experiment Free Flyer (USEF), Tokyo, Japan*

*Mr. Hiroshi Kanai, Institute for Unmanned Space Experiment Free Flyer (USEF), Tokyo, Japan, Mr. Shuji Nakamura, Institute for Unmanned Space Experiment Free Flyer (USEF), Tokyo, Japan, Mr. Tatsuhiro Ono, Institute for Unmanned Space Experiment Free Flyer (USEF), Tokyo, Japan*

## IAC-06-A2.3.07

### Subcooled pool boiling on thin wire in microgravity

*Prof. Jian-Fu Zhao, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China*

*Mr. Shi-Xin Wan, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China, Mr. Gang Liu, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China, Ms. Na Yan, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China, Dr. Wen Rui Hu, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China*

## IAC-06-A2.3.08

### Sara Suborbital - Development Status

*Dr. Luis Eduardo Loures da Costa, CTA-IAE, São José dos Campos-SP, Brazil*

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**October 03 2006, 15:30 - Room 1**

## A3. Space Exploration Symposium

*Coordinators: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)*

### A3.3. Mars Exploration

*Chairmen: Christian Sallaberger (Canada)*

*Rapporteur: Eduardo W. Bergamini (Brazil)*

## IAC-06-A3.3.01

### Status of Mars Reconnaissance Orbiter Mission

*Mr. James Graf, Jet Propulsion Laboratory, Pasadena, CA, United States*

## IAC-06-A3.3.02

### Phoenix - The First Mars Scout Mission (A Midterm Report)

*Mr. Robert Shotwell, Jet Propulsion Laboratory, Pasadena, CA, United States*

## IAC-06-A3.3.03

### The Canadian Meteorology (MET) Package for the Phoenix Mars Lander

*Mr. Eric Choi, McDonald Dettwiler & Associates, Brampton, Canada*

*Mr. Michael G. Daly, MDA, Brampton, ONT, Canada, Mr. Jeff Tripp, Optech Incorporated, Toronto, Canada, Dr. Robert Richards, Optech Incorporated, Toronto, Canada, Dr. Nadeem Ghafoor, MacDonald Dettwiler Space and Advanced Robotics Ltd., Brampton, ONT, Canada, Prof. Christian Sallaberger, MDA, Brampton, ONT, Canada*

### **IAC-06-A3.3.04**

**Russian programs of the Moon and Mars exploration by automated spacecrafts: heritage and prospects.**

*Dr. Victor V. Vorontsov, Lavochkin Association, Khimki-2, Moscow region, Russia*

### **IAC-06-A3.3.05**

**EXOMARS Mission and Spacecraft Architecture**

*Dr. Alessandro Gily, Alenia Spazio S.p.A., Turin, Italy*

### **IAC-06-A3.3.06**

**EXOMARS Descent Module**

*Mr. Vincenzo Giorgio, Alcatel Alenia Space, Turin, Italy*

### **IAC-06-A3.3.07**

**Canadian Mobile Robotics: The ExoMars Mission and Beyond**

*Mr. Ryan McCoubrey, MDA, Brampton, ONT, Canada*  
*Ms. Gita Ravindran, MDA, Brampton, ONT, Canada, Mr. Howard Jones, MDA, Brampton, ONT, Canada, Mr. Robert Carr, MDA, Brampton, ONT, Canada, Dr. Nadeem Ghafoor, MacDonald Dettwiler Space and Advanced Robotics Ltd., Brampton, ONT, Canada, Prof. Christian Sallaberger, MDA, Brampton, ONT, Canada*

### **IAC-06-A3.3.08**

**Exobiology payloads for European Mars missions**

*Dr. Peter Hofmann, Kayser-Threde GmbH, Munich, Germany*

*Dr. Wolfgang Schulte, Kayser-Threde GmbH, Munich, Germany, Mr. Ralf Heise-Rotenburg, Kayser-Threde GmbH, 81379 Munich, Germany, Mr. Philipp Reissaus, Kayser-Threde GmbH, Munich, Germany, Mr. Hans Thiele, Kayser-Threde GmbH, Munich, Germany*

### **IAC-06-A3.3.09**

**Special Regions in Mars Exploration: Problems and Potential**

*Dr. John D. Rummel, National Aeronautics and Space Administration (NASA), Washington, DC, United States*

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## **October 03 2006, 15:30 - Room 3**

### **B1. Earth Observation Symposium**

*Coordinators: W. John Hussey (United States), Pierre Ranzoli (Germany)*

### **B1.3. Earth Observation Sensors and Technology**

*Chairmen: Andrew Court (The Netherlands), David L. Glackin (United States)*

*Rapporteur: Pierre Ranzoli (Germany)*

### **IAC-06-B1.3.01**

**Actual Status and Prospect of Space Optical Payload Technology in China**

*Dr. Fu Danying, Beijing Institute of Space Machine and Electricity, Beijing, China*

### **IAC-06-B1.3.02**

**The EnMAP Hyperspectral Imager – An Advanced Optical Payload for Future Applications in Earth Observation Programmes**

*Dr. Timo Stuffer, Kayser-Threde GmbH, Munich, Germany*  
*Dr. Stefan Hofer, Kayser-Threde GmbH, Munich, Germany, Mr. Klaus-Peter Förster, Kayser-Threde GmbH, Munich, Germany, Prof. Hermann Kaufmann, Geoforschungszentrum Potsdam, Potsdam, Germany, Mr. Boris Penné, OHB-System AG, Bremen, Germany, Dr. Heike Bach, VISTA GmbH, Munich, Germany, Dr. Ursula Benz, Definiens Imaging GmbH, Munich, Germany, Dr. Rupert Haydn, GAF AG, Munich, Germany, Dr. Andreas Eckardt, DLR OS, Berlin, Germany*

### **IAC-06-B1.3.03**

**ILAC: Radio and optical lightning signals coupled to atmospheric chemistry measurements**

*Dr. Andrew Court, TNO Science and Industry, Delft, The Netherlands*

*Dr. Pierre Laroche, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Paris, France, Dr. Philippe Lalande, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Paris, France, Dr. Ad Maas, TNO Science and Industry, Delft, The Netherlands, Dr. Serge Soula, University of Toulouse III, Toulouse, France, Dr. Frank Roux, University of Toulouse III, Toulouse, France, Dr. Peter van Velthoven, Royal Netherlands Meteorological Institute, De Bilt, The Netherlands, Dr. Ulrich Schumann, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Oberpfaffenhofen, Germany, Dr. Hartmut Höller, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Oberpfaffenhofen, Germany*

### **IAC-06-B1.3.04**

**FLuorescence EXplorer (FLEX): an optimised payload to map vegetation photosynthesis from space**

*Dr. Jose Moreno, University of Valencia, Burjassot, Valencia, Spain*

### **IAC-06-B1.3.05**

**TanDEM-X: A Satellite Formation for High Resolution Radar Interferometry**

*Dr. Alberto Moreira, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Wessling, Germany*

*Mr. Gerhard Krieger, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Wessling, Germany, Dr. Hauke Fiedler, German Aerospace Center (DLR), Oberpfaffenhofen, Germany, Dr. Irena Hajsek, German Aerospace Center (DLR), Oberpfaffenhofen, Germany, Mr. Marian Werner, German Aerospace Center (DLR), Oberpfaffenhofen, Germany, Dr. Manfred Zink, German Aerospace Center (DLR), Oberpfaffenhofen, Germany, Dr. Marwan Younis, German Aerospace Center (DLR), Oberpfaffenhofen, Germany*

### **IAC-06-B1.3.06**

**Oceanpal<sup>®</sup>, a GPS-reflection coastal instrument to monitor sea-state**

*Mr. Marco Caparrini, Starlab Barcelona SL, Barcelona, Spain*

*Mr. Stephen Dunne, Starlab Barcelona SL, Barcelona, Spain, Mr. Olivier Germain, Starlab Barcelona SL, Barcelona, Spain, Dr. Esteve Farrés, Starlab Barcelona SL, Barcelona, Spain, Dr. François Soulat, Starlab Barcelona SL, Barcelona, Spain, Mr. Xavier Barroso, Universitat Autònoma de Barcelona, Barcelona, Spain, Dr. Giulio Ruffini, Starlab Barcelona SL, Barcelona, Spain*

### **IAC-06-B1.3.07**

#### **From OMI to TROPOMI : entering the realm of air quality from space**

*Dr. Johan de Vries, Dutch Space B.V., Leiden, The Netherlands*

Mr. Erik Laan, Nederlandse Vereniging voor Ruimtevaart (NVR), Leiden, The Netherlands, Prof. Ilse Aben, SRON, Utrecht, The Netherlands, Dr. Rienk Jongma, SRON, Utrecht, The Netherlands, Dr. Pieter Levelt, KNMI, De Bilt, The Netherlands, Dr. Gijsbertus van den Oord, KNMI, De Bilt, The Netherlands, Dr. Pepijn Veefkind, KNMI, De Bilt, The Netherlands, Dr. Andrew Court, TNO Science and Industry, Delft, The Netherlands, Ms. Isabel Escudero, TNO TPD, Delft, The Netherlands

### **IAC-06-B1.3.08**

#### **A new night time sensor design for human settlements monitoring**

*Dr. Giovanni Laneve, University of Rome "La Sapienza", Rome, Italy*

Dr. Marco Maria Castronuovo, ASI - Agenzia Spaziale Italiana, Rome, Italy, Eng Enrico Giuseppe Cadau, University of Rome "La Sapienza", Rome, Italy

### **IAC-06-B1.3.09**

#### **Optical Instruments Concept for the Spanish Earth-observation Satellite**

*Mr. Diego Rodríguez, SENER Ingeniería y Sistemas, S.A., Tres Cantos, Spain*

Mr. Carlos Miravet, SENER Ingeniería y Sistemas, S.A., Tres Cantos, Spain, Mr. Emilio Vez, SENER Ingeniería y Sistemas, S.A., Tres Cantos (Madrid), Spain, Mr. Daniel Cocho, SENER Ingeniería y Sistemas, S.A., Tres Cantos, Spain

## **38**

**October 03 2006, 15:30 - Room 13**

### **B4. Space Stations Symposium**

*Coordinators: Mag Iskander (Canada), Carlo Mirra (The Netherlands)*

#### **B4.2. Space Stations Assembly and Operations**

*Chairmen: Guenther Brandt (Germany), Todd Fox (United States)*

*Rapporteur: Klaus Wittmann (Germany)*

### **IAC-06-B4.2.01**

#### **The Integration of ESA's Long Duration Mission: Astrolab**

*Ms. Ing Oei, Booz Allen Hamilton, Amsterdam, The Netherlands*

Mr. Carlo Mirra, EADS SPACE Transportation, Leiden, The Netherlands, Mr. Erik Dyrkoren, Marintek, Leiden, The Netherlands

### **IAC-06-B4.2.02**

#### **Commissioning "Dextre" for On-Orbit Operations**

*Mr. Layi Oshinowo, MDA, Brampton, Canada*

Mr. Elliott Coleshill, University of Guelph, Milton, Ontario, Canada, Dr. Michael Liu, MDA, Brampton, Canada, Richard Rembala, MDA, Brampton, Canada, Mr. Shivshankar Prasad, MDA, Brampton, Canada

### **IAC-06-B4.2.03**

#### **Enhanced operations efficiency by using the Unified Synoptic System**

*Mr. Uwe Brauer, EADS SPACE Transportation, Bremen, Germany*

Mr. Mikael Wolff, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Wim van Leeuwen, European Space Agency/ESTEC, Noordwijk, The Netherlands

### **IAC-06-B4.2.04**

#### **Experience on development of control systems of durable orbital stations**

*Dr. Eugeny Mikrin, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Moscow region, Russia*

Dr. Boris Chertok, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Russia, Dr. Victor Legostaev, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Russia, Mr. Sergey Gusev, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Russia

### **IAC-06-B4.2.05**

#### **Integrating International Engineering Organizations for Successful ISS Operations**

*Ms. Elizabeth Blome, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, United States*

Mr. Matthew Duggan, The Boeing Company, Houston, United States, Mrs. Laryssa Patten, Booz Allen Hamilton, Noordwijk, The Netherlands, Ms. Hiltrud Pieterek, European Space Agency/ESTEC, Noordwijk, The Netherlands

### **IAC-06-B4.2.06**

#### **International participation to the CAPPS (Checkout, Assembly & Payload Processing Services). Alenia Spazio North America (ASNA)**

*Dr. Luciano Saccani, Alenia Spazio North America, Cupertino, United States*

### **IAC-06-B4.2.07**

#### **The International Space Station: Operations & Assembly – Learning From Experiences – Past, Present, & Future**

*Mr. Patrick Buzzard, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, Texas, United States*

### **IAC-06-B4.2.08**

#### **Free Flyer Capture – New Robotic Challenges from the International Space Station**

*Ms. Charlaean Smith, Canadian Space Agency, Houston, Texas, United States*

Mr. Jason Seagram, Canadian Space Agency, St Hubert, QC, Canada

### **IAC-06-B4.2.09**

#### **International Space Station External Active Thermal Control System lines manufacturing**

*Mr. Stefano Ferretti, Alcatel Alenia Space, Turin, Italy*

Mr. Giuseppe Valenzano, Alcatel Alenia Space, Turin, Italy, Mr. Walter Cugno, Alcatel Alenia Space, Turin, Italy

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**October 03 2006, 15:30 - Room 6**

### **B6. Space Debris Symposium**

*Coordinators: Christophe Bonnal (France), Walter Flury (Germany), Nicholas L. Johnson (United States)*

#### **B6.2. Risk Analysis and Modelling**

*Chairmen: Mark J. Matney (United States), Carmen Pardini (Italy)*

*Rapporteur: Heiner Klinkrad (Germany)*

## IAC-06-B6.2.01

### Modeling the High Area-to-Mass Ratio Debris in GEO

*Mr. Michael Oswald, Institute of Aerospace Systems, Braunschweig, Germany*

*Mr. Sven Flegel, Technical University of Braunschweig, Braunschweig, Germany, Mr. Sebastian Stabroth, Technical University of Braunschweig, Braunschweig, Germany, Mr. Carsten Wiedemann, Institute of Aerospace Systems, Braunschweig, Germany, Dr. Heiner Klinkrad, European Space Agency/ESOC, Darmstadt, Germany, Mr. Peter Voersmann, Institute of Aerospace Systems, Braunschweig, Germany*

## IAC-06-B6.2.02

### Calculating Statistical Orbit Distributions Using GEO Optical Observations with the Michigan Orbital Debris Survey Telescope (MODEST)

*Dr. Mark J. Matney, National Aeronautics and Space Administration (NASA), Houston, Texas, United States*

## IAC-06-B6.2.03

### Statistical Inference in Modeling the Orbital Debris Environment

*Dr. Yu-lin Xu, Jacobs Sverdrup, Houston, Texas, United States*

## IAC-06-B6.2.04

### Historical Evolution of the Small Particle Debris Environment

*Mr. Sebastian Stabroth, Technical University of Braunschweig, Braunschweig, Germany*

*Mr. Michael Oswald, Institute of Aerospace Systems, Braunschweig, Germany, Mr. Carsten Wiedemann, Institute of Aerospace Systems, Braunschweig, Germany, Dr. Heiner Klinkrad, European Space Agency/ESOC, Darmstadt, Germany, Mr. Peter Voersmann, Institute of Aerospace Systems, Braunschweig, Germany*

## IAC-06-B6.2.05

### Historical Collisions in Low Earth Orbit

*Dr. Paula H. Krisko, ESCG/Jacobs Sverdrup, Houston, TX, United States*

## IAC-06-B6.2.06

### LEO Debris Environment Modeling in Japan

*Mr. Tomohiro Narumi, Kyushu University, Fukuoka, Japan, Prof. Toshiya Hanada, Kyushu University, Fukuoka, Japan, Ms. Satomi Kawamoto, Japan Aerospace Exploration Agency (ISTA/JAXA), Tokyo, Japan, Dr. Seishiro Kibe, Japan Aerospace Exploration Agency (JAXA), Chiyoda-ku, Japan*

## IAC-06-B6.2.07

### Additional Historical Solid Rocket Motor Burns

*Mr. Carsten Wiedemann, Institute of Aerospace Systems, Braunschweig, Germany*

*Mrs. Maren Homeister, Institute of Aerospace Systems, Braunschweig, Germany, Mr. Sebastian Stabroth, Technical University of Braunschweig, Braunschweig, Germany, Mr. Michael Oswald, Institute of Aerospace Systems, Braunschweig, Germany, Dr. Heiner Klinkrad, European Space Agency/ESOC, Darmstadt, Germany, Mr. Peter Voersmann, Institute of Aerospace Systems, Braunschweig, Germany*

## IAC-06-B6.2.08

### Generalized Orbital Projections of a Sublimating Ice Particle

*Dr. Evgeny Menkin, ARES Aerospace, Houston, TX, United States*

*Dr. John Bacon, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States*

## IAC-06-B6.2.09

### Generalized Separation of an Object Jettisoned from ISS

*Dr. John Bacon, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States*

*Dr. Evgeny Menkin, ARES Aerospace, Houston, TX, United States*

## IAC-06-B6.2.10

### Benefits and risks of using electrodynamic tethers to de-orbit spacecraft

*Dr. Carmen Pardini, ISTI-CNR, Pisa, Italy*

*Prof. Toshiya Hanada, Kyushu University, Fukuoka, Japan, Dr. Paula H. Krisko, ESCG/Jacobs Sverdrup, Houston, TX, United States*

## IAC-06-B6.2.11

### GSLV-D2/CS1 Lifetime Estimation by Genetic Algorithm with Response Surface Approximation

*Mr. Priyankar Bandyopadhyay, Indian Space Research Organization (ISRO), Trivandrum, India*

*Dr. V. Adimurthy, Indian Space Research Organization (ISRO), Trivandrum, India*

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**October 03 2006, 15:30 - Room 10**

## C1. Astrodynamics Symposium

*Coordinators: Alberto Foni (Italy), Arun Misra (Canada)*

## C1.3. Multibody Dynamics

*Chairmen: Elbert E.N. Macau (Brazil), Yasuhiro Morita (Japan)*

*Rapporteur: Andre Mazzoleni (United States)*

## IAC-06-C1.3.01

### Simulation and control of an active Stewart platform for docking and berthing of space vehicles

*Dr. Michael Hardt, SENER Ingeniería y Sistemas, S.A., Tres Cantos (Madrid), Spain*

*Mr. José Ramon Villa Navarro, SENER Ingeniería y Sistemas, S.A., Tres Cantos (Madrid), Spain, Mr. Peter Urmston, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Oscar Gracia, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Daniel Cocho, SENER Ingeniería y Sistemas, S.A., Tres Cantos, Spain*

## IAC-06-C1.3.02

### Descent and touchdown dynamics for sample collection in Hayabusa mission

*Dr. Takashi Kubota, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami, Japan*

## IAC-06-C1.3.03

### Dynamics of Flexible Appendages Mounted on Lagrangian Point Satellites

*Mr. Brian Wong, McGill University, Montreal, QC, Canada, Dr. Arun Misra, McGill University, Montreal QC, Canada*

## IAC-06-C1.3.04

### Determination of kinematic state of an orbiting multibody using GNSS signals

*Prof. Giovanni B. Palmerini, University of Rome "La Sapienza", Rome, Italy*

*Dr. Paolo Gasbarri, University of Rome "La Sapienza", Rome, Italy, Mrs. Chiara Togliola, University of Rome "La Sapienza", Rome, Italy*

### **IAC-06-C1.3.05**

#### **Stabilization of the triangular formation of the LISA satellites**

*Ms. Janneke Bik, Technical University of Delft (TUDelft), Delft, The Netherlands*

### **IAC-06-C1.3.06**

#### **Optimal Control of a Spinning Double-Pyramid Earth-Pointing Tether Formation**

*Dr. Paul Williams, Royal Melbourne Institute of Technology (RMIT), Melbourne, Australia*

### **IAC-06-C1.3.07**

#### **Radio-frequency technology and GNC (guidance navigation and control) for formation flying**

*Mr. Roland Frenkiel, Alcatel Alenia Space, Cannes la Bocca, France*

*Mr. Christian Mehlen, Alcatel Alenia Space, Cannes la Bocca, France, Mrs. Estelle Pierre, Alcatel Alenia Space, Cannes la Bocca, France, Mr. Michel Sghedoni, Alcatel Alenia Space, Cannes la Bocca, France*

### **IAC-06-C1.3.08**

#### **Using dummy spacecraft to gravitational control of flights asteroids-a mathematical model**

*Mr. Navid Maghsoudi, Iranian Space Agency, Tehran, Iran  
Mr. Khashayar Aavani, Iranian Space Agency, Tehran, Iran*

### **IAC-06-C1.3.09**

#### **New approach for separation study in Vega launcher: Vega stages separation tool models development and multibody separation dynamic simulations for Vega payload fairing jettisoning**

*Dr. Ing. Vincenzo Mirra, ELV S.p.A., Colleferro (Roma), Italy*

*Mr. Gonzalo Saavedra, SENER Ingeniería y Sistemas, S.A., Tres Cantos, Spain, Mr. Rafael Rebolo Gomez, SENER Ingeniería y Sistemas, S.A., Tres Cantos, Spain, Mr. Daniele Barbagallo, European Space Agency/ESRIN, Frascati, Italy*

### **IAC-06-C1.3.10**

#### **Dynamic simulation of large flexible deployable space truss structures with clearances**

*Prof. Fuling Guan, Zhejiang University, Hangzhou, China  
Dr. Mengliang Zhao, Zhejiang University, Hangzhou, China*

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**October 03 2006, 15:30 - Room 15**

#### **C2. Materials and Structures Symposium**

*Coordinators: Constantinos P. Stavrinidis (The Netherlands), Pavel M. Trivailo (Australia)*

#### **C2.3. Space Structures - Dynamics and Micro-dynamics**

*Chairmen: Peter M. Bainum (United States), Ijar M. Da Fonseca (Brazil)*

*Rapporteur: Harijono Djojodihardjo (Indonesia)*

### **IAC-06-C2.3.02**

#### **FORMOSAT-3/COSMIC Structural Dynamic Test Verification**

*Dr. Ming-Chih Cheng, National Space Organization, Hsin-Chu, Taiwan, China*

*Mr. J.C. Kuo, National Space Organization, Hsin-Chu, Taiwan, China, Mr. C.W. Chou, National Space Organization, Hsin-Chu, Taiwan, China, Dr. Chiuder Hsiao, National Space Organization, Hsin-Chu, Taiwan, China*

### **IAC-06-C2.3.03**

#### **Space structures dynamic identification through output only approach**

*Dr. Giuliano Coppotelli, University of Rome "La Sapienza", Rome, Italy*

*Dr. Paolo Gasbarri, University of Rome "La Sapienza", Rome, Italy*

### **IAC-06-C2.3.04**

#### **Damping Characterization & Flight Identification**

*Mr. Vincent Le Gallo, EADS SPACE Transportation, Les Mureaux, France*

*Mr. Maurice Goursat, INRIA, Le Chesnay, France, Mr. Luc Gonidou, Centre National d'Etudes Spatiales (CNES), Evry, France*

### **IAC-06-C2.3.05**

#### **Launcher Structures excited by Shock in the Absence and the Presence of Fluid Loaded Vessels**

*Mr. Bernhard Kotzias, EADS SPACE Transportation, Bremen, Germany*

### **IAC-06-C2.3.06**

#### **LSS Vibration Damping by Using Active Control Strategy**

*Dr. Ijar M. Da Fonseca, Instituto Nacional de Pesquisas Espaciais (INPE), Sao José dos Campos, Brazil*

### **IAC-06-C2.3.07**

#### **Non-Linear Dynamic Modelling of Composite Systems of Multiple Flexible Robotic Manipulators**

*Prof. Pavel M. Trivailo, Royal Melbourne Institute of Technology (RMIT), Bundoora VIC, Australia*

### **IAC-06-C2.3.08**

#### **Dynamic Analysis with Varying Parameter using the Factorial Design Method**

*Dr. Andreas Rittweger, EADS SPACE Transportation, Bremen, Germany*

*Dr. Stefan Dieker, Reimerdes und Dieker Ingenieure GbR, Bremen, Germany, Dr. Jochen Albus, EADS Space Transportation GmbH, Bremen, Germany*

### **IAC-06-C2.3.09**

#### **Unified Computational Scheme for the Calculation of the Influence of Acoustic Disturbance to the Aeroelastic Stability and Dynamic Response of Structure**

*Dr. Harijono Djojodihardjo, Universitas Al Azhar Indonesia, Jakarta, Indonesia*

*Mr. Irtan Safari, Bandung, Indonesia*

### **IAC-06-C2.3.10**

#### **A Study of Joint Damping in Metal Plates**

*Dr. Scott Walker, University of Southampton, Southampton, United Kingdom*

*Dr. Guglielmo Aglietti, University of Southampton, Southampton, United Kingdom, Dr. Paul R. Cunningham, Smiths Aerospace Mechanical Systems-Aerostructures, Southampton, United Kingdom*

### **IAC-06-C2.3.11**

#### **Researching into-carrying capacity of complexly dynamic loaded and heated composite shell**

*Mr. Igor Turkin, Moscow Aviation Institute (State Technical University), Moscow, Russia*

*Mr. Vyacheslav Safronov, Moscow Aviation Institute (State Technical University), Moscow, Russia, Mr. Evgueni Larichev, Moscow Aviation Institute (State Technical University), Moscow, Russia*

**C3. Space Power Symposium**

*Coordinators: John C. Mankins (United States)*

**C3.1. Space Power Systems, Concepts and Architectures**

*Chairmen: Nobuyuki Kaya (Japan), Harvey J. Willenberg (United States)*

*Rapporteur: Lucien Deschamps (France), Leopold Summerer (The Netherlands)*

**IAC-06-C3.1.01****PETER GLASER Lecture: Comparing the Options - Recent Studies of Space and Ground Solar Power for Europe**

*Mr. Franco Ongaro, European Space Agency (ESA), 75015 Paris, France*

**IAC-06-C3.1.02****International Peer Review Results of European Work on Solar Power from Space**

*Dr. Leopold Summerer, European Space Agency/ESTEC, Noordwijk, The Netherlands*

*Dr. Nobuyuki Kaya, Kobe University, Kobe, Japan*

**IAC-06-C3.1.03****New Directions for Space Solar Power**

*Mr. John Mankins, Artemis Innovation Management Solutions LLC, Ashburn, United States*

**IAC-06-C3.1.04****Summary of Studies on Space Solar Power Systems of Japan Aerospace Exploration Agency (JAXA)**

*Ms. Yuka Saito, Japan Aerospace Exploration Agency (JAXA), Tsukuba-shi Ibaraki-ken, Japan*

*Mr. Tatsuhito Fujita, Japan Aerospace Exploration Agency (ISTA/JAXA), Tsukuba, Japan, Mr. Masahiro Mori, Japan Aerospace Exploration Agency (JAXA), Tsukuba-shi, Japan*

**IAC-06-C3.1.05****Impact of Solar Array Designs on High Voltage Operation in Space**

*Dr. Henry Brandhorst, Auburn University, Auburn University, AL, United States*

*Mr. Mark J. O'Neill, ENTECH, Inc., Keller, TX, United States, Mr. Michael Piszczor, National Aeronautics and Space Administration (NASA)/Glenn Research Center, Cleveland, OH, United States, Dr. Dale C. Ferguson, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Marshall Space Flight Center, AL, United States*

**IAC-06-C3.1.06****Construction Scenario for Tethered Solar Power Satellite**

*Prof. Susumu Sasaki, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagamihara, Japan*

*Dr. Koji Tanaka, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagamihara, Japan, Dr. Ken Higuchi, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagamihara, Kanagawa, Japan, Dr. N. Okuizumi, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagamihara, Kanagawa, Japan, Prof. Shigeo Kawasaki, Kyoto University, Kyoto, Japan, Dr. Naoki Shinohara, Kyoto University, Kyoto, Japan, Dr. Kosei Ishimura, Hokkaido University, Sapporo, Japan*

**IAC-06-C3.1.07****Conceptual Design of the Electrical Power Subsystem for the European Student Moon Orbiter Mission**

*Mr. Steve Ulrich, Université de Sherbrooke, Sherbrooke, Canada*

*Mr. François Landry Corbin, Université de Sherbrooke, Sherbrooke, Canada, Mr. Hubert Nolet Côté, Université de Sherbrooke, Sherbrooke, Canada, Mr. Alexandre Désilets, Université de Sherbrooke, Sherbrooke, Canada*

**IAC-06-C3.1.08****Advanced Energy Conversion Technologies and Architectures for Earth and Beyond**

*Mr. Joe Howell, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, United States*

**IAC-06-C3.1.09****Retrodirective System for Solar Power Satellites**

*Prof. Kozo Hashimoto, Kyoto University, Uji, Kyoto, Japan*

*Prof. Hiroshi Matsumoto, Kyoto University, Kyoto, Japan*

**C4. Space Propulsion Symposium**

*Coordinators: Dana G. Andrews (United States), Giorgio Saccoccia (The Netherlands)*

**C4.5. Hypersonic and Combined Cycle Propulsion**

*Chairmen: Francois Falempin (France), Nobuhiro Tanatsugu (Japan)*

*Rapporteur: Shigeru Aso (Japan)*

**IAC-06-C4.5.01****LAPCAT: an EC Funded Project on Sustained Hypersonic Flight**

*Dr. Johan Steelant, European Space Agency/ESTEC, Noordwijk, The Netherlands*

**IAC-06-C4.5.02****Development Study of Precooled-Cycle Hypersonic Turbojet Engine for Flight Demonstration**

*Dr. Tetsuya Sato, Japan Aerospace Exploration Agency (IAT/JAXA), Chofu, Japan*

*Dr. Hideyuki Taguchi, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan, Mr. Hiroaki Kobayashi, Japan Aerospace Exploration Agency (ISTA/JAXA), Tokyo, Japan, Mr. Takayuki Kojima, Japan Aerospace Exploration Agency (ISTA/JAXA), Tokyo, Japan, Dr. Keiichi Okai, Japan Aerospace Exploration Agency (ISTA/JAXA), Tokyo, Japan, Dr. Kazuhisa Fujita, Japan Aerospace Exploration Agency (ISTA/JAXA), Tokyo, Japan, Dr. Daisaku Masaki, Japan Aerospace Exploration Agency (IAT/JAXA), Chofu, Japan, Mr. Motoyuki Hongo, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagamihara, Japan, Mr. Toyohiko Ohta, IHI Aerospace Co, Ltd., Tomioka, Japan*

**IAC-06-C4.5.03****Quasi-1D Analysis Model of Rocket Ejector Mode**

*Mr. Lu Xiang, Northwestern Polytechnical University, Xi'an, China*

*Prof. Guoqiang He, Northwestern Polytechnical University, Xi'an, China, Prof. Pei-Jing Liu, Northwestern Polytechnical University, Xi'an, China*

## IAC-06-C4.5.04

### Evaluation of Heat-flux on Scramjet Engine Wall in Mach 6 Flight Condition

Mr. *shuichi ueda*, Japan Aerospace Exploration Agency (JAXA), Miyagi, Japan

Dr. Masao Takegoshi, Japan Aerospace Exploration Agency (JAXA), Miyagi, Japan, Dr. Toshinori Kouchi, Japan Aerospace Exploration Agency (JAXA), Miyagi, Japan, Mr. Fumie Ono, Japan Aerospace Exploration Agency (JAXA), Miyagi, Japan, Mr. Toshihito Saito, Japan Aerospace Exploration Agency (JAXA), Miyagi, Japan, Mr. Muneo Izumikawa, Japan Aerospace Exploration Agency (JAXA), Miyagi, Japan

## IAC-06-C4.5.05

### Flow Studies on a Scramjet Isolator with a Diverging Cross-Section Using Schlieren Optics

Mr. *Sascha Tietz*, University of Stuttgart, Stuttgart, Germany

Mr. Jaechul Chun, University of Stuttgart, Stuttgart, Germany, Prof. Jens von Wolfersdorf, University of Stuttgart, Stuttgart, Germany

## IAC-06-C4.5.06

### A study on supersonic mixing by circular nozzle with various injection angle for air breathing engine

Mr. *Kei Inoue*, Kyushu University, Fukuoka, Japan

Mr. Kohei Yamaguchi, Kyushu University, Fukuoka, Japan, Prof. Shigeru Aso, Kyushu University, Fukuoka, Japan, Dr. Yasuhiro Tani, Kyushu University, Fukuoka, Japan

## IAC-06-C4.5.07

### Simulating cross altitude performance of expansion deflection nozzles

Dr. *Neil Taylor*, University of Bristol, Bristol, United Kingdom

## IAC-06-C4.5.08

### Numerical refinement of the 1D modeling of ram accelerator in sub-detonative propulsion mode

Mr. *Tarek Bengherbia*, Kingston University, London, United Kingdom

Dr. Yao Yufeng, Kingston University, London, United Kingdom, Prof. Pascal Bauer, ENSMA, Poitiers, France

## IAC-06-C4.5.09

### An experimental study on shortening of ddt distance for pulse detonation engines

Mr. *Ryuji Nakawatase*, Kyushu University, Fukuoka, Japan

Mr. Hiroaki Miyazawa, Kyushu University, Fukuoka, Japan, Prof. Shigeru Aso, Kyushu University, Fukuoka, Japan, Dr. Yasuhiro Tani, Kyushu University, Fukuoka, Japan

## IAC-06-C4.5.10

### The conception of a launch vehicles with ramjet and rocket-ramjet engines for a small payload injection into Low Earth Orbit

Prof. *Valeriy Tymoshenko*, Institute of Technical Mechanics NASU NSAU, Dnepropetrovsk, Ukraine

Dr. Valeriy P. Galinsky, Institute of Technical Mechanics NASU NSAU, Dnepropetrovsk, Ukraine, Dr. Igor S. Belotserkovets, Institute of Technical Mechanics NASU NSAU, Dnepropetrovsk, Ukraine, Dr. Vjacheslav Gusinin, National space agency of Ukraine, Kiev, Ukraine

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October 03 2006, 15:30 - Room 2

## D2. Space Transportation Symposium

Coordinators: *Christophe Bonnal* (France), *Richard Tyson* (United States)

## D2.3. Upper Stages, Space Transfer and Reentry Systems

Chairmen: *Dana G. Andrews* (United States), *Shoichiro Asada* (Japan)

Rapporteur: *Pier De Matteis* (Italy)

## IAC-06-D2.3.01

### Emergency Trajectories for the Crew Transfer Vehicle

Mr. *Jesus Gil-Fernandez*, GMV S.A., PTM Tres Cantos (Madrid), Spain

Mrs. Mariella Graziano, GMV S.A., Tres Cantos (Madrid), Spain, Mr. Bernd Bischof, EADS SPACE Transportation, D-28199 Bremen, Germany, Mr. Juergen Starke, EADS SPACE Transportation, Bremen, Germany

## IAC-06-D2.3.02

### Development of the Olympus Space Utility Vehicle

Dr. *Dana Andrews*, Andrews Space & Technology, Seattle, United States

Mr. Jason Andrews, Andrews Space & Technology, Seattle, United States, Mr. Chris Hoeft, Andrews Space & Technology, Seattle, United States

## IAC-06-D2.3.03

### Designing a micro-launcher with tethered upper stage

Mr. *Erik Van der Heide*, Delta-Utec SRC, Leiden, The Netherlands

Mr. Michiel Kruijff, Delta-Utec, Leiden, The Netherlands, Mr. Andrew Hyslop, Delta-Utec SRC, Leiden, The Netherlands, Mr. Christophe Bonnal, Centre National d'Etudes Spatiales (CNES), Evry, France, Mr. Christophe Talbot, Centre National d'Etudes Spatiales (CNES), Evry, France, Mrs. Amaya Espinosa, Centre National d'Etudes Spatiales (CNES), Evry, France

## IAC-06-D2.3.04

### YES2 Optimal Trajectories in Presence of Eccentricity and Aerodynamic Drag

Dr. *Paul Williams*, Royal Melbourne Institute of Technology (RMIT), Melbourne, Australia

Mr. Andrew Hyslop, Delta-Utec SRC, Leiden, The Netherlands, Mr. Michiel Kruijff, Delta-Utec, Leiden, The Netherlands

## IAC-06-D2.3.05

### Compatibility of Delta IV with the Transfer Vehicles HTV and ATV for Cargo Delivery

Dr. *Robert Sirko*, Boeing Launch Services, Huntington Beach, United States

Mr. Kevin Reyes, Boeing Launch Services, Huntington Beach, United States, Mr. Yasunobu Yoshida, Mitsubishi Heavy Industries, Ltd., Komaki-shi, Aichi-ken, Japan, Mr. Jacques Breton, Arianespace, Evry, France

## IAC-06-D2.3.06

### System Aspects of Europe's Automated Transfer Vehicle (ATV) Propulsion and Reboost Subsystem

Dr. *Ruediger Ress*, EADS Space Transportation GmbH, Bremen, Germany

Mr. Ingo Ahrens, EADS Space Transportation GmbH, Bremen, Germany, Mr. Martin Riehle, EADS Space Transportation GmbH, Möckmühl, Germany, Dr. Ulrich Laux, EADS Space Transportation GmbH, Bremen, Germany



### IAC-06-D2.3.07

**Aerodynamic features of the hypersonic re-entry leg of Kliper type vehicle**

*Dr. Alexey Galaktionov, TSNIIMASH, Korolev, Russia*  
*Dr. Yuriy Lipnitskiy, TSNIIMASH, Korolev, Russia, Dr. Vladimir Lapygin, TSNIIMASH, Korolev, Russia*

### IAC-06-D2.3.08

**Soft-landing: the key building block for exploration**

*Mrs. Francine Bonnefond, EADS SPACE Transportation, St Médard en Jalles, France*

### IAC-06-D2.3.09

**An Extrapolation-to-Flight Methodology for Wind Tunnel Measurements Applied to the Prora-USV FTB1 Vehicle**

*Dr. Pietro Roncioni, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy*  
*Dr. Giuseppe Carmine Rufolo, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy, Mr. Raffaele Votta, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy, Dr. Marco Marini, C.I.R.A. Italian Aerospace Research Centre, Capua, Italy*

### IAC-06-D2.3.10

**The analysis of transport opportunities of an oxygen-hydrogen chemical upper stage at insertion into a geostationary orbit for space system on the basis of a launcher Soyuz 2-1b**

*Prof. Mikhail S. Konstantinov, Moscow Aviation Institute, Moscow, Russia*  
*Mr. Mark Skryabin, Moscow, Russia*

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### October 03 2006, 15:30 - Room 12

**D3. Symposium on Stepping Stones to the Future: Strategies, Architectures, Concepts and Technologies**  
*Coordinators: John C. Mankins (United States), Dietrich Vennemann (The Netherlands)*

**D3.2. Novel Concepts and Technologies for the Exploration and Utilization of Space**

*Chairmen: Alain Pradier (The Netherlands), Nantel Suzuki (United States)*  
*Rapporteur: Maria Antonietta Perino (Italy)*

### IAC-06-D3.2.01

**On-orbit servicing for the commercial utilization of space: orbital satellite services system**

*Dr. Peter Hofmann, Kayser-Threde GmbH, Munich, Germany*  
*Dr. Walter Naumann, Kayser-Threde GmbH, Munich, Germany, Mr. Phil Braden, Orbital Recovery, -, Germany, Mr. Steve Hall, Orbital Recovery, , United Kingdom*

### IAC-06-D3.2.02

**Proposal of Earth landing demonstration for a planetary lander**

*Mrs. Francine Bonnefond, EADS SPACE Transportation, St Médard en Jalles, France*

### IAC-06-D3.2.03

**Deployable Structures for a Human Lunar Base**

*Mrs. Sandra Haeuplik, University of Technology Vienna, Vienna, Austria*  
*Mrs. Petra Gruber, University of Technology Vienna, Vienna, Austria, Mrs. Barbara Imhof, LIQUIFER, Vienna, Austria, Mr. Kürsad Özdemir, University of Technology Vienna, Vienna, Austria, Mr. Rene Waclavicek, University of Technology Vienna, Vienna, Austria*

### IAC-06-D3.2.04

**Development of a Space Manufacturing Facility for In-situ Fabrication of Large Space Structures**

*Mr. Sean Jessen, MDA, Brampton, Canada*  
*Dr. Lijue Xue, National Research Council Canada, London, ONT, Canada*

### IAC-06-D3.2.05

**Force-field tailoring: First-principles derivation of wall formation physics**

*Prof. Narayanan Komerath, Georgia Institute of Technology, Atlanta, United States*

### IAC-06-D3.2.06

**A Logistic System based on Momentum Exchange Tethers for Earth-Moon cargo transportation**

*Ms. Manuela Aguzzi, Politecnico di Milano, Milan, Italy*  
*Prof. Matthew Cartmell, University of Glasgow, Glasgow, United Kingdom, Dr. Gianmarco Radice, University of Glasgow, Glasgow, United Kingdom, Dr. Massimiliano Vasile, University of Glasgow, Glasgow, United Kingdom, Mr. Marco Villanti, Milan, Italy*

### IAC-06-D3.2.07

**StarTram: An International Facility to Magnetically Launch Payloads at Ultra Low Unit Cost**

*Dr. George Maise, Plus Ultra Technologies, Inc., Stony Brook, NY, United States*

*Dr. James Powell, Plus Ultra Technologies, Inc., Shoreham, NY, United States, Dr. John Paniagua, Plus Ultra Technologies, Inc., Stony Brook, NY, United States, Mr. James Jordan, StarTram, Inc., Stony Brook, NY, United States*

### IAC-06-D3.2.08

**Reaching for the Stars: The Past and Future of Interstellar Flight**

*Mr. John Mankins, Artemis Innovation Management Solutions LLC, Ashburn, United States*

### IAC-06-D3.2.09

**Feasibility of Using a Miniature-UAV Remote-Sensing/Precision-Agriculture System (MINI-UAV RSPA SPACE SYSTEM) to Increase Crop Yields, Lower Costs, Save Water, and Reduce Pollution of Air, Soil, and Water**

*Dr. George Morgenthaler, University of Colorado at Boulder, Boulder, CO, United States*  
*Mr. Gordon Woodcock, Gray Research, Inc., Huntsville, AL, United States*

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### October 03 2006, 15:30 - Room 4

**D4. Symposium on The Far Future: Renewed Visions**  
*Coordinators: Hans E.W. Hoffmann (Germany), George Morgenthaler (United States)*

**D4.3. Space Elevators and Advanced Tethers: Programs and Applications**

*Chairmen: David Raitt (The Netherlands), Peter A. Swan (United States)*  
*Rapporteur: Bradley C. Edwards (United States)*

### IAC-06-D4.3.01

**The real history of the space elevator**

*Mr. Jerome Pearson, Star Technology and Research, Inc., Mount Pleasant, SC, United States*

### **IAC-06-D4.3.02**

#### **Space tethers: read instructions before use**

*Mr. Bas Lansdorp, Technical University of Delft (TUDelft), Delft, The Netherlands*

### **IAC-06-D4.3.03**

#### **Symmetrically Laden Motorised Momentum Exchange tethers for a continuous Earth Moon payload exchange**

*Mr. Christopher Murray, University of Glasgow, Paisley, United Kingdom*  
*Prof. Matthew Cartmell, University of Glasgow, Glasgow, United Kingdom*

### **IAC-06-D4.3.04**

#### **Stability of the Space Cable**

*Dr. John Knapman, Chandlers Ford, United Kingdom*

### **IAC-06-D4.3.05**

#### **Re-orbiting of Geosynchronous Satellites by Earth-Oriented Tethers**

*Dr. Vladimir Chobotov, The Aerospace Corporation, El Segundo, United States*  
*Dr. Nahum Melamed, The Aerospace Corporation, El Segundo, United States*

### **IAC-06-D4.3.06**

#### **High-payoff space tethers**

*Mr. Jerome Pearson, Star Technology and Research, Inc., Mount Pleasant, SC, United States*  
*Mr. John Oldson, ESL, Inc., San Diego, CA, United States*

### **IAC-06-D4.3.07**

#### **A method of launching Constellation satellites using MMET tethers.**

*Mr. David McKenzie, University of Glasgow, Glasgow, United Kingdom*  
*Prof. Matthew Cartmell, University of Glasgow, Glasgow, United Kingdom*

### **IAC-06-D4.3.08**

#### **Gas-damper attitude stabilization for space tether systems**

*Ms. Ana Blasco, Universidad Politécnica de Madrid, Madrid, Spain*

### **IAC-06-D4.3.09**

#### **Debris Hazards Mitigation and Retrieval for Space Elevators**

*Dr. Radu Rugescu, Politechnic University of Bucharest, Bucharest, Romania*

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### **October 03 2006, 15:30 - Room 16**

#### **D5. 39th Symposium on Safety and Quality in Space Activities**

*Coordinators: Max Grimard (France)*

#### **D5.1. Knowledge Management**

*Chairmen: Jeanne Holm (United States), Denis J.P. Moura (France), Manfred Warhaut (Germany)*

### **IAC-06-D5.1.01**

#### **Developing a Knowledge-Based View Across an Aerospace Organization: Inside NASA**

*Ms. Jeanne Holm, Jet Propulsion Laboratory / CalTech, Pasadena, CA, United States*  
*Ms. Keri Murphy, Jet Propulsion Laboratory / CalTech, Pasadena, CA, United States, Mr. Douglas Hughes, Jet Propulsion Laboratory / CalTech, Pasadena, CA, United States*

### **IAC-06-D5.1.02**

#### **Journey from space projects to portfolio and knowledge management**

*Mr. Serge Garon, Canadian Space Agency, St Hubert, QC, Canada*

### **IAC-06-D5.1.03**

#### **Integrating Knowledge Management in ESOC**

*Mrs. Roberta Mugellesi Dow, European Space Agency/ESOC, Darmstadt, Germany*  
*Mr. Siegmund Pallaschke, European Space Agency/ESOC, Darmstadt, Germany, Dr. Manfred Warhaut, European Space Agency/ESOC, Darmstadt, Germany*

### **IAC-06-D5.1.04**

#### **Knowledge Management Activity in JAXA**

*Mr. Shinichi Sobue, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan*  
*Mr. Hiroaki Tateshita, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan*

### **IAC-06-D5.1.05**

#### **Hardware/Software facilities for product assurance, control and management at Khrunichev State Research and Production Space Center**

*Mr. Yury Mirosh, Khrunichev State Research and Production Space Center, Moscow, Russia*  
*Mr. Lutsian S. Medushevsky, Khrunichev Space Center, Jubileiny, Moscow region, Russia*

### **IAC-06-D5.1.06**

#### **Precision Knowledge Retrieval for Engineering Problem Solving, Failure Mode and Effects Analysis (FMEA), and Root-Cause Analysis (RCA)**

*Mr. Douglas Roberts, Northrop-Grumman Corporation, Woodland Hills, CA, United States*

### **IAC-06-D5.1.07**

#### **Emerging Applications of Knowledge Management and Innovation in Space Activities**

*Dr. Gabriela Prelipcean, Stefan cel Mare University of Suceava, Suceava, Romania*  
*Dr. Mircea Boscoianu, Military Technical Academy of Bucharest, Bucharest, Romania*

### **IAC-06-D5.1.08**

#### **IAA Knowledge Management Working Group Update**

*Ms. Jeanne Holm, Jet Propulsion Laboratory / CalTech, Pasadena, CA, United States*

**E2. 36th Student Conference**

*Coordinators: Rachid Amekrane (Germany), Stephen Brock (United States), Bénédicte Escudier (France)*

**E2.2. Student Conference II**

*Chairmen: Rachid Amekrane (Germany), Fernando Stanicato (Brazil)*  
*Rapporteur: Christyne Legault (Canada)*

**IAC-06-E2.2.01**

**Mars Airborne Canyon Explorer for Mars surface exploration.**

*Mr. Jeffrey Apeldoorn, Technical University of Delft (TUDelft), Delft, The Netherlands*

**IAC-06-E2.2.02**

**Space exploration marketing and the development of a global brand equity**

*Mr. William Widjaja, Ritsumeikan Asia Pacific University (APU), Beppu, Japan*

**IAC-06-E2.2.03**

**Trajectories and attitudes of an asteroid sample return spacecraft "Hayabusa" during touchdowns on Itokawa**

*Ms. Saika Aida, University of Tokyo, Kanagawa, Japan*  
*Dr. Junichiro Kawaguchi, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan*

**IAC-06-E2.2.04**

**Preliminary design and testing of a 7 kN LOX/methane thruster**

*Mr. Maurits Mostert, Technical University of Delft (TUDelft), Delft, The Netherlands*  
*Mr. Steven Engelen, Technical University of Delft (TUDelft), Pijnacker, The Netherlands, Prof. Barry Zandbergen, Technical University of Delft (TUDelft), Delft, The Netherlands*

**IAC-06-E2.2.05**

**Dust and microbial mitigation methods for long duration lunar missions**

*Ms. Anna Grinberg, International Space University (ISU), Conestogo, Canada*

**IAC-06-E2.2.06**

**Investigating blood microcirculation by the method of computer capillaroscopy**

*Mrs. Anna Antonyuk, Moscow Aviation Institute (State Technical University), Moscow, Russia*

**E4. 40th Symposium on the History of Astronautics**

*Coordinators: Marsha Freeman (United States), George James (United States), Christophe Rothmund (France), Ake Ingemar Skoog (Germany)*

**E4.4. History of Spanish Contribution to Astronautics**

*Chairmen: José M. Dorado Gutierrez (Spain), Otfried G. Liepack (United States)*  
*Rapporteur: Roger D. Launius (United States), Yasunori Matogawa (Japan)*

**IAC-06-E4.4.01**

**The Beginning of CEDEA ("EL ARENOSILLO" Experimentation Center). Technical and Scientific Accomplishments**

*Dr. Alvaro Azcarraga, SENER Ingeniería y Sistemas, S.A., Tres Cantos (Madrid), Spain*  
*Dr. Luis V. Sanchez-Muniosguren, Arenosillo Range, Murcia, Spain*

**IAC-06-E4.4.02**

**The First Spanish Space Plan 1968 to 1974**

*Dr. José M. Dorado Gutierrez, EASL, Pozuelo de Alarcón-Madrid, Spain*

**IAC-06-E4.4.03**

**Three Decades of Space Activities at IDR/UPM**

*Dr. Angel Sanz-Andres, Instituto Universitario de Microgravedad "Ignacio Da Riva"; IDR/UPM, Madrid, Spain*  
*Dr. Jose Meseguer, IDR/UPM, Madrid, Spain*

**IAC-06-E4.4.04**

**Space Communication Stations in Spain and their Contributions to Solar System Exploration**

*Dr. Jose M Urech, INSA, Madrid, Spain*  
*Mr. Gregorio Rodriguez Pasero, Individual collaboration, Madrid, Spain*

**IAC-06-E4.4.05**

**Sounding Rockets Developments in Spain**

*Dr. Pedro Sanz-Aranguéz, Madrid Polytechnic University, Madrid, Spain*  
*Dr. Julian Simon, Instituto Nacional de Técnica Aeroespacial (INTA), Torrejón de Ardoz, Spain*

**IAC-06-E4.4.06**

**Then and Now: From INTASAT to Mini and Nanosatellites**

*Mr. Jose Torres, Instituto Nacional de Técnica Aeroespacial (INTA), Madrid, Spain*  
*Mr. Inocencio Tato, Madrid, Spain*

**IAC-06-E4.4.07**

**The History of the Ariane Launcher in Spain**

*Mr. Miguel Angel Llorca, EADS CASA Espacio, Madrid, Spain*

**IAC-06-E4.4.08**

**HISPASAT Satellites Programs- Background, Beginning, Experience and Benefits for Society and Spanish Space Industry**

*Dr. Pedro Pinto, Consultant, San Sebastian de los Reyes, Spain*

**E6. 49th Colloquium on Law of Outer Space (IISL)**

*Coordinators: Tanja Masson-Zwaan (The Netherlands)*

**E6.2. Legal Aspects of Disaster Management**

*Chairmen: Juan Faraminan Gilbert (Spain), Sergio Marchisio (Italy)*

**IAC-06-E6.2.01**

**Disaster management as a tool to bring space closer to people - legal aspects & the contribution of GMES**  
*Ms. Tanja Masson-Zwaan, IISL Secretary, The Hague, The Netherlands*

## IAC-06-E6.2.02

"SOS" - is anyone getting this message?

*Dr. Sylvia Ospina, S. Ospina & Associates - Consultants, Coral Gables, FL, United States*

## IAC-06-E6.2.03

Toward the better regime for space-based information for disaster management

*Ms. Atsuyo Ito, University of Paris XI, Paris, France*

## IAC-06-E6.2.04

International Cooperation and Coordination for Disaster Management by Use of Satellite Technology - New Development in Asia Pacific Region after Indian Ocean Tsunami

*Prof. Toshio Kosuge, International Institute of Space Law, Kashiwa, Chiba, Japan*

## IAC-06-E6.2.05

GMES and the Charter for Space and Major Disasters: another "Responsibility to Protect"?

*Dr. Olivier Ribbelink, T.M.C. Asser Institute, The Hague, The Netherlands*

## IAC-06-E6.2.06

Asia Satellite Centre - Its Case Study in Tsunami Disaster Relief

*Prof. Yasuaki Hashimoto, National Institute for Defense Studies, Tokyo, Japan*

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**October 03 2006, 15:30 - Room 14**

**E6. 49th Colloquium on Law of Outer Space (IISL)**

*Coordinators: Tanja Masson-Zwaan (The Netherlands)*

**E6.2.A. The Moon, Property Rights and Legal Issues**

*Chairmen: Juan Faraminan Gilbert (Spain), Sergio Marchisio (Italy)*

## IAC-06-E6.2.A.01

Updating of lunar treaty

*Dr. Milan Pospisil, Verific, Kralupy nad Vltavou, Czech Republic*

## IAC-06-E6.2.A.02

Towards a Legal Framework for Sustainable Development on the Moon: the Case of In-Situ Resource Utilization.

*Mrs. Cynthia Jimenez Monroy, International Space University (ISU), Strasbourg, France*

## IAC-06-E6.2.A.03

Fly Me to the Moon: Legal Considerations of Space Exploration Initiatives from the European and US Perspectives

*Dr. Larry Martinez, California State University, Long Beach, CA, United States*

*Dr. Ulrike M. Bohlmann, European Space Agency/Headquarters, Paris, France*

## IAC-06-E6.2.A.04

2006 Status of the Space Law Protocol

*Mr. Paul B. Larsen, Georgetown University Law Center, Washington, D.C., United States*

## IAC-06-E6.2.A.05

'Free Trade Zone Concepts' and Space Development

*Mr. Jack Pearce, O.S.I., Management, Inc, Washington, DC, United States*

## IAC-06-E6.2.A.06

Protection of Intellectual Property Rights in Outer Space

*Dr. Yun Zhao, City University of Hong Kong, Kowloon, Hong Kong, Hong Kong*

## IAC-06-E6.2.A.07

The property (ownership rights) in outer space: practical cases

*Mr. Jairo Andres Becerra Ortiz, Jaen University, Barcelona, Spain*

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**October 04 2006, 10:10 - Room 11**

**A1. Space Life Sciences Symposium**

*Coordinators: Gerda Horneck (Germany), Inessa Kozlovskaya (Russia)*

**A1.4. Cellular and Molecular Mechanisms Underlying Spaceflight Responses**

*Chairmen: Ludmila Buravkova (Russia), Jancy C. McPhee (United States)*

*Rapporteur: Richard Boyle (United States)*

## IAC-06-A1.4.01

Cultured stem cells are sensitive to gravity changes

*Dr. Ludmila Buravkova, Institute for Biomedical Problems, Moscow, Russia*

*Mr. Yuri Romanov, Institute for Biomedical Problems, Moscow, Russia, Ms. Nataly Konstantinova, Student, Moscow, Russia*

## IAC-06-A1.4.02

Splenic volume unloading may obscure right atrial signaling during simulated microgravity

*Ms. Heather Edgell, University of Waterloo, Waterloo, Canada*

*Dr. Susan Kaufman, University of Alberta, Edmonton, Canada*

## IAC-06-A1.4.03

Reduced function and disorganized cytoskeleton of cardiomyocytes in spaceflight

*Ms. Fen Yang, China Astronaut Research and Training Center, Beijing, China*

*Dr. Yinghui Li, China Astronaut Research and Training Center, Beijing, China*

## IAC-06-A1.4.04

Effects of 30d Simulated Weightlessness on Antioxidant Defense System in Rat Liver

*Dr. Wu Bin, Astronaut Center of China, Beijing, China*

*Mr. Ping Wu, Astronaut Center of China, Beijing, China*

## **IAC-06-A1.4.05**

### **ICE FIRST: biological response during a 10 day round trip to the International Space Station**

*Mr. Florian Selch, University Vienna, Vienna, Austria*  
Dr. Nathaniel Szewczyk, University of Pittsburgh, Pittsburgh, PA, United States, Dr. Catharine A. Conley, National Aeronautics and Space Administration (NASA)/Ames Research Center, Moffett Field, United States

## **IAC-06-A1.4.06**

### **Gene-expression profiling during embryogenesis of Zebrafish under microgravity conditions**

*Mr. Bernd Willems, University of Cologne, Cologne, Germany*  
Dr. Martin Gajewski, University of Cologne, Cologne, Germany

## **IAC-06-A1.4.07**

### **Cellular and molecular basis for nutritional countermeasures in the microgravity environment**

*Dr. Alamelu Sundaresan, Texas Southern University, Houston, United States*  
Dr. Anil Kulkarni, The University of Texas Health Science center, Medical School and Graduate School of Biomedical Sciences, Houston, United States, Dr. Neal R. Pellis, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States, Dr. James Dumond, Texas Southern University, Houston, United States, Dr. Charanjit Kaur, Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Rep. Of Singapore

## **IAC-06-A1.4.08**

### **Bone Proteomics experiment (BOP): the first proteomic analysis of mammalian cells cultured in weightlessness conditions**

*Mr. Adalberto Costessi, Radboud University Nijmegen, Nijmegen, The Netherlands*  
Mr. Carlo Vascotto, University of Udine, Udine, Italy, Dr. Alex Pines, University of Udine, Udine, Italy, Mr. Rogier Schonenborg, European Space Agency/ESTEC, Noordwijk, The Netherlands, Dr. Milena Romanello, University of Udine, Udine, Italy, Dr. Peter Schiller, European Space Agency/ESTEC, Noordwijk, The Netherlands, Prof. Luigi Moro, University of Trieste, Trieste, Italy, Prof. Gianluca Tell, University of Udine, Udine, Italy

## **IAC-06-A1.4.09**

### **Low Magnitude and High Frequency Vibration Prevents Simulated Microgravity-Induced Decrease in a Bone Formation Response in Osteoblasts**

*Ms. Mamta Patel, Georgia Institute of Technology, Atlanta, United States*  
Mr. Roger Talish, Juvent Inc., Somerset, United States, Dr. Clinton Rubin, State University of New York, Stony Brook, United States, Dr. Hanjoong Jo, Emory University, Atlanta, United States

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## **October 04 2006, 10:10 - Room 6**

### **A3. Space Exploration Symposium**

*Coordinators: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)*

#### **A3.4. New Mission Concepts for Space Exploration**

*Chairmen: Junichiro Kawaguchi (Japan), Denis J.P. Moura (France)*  
*Rapporteur: Douglas A. O'Handley (United States), William H. Siegfried (United States)*

## **IAC-06-A3.4.01**

### **Success Stories of New Concepts of Miniaturized Imaging Systems for Space Exploration**

*Dr. Jean-Luc Josset, Space Exploration Institute (SPACE-X), Neuchatel, Switzerland*  
Dr. Patrick Plancke, European Space Agency/ESTEC, Noordwijk, The Netherlands, Dr. Stephane Beauvivre, Micro-Cameras and Space Exploration, Neuchatel, Switzerland

## **IAC-06-A3.4.02**

### **Ad-Hoc Wireless Sensor networks for exploration of solar-system bodies**

*Dr. Philippe Dubois, EPFL, Neuchâtel, Switzerland*  
Dr. Carlo Menon, European Space Agency/ESTEC, Noordwijk, The Netherlands, Prof. Herbert Shea, Ecole Polytechnique Fédérale de Lausanne, Neuchâtel, Switzerland

## **IAC-06-A3.4.03**

### **A new constellation configuration scheme for communicating architecture in cislunar space**

*Prof. Xu Shijie, Beijing University of Aeronautics and Astronautics, Beijing, China*  
Mr. Xu Ming, Beijing University of Aeronautics and Astronautics, Beijing, China

## **IAC-06-A3.4.04**

### **LunEos - the new beginning: Developing countries microsatellite networks for lunar exploration**

*Ms. Bijal Thakore, International Space University (ISU), Strasbourg, France*

## **IAC-06-A3.4.05**

### **Concepts for Aerostatic Planetary Exploration**

*Dr. Jesus Gonzalo, Aeronautical School of University of León, León, Spain*  
Mr. Jose Antonio Rodriguez Manfredi, Centro de Astrobiología (INTA), Torrejon de Ardoz, Madrid, Spain, Dr. Javier Gomez-Elvira, Centro de Astrobiología (INTA), Torrejon de Ardoz, Madrid, Spain, Mr. Isaac Domínguez Santos, INSA, Ingeniería y Servicios Aeroespaciales, S.A., Madrid, Spain

## **IAC-06-A3.4.06**

### **A study on tethered lander for soft landing on a class of planets with atmosphere**

*Mr. Zhu Jianfeng, Beijing University of Aeronautics and Astronautics, Beijing, China*  
Prof. Xu Shijie, Beijing University of Aeronautics and Astronautics, Beijing, China

## **IAC-06-A3.4.07**

### **The european solar sail deployment demonstration mission**

*Dr. Manfred Leipold, Kayser-Threde GmbH, Munich, Germany*  
Mr. C. Widani, Kayser-Threde GmbH, Munich, Germany, Mr. Peter Groepper, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Christoph Sickinger, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Brunswick, Germany, Dr. Franz Lura, German Aerospace Center (DLR), Berlin, Germany

## **IAC-06-A3.4.08**

### **Investigating modified gravitation with ESA's Fundamental Physics Explorer**

*Dr. Andreas Rathke, EADS Astrium GmbH, Friedrichshafen, Germany*  
Dr. Dario Izzo, European Space Agency/ESTEC, Noordwijk, The Netherlands

**A5. Symposium on Integrated Approaches to the Exploration of the Moon and Mars**

*Coordinators: George Morgenthaler (United States), Christian Sallaberger (Canada)*

**A5.2. Human and Robotic Partnerships to Realize Space Exploration Goals**

*Chairmen: Michael Reichert (Germany), Christian Sallaberger (Canada)*

**IAC-06-A5.2.01****The European Space Exploration Programme "Aurora": status and outlook**

*Mr. Piero Messina, European Space Agency/Headquarters, Paris, France*

**IAC-06-A5.2.02****Mars Sample Return: The Critical Next Step**

*Mr. Benton C. Clark, Lockheed Martin Space Systems, Denver, CO, United States*

**IAC-06-A5.2.03****Canadian Space Robotic Systems for Space Exploration**

*Dr. Nadeem Ghafoor, MacDonald Dettwiler Space and Advanced Robotics Ltd., Brampton, ONT, Canada*  
*Prof. Christian Sallaberger, MDA, Brampton, ONT, Canada*

**IAC-06-A5.2.04****JAXA's strategy of utilizing space robot technologies for future space missions**

*Dr. Mitsushige Oda, Japan Aerospace Exploration Agency (JAXA), Ibaraki-ken, Japan*

**IAC-06-A5.2.05****Vehicles for robotic and manned planetary exploration**

*Prof. Giancarlo Genta, Politecnico di Torino, Turin, Italy*

**IAC-06-A5.2.06****Can We Power Future Mars Missions?**

*Dr. Tibor S. Balint, Jet Propulsion Laboratory / CalTech, Pasadena, CA, United States*

*Mr. Erick J. Sturm II, Jet Propulsion Laboratory / CalTech, Pasadena, CA, United States, Mr. Ryan C. Woolley, Jet Propulsion Laboratory / CalTech, Pasadena, CA, United States, Dr. James F. Jordan, Jet Propulsion Laboratory / CalTech, Pasadena, CA, United States*

**IAC-06-A5.2.07****Electrodynamic dust shield for surface exploration activities on the Moon and Mars**

*Dr. Carlos Calle, National Aeronautics and Space Administration (NASA)/Kennedy Space Center, FL, United States*

*Dr. Christopher Immer, ASRC Aerospace, Kennedy Space Center, FL, United States, Ms. Michelle Michalenko, National Aeronautics and Space Administration (NASA)/Kennedy Space Center, FL, United States, Mr. Jeffrey Starnes, ASRC Aerospace, Kennedy Space Center, FL, United States, Dr. Charles Buhler, ASRC Aerospace, Kennedy Space Center, FL, United States, Dr. James Mantovani, National Aeronautics and Space Administration (NASA)/Kennedy Space Center, FL, United States*

**IAC-06-A5.2.08****Challenges and options for an affordable small Lunar Sample Return Mission**

*Dr. Adam M. Baker, Surrey Satellite Technology Ltd., Guildford, United Kingdom*

*Dr. Alex Ellery, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom, Mr. Andy Phipps, Surrey Satellite Technology Ltd., Guildford, United Kingdom, Dr. Yang Gao, University of Surrey, Guildford, United Kingdom, Prof. Sir. Martin Sweeting, Surrey Space Centre, Guildford, United Kingdom*

**IAC-06-A5.2.09****Surface Support Systems for Co-operative and Integrated Human/Robotic Lunar & Mars Exploration**

*Mr. Robert Mueller, National Aeronautics and Space Administration (NASA)/Kennedy Space Center, Florida, United States*

*Ms. Elisa Artusa, National Aeronautics and Space Administration (NASA)/Kennedy Space Center, Florida, United States*

**B1. Earth Observation Symposium**

*Coordinators: W. John Hussey (United States), Pierre Ranzoli (Germany)*

**B1.4. Earth Observation Data Management Systems**

*Chairmen: Bruce K. Quirk (United States), Carlo Olivieri (Italy)*

*Rapporteur: Jesus Gonzalo (Spain), Shaida Johnston (United States)*

**IAC-06-B1.4.01****Archaeological remote sensing application pre-post war situation of Babylon archaeological site - Iraq**

*Dr. Munzer Jahjah, Centro di Ricerca Progetto San Marco (C.R.P.S.M.), Rome, Italy*

*Prof. Carlo Olivieri, University of Rome "La Sapienza", Rome, Italy, Prof. Antonio Invernizzi, University of Turin, Turin, Italy, Dr. Roberto Parapetti, Centro Ricerche Archeologiche e Scavi di Torino - CRAST, Rome, Italy*

**IAC-06-B1.4.02****Building Operational Systems to Support Fire Services**

*Mr. Gonzalo Martin-de-Mercado, INSA, Madrid, Spain*

*Mr. Jose Maria Cruz Gomez, INSA, Madrid, Spain, Mr. Bruno Greco, European Space Agency/ESRIN, Frascati, Italy*

**IAC-06-B1.4.03****The new generation of remote sensing services for operational forest fire-fighting within GMES**

*Mr. Fernando Valcarce, INSA, Madrid, Spain*

*Dr. Jesus Gonzalo, Aeronautical School of University of León, León, Spain, Dr. Joaquín Ramirez, Tecnosylva, Leon, Spain, Mr. Abel Calle, University of Valladolid, Valladolid, Spain, Dr. Emilio Chuvieco, University of Alcalá de Henares, Alcalá de Henares, Spain*

**IAC-06-B1.4.04****Feasibility Study of Tsunami Detection using GNSS Reflections**

*Dr. François Soulat, Starlab Barcelona SL, Barcelona, Spain*

*Mr. Marco Caparrini, Starlab Barcelona SL, Barcelona, Spain, Dr. Esteve Farrés, Starlab Barcelona SL, Barcelona, Spain, Dr. Giulio Ruffini, Starlab Barcelona SL, Barcelona, Spain, Mr. Christopher Buck, European Space Agency/ESTEC, Noordwijk, The Netherlands, Dr. Manuel Martin-Neira, European Space Agency/ESTEC, Noordwijk, The Netherlands*

### **IAC-06-B1.4.05**

#### **Surface Change Detection based on Multi Sensor data Integration**

*Mr. Luca Martino, University of Rome "La Sapienza", Rome, Italy*

*Dr. Emanuele Loret, European Space Agency/ESRIN, Frascati (Rm), Italy, Dr. Munzer Jahjah, Centro di Ricerca Progetto San Marco (C.R.P.S.M.), Rome, Italy*

### **IAC-06-B1.4.06**

#### **Comparison of Simplified Algorithms for Atmospheric Corrections of MERIS Data over Land**

*Dr. Juergen Telaar, University of Stuttgart, Stuttgart, Germany*

*Dr. Maria von Schoenermark, University of Stuttgart, Stuttgart, Germany*

### **IAC-06-B1.4.07**

#### **Ingesting, Archiving, Processing, and Distributing EOS Products to the Land Community**

*Mrs. Jennifer Willems, U.S. Geological Survey, Sioux Falls, SD, United States*

### **IAC-06-B1.4.08**

#### **Information System for Multipurpose Aerospace Research: Structure and Functional Features**

*Dr. R. Kancheva, Solar-Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Sofia, Bulgaria*

### **IAC-06-B1.4.09**

#### **Early warning of Coastal Earthquakes using Land, Ocean and Atmospheric Parameters**

*Prof. Ramesh Singh, Indian Institute of Technology, Kanpur, India*

*Mr. Guido Cervone, Center for Earth Observing System, Fairfax, VA, United States, Mr. Anup Prasad, Indian Institute of Technology, Kanpur, India, Mr. Menas Kafatos, Center for Earth Observing System, Fairfax, VA, United States*

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## **October 04 2006, 10:10 - Room 13**

### **B4. Space Stations Symposium**

*Coordinators: Mag Iskander (Canada), Carlo Mirra (The Netherlands)*

#### **B4.3. International Utilization of Space Stations**

*Chairmen: John-David F. Bartoe (United States), Tai Nakamura (Japan)*

*Rapporteur: Thomas J. Sutliff (United States)*

### **IAC-06-B4.3.01**

#### **ESA's Utilisation Accomplishments and Planning for ISS**

*Dr. Martin Zell, European Space Agency/ESTEC, Noordwijk, The Netherlands*

*Mr. Marc Heppener, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Aldo Petrivelli, European Space Agency/ESTEC, Noordwijk, The Netherlands*

### **IAC-06-B4.3.02**

#### **Main results of medical support to the crews of the International Space Station**

*Dr. Anatoly I. Grigoriev, Institute for Biomedical Problems, Moscow, Russia*

*Mr. Valery V. Bogomolov, Institute for Biomedical Problems, Moscow, Russia, Dr. Igor Goncharov, Institute for Biomedical Problems, Moscow, Russia, Dr. Irina Alferova, Institute for Biomedical Problems, Moscow, Russia, Dr. Vladimir P. Katuntsev, Institute for Biomedical Problems, Moscow, Russia, Dr. Yuri Osipov, Institute for Biomedical Problems, Moscow, Russia*

### **IAC-06-B4.3.03**

#### **A Year in the Life of International Space Station**

*Mr. John Uri, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, United States*

### **IAC-06-B4.3.04**

#### **Canadian Utilization of the International Space Station: Past, Present and Future**

*Dr. Nicole Buckley, Canadian Space Agency, St. Hubert, QC, Canada*

*Dr. Perry Johnson-Green, Canadian Space Agency, St. Hubert, QC, Canada*

### **IAC-06-B4.3.05**

#### **Status and problems of space stations utilization**

*Dr. Igor Sorokin, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Moscow Region, Russia*

*Mr. Alexander Markov, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Moscow Region, Russia*

### **IAC-06-B4.3.06**

#### **Complex plasma research on ISS: pke-nefedov, pk-3 plus, pk-4, and impact laboratory**

*Mr. Roland Seurig, Kayser-Threde GmbH, Munich, Germany*

*Prof. Gregor Morfill, Max-Planck-Institut for Extraterrestrial Physic, Garching, Germany, Prof. Vladimir Fortov, Institute for High Energy Densities, Russian Academy of Sciences, Moscow, Russia, Dr. Peter Hofmann, Kayser-Threde GmbH, Munich, Germany, Mr. Philipp Reissaus, Kayser-Threde GmbH, Munich, Germany, Dr. Vladimir Molotkov, Institute for High Energy Densities, Russian Academy of Sciences, Moscow, Russia, Mr. Andrey Lipaev, Institute for High Energy Densities, Russian Academy of Sciences, Moscow, Russia, Prof. Oleg Petrov, Institute for High Energy Densities, Russian Academy of Sciences, Moscow, Russia, Dr. Alexandre Usachev, Institute for High Energy Densities, Russian Academy of Sciences, Moscow, Russia, Mr. Hermann Rothermel, Max-Planck Institut, Garching, Germany, Dr. Hubertus Thomas, Max-Planck-Institut for Extraterrestrial Physic, Garching, Germany, Dr. Markus Thoma, Max-Planck Institut, Garching, Germany, Mr. Herwig Hoefner, Max-Planck Institut, Garching, Germany*

### **IAC-06-B4.3.07**

#### **Human reserve evaluation problems during pre- and post space flight periods**

*Dr. Victor M. Baranov, Institute for Biomedical Problems, Moscow, Russia*

*M.D. Andrew Pashchenko, Institute for Biomedical Problems, Moscow, Russia, Dr. Michail Baranov, Institute for Biomedical Problems, Moscow, Russia, Dr. Roman Baevsky, Institute for Biomedical Problems, Moscow, Russia*

## IAC-06-B4.3.08

### Japanese space materials exposure experiment utilizing International Space Station

Mr. Yugo Kimoto, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan

Mr. Yamagata Ichiro, Japan Aerospace Exploration Agency (IAT/JAXA), Tsukuba, Japan, Dr. Eiji Miyazaki, Japan Aerospace Exploration Agency (JAXA), Tsukuba-shi, Japan, Mr. Junichiro Ishizawa, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Ibaraki, Japan, Ms. Chie Saito, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan, Mr. Kato Mitsuyasu, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan, Mr. Mineo Suzuki, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan

## IAC-06-B4.3.09

### International Space Station: study of near-surface environment

Prof. Valery Korepanov, Lviv Centre of Institute of Space Research, Lviv, Ukraine

Dr. Stanislav Klimov, Moscow, Russia, Mr. Serhiy Belyayev, Lviv, Ukraine, Dr. Csaba Ferencz, Budapest, Hungary, Dr. Katya Georgieva, Sofia, Bulgaria, Prof. Paul Gough, University of Sussex, Brighton, United Kingdom, Dr. Jozef Juchniewicz, Warsaw, Poland, Dr. Boyan Kirov, Sofia, Bulgaria, Dr. Janos Lichtenberger, Budapest, Hungary, Dr. Janos Nagy, Budapest, Hungary, Dr. Hanna Rothkaehl, Space Research Center PAS, Warsaw, Poland, Dr. Georgy Stanev, Sussex, Bulgaria, Dr. Kristof Stasiewicz, Uppsala, Sweden, Dr. Sandor Szalai, SGF Ltd, Budapest, Hungary

# 57

October 04 2006, 10:10 - Room 4

### B5. Small Satellites Missions Symposium

Coordinators: Rhoda Shaller Hornstein (United States), Rainer Sandau (Germany)

#### B5.3. Small Satellite Operations

Chairmen: Peter M. Allan (United Kingdom), Rhoda Shaller Hornstein (United States)

## IAC-06-B5.3.01

### Small satellites for real operational missions in Earth Observation

Mr. Alex da Silva Curiel, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom

Mr. Luis Gomes, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom, Prof. Sir. Martin Sweeting, Surrey Space Centre, Guildford, United Kingdom

## IAC-06-B5.3.02

### Tokyo Tech Second Nano-Satellite Cute-1.7 + APD and its Flight Operation Results

Mr. Kuniyuki Omagari, Tokyo Institute of Technology, Tokyo, Japan

Mr. Kazuya Konoue, Tokyo Institute of Technology, Meguro-ku, Tokyo, Japan, Mr. Naoki Miyashita, Tokyo Institute of Technology, Tokyo, Japan, Mr. Masafumi Iai, Tokyo Institute of Technology, Tokyo, Japan, Mr. Hideyuki Yabe, Tokyo Institute of Technology, Tokyo, Japan, Mr. Katsutoshi Imai, Tokyo Institute of Technology, Meguro-ku, Tokyo, Japan, Mr. Kei Miyamoto, Tokyo Institute of Technology, Tokyo, Japan, Mr. Shinji Masumoto, Tokyo Institute of Technology, Tokyo, Japan, Mr. Thomas Iljic, Tokyo Institute of Technology, Tokyo, Japan, Mr. Ken Fujiwara, Tokyo Institute of Technology, Tokyo, Japan, Mr. Takeshi Usuda, Tokyo Institute of Technology, Tokyo, Japan, Mrs. Yasumi Konda, Tokyo Institute of Technology, Tokyo, Japan, Ms. Saori Sugita, Tokyo Institute of Technology, Tokyo, Japan, Mr. Tomio Yamanaka, Tokyo Institute of Technology, Tokyo, Japan, Prof. Saburo Matunaga, Tokyo Institute of Technology, Tokyo, Japan

## IAC-06-B5.3.03

### Responsive tactical space using micro-satellites and aerial launching: the perspective of a small nation

Mr. Tal Inbar, Russian Academy of Sciences - IMASH, Kadima, Israel

## IAC-06-B5.3.04

### Two-Year State-of-Health Trending of FORMOSAT-2

Dr. Jeng-Shing Chern, National Space Organization, Hsinchu, Taiwan, China

Dr. An-Ming Wu, National Space Organization, Hsin-chu, Taiwan, China, Mr. Shin-Fa Lin, National Space Organization, Hsinchu, Taiwan, China

## IAC-06-B5.3.05

### Queueing theory application in imaging service analysis for small Earth observation satellites

Ms. Wen Chen, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom

Dr. Stephen Mackin, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom, Dr. Philip L. Palmer, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom, Mr. Gary Crowley, DMC International Imaging Limited, Guildford, Surrey, United Kingdom

## IAC-06-B5.3.06

### Risk Management of Student-Run Small Satellite Programs

Ms. Elizabeth Deems, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States

## IAC-06-B5.3.07

### CubeSat UWE-1 – technology tests and in orbit results

Mr. Radu Barza, Wuerzburg University, Wuerzburg, Germany

Mrs. Yohko Aoki, University of Southampton, Southampton, United Kingdom, Prof. Dr. Klaus Schilling, Wuerzburg University, Wuerzburg, Germany

## IAC-06-B5.3.08

### Smart-1 Operations Experience and Lessons Learnt

Mr. Octavio Camino, European Space Agency/ESOC, Darmstadt, Germany

Mrs. Maria Alonso, European Space Agency/ESOC, Darmstadt, Germany, Eng. Daniel Gestal, LSE Space Engineering and Operations AG, Darmstadt, Germany, Mr. Jurriaan De Bruin, European Space Agency/ESOC, Darmstadt, Germany, Mr. Peter Rathsman, Swedish Space Corporation, Solna, Sweden, Mr. Joakim Kugelberg, Swedish Space Corporation, Solna, Sweden, Mr. Per Bodin, Swedish Space Corporation, Solna, Sweden, Mr. Sascha Ricken, LSE Space Engineering and Operations AG, Darmstadt, Germany, Mr. Rick Blake, SciSys Ltd, Darmstadt, Germany, Mr. Pablo Pardo, Vega GmbH, Darmstadt, Germany, Mr. Luca Stagnaro, European Space Agency/ESTEC, Noordwijk, The Netherlands

# 58

October 04 2006, 10:10 - Room 10

### C1. Astrodynamics Symposium

Coordinators: Alberto Foni (Italy), Arun Misra (Canada)

#### C1.4. Optimization

Chairmen: David C. Folta (United States), Moshe Guelman (Israel)

Rapporteur: Jean-Paul Aguttes (France)



**IAC-06-C1.4.01**

**Optimization and guidance of very low-thrust transfers to geostationary orbit**

*Mr. Jesus Gil-Fernandez, GMV S.A., PTM Tres Cantos (Madrid), Spain*

*Mr. Lorenzo Tarabini, GMV S.A., Tres cantos, Spain, Mrs. Mariella Graziano, GMV S.A., Tres Cantos (Madrid), Spain, Mr. Miguel Angelo Molina, GMV S.A., Tres Cantos, Madrid, Spain*

**IAC-06-C1.4.02**

**A Comparison of the Differential Evolution Method with Genetic Algorithms for Orbit Optimisation**

*Mr. Robin Biesbroek, European Space Agency/ESTEC, Noordwijk, The Netherlands*

**IAC-06-C1.4.03**

**Methodical aspects of optimization of complex interplanetary trajectories (global trajectory optimization)**

*Prof. Mikhail S. Konstantinov, Moscow Aviation Institute, Moscow, Russia*

*Dr. Vyacheslav Petukhov, Khronichev State Research & Production Space Center, Moscow, Russia*

**IAC-06-C1.4.04**

**The Design and Development of COPERNICUS: A Comprehensive Trajectory Design and Optimization System**

*Dr. Cesar Ocampo, The University of Texas at Austin, Austin, TX, United States*

*Dr. Juan Senent, National Aeronautics and Space Administration (NASA), Austin, United States*

**IAC-06-C1.4.05**

**On the optimality of a shaped-based approach based on pseudo-equinoctial elements**

*Dr. Massimiliano Vasile, University of Glasgow, Glasgow, United Kingdom*

*Mr. Paolo de Pascale, European Space Agency/ESOC, Darmstadt, Germany, Dr. Stefano Casotto, CISAS - "G. Colombo" Center of Studies and Activities, Padova, Italy*

**IAC-06-C1.4.06**

**Reentry trajectory optimization using direct collocation method and nonlinear programming**

*Dr. Lianghui Tu, Northwestern Polytechnical University, Xi'an, China*

*Prof. Jianping Yuan, Northwestern Polytechnical University, Xi'an, China*

**IAC-06-C1.4.07**

**Fast Optimization of Constrained Reentry Trajectory**

*Dr. Mingguang Wang, Northwestern Polytechnical University, Xian, China*

**IAC-06-C1.4.08**

**Optimal Launch Opportunity Searching for Small Celestial Body**

*Dr. Ren Yuan, Harbin Institute of Technology, Harbin, China*

*Mr. Pingyuan Cui, Harbin Institute of Technology, Harbin, China*

**IAC-06-C1.4.09**

**Low-Thrust Mission Design to Impact Asteroid 2001-TW229**

*Mr. Juan L. Cano, DEIMOS Space S.L., Tres Cantos, Spain*  
*Mr. Miguel Bello Mora, DEIMOS Space S.L., Madrid, Spain*

**C2. Materials and Structures Symposium**

*Coordinators: Constantinios P. Stavrinidis (The Netherlands), Pavel M. Trivailo (Australia)*

**C2.4. New Materials and Structural Concepts**

*Chairmen: Detlef Alwes (Germany), Marc Lacoste (France)*  
*Rapporteur: Yuriy Moshmenko (Ukraine)*

**IAC-06-C2.4.01**

**CEV Crew Module Structural Optimization**

*Mr. Glenn A. Hrinda, National Aeronautics and Space Administration (NASA), Hampton, Virginia, United States*

**IAC-06-C2.4.02**

**Materials and Structures for the European Future Launcher Preparatory Programme**

*Mr. Daniele Francesconi, NGL Prime SpA, Turin, Italy*  
*Mr. Angelo Denaro, Alenia Spazio, Turin, Italy, Mr. Guy Ramusat, European Space Agency (ESA), Paris, France*

**IAC-06-C2.4.03**

**Cmc thermal protection system for future reusable launch vehicles: generic shingle technological maturation and tests**

*Mr. Thierry Pichon, Snecma Propulsion Solide, Le Haillan, France*

*Mr. Philippe Soyris, Snecma Propulsion Solide, Le Haillan, France, Ms. Armelle Foucault, Snecma Propulsion Solide, Le Haillan, France, Mr. Jean-Marie Parenteau, Snecma Propulsion Solide, Le Haillan, France, Mr. Sylvain Guedron, Centre National d'Etudes Spatiales (CNES), Evry, France, Mr. Yves Prel, Centre National d'Etudes Spatiales (CNES), Evry, France*

**IAC-06-C2.4.04**

**Surface Properties and Oxidation Behaviour of Ultra High Temperature Ceramics for Sharp Leading Edges**

*Dr. Luigi Scatteia, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy*

*Dr. Marianne Balat Pichelin, Laboratoire Procédés, Matériaux et Energie Solaire, PROMES-CNRS, Font-Romeu Odeillo, France, Mr. Raffaele Savino, University of Naples "Federico II", Naples, Italy, Dr. Antonio Del Vecchio, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy, Ms. Stefania Cantoni, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy*

**IAC-06-C2.4.05**

**Sharp Hot Structures Project Current Status**

*Dr. Luigi Scatteia, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy*

*Dr. Marco Gigliotti, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy, Dr. Antonio Del Vecchio, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy, Mr. Marco Di Clemente, C.I.R.A. Italian Aerospace Research Centre, Capua, Italy, Dr. Giuseppe Carmine Ruffolo, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy, Mr. Roberto Gardi, Second University of Naples, Aversa, Italy, Dr. Giuliano Marino, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy*

**IAC-06-C2.4.06**

**Exploratory of a fast fabrication method of c/c/sic composite with chemical vapor reaction**

*Mrs. Li Ruizhen, Xi'an Aerospace Composite Materials Institute, Xi'an, China*

## IAC-06-C2.4.07

### Electrospun structures with controlled specific surface areas and pores

*Mrs. Vasana Manceerata, Student, Gainesville, Florida, United States*

*Dr. Wolfgang Sigmund, University of Florida, Gainesville, United States*

## IAC-06-C2.4.08

### Preparation of SiC hybrid Phenolic Resin Composites

*Mrs. Qi Shuhua, Northwestern Polytechnical University, Xi'an, China*

*Mr. Li Chunhua, Northwestern Polytechnical University, Xi'an, China, Mrs. Huang Ying, Northwestern Polytechnical University, Xi'an, China*

## IAC-06-C2.4.09

### Study of insulated and equipped cryogenic tanks for RLV

*Dr. Yuriy Sumin, TSNIMASH, Korolev, Russia*

*Mr. Yves Prel, Centre National d'Etudes Spatiales (CNES), Evry, France, Mr. Yuriy Gusev, TSNIMASH, Korolev, Russia, Mr. Nikolai Panichkin, TSNIMASH, Korolev, Moscow Region, Russia, Mr. Yael Marion, CRYOSPACE, Les Mureaux, France*

## IAC-06-C2.4.10

### Aluminium Foam Sandwich Structures for Space Applications

*Dr. Dirk Schwingel, alm GmbH, Saarbrücken, Germany*

*Dr. Hans-Wolfgang Seeliger, alm GmbH, Saarbrücken, Germany, Mr. Claude Vecchionacci, Centre National d'Etudes Spatiales (CNES), Evry, France, Mr. Detlef Alwes, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Bonn, Germany, Mr. Jürgen Dittrich, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Bonn, Germany*

## IAC-06-C2.4.11

### Influence of beta-resin content and sintering conditions on the performance of high-density and isotropic carbon bulks derived from super-fine mesophase powder

*Dr. Tong-Qi Li, Aerospace Research Institute of Materials & Process. Tech., Beijing, China*

*Dr. Zi-Jun Hu, Beijing, China, Dr. Jun-Shan Wang, Beijing, China, Dr. Yu-Ming Guo, Beijing, China, Dr. Cheng-Yang Wang, Tianjin, China*

# 60

**October 04 2006, 10:10 - Room 8**

## C3. Space Power Symposium

*Coordinators: John C. Mankins (United States)*

### C3.2. Space Power Technologies and Components

*Chairmen: Gérard Gave (France), Joe Howell (United States)*

*Rapporteur: Richard Dickinson (United States), Wolfgang Seboldt (Germany)*

## IAC-06-C3.2.01

### Applicable Technologies for Space Demonstration of Solar Power Satellite

*Dr. Koji Tanaka, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami-hara, Japan*

*Prof. Susumu Sasaki, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami-hara, Japan*

## IAC-06-C3.2.02

### Development of high voltage power system for SSPS

*Prof. Kazuhiro Toyoda, Kyushu Institute of Technology, Kitakyushu, Japan*

*Dr. Minoru Iwata, Kyushu Institute of Technology, Kitakyushu, Japan, Prof. Mengu Cho, Kyushu Institute of Technology, Kitakyushu, Japan*

## IAC-06-C3.2.03

### Analysis of an Energy Storage System Based on Regenerative Fuel Cells for Spacecraft

*Mr. Daniel Rosenberg, Israel Aircraft Industries Ltd., Lod, Israel*

*Mr. Dani Pinto, Israel Aircraft Industries Ltd., Lod, Israel, Mr. Israel Schnitzer, Israel Aircraft Industries Ltd., Lod, Israel*

## IAC-06-C3.2.04

### Design and Implementation of the Model Simulation of the Second Power Supply in Satellite

*Mr. weijun lei, Northwestern Polytechnical University, Beijing, China*

*Mrs. Jiaojian Shi, China Academy of Space Technology (CAST), Beijing, China*

## IAC-06-C3.2.05

### An Aperture Array Antenna and a Dipole Array Antenna for Microwave Power Transmission

*Prof. Tadashi Takano, Japan Aerospace Exploration Agency (JAXA), Sagami-hara, Japan*

*Mr. T. Isono, Tokyo University of Science, Tokyo, Japan, Mr. T. Imura, University of Tokyo, Tokyo, Japan, Mr. D. Radenam, University of Tokyo, Tokyo, Japan*

## IAC-06-C3.2.06

### The Myths and Realities of Thermophotovoltaic Energy Conversion

*Mr. Edward Brown, Lockheed Martin, Niskayuna, New York, United States*

## IAC-06-C3.2.07

### A 100 Watt Radioisotope Energy System Using Current Generation Thermophotovoltaic Technology that Produces 13 Watts/Kg

*Mr. Edward Brown, Lockheed Martin, Niskayuna, New York, United States*

## IAC-06-C3.2.08

### Wireless Power Transmission using a Satellite Network

*Mr. Israel Griol Barres, Universidad Politecnica de Valencia (Spain), Valencia, Spain*

## IAC-06-C3.2.09

### Efficient Chaotic Based Satellite Power Supply Subsystem

*Prof. Elbert E.N. Macau, Instituto Nacional de Pesquisas Espaciais (INPE), Sao Jose dos Campos, Brazil*

*Mr. Luiz Felipe Turci, Instituto Tecnológico de Aeronáutica - ITA, Jacaré, Brazil, Mr. Takashi Yoneyama, Instituto Tecnológico de Aeronáutica - ITA, São José dos Campos - SP, Brazil*

# 61

**October 04 2006, 10:10 - Room 12**

## D1. Space Systems Symposium

*Coordinators: Hans F.A. Roefs (The Netherlands), Lawrence Dale Thomas (United States)*

### D1.2. Enabling Technologies for Space Systems

*Chairmen: Marco Guglielmi (The Netherlands), Qi Zheng Hu (China)*

*Rapporteur: Charles D. Edwards (United States)*

## IAC-06-D1.2.01

### Autonomous Star Tracker Performance

*Mr. James Kaidy, The John Hopkins University Applied Physics Laboratory, Laurel, Maryland, United States*

*Mr. Gabe Rogers, The John Hopkins University Applied Physics Laboratory, Laurel, Maryland, United States, Dr. Thomas Strikwerda, The John Hopkins University Applied Physics Laboratory, Laurel, Maryland, United States, Mr. Roberto Casini, Galileo Avionica S.p.A., Campi Bisenzio (FI), Italy, Mr. Rossano Bettarini, Galileo Avionica S.p.A., Campi Bisenzio (FI) IT, Italy, Mr. Andrea Landi, Galileo Avionica S.p.A., Campi Bisenzio (FI) IT, Italy, Dr. David Haley, The John Hopkins University Applied Physics Laboratory, Laurel, MD, United States*

## IAC-06-D1.2.02

### PRISMA Swedish In-orbit Testbed for Rendezvous and Formation Flying

*Mr. Björn Jakobsson, Swedish Space Corporation, Solna, Sweden*

*Mr. Staffan Persson, Swedish Space Corporation, Solna, Sweden*

## IAC-06-D1.2.03

### A High Performance Image Processing Unit for On-orbit Servicing

*Dr. Shinichi Kimura, National Institute of Information and Communication Technology, Tokyo, Japan*

## IAC-06-D1.2.04

### A microrobotic probe for monitoring ISS Thermal Control System lines

*Mr. Paolo Corradi, Scuola Superiore Sant' Anna (SSSUP), Pontedera (Pisa), Italy*

*Mr. Stefano Ferretti, Alcatel Alenia Space, Turin, Italy, Mr. Giuseppe Valenzano, Alcatel Alenia Space, Turin, Italy, Mr. Walter Cugno, Alcatel Alenia Space, Turin, Italy*

## IAC-06-D1.2.05

### A New Cooperative Multi-Agent Heater Controller with its Applications

*Dr. Junichiro Kawaguchi, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan*

*Dr. Osamu Mori, Japan Aerospace Exploration Agency (JAXA), Sagami-hara, Kanagawa, Japan*

## IAC-06-D1.2.06

### Nanophotonics and Optical MEMS: Building All-Optical Satellites

*Mr. Rubén Salvador Edo, Polytechnics University of Valencia, Valencia, Spain*

## IAC-06-D1.2.07

### Advanced Technologies for future spacecraft cockpits and space-based control centers

*Mr. Carlos Garcia-Galan, Honeywell Space Systems, Florida, United States*

## IAC-06-D1.2.08

### Integration of an algal photobioreactor into an environmental control and life support system of a space station

*Mrs. Britta Ganzer, University of Stuttgart, Stuttgart, Germany*

## IAC-06-D1.2.09

### Development of Large Structures in Space Using the Magnetically Inflated Cable (MIC) System

*Dr. James Powell, Plus Ultra Technologies, Inc., Shoreham, NY, United States*

*Dr. George Maise, Plus Ultra Technologies, Inc., Stony Brook, NY, United States, Dr. John Paniagua, Plus Ultra Technologies, Inc., Stony Brook, NY, United States, Dr. John Rather, Plus Ultra Technologies, Inc., Stony Brook, NY, United States*

# 62

## October 04 2006, 10:10 - Room 2

### D2. Space Transportation Symposium

*Coordinators: Christophe Bonnal (France), Richard Tyson (United States)*

### D2.4. Future Space Transportation Systems

*Chairmen: S.S. Balakrishnan (India), Ralf Klaedtke (Germany)*

*Rapporteur: Tim Self (United States)*

## IAC-06-D2.4.01

### Clipper Reusable Space Transport System

*Mr. Nikolay Bryukhanov, S.P. Korolev Rocket and Space Corporation Energia, Moscow, Russia*

## IAC-06-D2.4.02

### Human Space Transportation and Re-entry Demonstration for LEO and Exploration

*Mr. Massimiliano Bottacini, Alcatel Alenia Space, Turin, Italy*

*Mr. Marco Caporicci, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Ulrich Thomas, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Rafael Molina, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Federico Massobrio, Alcatel Alenia Space, Turin, Italy, Mr. Roberto Angelini, Alenia Aerospazio S.p.A, Turin, Italy, Mr. Luciano Basile, Alenia Aerospazio S.p.A, Turin, Italy*

## IAC-06-D2.4.03

### Roadmap of long-march reusable launch vehicle

*Dr. Yong Yang, China Academy of Launch Vehicle Technology, Beijing, China*

## IAC-06-D2.4.04

### A New Heavy Lift Capability for Space Exploration

*Mr. Michael L. Burris, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, Virginia, United States*

*Mr. J. Phil Sumrall, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, AL 35812, United States*

## IAC-06-D2.4.05

### Future European Launch Systems in FLPP and Overview of Second Period

*Mr. Jens Kauffmann, European Space Agency/Headquarters, Paris, France*

*Mr. Juergen Ackermann, European Space Agency (ESA), Paris, France*

## IAC-06-D2.4.06

### Towards the European Next Generation Launcher.

*Mr. Eric Louaas, Centre National d'Etudes Spatiales (CNES), Evry, France*

*Mr. Christophe Talbot, Centre National d'Etudes Spatiales (CNES), Evry, France, Mr. Jean-Marc Astorg, Centre National d'Etudes Spatiales (CNES), Evry, France, Mr. Joseph Berenbach, Centre National d'Etudes Spatiales (CNES), Evry, France*

## IAC-06-D2.4.07

### Technical Challenge of Future Space Transportation Systems in JAXA

*Dr. Hidehiko Nakayasu, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan*

## IAC-06-D2.4.08

### The XP Spaceplane : A Near Term Multi-purpose Suborbital RLV

*Mr. Charles Lauer, Rocketplane Ltd., MI, United States*

## IAC-06-D2.4.09

### Innovative Air-Launch System Using a Multirole UAV

*Mr. Nicolas Berend, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Châtillon, France*

*Mr. Michel Bourgaie, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Palaiseau, France, Mr. Sébastien Defoort, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Palaiseau, France, Mr. Jean Hermetz, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Toulouse, France, Mr. Claude Le Tallec, Office National d'Etudes et de Recherches Aérospatiales (ONERA), Châtillon, France, Mr. Raymond Bec, Centre National d'Etudes Spatiales (CNES), Evry, France*

## IAC-06-D2.4.10

### Assessment of U.S. human space launch and flight programs

*Dr. I-Shih Chang, The Aerospace Corporation, El Segundo, CA, United States*

*Mr. E. Joe Tomei, The Aerospace Corporation, El Segundo, CA, United States, Mr. Arthur W. Joslin, The Aerospace Corporation, El Segundo, CA, United States, Dr. Michael Adams, The Aerospace Corporation, Los Angeles, United States, Dr. Aaron B. Cozart, The Aerospace Corporation, El Segundo, CA, United States*

# 63

**October 04 2006, 10:10 - Room 17**

### E2. 36th Student Conference

*Coordinators: Rachid Amekrane (Germany), Stephen Brock (United States), Bénédicte Escudier (France)*

### E2.3. Student Conference III

*Chairmen: Carsten Holze (Germany), Piero Messina (France)*

*Rapporteur: Andrea Guidi (Germany)*

## IAC-06-E2.3.01

### QTEX aerobrake version : Demonstration around the Earth

*Mr. Yotsumoto Kazuhiko, Kyushu University, Fukuoka, Japan*

*Prof. Toshiya Hanada, Kyushu University, Fukuoka, Japan, Dr. Hiroshi Hirayama, Kyushu University, Fukuoka, Japan*

## IAC-06-E2.3.02

### Improved Attitude Control Sensors for a High Performance Navigation System of the Micro-Satellite Flying Laptop

*Mr. Dominik Saile, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany*

*Mr. Georg Grillmayer, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany, Mr. Christian Waidmann, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany, Mr. Matthias Waidmann, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany, Mrs. Viola Wolter, Steinbeis Transferzentrum Raumfahrt, Gäufelden, Germany*

## IAC-06-E2.3.03

### Mapping lunar mascons on the hidden side of the moon: gravitational field measurement through a micro-satellite mission

*Mr. Marco Gregnanin, Rome, Italy*

*Mr. Riccardo Marson, Udine, Italy, Mr. Francesco Guarducci, Rome, Italy, Mr. Michele Bonerba, Rome, Italy, Mr. Andrea Bolle, Rome, Italy, Mr. Pietro Berardino, Viterbo, Italy*

## IAC-06-E2.3.04

### Under The Background Influence (UTBI): 2006 Opportunity for Flight

*Mr. Andres Russu, University of Valencia, Valencia, Spain*

*Mr. Javier Sanchis Muñoz, Student, Valencia, Spain, Mrs. Nuria Escobar, University of Valencia, Valencia, Spain, Mrs. Maria Moreno Llacer, Student, Valencia, Spain, Mr. Rafael Gisbert, University of Valencia, Valencia, Spain, Mr. Francesc Monrabal Capilla, Next Generation Launcher studies, Valencia, Spain, Dr. Cándid Reig Escrivà, University of Valencia, Burjassot, Spain, Dr. Ernesto Lopez-Baeza, University of Valencia, Valencia, Spain, Mr. Victor Reglero, University of Valencia, Valencia, Spain, Mrs. Rodrigo Juana M., University of Valencia, Valencia, Spain*

## IAC-06-E2.3.05

### Model Engineering of the Task of the Platform-Less Navigation System's Orientation

*Mrs. Tatjana Mokschankina, Dnepropetrovsk National University, Dnepropetrovsk, Ukraine*

*Mr. Dmitriy Fedorenko, Energodar, Ukraine*

## IAC-06-E2.3.06

### Artificial Environments and Artificial Life: From Space to Earth

*Dr. Simon Worden, University of Arizona, Tucson, AZ, United States*

*Ms. Participants International Space University Summer Session program 2006, International Space University (ISU), Illkirch-Graffenstaden, France*

# 64

**October 04 2006, 10:10 - Room 5**

### E3. Symposium on Which Direction in Space? Balancing Applications and Exploration

*Coordinators: Gérard Brachet (France), Debra Facktor Lepore (United States)*

### E3.4. Space Tourism: Keeping the Dream Alive

*Chairmen: Christophe Bonnal (France), Richard Clar (France)*

*Rapporteur: André Van Gaver (France)*

## IAC-06-E3.4.01

### Sub-Orbital Space Tourism: Predictions of the Future Marketplace Using Agent-Based Modeling

*Mr. A.C. Charania, SpaceWorks Engineering, Inc. (SEI), Atlanta, United States*

*Dr. John Olds, SpaceWorks Engineering, Inc. (SEI), Atlanta, United States, Mr. Dominic DePasquale, SpaceWorks Engineering, Inc. (SEI), Atlanta, United States*

## IAC-06-E3.4.02

### Liability of Space Transport Carriers and Tourism Operators to Passengers, Cargo and Third Parties

*Mr. Ricky J. Lee, Flinders University of South Australia, Adelaide, Australia*

### **IAC-06-E3.4.03**

**Physical frameworks of safe vehicles for space tourism**  
*Mr. Alexander Golikov, Central Aero-HydroDynamic Institute, Zhukovskiy, Russia*

*Dr. Alexander Filatyev, Central Aero-HydroDynamic Institute, Zhukovskiy, Russia, Dr. Olga Yanova, Central Aero-HydroDynamic Institute, Zhukovskiy, Russia, Dr. Sergey A. Petrovskiy, Khronichev State Research and Production Space Center, Moscow, Russia*

### **IAC-06-E3.4.04**

**The Safety Management Approach to Space Tourism**  
*Mr. Andy Quinn, Spaceflight Safety Services Ltd, High Wycombe, United Kingdom*

### **IAC-06-E3.4.05**

**From space heroes to space tourists**  
*Dr. Jacques Arnould, Centre National d'Etudes Spatiales (CNES), Paris, France*

### **IAC-06-E3.4.06**

**Physiological, Environmental and Operational Risk Factors for Crews and Passengers of Future Commercial Space Vehicles**

*Dr. Melchor Antunano, U.S. Federal Aviation Administration (FAA), Edmond, Oklahoma, United States*

### **IAC-06-E3.4.07**

**Vehra SH suborbital manned vehicle**  
*Mr. Laurent Gathier, Dassault Aviation, St. Cloud, France*  
*Mr. Jean-Pierre Haignere, European Space Agency/Headquarters, Paris, France*

### **IAC-06-E3.4.08**

**Design Considerations for Exterior and Interior Configurations of Surface Habitat Modules**  
*Ms. Olga Bannova, University of Houston, Houston, TX, United States*

### **IAC-06-E3.4.09**

**Advanced Materials in Space Architecture: New Concepts for Space Tourism in the Coming Decades**  
*Dr. Luigi Scatteia, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy*  
*Ms. Martina Pinni, Conegliano, Italy, Dr.-Ing. Robert Goehlich, Japan Aerospace Exploration Agency (JAXA), Berlin, Germany*

### **IAC-06-E3.4.10**

**Essential Aspects of Habitat Design for Extreme and Space Applications**  
*Mr. Jesper Jørgensen, SpaceArch, Copenhagen V, Denmark*  
*Ms. Olga Bannova, University of Houston, Houston, TX, United States*

## **65**

**October 04 2006, 10:10 - Room 7**

**E4. 40th Symposium on the History of Astronautics**  
*Coordinators: Marsha Freeman (United States), George James (United States), Christophe Rothmund (France), Ake Ingemar Skoog (Germany)*

#### **E4.1. Memoirs**

*Chairmen: Herve Moulin (France), Frederick I. Ordway (United States)*  
*Rapporteur: Susan McKenna-Lawlor (Ireland), Théo Pirard (Belgium)*

### **IAC-06-E4.1.01**

**They Blazed the Trail for the Space Pioneers: on some little-known Ukrainian names in the history of astronautics and rocketry**

*Mr. Oleg Ventskovskiy, Yuzhnoye SDO European Representation, Brussels, Belgium*

*Dr. Iryna Vavilova, National Academy of Sciences of Ukraine, Kiev, Ukraine, Acad. Yaroslav Yatskiv, National Academy of Sciences of Ukraine, Kiev, Ukraine*

### **IAC-06-E4.1.02**

**Rudolf Hermann, Wind Tunnels and Aerodynamics**  
*Dr. Charles Lundquist, University of Alabama in Huntsville, Huntsville, United States*

*Mrs. Anne Coleman, University of Alabama in Huntsville, Huntsville, AL, United States*

### **IAC-06-E4.1.03**

**Sources of the Ukrainian Space Potential - to 85th Anniversary of V.M. Kovtounenko**

*Prof. Vladimir Prisniakov, Institute of Geotechnical Mechanics, National Academy of Sciences, Dnipropetrovsk, Ukraine*

*Mr. S.S. Kavelin, Design buro "Pivdenne", Dnipropetrovsk, Ukraine*

### **IAC-06-E4.1.04**

**Preparing for the Space Age: The History of Project EMILY**

*Dr. L. Parker Temple, The Aerospace Corporation, Burke, United States*

*Dr. Peter L. Portanova, The Aerospace Corporation, El Segundo, CA, United States*

### **IAC-06-E4.1.05**

**Sir Hermann Bondi: a journey through his life and the early endeavours of Europe into space**

*Ms. Veerle Sterken, Technical University of Delft (TUDelft), Delft, The Netherlands*

### **IAC-06-E4.1.06**

**Corresponding Member of Ukrainian Academy of Sciences Nikolay Fyodorovich Gerasyuta – Originator of Ukrainian Scientific School of Ballistics, Flight Dynamics and Rocket Control**

*Mr. Alexander Novikov, Yuzhnoye State Design Office, Dnipropetrovsk, Ukraine*

### **IAC-06-E4.1.07**

**Word "Cosmonautics:" a history**  
*Prof. Mike Gruntman, University of Southern California, Los Angeles, United States*

## **66**

**October 04 2006, 10:10 - Room 16**

**E5. 17th Symposium on Space Activity and Society**  
*Coordinators: Roger Malina (France), David Raitt (The Netherlands)*

#### **E5.1. Social Benefits of Space Spin-Offs**

*Chairmen: Nona Cheeks (United States), David Raitt (The Netherlands)*

*Rapporteur: Katsuya Terasawa (Japan)*

### **IAC-06-E5.1.01**

**Space technology transfer in Spain. Space as source of innovation and industrial solutions**

*Mr. Jesús Marcos, INASMET-TECNALIA, Donostia, Spain*  
*Mr. Carlos Foruria, INASMET-TECNALIA, Donostia, Spain*

### **IAC-06-E5.1.02**

#### **Societal and Economic Valuation of Technology Transfer Deals**

*Mr. Joseph Holmes, Acuity Edge, Inc., Sanford, United States*

### **IAC-06-E5.1.03**

#### **INNOVeNtion - an innovative approach to Transnational Technology Transfer**

*Mr. Raimondo De Laurentiis, D'Appolonia S.p.A., Genoa, Italy*

*Mr. Stefano Carosio, D'Appolonia S.p.A., Genoa, Italy, Mr. Guido Chiappa, D'Appolonia S.p.A., Genoa, Italy*

### **IAC-06-E5.1.04**

#### **Technology Transition a Model for Infusion and Commercialization**

*Mr. Vernotto McMillan, National Aeronautics and Space Administration (NASA), MSFC, United States*

### **IAC-06-E5.1.05**

#### **SATCOM Based Telemedicine - An Application Spin-Off for Rural Health Care Delivery in India**

*Mr. RLN. Murthy, Antrix Corporation, Bangalore, India*

*Mr. Satyamurthy L.S., Indian Space Research Organization (ISRO), Bangalore, India, Mr. A. Bhaskaranarayana, Indian Space Research Organization (ISRO), Bangalore, India*

### **IAC-06-E5.1.06**

#### **Renewable Energy Systems: How Can Space Help?**

*Mr. Ozgur Gurtuna, Turquoise Technology Solutions Inc., Montreal, Canada*

### **IAC-06-E5.1.07**

#### **Benefiting society: ESA's successful Technology Transfer Programme**

*Dr. David Raïtt, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## **67**

### **October 04 2006, 10:10 - Room 14**

#### **E6. 49th Colloquium on Law of Outer Space (IISL)**

*Coordinators: Tanja Masson-Zwaan (The Netherlands)*

#### **E6.3. International Cooperation in Space Activities, with Special Focus on Remote Sensing**

*Chairmen: Joanne Irene Gabrynowicz (United States), José Monserrat-Filho (Brazil)*

### **IAC-06-E6.3.01**

#### **European Transformation Countries on their Path to ESA**

*Dr. Mahulena Hofmann, Max Planck Institute for Comparative Public Law and International Law, Heidelberg, Germany*

### **IAC-06-E6.3.02**

#### **EUMETSAT International Cooperation Activities**

*Dr. Werner Balogh, Eumetsat, Darmstadt, Germany*

*Dr. Piero Valabrega, Eumetsat, Darmstadt, Germany, Dr. David Williams, Eumetsat, Darmstadt, Germany*

### **IAC-06-E6.3.03**

#### **The cooperation between ESA and EU regarding the Earth observation**

*Ms. Maria del Carmen Munoz Rodriguez, Universidad de Jaen, Jaen, Spain*

*Mr. Juan Faraminan Gilbert, Jaen University, Grenada, Spain*

### **IAC-06-E6.3.04**

#### **Monitoring Greenhouse Gases from Space and the Kyoto Protocol**

*Ms. Masami Onoda, Kyoto University, Kyoto, Japan*

### **IAC-06-E6.3.05**

#### **Global Spatial Data Infrastructure: Issues for Space Law and International Cooperation**

*Mr. Satya Sagar Priyatham Singamsetty, International Institute of Air and Space Law, Leiden, The Netherlands*

*Ms. Debarupa Banerjee, NALSAR University of Law, Hyderabad, ST Andhra Pradesh, India*

### **IAC-06-E6.3.06**

#### **The importance of international cooperation in building national space data infrastructure in all countries**

*Mr. José Monserrat-Filho, Brazilian Association of Air and Space Law, Rio de Janeiro RJ, Brazil*

### **IAC-06-E6.3.07**

#### **An Analysis of Issues Arising from the Commercialization of Remote Sensing Activities**

*Mr. Ketan Mukhija, NALSAR University of Law, Hyderabad, India*

### **IAC-06-E6.3.08**

#### **Remote sensing data: some critical comments on the current state of regulation and reflections on reform**

*Dr. Lesley Jane Smith, University of Lueneburg, Lueneburg, Germany*

*Ms. Catherine Doldirina, University of Bremen, Bremen, Germany*

### **IAC-06-E6.3.09**

#### **The Registration Convention Thirty Years On**

*Prof. Maureen Williams, CONICET and University of Buenos Aires, Buenos Aires, Argentina*

### **IAC-06-E6.3.10**

#### **Public and private interest in remote sensing activities: The need for an effective legal environment**

*Dr. Marianna Morelli, CARSO- Center for Advanced Research on Space Optics / EIDON -Ricerca Sviluppo Documentazione, Venezia, Italy*

### **IAC-06-E6.3.11**

#### **Regulation of Private Satellite Remote Sensing in Canada**

*Prof. Ram S. Jakhu, McGill University, Montreal, Quebec, Canada*

### **IAC-06-E6.3.12**

#### **Drafting legislation to regulate commercial remote sensing satellites: A how-to guide from Canada**

*Mr. Bruce Mann, Government of Canada, Ottawa, Canada*

### **IAC-06-E6.3.13**

#### **Canada's new licensing regime for remote sensing**

*Mrs. Vicky Chouinard, ART Advanced Research Technologies Inc., Montréal, Canada*

**A1. Space Life Sciences Symposium**

*Coordinators: Gerda Horneck (Germany), Inessa Kozlovskaya (Russia)*

**A1.5. Life Support Systems for Long Duration Human Spaceflight**

*Chairmen: Rupert Gerzer (Germany), Ake Ingemar Skoog (Germany)*

*Rapporteur: Vladimir N. Sychev (Russia)*

**IAC-06-A1.5.01**

**Regenerative water supply for an interplanetary space station: the experience gained on the space stations Salut, Mir, ISS and development prospects.**

*Dr. Leonid Bobe, NIICHIMMASH, Moscow, Russia*

*Dr. Nikolay Samsonov, NIICHIMMASH, Moscow, Russia, Dr. Lev Gavrilov, NIICHIMMASH, Moscow, Russia, Dr. Vladimir Novikov, NIICHIMMASH, Moscow, Russia, Mr. Peter Andreychuk, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Russia, Mr. Nikolay Protasov, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Russia, Dr. Yury Sinjak, Institute for Biomedical Problems, Moscow, Russia, Dr. Vladimir Skuratov, Institute for Biomedical Problems, Moscow, Russia*

**IAC-06-A1.5.02**

**A Bimodal Strategy for Future Life Support System Development**

*Dr. John D. Rummel, National Aeronautics and Space Administration (NASA), Washington, DC, United States*

**IAC-06-A1.5.03**

**Recommendations for the Design of Space Suit With Medical Evacuation Support Capability**

*Mr. Matthew Killick, International Space University (ISU), St. Albert, Canada*

*Mr. Vladimir Ivkovic, Institute for Anthropological Research (Zagreb, Croatia) & International Space University, Illkirch-Graffenstaden, Croatia, Dr. Igor Gosev, International Space University (ISU), Zagreb, Croatia*

**IAC-06-A1.5.04**

**Autonomic Cardiovascular and Respiratory Control Testing Onboard ISS for Crew Health Monitoring**

*Dr. Jens Tank, Franz Volhard Clinical Research Center, Charité, Berlin-Buch, Berlin, Germany*

*Dr. Victor M. Baranov, Institute for Biomedical Problems, Moscow, Russia, Dr. Roman Baevsky, Institute for Biomedical Problems, Moscow, Russia, M.D. Andrew Pashchenko, Institute for Biomedical Problems, Moscow, Russia, Dr. Irina I. Funtova, Institute for Biomedical Problems, Moscow, Russia, Prof. André Diedrich, Vanderbilt University, GCRC, Nashville, TN, United States, Mrs. A.G. Chernikova, Institute for Biomedical Problems, Moscow, Russia, Dr. Juergen Drescher, German Aerospace Center (DLR), Washington, United States*

**IAC-06-A1.5.05**

**AquaHab - from a science and technology verification system to an integrated CELSS subsystem**

*Mr. Matthias Dünne, OHB-System AG, Bremen, Germany*

*Mr. Klaus Slenzka, OHB-System AG, Bremen, Germany*

**IAC-06-A1.5.06**

**Microbial Community Analysis on the International Space Station**

*Dr. Natalia Novikova, Institute for Biomedical Problems, Moscow, Russia*

*Mrs. Svetlana Poddubko, Institute for Biomedical Problems, Moscow, Russia, Mrs. Elena Deshevaya, Institute for Biomedical Problems, Moscow, Russia, Mr. Nikolai Polikarpov, Institute for Biomedical Problems, Moscow, Russia*

**IAC-06-A1.5.07**

**Biometric anatomy of seedlings developed onboard of Foton M2 in an automatic system supporting growth**

*Dr. Veronica De Micco, Università degli Studi di Napoli "Federico II", Portici - Naples, Italy*

*Prof. Giovanna Aronne, University of Naples "Federico II", Naples, Italy, Mr. Michele Scala, University of Naples "Federico II", Naples, Italy*

**IAC-06-A1.5.08**

**Express-diagnostics of cosmonauts' microbiological status with the help of chromatography-mass spectrometry detecting**

*Ms. Pakhomova Anna, Institute for Biomedical Problems, Moscow, Russia*

*Mrs. Lana Moukhamedieva, Institute for Biomedical Problems, Moscow, Russia, Mr. Viachheslav K. Ilyin, Institute for Biomedical Problems, Moscow, Russia*

**IAC-06-A1.5.09**

**Plant Cultivation in Space: next steps towards the svet-3 space greenhouse project and current advances**

*Dr. Tania Ivanova, Space Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria*

*Mr. Plamen Kostov, Space Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria, Mrs. Svetlana Sapunova, Space Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria, Ms. Iliana Ilieva, Space Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria, Mr. Slaveyko Neychev, Space Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria*

**A2. Microgravity Sciences and Processes Symposium**

*Coordinators: Antonio Viviani (Italy), Rainer Willnecker (Germany)*

**A2.4. Science Results from Ground Based Research**

*Chairmen: Valentina Shevtsova (Belgium), Antonio Viviani (Italy)*

*Rapporteur: Nickolay N. Smirnov (Russia)*

**IAC-06-A2.4.01**

**Linear Lateral Vibration of Axisymmetric Liquid Bridges**

*Mr. Conrado Ferrera, Universidad de Extremadura, Badajoz, Spain*

**IAC-06-A2.4.02**

**Evaporative and convective instability in the two-layer Marangoni-Bénard**

*Dr. Qiu-Sheng Liu, Chinese Academy of Sciences, Beijing, China*

*Dr. Rong Liu, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China, Mr. Zhi-Qiang Zhu, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China, Mr. Jia-Ping Yan, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China, Mrs. Shu-Ling Chen, Beijing Jiaotong University, Beijing, China*

## IAC-06-A2.4.03

### Experimental Studies of Convective Self-Oscillations near the Lateral Surface of a Bubble in Plane Rectangular Channel

*Prof. Dr. Antonio Viviani, Seconda Università di Napoli, Aversa, Italy*

Mr. Konstantin G. Kostarev, Institute of Continuous Media Mechanics, UB Russian Academy of Sciences, Perm, Russia, Mr. Andrey L. Zuev, Institute of Continuous Media Mechanics, UB Russian Academy of Sciences, Perm, Russia

## IAC-06-A2.4.04

### A method to restrain natural convection in ground flow field test of spacecraft

*Mr. Jun Jiang, Beijing Institute of Spacecraft System Engineering, Beijing, China*

Mr. Qiang Liu, China Academy of Space Technology (CAST), Beijing, China

## IAC-06-A2.4.05

### Observation of diffusion phenomena in ground experiments: problems and solutions.

*Dr. Valentina Shevtsova, Université Libre de Bruxelles, Brussels, Belgium*

Dr. Alexandr Mialdun, Université Libre de Bruxelles, Brussels, Belgium, Mr. Denis Melnikov, Université Libre de Bruxelles, Brussels, Belgium

## IAC-06-A2.4.06

### Viscous fluids flow in porous media.

*Prof. Dr. Nickolay N. Smirnov, Moscow Lomonosov State University, Moscow, Russia*

Dr. Vladislav Dushin, Moscow Lomonosov State University, Moscow, Russia, Dr. Valeriy Nikitin, Moscow Lomonosov State University, Moscow, Russia, Dr. Oleg Ivashnyov, Moscow Lomonosov State University, Moscow, Russia, Mr. Oleg Logvinov, Moscow Lomonosov State University, Moscow, Russia, Mr. M. Thiercellin, Schlumberger Moscow Research, Moscow, Russia, Prof. Jean Claude Legros, University of Brussels, Brussels, Belgium

## IAC-06-A2.4.07

### Stratospherical Balloons as a Platform for Microgravity Experimentation

*Mr. Jorge Lassig, Comahue National University, Neuquen, Argentina*

## IAC-06-A2.4.08

### Measurements of Dynamic Surface Deformation in Liquid Bridges

*Mr. Conrado Ferrera, Universidad de Extremadura, Badajoz, Spain*

## IAC-06-A2.4.09

### Three-Dimensional Modeling of SiGe by the Traveling Solvent Method in the Presence of Magnetic Field

*Mr. Tawfiq Jaber, Ryerson University, Toronto, ON, Canada*

Prof. Ziad Saghir, Ryerson University, Toronto, Canada

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## October 04 2006, 15:30 - Room 1

### A3. Space Exploration Symposium

*Coordinators: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)*

#### A3.5. Small Bodies Missions and Technologies

*Chairmen: Susan McKenna-Lawlor (Ireland), Stephan Ulamec (Germany)*

*Rapporteur: Zhengxin Liu (China), Marc D. Rayman (United States)*

## IAC-06-A3.5.01

### Operation of MINERVA rover in Hayabusa Asteroid Mission

*Dr. Tetsuo Yoshimitsu, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami-hara, Japan*

Dr. Ichiro Nakatani, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami-hara, Japan

## IAC-06-A3.5.02

### Hayabusa – Its Technology and Science Accomplishment Summary and Hayabusa-2

*Dr. Junichiro Kawaguchi, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan*

Prof. Kunitori Uesugi, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan, Prof. Akira Fujiwara, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan

## IAC-06-A3.5.03

### The First Rosetta Passive Cruise: Approach and Experience

*Mr. Paolo Ferri, European Space Agency/ESOC, Darmstadt, Germany*

Mrs. Elsa Montagnon, European Space Agency/ESOC, Darmstadt, Germany, Mr. Jose Morales, European Space Agency/ESOC, Darmstadt, Germany

## IAC-06-A3.5.04

### Small body sampling techniques being developed at Johns Hopkins University Applied Physics Laboratory

*Mr. Jeffrey Lees, The Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States*

Mr. Dave Persons, The Johns Hopkins University, Laurel, MD, United States, Mr. Theodore J. Hartka, The Johns Hopkins University, Laurel, MD, United States

## IAC-06-A3.5.05

### Learning to deflect Near Earth Objects: Industrial design of the Don Quijote mission

*Mr. Andres Galvez, European Space Agency/Headquarters, Paris, France*

Mr. Ian Carnelli, European Space Agency/ESTEC, Noordwijk, The Netherlands

## IAC-06-A3.5.06

### Preliminary Design of European Asteroid Mission Architectures

*Dr. Kian Yazdi, EADS Astrium Ltd., Stevenage, United Kingdom*

Ms. Lisa Peacocke, EADS Astrium Ltd., Stevenage, United Kingdom, Mrs. Marie-Claire Perkinson, EADS Astrium Ltd., Stevenage, United Kingdom, Dr. Paolo D Arrigo, EADS Astrium Ltd., Stevenage, United Kingdom

## IAC-06-A3.5.07

### Cassandra, a strategy to protect our planet from Near Earth objects

*Mr. Riccardo Nadalini, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Berlin, Germany*

Team Cassandra, Illkirch-Graffenstaden, France

## IAC-06-A3.5.08

### A comparative assessment of different deviation strategies for dangerous NEO

*Ms. Camilla Colombo, University of Glasgow, Glasgow, United Kingdom*

Dr. Massimiliano Vasile, University of Glasgow, Glasgow, United Kingdom, Mr. Joan Pau Sanchez Cuartielles, University of Glasgow, Glasgow, United Kingdom, Dr. Gianmarco Radice, University of Glasgow, Glasgow, United Kingdom



**B1. Earth Observation Symposium**

*Coordinators: W. John Hussey (United States), Pierre Ranzoli (Germany)*

**B1.5. Earth Observation Applications and Economic Benefits**

*Chairmen: Luigi Bussolino (Italy), Paul Kamoun (France)  
Rapporteur: W. John Hussey (United States)*

**IAC-06-B1.5.01****Growing Global Business for Geospatial Services - The Experiences and Expectations of Indian Geospatial Industry**

*Mr. RLN. Murthy, Antrix Corporation, Bangalore, India  
Dr. CVS. Prakash, Antrix Corporation, Bangalore, India,  
Mr. K.R. Sridhara Murthi, Antrix Corporation, Bangalore, India*

**IAC-06-B1.5.02****Using Satellite Systems to Improve the Management of Fresh Water Resources**

*Dr. Ray A. Williamson, Space Policy Institute, George Washington University, Washington, DC, United States  
Dr. Henry Hertzfeld, George Washington University, Washington, United States, Mr. Nicolas Peter, George Washington University, Washington, United States, Ms. Angela Peura, George Washington University, Washington, United States*

**IAC-06-B1.5.03****Ground water Assessment and Management using Remote sensing, Geographic Information System and Geophysical Data Integration**

*Dr. A. Jeyaram, Indian Space Research Organization (ISRO), Kharagpur, India  
Dr. YVN. Krishna Murthy, Regional Remote Sensing Service Centre, Nagpur, India, Mr. SK. Bansal, Central Ground Water Board, Nagpur, India, Dr. V Jayaraman, Indian Space Research Organization (ISRO), Bangalore, India*

**IAC-06-B1.5.04****MarCoast network: a provision of EO-based services for marine and coastal applications**

*Mr. Jerome Bruniquel, Alcatel Alenia Space, Toulouse, France  
Mrs. Araceli Pi Figueroa, Starlab Barcelona SL, Barcelona, Spain, Mr. Gordon Campbell, European Space Agency/ESRIN, Frascati, Italy*

**IAC-06-B1.5.05****India's EO Pyramid for Holistic Development**

*Dr. V Jayaraman, Indian Space Research Organization (ISRO), Bangalore, India  
Dr. D. Gowrisankar, Indian Space Research Organization (ISRO), Bangalore, India, Dr. S.K. Srivastava, Indian Space Research Organization (ISRO), Bangalore, India*

**IAC-06-B1.5.06****Mapping Informal Settlements Through High Resolution Imagery**

*Mr. Mattia Stasolla, University of Pavia, Pavia, Italy*

**IAC-06-B1.5.07****Latitudinal gradients in ice dynamic response: results from satellite remote sensing in East Greenland**

*Ms. Leigh Stearns, University of Maine, Orono, United States  
Dr. Gordon Hamilton, University of Maine, Orono, United States*

**IAC-06-B1.5.08****EO Ethics for the Poor**

*Dr. V Jayaraman, Indian Space Research Organization (ISRO), Bangalore, India  
Dr. S.K. Srivastava, Indian Space Research Organization (ISRO), Bangalore, India, Dr. D. Gowrisankar, Indian Space Research Organization (ISRO), Bangalore, India*

**IAC-06-B1.5.09****Participatory watershed development using EO inputs - A working model for Poverty Alleviation and improved livelihood in rural India**

*Dr. BK Ranganath, Indian Space Research Organization (ISRO), Bangalore, India  
Mr. PG Diwakar, Indian Space Research Organization (ISRO), Bangalore, India, Dr. D. Gowrisankar, Indian Space Research Organization (ISRO), Bangalore, India, Dr. V Jayaraman, Indian Space Research Organization (ISRO), Bangalore, India*

**IAC-06-B1.5.10****Multiple Use of Earth Observation, Meteorological and Navigation Space Means for the Purposes of on-Line Monitoring of Natural Resources and Stationary and Mobile Objects**

*Prof. Valery Menshikov, Space Systems Research Institute - Branch of Khrunichev Space Center, Jubileiny, Moscow Region, Russia  
Dr. Sergey Pavlov, Space Systems Research Institute - Branch of Khrunichev Space Center, Jubileiny, Moscow Region, Russia*

**B3. Space Communications and Navigation Symposium**

*Coordinators: Robert D. Briskman (United States), MG Chandrasekhar (United States)*

**B3.3. Fixed and Broadcast Services**

*Chairmen: Patrick Agnieray (France), Joe Melvin Straus (United States)  
Rapporteur: Carlo Elia (The Netherlands)*

**IAC-06-B3.3.01****Delivery Of Satellite Based Broadband Services**

*Mr. Venugopal Desaraju, Advanced Space Technologies and Services, Bangalore, India  
Dr. MG Chandrasekhar, Orbimage, Inc., Arlington, VA 22209, United States*

**IAC-06-B3.3.02****Impact Of Advanced Space Technologies On The Informatization Of Russia**

*Mrs. Marina Sevastyanova, Gascom, Moscow, Russia*

**IAC-06-B3.3.03****Spainsat Operational X-band and Ka-band Service for the Spanish Ministry of Defense and other Allied Governments**

*Mr. Larry Rubin, Space Systems Loral, Palo Alto, United States  
Mr. Miguel Angel Garcia Primo, HISDESAT Servicios Estrategicos S.A., Madrid, Spain*

**IAC-06-B3.3.04****Communication Satellites to Enter a New Age of Flexibility**

*Mr. Cédric Balty, Alcatel Alenia Space, Toulouse, France*

### **IAC-06-B3.3.05**

**Satellite Based Mobile Broadcast Service Using the MBSAT Satellite**

*Mr. Masashi Suenaga, Mobile Broadcasting Corporation, Tokyo, Japan*

### **IAC-06-B3.3.06**

**Satellite for Mobile TV**

*Mr. Jean-François Ereau, Alcatel Alenia Space, Toulouse, France*

### **IAC-06-B3.3.07**

**Unique Considerations for a SDARS Signal Availability Model Using A Highly Inclined Elliptical Geosynchronous Satellite Constellation**

*Mr. Patrick T. Anglin, Sirius Satellite Radio, New York, NY, United States*

### **IAC-06-B3.3.08**

**Advanced Antennae for Flexible and Cost Effective Broadcasting Satellites**

*Mr. Jean-Didier Gayraud, Alcatel Alenia Space, Toulouse, France*

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**October 04 2006, 15:30 - Room 4**

**B5. Small Satellites Missions Symposium**

*Coordinators: Rhoda Shaller Hornstein (United States), Rainer Sandau (Germany)*

**B5.4. Small Satellites for Earth Observation and Lessons Learned and New Generation Missions**

*Chairmen: Amnon Ginati (The Netherlands), Larry Paxton (United States)*

*Rapporteur: Klaus Briess (Germany)*

### **IAC-06-B5.4.01**

**The MYRIADE product line ; A real success story**

*Mr. Didier Alary, EADS Astrium, Toulouse, France*

*Mr. Herve Lambert, EADS Astrium, Toulouse, France*

### **IAC-06-B5.4.02**

**Separated Aperture Optical Telescopes with small satellite formation flying**

*Mr. Norihide Miyamura, University of Tokyo, Tokyo, Japan*

### **IAC-06-B5.4.03**

**A high agile satellite platform for Earth Observation – performance description using new generation missions**

*Mr. Boris Penné, OHB-System AG, Bremen, Germany*

*Mr. Carsten Tobehn, OHB-System AG, Bremen, Germany,*

*Mr. Martin Kassebom, OHB-System AG, Bremen, Germany,*

*Mr. Bent Ziegler, OHB-System AG, Bremen, Germany*

### **IAC-06-B5.4.04**

**Cost-Effective Earth Observation Missions - Outcomes and Visions of the International IAA Study**

*Dr. Rainer Sandau, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Berlin, Germany*

*Mr. Jaime Esper, National Aeronautics and Space Administration (NASA), Greenbelt, MD, United States, Dr. Larry Paxton, The John Hopkins University Applied Physics Laboratory, Laurel, MD, United States*

### **IAC-06-B5.4.05**

**A South African resource management mission based on the Multi-Sensor Microsatellite Imager MSMI**

*Mr. Kilian A. Engel, Technical University of Munich, Gaißach, Germany*

*Prof. Sias Mostert, University of Stellenbosch, Stellenbosch, South Africa*

### **IAC-06-B5.4.06**

**HypSat PROGRAM**

*Prof. Filippo Graziani, University of Rome "La Sapienza", Rome, Italy*

*Prof. Michael Yu. Ovchinnikov, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia, Mr. Fabio Santoni, Scuola di Ingegneria Aerospaziale, Rome, Italy, Mr. Fabrizio Piergentili, Scuola di Ingegneria Aerospaziale, Rome, Italy, Mr. Andrey Ovchinnikov, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia, Mr. Fabio Bulgarelli, Latina, Italy, Ms. Maria Libera Battagliere, University of Rome "La Sapienza", Rome, Italy, Mr. Mario Sgubini, Rome, Italy, Mr. Massimiliano Ronzitti, Rome, Italy, Mr. Marco Agostinelli, Rome, Italy*

### **IAC-06-B5.4.07**

**Small Satellite's Role in Future Hyperspectral Earth Observation Missions**

*Prof. Moshe Guelman, Technion, I.I.T., Haifa, Israel*

### **IAC-06-B5.4.08**

**TopSat - The high quality, affordable imaging satellite for future constellations**

*Mr. Richard Blott, Qinetiq Ltd., Farnborough, United Kingdom*

### **IAC-06-B5.4.09**

**CALIPSO small satellite flight commissioning**

*Mr. Jean Blouvac, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

*Mr. Francois Paoli, Alcatel Alenia Space, Cannes la Bocca, France, Mr. Philippe Landiech, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mr. Patrick Castellan, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

### **IAC-06-B5.4.10**

**Advanced small satellite constellations to meet challenging Earth Science missions**

*Mr. Alex da Silva Curriel, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom*

*Mr. James Penson, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom, Prof. Sir. Martin Sweeting, Surrey Space Centre, Guildford, United Kingdom*

## **74**

**October 04 2006, 15:30 - Room 10**

**C1. Astrodynamics Symposium**

*Coordinators: Alberto Foni (Italy), Arun Misra (Canada)*

**C1.5. Orbital Dynamics**

*Chairmen: Robert G. Melton (United States), An-Ming Wu (Taiwan, China)*

*Rapporteur: Colin R. McInnes (United Kingdom)*

### **IAC-06-C1.5.01**

**New Method of the Analytic Periodic Solution for Spacecraft Formation in Elliptical Orbits**

*Mr. Jian Jun Xing, National University of Defense Technology, Changsha, China*

*Dr. Guo-jin Tang, National University of Defense Technology, Changsha, China, Dr. Hai-yang Li, National University of Defense Technology, Changsha, China*

## IAC-06-C1.5.02

**Direct Density Correction Method: review of results**  
*Dr. Vasilij Yurasov, Space Informatics Analytical Systems JSC, Moscow, Russia*

Prof. Andrey Nazarenko, Space Observation Center, Moscow, Russia, Prof. Kyle Alfriend, Texas A&M University, Texas, TX, United States, Dr. Paul J. Cefola, Massachusetts Institute of Technology (MIT), Sudbury, MA, United States

## IAC-06-C1.5.03

**Dynamics and Control of Low-Altitude Formations**  
*Prof. Giovanni B. Palmerini, University of Rome "La Sapienza", Rome, Italy*

Mr. Marco Sabatini, University of Rome "La Sapienza", Rome, Italy

## IAC-06-C1.5.04

**Station keeping strategy for geo satellites with low thrust electrical propulsion and limitations in the thrust direction. application to the conexpress project.**

*Mr. Alberto Sebastian, SENER Ingenieria y Sistemas, S.A., Tres Cantos (Madrid), Spain*

Mr. Juan Manuel del Cura, SENER Ingenieria y Sistemas, S.A., Tres Cantos (Madrid), Spain, Mrs. Laura Torres, SENER Ingenieria y Sistemas, S.A., Tres Cantos (Madrid), Spain

## IAC-06-C1.5.05

**General Dynamics in the Restricted Full Three-Body Problem**

*Ms. Julie Bellerose, University of Michigan, Ann Arbor, MI, United States*

Dr. Daniel J. Scheeres, University of Michigan, Ann Arbor, MI, United States

## IAC-06-C1.5.06

**India's Lunar Mission (Chandrayaan- 1) Orbit Determination System**

*Dr. Vighnesam Narayanasetti Venkata, Indian Space Research Organization (ISRO), Bangalore, India*

Mr. Anatta Sonney, Indian Space Research Organization (ISRO), Bangalore, India, Mr. Pramod Kumar Soni, Indian Space Research Organization (ISRO), Bangalore, India

## IAC-06-C1.5.07 (WITHDRAWN)

**Consider Covariance Sigma-Point Filtering Of Inertial Measurement Unit Data For Mars Reconnaissance Orbiter Spacecraft State Estimation During Aerobraking Operations**

*Dr. Moriba Jah, Jet Propulsion Laboratory, Pasadena, United States*

Dr. Michael Lisano, Jet Propulsion Laboratory, Pasadena, United States, Dr. George Hockney, Jet Propulsion Laboratory, Pasadena, United States

## IAC-06-C1.5.08

**Periodic Interplanetary Trajectories in a Restricted Coplanar Circular Two-Planet System**

*Mr. Dmitry Pisarevsky, Technion, I.I.T., Haifa, Israel*

Dr. Alexander Kogan, Technion, I.I.T., Haifa, Israel, Prof. Moshe Guelman, Technion, I.I.T., Haifa, Israel

## IAC-06-C1.5.09

**Orbit Analysis of HAYABUSA around Asteroid ITOKAWA**

*Mr. Hitoshi Ikeda, Kyushu University, Fukuoka, Japan*

Mr. Takashi Kominato, NEC Aerospace Systems, Ltd., Yokohama, Japan, Mr. Masatoshi Matsuoka, NEC Aerospace Systems, Ltd., Yokohama, Japan, Dr. Makoto Yoshikawa, Japan Aerospace Exploration Agency (JAXA), Sagami-hara, Japan

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**October 04 2006, 15:30 - Room 15**

## C2. Materials and Structures Symposium

*Coordinators: Constantinios P. Stavrinidis (The Netherlands), Pavel M. Trivailo (Australia)*

### C2.5. Smart Materials and Adaptive Structures

*Chairmen: Michael J. Eiden (The Netherlands), Junjiro Onoda (Japan)*

*Rapporteur: Paolo Gaudenzi (Italy)*

## IAC-06-C2.5.01

**Multifunctional Power Structures for Spacecraft Applications**

*Mr. Samuel Roberts, University of Southampton, Southampton, United Kingdom*

Dr. Guglielmo Aglietti, University of Southampton, Southampton, United Kingdom

## IAC-06-C2.5.02

**The Dynamic Behaviour of Multifunctional Power Structures**

*Dr. Christoph Schwingshackl, University of Southampton, Southampton, United Kingdom*

Dr. Guglielmo Aglietti, University of Southampton, Southampton, United Kingdom, Dr. Paul R. Cunningham, Smiths Aerospace Mechanical Systems-Aerostructures, Southampton, United Kingdom

## IAC-06-C2.5.03

**Phase Change Materials and Thermosensitive Painting: Application on Smart Thermal Protection Systems**

*Dr. Javier Coletto, INASMET-TECNALIA, San Sebastián, Spain*

Mrs. Marina Bausa, INASMET-TECNALIA, San Sebastián, Spain, Mr. Jon Maudes, INASMET-TECNALIA, San Sebastián, Spain, Mr. Thierry Salmon, EADS SPACE Transportation, Saint-Medard-en-Jalles, France, Dr. Lilian Martinez, LISAP, Villeurbanne, France, Dr. Andrea Passaro, Alta SpA, Ospedaletto, Pisa, Italy

## IAC-06-C2.5.04

**Mechanical design of a hopper robot for planetary exploration using SMA as a unique source of power**

*Mr. Steeve Montminy, Canadian Space Agency, St-Hubert, Canada*

Mr. Erick Dupuis, Canadian Space Agency, St Hubert, QC, Canada, Dr. Henri Champlaud, École de technologie supérieure, Montréal, Canada

## IAC-06-C2.5.05

**Inflatable actuators**

*Mr. Gonzalo Taubmann, SENER Ingenieria y Sistemas, S.A., Las Arenas, Spain*

## IAC-06-C2.5.06

**Impact Attenuator for Ground Landing of Space Capsules**

*Dr. Paulo Moraes Jr., CTA/ Institute of Aeronautics and Space, Sao Jose dos Campos-SP, Brazil*

Mr. Odilon Costa Franco Jr., CTA/ Institute of Aeronautics and Space, Sao Jose dos Campos-SP, Brazil

## IAC-06-C2.5.07

**Active Control of Smart Panel Using Triangular Actuators**

*Mrs. Yohko Aoki, University of Southampton, Southampton, United Kingdom*

Prof. Stephan J. Elliot, University of Southampton, Southampton, United Kingdom, Dr. Paolo Gardonio, University of Southampton, Southampton, United Kingdom

## IAC-06-C2.5.08

### Optimum Designs of Piezoelectric Fibers

Mr. Yohsuke Nambu, *University of Tokyo, Tokyo, Japan*  
Dr. Junjiro Onoda, *Japan Society for Aeronautics and Space Sciences (JSASS), Tokyo, Japan*, Mr. Yosuke Izumi, *University of Tokyo, Tokyo, Japan*

## IAC-06-C2.5.09

### Novel strain sensor for space application inspired by campaniform sensilla

Dr. Carlo Menon, *European Space Agency/ESTEC, Noordwijk, The Netherlands*  
Prof. Julian Vincent, *University of Bath, Bath, United Kingdom*

## IAC-06-C2.5.10

### Controllability and Observability of Modal Characteristics for Self-identification of Adaptive Structures

Dr. Atsuhiko Senba, *Tokyo Institute of Technology, Yokohama, Japan*  
Dr. Hiroshi Furuya, *Tokyo Institute of Technology, Yokohama, Japan*

## IAC-06-C2.5.11

### Study on Driving Energy of Monitoring Unit: Driving Energy Source Acquisition from Monitoring Objective

Mr. Luo Shikui, *China Academy of Space Technology (CAST), Beijing, China*  
Mrs. Cheng Guimei, *China Academy of Space Technology (CAST), Beijing, China*

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October 04 2006, 15:30 - Room 8

## C3. Space Power Symposium

*Coordinators: John C. Mankins (United States)*

### C3.3. Space Power Experiments and Demonstrations

*Chairmen: Henry W. Brandhorst (United States), Susumu Sasaki (Japan)*  
*Rapporteur: Frank Steinsiek (Germany), Nantel Suzuki (United States)*

## IAC-06-C3.3.01

### Status of JAXA's study of the microwave based and laser based space energy utilization systems

Dr. Mitsushige Oda, *Japan Aerospace Exploration Agency (JAXA), Ibaraki-ken, Japan*  
Mr. Masahiro Mori, *Japan Aerospace Exploration Agency (JAXA), Tsukuba-shi, Japan*

## IAC-06-C3.3.02

### Activities Results of Experiments for Space Solar Power Systems at USEF

Mr. Shoichiro Mihara, *Institute for Unmanned Space Experiment Free Flyer (USEF), Tokyo, Japan*  
Mr. Takashi Saito, *Institute for Unmanned Space Experiment Free Flyer (USEF), Tokyo, Japan*, Mr. Yutaro Kobayashi, *Institute for Unmanned Space Experiment Free Flyer (USEF), Tokyo, Japan*, Mr. Hiroshi Kanai, *Institute for Unmanned Space Experiment Free Flyer (USEF), Tokyo, Japan*

## IAC-06-C3.3.03

### Rocket Experiment on Microwave Power Transmission with Furoshiki Deployment

Dr. Nobuyuki Kaya, *Kobe University, Kobe, Japan*  
Mr. Masashi Iwashita, *Kobe University, Kobe, Japan*, Mr. Kouhei Tanaka, *Kobe University, Kobe, Japan*, Prof. Shinichi Nakasuka, *University of Tokyo, Tokyo, Japan*, Dr. Leopold Summerer, *European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-C3.3.04

### Sounding Rocket Experiment Results of Large Net Extension in Space to be Applied to Future Large Phased Array Antenna

Prof. Shinichi Nakasuka, *University of Tokyo, Tokyo, Japan*  
Dr. Hironori Sahara, *University of Tokyo, Tokyo, Japan*, Mr. Yuya Nakamura, *University of Tokyo, Tokyo, Japan*, Mr. Ryu Funase, *University of Tokyo, Tokyo, Japan*, Mr. Masaki Nagai, *University of Tokyo, Tokyo, Japan*, Mr. Norihide Miyamura, *University of Tokyo, Tokyo, Japan*, Mr. Akito Enokuchi, *University of Tokyo, Tokyo, Japan*, Mr. Yoichi Hatsutori, *Keio University, Yokohama, Japan*, Mr. Tsukasa Funane, *University of Tokyo, Tokyo, Japan*, Mr. Fumiki Sasaki, *University of Tokyo, Tokyo, Japan*, Mr. Yuta Nojiri, *University of Tokyo, Tokyo, Japan*, Mr. Mitsuhiro Komatsu, *University of Tokyo, Tokyo, Japan*, Dr. Nobuyuki Kaya, *Kobe University, Kobe, Japan*, Dr. Yoshiki Sugawara, *University of Tokyo, Tokyo, Japan*

## IAC-06-C3.3.05

### First Results of robots crawling on a loose net in microgravity during a sounding rocket experiment

Dr. Leopold Summerer, *European Space Agency/ESTEC, Noordwijk, The Netherlands*  
Dr. Nobuyuki Kaya, *Kobe University, Kobe, Japan*, Dr. Bernhard Putz, *Vienna University of Technology, Vienna, Austria*, Prof. Peter Kopacek, *Vienna University of Technology, Vienna, Austria*

## IAC-06-C3.3.06

### Fundamental experiment of optical feed phased array antenna for large scale satellite.

Dr. Yoshiyuki Fujino, *National Institute of Information and Communications Technology, Ibaraki, Japan*

## IAC-06-C3.3.07

### Space investigations on degradation of amorphous-silicon solar arrays on "Universitetsky" micro-satellite

Prof. Sergey Finogenov, *Moscow Aviation Institute (State Technical University), Moscow, Russia*  
Prof. Vitaly Melnikov, *Moscow Aviation Institute, Moscow, Russia*, Prof. Alexander Kolomentsev, *Moscow Aviation Institute, Moscow, Russia*

## IAC-06-C3.3.08

### Tests of Wireless Transmitting Energy on the Ground in JAXA

Mr. Tatsuhito Fujita, *Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan*  
Mr. Masahiro Mori, *Japan Aerospace Exploration Agency (JAXA), Tsukuba-shi, Japan*, Mr. Yasumasa Hisada, *Japan Aerospace Exploration Agency (JAXA), Ibaraki, Japan*, Ms. Yuka Saito, *Japan Aerospace Exploration Agency (JAXA), Tsukuba-shi Ibaraki-ken, Japan*

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October 04 2006, 15:30 - Room 9

## C4. Space Propulsion Symposium

*Coordinators: Dana G. Andrews (United States), Giorgio Saccoccia (The Netherlands)*

### C4.3. Propulsion Technology

*Chairmen: Francesca Lillo (Italy), Gennaro Russo (Italy)*  
*Rapporteur: Vladimir Prisniakov (Ukraine)*

## IAC-06-C4.3.01

### Aluminized Solid Propellants Combustion Under Vibratory Conditions

Mr. Alessio Bandera, *Politecnico di Milano, Milan, Italy*  
Dr. Luigi T. DeLuca, *Politecnico di Milano, Milan, Italy*, Dr. Robert L. Glick, *Rensselaer, United States*

### IAC-06-C4.3.02

**Unique Phenomena Resulting from Three-Dimensional Flows inside Solid Propellant Rockets**  
*Prof. Toru Shimada, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami, Japan*

### IAC-06-C4.3.03

**Experimental investigation and numerical modeling of the condensed combustion products of micro and nano-aluminized solid propellants**  
*Dr. Luciano Galfetti, Politecnico di Milano, Milan, Italy*  
*Dr. Luigi T. DeLuca, Politecnico di Milano, Milan, Italy,*  
*Prof. Febo Severini, Politecnico di Milano, Milan, Italy, Dr. Laura Meda, Polimeri Europa, Novara, Italy, Dr. Gianluigi Marra, Polimeri Europa, Novara, Italy, Mr. Lucas Lentini, Politecnico di Milano, Milan, Italy, Dr. Valery A. Babuk, Baltic State Technical University, St. Petersburg, Russia*

### IAC-06-C4.3.04

**Turbine technologies for future cryogenic ELV engines**  
*Mr. Stefan Trollheden, Volvo Aero Corporation, Trollhättan, Sweden*

### IAC-06-C4.3.05

**Influence of coaxial injector element design on heat transfer in oxidizer rich staged combustion cycle engines**  
*Mr. Sebastian Soller, Technical University of Munich, Garching, Germany*  
*Mr. Robert Wagner, Technical University of Munich, Garching, Germany, Prof. Dr.-Ing. Hans-Peter Kau, Technical University of Munich, Garching, Germany, Mr. Chris Maeding, EADS Space Transportation GmbH, Munich, Germany, Mr. Philip Martin, EADS Space Transportation GmbH, Munich, Germany*

### IAC-06-C4.3.06

**CFD studies of tanks draining : how to enlarge the qualification field of ESC-A Lox tank anti-vortex ?**  
*Mr. Jerome Lacapere, Air Liquide DTA, Sassenage, France*

### IAC-06-C4.3.07

**French / Russian activities on LOX - LCH4 area**  
*Mr. Christophe Bonhomme, Centre National d'Etudes Spatiales (CNES), Evry, France*  
*Mr. Eric Louaas, Centre National d'Etudes Spatiales (CNES), Evry, France, Mrs. Marie Theron, Centre National d'Etudes Spatiales (CNES), Evry, France, Mr. André Beaurain, Snecma, Vernon, France, Mr. E. P. Selezniou, Chemical Machinery Design Bureau (CMDB), Korolev, Moscow Region, Russia*

### IAC-06-C4.3.08

**The V2+ Nozzle Extension Demo: A milestone on the route to sandwich nozzle production.**  
*Dr. Peter Envin, Volvo Aero Corporation, Trollhättan, Sweden*  
*Mr. Thomas Tomas Damgaard, Volvo Aero Corporation, Trollhättan, Sweden, Mr. Michael Hallberg, Volvo Aero Corporation, Trollhättan, Sweden, Mrs. Lise Brox, Volvo Aero Corporation, Trollhättan, Sweden*

### IAC-06-C4.3.09

**Wide range variable operation condition technology for a lox/kerosene staged combustion cycle engine**  
*Mr. Jianhua Chen, Northwestern Polytechnical University, Xi'an, China*

### IAC-06-C4.3.10

**Advances in Electromagnetic Inertia Propulsion**  
*Prof. Hector Brito, Instituto Universitario Aeronautico, Cordoba, Argentina*  
*Dr. Sergio Elaskar, Universidad Nacional de Córdoba and CONICET, Córdoba, Argentina*

## 78

**October 04 2006, 15:30 - Room 2**

**D2. Space Transportation Symposium**  
*Coordinators: Christophe Bonnal (France), Richard Tyson (United States)*

**D2.5. Future Space Transportation Systems Technologies**  
*Chairmen: Yoshifumi Inatani (Japan), Gennaro Russo (Italy)*  
*Rapporteur: Norbert Puettmann (Germany)*

### IAC-06-D2.5.01

**Aerodynamic performance enhancement by lateral blowing for reusable launch vehicles**  
*Dr. Kenji Tadakuma, Kyushu University, Fukuoka, Japan*  
*Prof. Shigeru Aso, Kyushu University, Fukuoka, Japan, Dr. Yasuhiro Tani, Kyushu University, Fukuoka, Japan*

### IAC-06-D2.5.02

**Shock-Wave Boundary-Layer Interaction (SWBLI) around open Flaps of EXPERT Capsule and their Consideration on Heat and Mechanical Loads under critical Re-Entry Flow Conditions**  
*Dr. Ognjan Bozic, German Aerospace Center (DLR), Braunschweig, Germany*  
*Dr. José Longo, German Aerospace Center (DLR), Braunschweig, Germany*

### IAC-06-D2.5.03

**SHEFEX II – The Next Step within Flight Testing of Re-entry Technology**  
*Mr. Hendrik Weihs, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Stuttgart, Germany*

### IAC-06-D2.5.04

**EXPERT: the early opportunity for re-entry system technologies and tools validation**  
*Mr. Federico Massobrio, Alcatel Alenia Space, Turin, Italy*  
*Mr. Marco Caporicci, European Space Agency/ESTEC, Noordwijk, The Netherlands, Dr. Giuliano Marino, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy, Dr. Roberto Viotto, Alcatel Alenia Space, Turin, Italy*

### IAC-06-D2.5.05

**Future launcher roadmap technological demonstrator activities in cnes programme**  
*Mr. Sylvain Guedron, Centre National d'Etudes Spatiales (CNES), Evry, France*

### IAC-06-D2.5.06

**Oural: a cooperation between Europe and Russia to prepare future launchers**  
*Mr. Jean-Marc Astorg, Centre National d'Etudes Spatiales (CNES), Evry, France*  
*Mr. Eric Louaas, Centre National d'Etudes Spatiales (CNES), Evry, France*

### IAC-06-D2.5.07

**GNC for Future Launch Vehicles: Current Developments and Perspectives**  
*Mr. Edgar Milic, GMV S.A., Tres Cantos, Spain*  
*Mr. Angelo Tomassini, GMV S.A., Tres Cantos - Madrid, Spain, Dr. Guillermo Ortega, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-D2.5.08

**Design Tool for Linear Expendable Launch Vehicle**  
*Mr. Vincent Peypodat, EADS SPACE Transportation, Les Mureaux, France*

*Mr. Martin Poncon, EADS SPACE Transportation, Les Mureaux, France, Mr. Christophe Chavagnac, EADS SPACE Transportation, Les Mureaux, France, Mr. David Iranzongreus, EADS SPACE Transportation, Les Mureaux, France*

## IAC-06-D2.5.09

**Integrated thermal protection systems and heat resistant structures**

*Mr. Thierry Pichon, Snecma Propulsion Solide, Le Haillan, France*

*Mr. Marc Lacoste, Snecma Propulsion Solide, Saint-Médard en Jalles, France, Dr. David E. Glass, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, VA, United States*

## IAC-06-D2.5.10

**VEGA Stages Full Scale Separation Test: Simulation, Preparation and Results**

*Dr. Marino Fragnito, ELV S.p.A., Colleferro (Roma), Italy, Mr. Fabrizio Barbieri, ELV S.p.A., Colleferro (Roma), Italy, Mr. Cristiano Contini, ELV S.p.A., Colleferro (Roma), Italy, Mr. Josè Luis Leofanti, ELV S.p.A., Colleferro (Roma), Italy, Mr. Matteo Monterosso, ELV S.p.A., Colleferro (Roma), Italy, Mr. Michel Bonnet, European Space Agency/ESRIN, Frascati (Roma), Italy, Mr. Andrea Preve, AVIO S.p.A., Colleferro (Roma), Italy*

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**October 04 2006, 15:30 - Room 12**

**D3. Symposium on Stepping Stones to the Future: Strategies, Architectures, Concepts and Technologies**  
*Coordinators: John C. Mankins (United States), Dietrich Vennemann (The Netherlands)*

**D3.3. System-of-Systems Infrastructures to Enable Ambitious Future Exploration and Utilization of Space**

*Chairmen: William H. Siegfried (United States), Yoshisada Takizawa (Japan)*

*Rapporteur: Scott Houland (The Netherlands)*

## IAC-06-D3.3.01

**An Integrated Modeling Tool for Sustainable Space Exploration**

*Ms. Sarah Shull, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States*

*Ms. Erica Gralla, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States, Dr. Olivier de Weck, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States*

## IAC-06-D3.3.02

**A Recommended Lunar Exploration Architecture**

*Mr. William Kosmann, Orbital Sciences Corporation, Middleburg, United States*

## IAC-06-D3.3.03

**On-Orbit Assembly and Re-fueling for Next-Generation Space Exploration**

*Ms. Erica Gralla, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States*

*Dr. Olivier de Weck, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States*

## IAC-06-D3.3.04

**The Multi-role Capsule as an Example of Function Based Requirement Generation**

*Mr. Mark Hemsell, University of Bristol, Bristol, United Kingdom*

## IAC-06-D3.3.05

**ISRU-Based Development of a Lunar Water Astroparticle Observatory**

*Dr. Alex Ignatiev, University of Houston, Houston, TX, United States*

*Mr. Klaus Heiss, High Frontier, Alexandria, United States, Mr. Paul Van Susante, Colorado School of Mines, Golden, CO, United States*

## IAC-06-D3.3.06

**Apex: Next Generation Commercial Space Access**

*Mr. Frank Eichstadt, Spacehab, Inc., Webster, Texas, United States*

*Mr. Robert Swanson, Spacehab, Inc., Webster, Tx., United States, Ms. Kimberly Campbell, Spacehab, Inc., Webster, Texas, United States*

## IAC-06-D3.3.07

**Systems and Technologies to Enable the Sustainable Exploration and Development of Space**

*Mr. John Mankins, Artemis Innovation Management Solutions LLC, Ashburn, United States*

## IAC-06-D3.3.08

**In-Space Cryogenic Propellant Depot (ISCPD) Architecture Definitions and Systems Studies**

*Mr. John Fikes, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, United States*

*Mr. Joe T. Howell, National Aeronautics and Space Administration (NASA), Huntsville, Alabama, United States, Mr. Mark Henley, The Boeing Company, Canoga Park, CA, United States*

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**October 04 2006, 15:30 - Room 17**

**E1. Space Education and Outreach Symposium**

*Coordinators: Pierre-Louis Contreras (France)*

**E1.2. Structures for Space Education**

*Chairmen: Yolanda Berenguer (France), Dennis A. Stone (United States)*

*Rapporteur: Bénédicte Escudier (France)*

## IAC-06-E1.2.01

**Educator professional development: a multidimensional approach to space-focussed science education.**

*Mr. Jason Clement, Canadian Space Agency, St-Hubert, Canada*

*Mrs. Marilyn Steinberg, Canadian Space Agency, Saint-Hubert, QC, Canada, Mr. Marc Fricker, Canadian Space Agency, St. Hubert, Canada*

## IAC-06-E1.2.02

**Space Education: it is time to scale up!**

*Ms. Caroline Pujol, PiLDo Labs, Barcelona, Spain*

*Ms. Cécile Montgobert, University of Valencia, Paterna, Spain*

### **IAC-06-E1.2.03**

#### **Using of Remote Education System for Training Specialists in the Field of Space Activity**

*Dr. Sergey Lysy, Space Systems Research Institute - Branch of Khrunichev Space Center, Jubileiny, Moscow Region, Russia*

Prof. Valery Menshikov, Space Systems Research Institute - Branch of Khrunichev Space Center, Jubileiny, Moscow Region, Russia, Prof. Efim M. Malitikov, CIS Intergovernmental Committee on Knowledge Propagation and Adult Education, Moscow, Russia, Dr. Larisa V. Menshikova, Moscow State Institute of Radio Engineering, Electronics and Automatics, Jubileiny, Moscow Region, Russia

### **IAC-06-E1.2.04**

#### **Exploiting Satellite Radio Technology to Create an African Satellite Health Education Infrastructure**

*Dr. Phillip Olla, Madonna University, Livonia, United States*

### **IAC-06-E1.2.05**

#### **Promoting Space – NGO point of view: lessons from the creation of the Israeli Space Society**

*Mr. Tal Inbar, Russian Academy of Sciences - IMASH, Kadima, Israel*

### **IAC-06-E1.2.06**

#### **Victorian Space Science Education Centre: A Unique State of the Art Structure for Learning**

*Ms. Naomi Mathers, Victorian Space Science Education Centre, Melbourne, Australia*

Mr. Michael Pakakis, Melbourne, Australia, Mrs. Anne Brumfit, European Space Agency/ESTEC, South Holland, The Netherlands, Prof. Lachlan Thompson, Royal Melbourne Institute of Technology (RMIT), Melbourne, Australia

### **IAC-06-E1.2.07**

#### **A Perspective on International Collaborative Programs in UNISEC - Challenges of Japanese University Students -**

*Ms. Rei Kawashima, UNISEC, Tokyo, Japan*

Prof. Shinichi Nakasuka, University of Tokyo, Tokyo, Japan, Prof. Tetsuo Yasaka, Kyushu University, Fukuoka, Japan

### **IAC-06-E1.2.08**

#### **Parsec to grow a new course within Observatorium**

*Mr. Philippe Jung, AAAF, Grasse, France*

Mr. Jean-Louis Heudier, Astrorama, Nice, France

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**October 04 2006, 15:30 - Room 16**

#### **E3. Symposium on Which Direction in Space? Balancing Applications and Exploration**

*Coordinators: Gérard Brachet (France), Debra Facktor Lepore (United States)*

#### **E3.2. Enabling Commercial Opportunities in Space**

*Chairmen: Patrick Eymar (France), Kazuto Suzuki (Japan)*

*Rapporteur: Claire Jolly (France)*

### **IAC-06-E3.2.01**

#### **NASA's COTS Initiative – Developing the LEO Commercial Space Transportation Industry**

*Mr. Dennis Stone, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, United States*

Mr. Alan Lindenmoyer, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, United States

### **IAC-06-E3.2.02**

#### **Enabling Policy: The Significance of policy instruments on the future commercial opportunities in Earth and Space Exploration. Whose on first?**

*Ms. Joan Harvey, Canadian Space Agency, Saint Hubert, Canada*

### **IAC-06-E3.2.03**

#### **International Space Commerce: Enhancing Global Quality of Life**

*Dr. Paul Eckert, Boeing Integrated Defense Systems, Arlington, VA, United States*

### **IAC-06-E3.2.04**

#### **Microgravity in Space Tourism**

*Ms. Amruta Mehta, International Space University (ISU), Strasbourg, France*

### **IAC-06-E3.2.05**

#### **EADS ST Industrial JV Initiatives**

*Mr. Patrick Eymar, EADS SPACE Transportation, Les Mureaux, France*

Dr. Peter Vits, EADS Space Transportation GmbH, Bremen, Germany

### **IAC-06-E3.2.06**

#### **Government Stimulation of Private Investment in Space Activities**

*Mr. Roscoe Moore III, PeerSat, Inc., Silver Spring, MD, United States*

### **IAC-06-E3.2.07**

#### **Domestic Laws and Policies on Private Launch Services and their Effects on Competition in the Global Market**

*Mr. Ricky J. Lee, Flinders University of South Australia, Adelaide, Australia*

### **IAC-06-E3.2.08**

#### **Lunar outpost as a public private partnership, finding a model that works**

*Mr. Joseph Casas, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Madison, United States*

Mr. Brian Mitchell, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Madison, United States, Mr. Mark Nall, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, AL, United States

### **IAC-06-E3.2.09**

#### **Baring in Mind the Space Insurance Market**

*Ms. Isabel Pessoa-Lopes, SPACE RISKS, , United Kingdom*

## **82**

**October 04 2006, 15:30 - Room 13**

#### **E4. 40th Symposium on the History of Astronautics**

*Coordinators: Marsha Freeman (United States), George James (United States), Christophe Rothmund (France), Ake Ingemar Skoog (Germany)*

#### **E4.2. Organisational Histories**

*Chairmen: Marsha Freeman (United States), Ake Ingemar Skoog (Germany)*

*Rapporteur: Philippe Cosyn (Belgium), Richard Dowling (United States)*

## IAC-06-E4.2.01

### The Kennedy Administration and Project Apollo: International Competition and Cooperation through Space Policy

Mr. Hirotaka Watanabe, Osaka University, Kurashiki-shi, Okayama, Japan

## IAC-06-E4.2.02

### The NASA Office of Advanced Research and Technology - An Overview

Mr. John Mankins, Artemis Innovation Management Solutions LLC, Ashburn, United States

## IAC-06-E4.2.03

### Origins and Development of NASA's Exobiology Program, 1958-1976

Dr. Steven Dick, National Aeronautics and Space Administration (NASA)/Headquarters, Washington, DC, United States

## IAC-06-E4.2.04

### The Oral History Tradition at the University of Alabama in Huntsville

Mrs. Anne Coleman, University of Alabama in Huntsville, Huntsville, AL, United States

Mr. Robert L. Middleton, University of Alabama in Huntsville, Huntsville, AL, United States, Dr. Charles Lundquist, University of Alabama in Huntsville, Huntsville, United States, Mr. David L. Christensen, Lockheed Martin Space Systems, Huntsville, AL, United States

## IAC-06-E4.2.05

### The Weapons Research Establishment: an Administrative History

Ms. Kerrie Dougherty, Power House Museum, Haymarket, NSW, Australia

## IAC-06-E4.2.06

### The international space cooperation in the early years of the French space activities: Political voluntarism and/or necessity?

Mr. Herve Moulin, Institut Français d'Histoire de l'Espace, Paris, France

## IAC-06-E4.2.07

### The Manfred Lachs Space Law Moot Court Competition and its Impact on the Development of Space Law

Mr. Ricky J. Lee, Flinders University of South Australia, Adelaide, Australia

Ms. Tanja Masson-Zwaan, IISL Secretary, The Hague, The Netherlands, Mr. Gabriel Lafferranderie, European Space Agency/Headquarters, Paris, France, Mr. Milton Smith, Sherman & Howard, LLC, Colorado Springs, CO, United States, Mr. Alberto Marchini, ECSL, Paris, France

## IAC-06-E4.2.08

### Portugal in Space

Ms. Vera Gomes, Lisboa, Portugal

# 83

## October 04 2006, 15:30 - Room 6

**E5. 17th Symposium on Space Activity and Society**  
Coordinators: Roger Malina (France), David Raitt (The Netherlands)

### E5.2. Space Spin-Offs: Investment Opportunities

Chairmen: Nona Cheeks (United States), David Raitt (The Netherlands)

Rapporteur: Joerg Kreisel (Germany)

## IAC-06-E5.2.01

### Sources for Space Technologies: Finding and Evaluating New Partners

Ms. Laura Schoppe, Fuentek, LLC, Apex, North Carolina, United States

## IAC-06-E5.2.02

### An Analysis of Investment Opportunities in Emerging Markets Space Applications for Defense

Dr. Mircea Boscoianu, Military Technical Academy of Bucharest, Bucharest, Romania

Dr. Gabriela Prelipcean, Stefan cel Mare University of Suceava, Suceava, Romania, Dr. Adrian Coman, Military Technical Academy of Bucharest, Bucharest, Romania

## IAC-06-E5.2.03

### "Linking Satellite ICT Application Businesses with Regional Innovation centers & Investors - The EC INVESat Project"

Ms. Florence Ghiron, Capital High Tech, Bayonne, France  
Mr. Joerg Kreisel, JOERG KREISEL International Consultant (JKIC), Aachen, Germany

## IAC-06-E5.2.04

### Project for an Ambient Intelligence SpaceLab (AmI SpaceLab)

Mr. Angel Torés, Intelligent Consulting, Barcelona, Spain

## IAC-06-E5.2.05

### The Mississippi Enterprise for Technology, Inc. MsET. Successful Example of a Space-Based Technologies Incubator Before and After Hurricane Katrina

Mr. Greg B. Hinkebein, Mississippi Enterprise for Technology (MsET), Stennis Space Center, United States

Mrs. Jacqueline Schenkel, Schenkel & Associates, LLC, Alexandria, VA, United States

## IAC-06-E5.2.06

### The Dutch Technology Transfer Program

Mr. Len Van der Wal, TNO Science and Industry, Delft, The Netherlands

Mrs. Heleen de Brabander, The Hague, The Netherlands, Mr. Pierre Brisson, European Space Agency/ESTEC, Noordwijk, The Netherlands

## IAC-06-E5.2.07

### Star2Earth: a spin off for ocean monitoring at the European Space Incubator

Mrs. Ana Maiques, Starlab Barcelona SL, Barcelona, Spain  
Dr. Giulio Ruffini, Starlab Barcelona SL, Barcelona, Spain



## IAC-06-E5.2.08

### Incubation and Investment: ESA's Strategy for Space Spin-Offs

*Dr. David Raitt, European Space Agency/ESTEC, Noordwijk, The Netherlands*

*Mr. Pierre Brisson, European Space Agency/ESTEC, Noordwijk, The Netherlands, Ms. Noemie Dumesnil, European Space Agency/ESTEC, Noordwijk, The Netherlands*

# 84

**October 04 2006, 15:30 - Room 14**

## E6. 49th Colloquium on Law of Outer Space (IISL)

*Coordinators: Tanja Masson-Zwaan (The Netherlands)*

### E6.4. Space Law at Times of Armed Conflict

*Chairmen: Jonathan F. Galloway (United States), Ram S. Jakhu (Canada)*

## IAC-06-E6.4.01

**The Question of Legitimacy of Threat or Use of Force in and from Outer Space: A Reflection on the Sanctity and Legal Binding Force of the Charter of the United Nations and the 1967 Outer Space Treaty**  
*Prof. Maurice N. Andem, University of Lapland, Rovaniemi, Finland*

## IAC-06-E6.4.02

**Legal Analysis of the Right of Self-Defense in Outer Space**

*Ms. Yuri Takaya-Umehara, Paris XI Univ., Kashima, Japan*

## IAC-06-E6.4.03

**Contemporary - A Doctrine of Self-defence in Outer Space Law**

*Prof. S. Bhatt, International Institute of Space Law, -, India*

## IAC-06-E6.4.04

**Military Application and Space Law**

*Prof. Gabriella Catalano Sgrosso, University of Rome "La Sapienza", Rome, Italy*

## IAC-06-E6.4.05

**The Demise of "Open Skies?": Commercial Remote Sensing Policy in an Age of Terror**

*Mr. John Heath, Alexandria, Virginia, United States*

## IAC-06-E6.4.06

**War and space law provisions**

*Mrs. Maria Mercedes Esquivel de Cocca, Buenos Aires, Argentina*

## IAC-06-E6.4.07

**The Ambit of the Law of Neutrality and Space Security**

*Mr. Michel Bourbonniere, Department of Justice, Canada, (PWGSC) and Professor of Law at the Royal Military College of Canada, St-Leonard, Canada*

## IAC-06-E6.4.08

**Weaponization of Outer Space: Neutrality Laws Revisited**

*Prof. Setsuko Aoki, Keio University, Tokyo, Japan*

## IAC-06-E6.4.09

**The Applicability of the Jus in Bello Rules of International Humanitarian Law to the Use of Outer Space**

*Mr. Steven Freeland, University of Western Sydney, Sydney NSW, Australia*

## IAC-06-E6.4.10

**The Legality of the Deployment of Conventional Weapons in Earth Orbit Against Terrestrial and Orbital Targets**

*Mr. Ricky J. Lee, Flinders University of South Australia, Adelaide, Australia*

*Mr. Michel Bourbonniere, Department of Justice, Canada, (PWGSC) and Professor of Law at the Royal Military College of Canada, St-Leonard, Canada*

## IAC-06-E6.4.11

**The legal status of double function satellite systems in view of the current international terrorism threat**

*Prof. G. Zhukov, People's Friendship University, Moscow, Russia*

## IAC-06-E6.4.12

**Information Warfare: The Legal Aspects of Using Satellites and Jamming Technologies in Propaganda Battles**

*Prof. Mark Sundahl, Cleveland State University, Cleveland, OH, United States*

## IAC-06-E6.4.13

**Galileo's Public Regulated Service: from security to military applications?**

*Ms. Amal Rakibi, IDEST- CNRS, Noisy-le-sec, France*

# 85

**October 05 2006, 10:10 - Room 11**

## A1. Space Life Sciences Symposium

*Coordinators: Gerda Horneck (Germany), Inessa Kozlovskaya (Russia)*

### A1.6. Astrobiology in the Solar System

*Chairmen: Gerda Horneck (Germany), John D. Rummel (United States)*

*Rapporteur: Gerhard Kminek (The Netherlands)*

## IAC-06-A1.6.01

**Astrobiological experiments in Low Earth Orbit - Experiments and research facilities in space**

*Dr. Petra Rettberg, German Aerospace Center (DLR), Cologne, Germany*

*Dr. Elke Rabbow, German Aerospace Center (DLR), Cologne, Germany, Dr. Corinna Panitz, Aachen, Germany, Dr. Guenther Reitz, German Aerospace Center (DLR), Cologne, Germany, Dr. Gerda Horneck, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Cologne, Germany*

## IAC-06-A1.6.02

**Lichens Survive in Space: BIOPAN Experiment on the FOTON M-2 Mission**

*Ms. Rosa De la Torre, Instituto Nacional de Tecnica Aeroespacial (INTA), Madrid, Spain*

*Dr. Gerda Horneck, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Cologne, Germany, Mr. Leopoldo Garcia Sancho, Universidad Complutense de Madrid, Madrid, Spain*

## IAC-06-A1.6.03

**Analysis of Organics: interstellar synthesis and in situ chemical derivatization of amino acids**

*Mr. Zachary Pozun, University of Pittsburgh, Pittsburgh, United States*

*Ms. Shannon Tronick, Syracuse University, Syracuse, United States*

## IAC-06-A1.6.04

**Hydrothermal vent bio-sampler**

*Mr. Jonas Jonsson, Student, Västerås, Sweden*

*Dr. Alberto Behar, Jet Propulsion Laboratory, Pasadena, United States, Dr. James Bruckner, Jet Propulsion Laboratory, Pasadena, United States, Mr. Jaret Matthews, Jet Propulsion Laboratory, Pasadena, United States*

## IAC-06-A1.6.05

**Astrolaboratory in Alcoi for Astrobiology Studies**

*Mr. José Canto, Universitat Politècnica de València, Alcoi, Spain*

*Dr. Miguel A. Satorre, Universitat Politècnica de València, Alcoi, Spain, Dr. Manuel Domingo, Universitat Politècnica de València, Alcoi, Spain, Dr. Oscar Gomis, Universitat Politècnica de València, Alcoi, Spain, Dr. Ramon Luna, Universitat Politècnica de València, Alcoi, Spain, Dr. Carlos Millan, Universitat Politècnica de València, Alcoi, Spain, Dr. Rosario Isabel Vilaplana, Universitat Politècnica de València, Alcoi, Spain, Ms. Santonja Carmina, Universitat Politècnica de València, Alcoi, Spain*

## IAC-06-A1.6.06

**Downstream Variations of Martian Channels and Implications for Climate Evolution and Habitability**

*Mr. Sanjoy Som, University of Washington, Seattle, United States*

## IAC-06-A1.6.07

**Preparing for life detection on Mars**

*Dr. Pascale Ehrenfreund, Leiden University, Leiden, The Netherlands*

## IAC-06-A1.6.08

**Astrobiological Exploration and Human Missions: First Steps**

*Dr. John D. Rummel, National Aeronautics and Space Administration (NASA), Washington, DC, United States*

# 86

## October 05 2006, 10:10 - Room 7

**A2. Microgravity Sciences and Processes Symposium**

*Coordinators: Antonio Viviani (Italy), Rainer Willnecker (Germany)*

**A2.5. Facilities and Operations of Microgravity Experiments**

*Chairmen: Gérard Cambon (France), Rainer Willnecker (Germany)*

*Rapporteur: Marcus Dejmek (Canada), Rodney Herring (Canada)*

## IAC-06-A2.5.01

**Materials Research Conducted Aboard the International Space Station: Facilities Overview, Operational Procedures, and Experimental Outcomes**

*Dr. Richard Grugel, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States*

*Mr. Paul Luz, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, United States, Mr. Guy Smith, University of Alabama in Huntsville, Huntsville, AL, United States, Mr. Reggie Spivey, Tec-Masters, Huntsville, AL, United States, Ms. Linda Jeter, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, AL, United States, Dr. Donald Gillies, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, AL, United States, Dr. Fay Hua, Intel Corporation, Santa Clara, CA, United States, Dr. A. Anilkumar, Vanderbilt University, Nashville, TN, United States*

## IAC-06-A2.5.02

**DECLIC : A facility to investigate Fluids and Transparent Materials in Microgravity conditions in ISS**

*Mr. Romain Marcout, EADS SPACE Transportation, Saint Médard en Jalles, France*

*Mr. Gérard Cambon, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mr. Bernard Zappoli, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mrs. Fabienne Duclos, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mr. Sebastien Barde, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mr. Bernard Martin, EADS SPACE Transportation, Saint Médard en Jalles, France, Mr. Gerald Raymond, EADS SPACE Transportation, Saint Medard en Jalles, France*

## IAC-06-A2.5.03

**Real Time on-line Space Research Laboratory Environment Monitoring with off-line Trend and Prediction Analysis**

*Mr. Kenol Jules, National Aeronautics and Space Administration (NASA), Houston, TX, United States*

*Dr. Paul Lin, Cleveland State University, Cleveland, OH, United States*

## IAC-06-A2.5.04

**Bio-inspired mechatronic articulations for space use**

*Dr. Carlo Menon, European Space Agency/ESTEC, Noordwijk, The Netherlands*

*Prof. Richard van der Linde, Technical University of Delft (TUDelft), Delft, The Netherlands*

## IAC-06-A2.5.05

**High-Precision Temperature Control for GRAD-FLEX**

*Mr. Matthias Boehme, OHB-System AG, Bremen, Germany*

*Mr. Juergen Moors-Nitschmann, OHB-System AG, Bremen, Germany, Mr. Lutz Guenther, OHB-System AG, Bremen, Germany, Mr. Ralf Greger, HTS AG, Wallisellen, Switzerland, Mr. Antonio Verga, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-A2.5.06

**Telescience Support Unit onboard the FOTON Spacecraft**

*Mr. Jimmy Thorstenson, Swedish Space Corporation, Solna, Sweden*

*Mr. Stefan Lundin, Swedish Space Corporation, Solna, Sweden, Mr. Francesco Grassini, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Daniele Titomanlio, Techno System Development, Pozzouli (Na), Italy*

## IAC-06-A2.5.07

### A new Service Module for the MASER Sounding Rocket program

Mr. Gunnar Florin, Swedish Space Corporation, Solna, Sweden

Mr. Jimmy Thorstenson, Swedish Space Corporation, Solna, Sweden, Mr. Gunnar Andersson, Swedish Space Corporation, Solna, Sweden, Mr. Marcus Törnqvist, Swedish Space Corporation, Solna, Sweden, Mr. John Turner, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Wessling, Germany

## IAC-06-A2.5.08

### Long Term Preservation, Retrieval and Sharing of Spaceflight Experiments Data

Dr. Stephan Schneider, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Cologne, Germany

Dr. Rainer Willnecker, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Cologne, Germany, Mr. Soeren Schwartz, Werum Software & Systems AG, Lueneburg, Germany

# 87

October 05 2006, 10:10 - Room 1

### A3. Space Exploration Symposium

Coordinators: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)

#### A3.6. Moon Exploration

Chairmen: Bernard H. Foing (The Netherlands), James Middleton (Canada)

Rapporteur: William H. Siegfried (United States)

## IAC-06-A3.6.01

### Creating A Strategy for Exploration

Mr. Jeff Volosin, National Aeronautics and Space Administration (NASA), Crofton, United States

Mr. Gilbert Kirkham, National Aeronautics and Space Administration (NASA)/Headquarters, Washington, DC, United States, Mrs. Lisa Guerra, National Aeronautics and Space Administration (NASA)/Glenn Research Center, Cleveland OH, United States

## IAC-06-A3.6.02

### Role and Expectation of Eternal Light Region for Japanese Moon Exploration

Mr. Kohtaro Matsumoto, Japan Aerospace Exploration Agency (JAXA), Chofu, Tokyo, Japan

Dr. Mitsushige Oda, Japan Aerospace Exploration Agency (JAXA), Ibaraki-ken, Japan, Ms. Sachiko Wakabayashi, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan, Ms. Satomi Kawamoto, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan, Dr. Tatsuaki Okada, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan, Dr. Takahiro Iwata, Japan Aerospace Exploration Agency (JAXA) / ISAS, Tsukuba, Ibaraki, Japan, Dr. Makiko Ohtake, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan

## IAC-06-A3.6.03

### NASA's RLEP - 2 mission, enabling human return to the moon

Dr. John Horack, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States

## IAC-06-A3.6.04

### Present and prospect for the chinese space exploring technology

Dr. Xinbin Hou, China Academy of Space Technology (CAST), Beijing, China

Dr. Li Wang, China Academy of Space Technology (CAST), Beijing, China

## IAC-06-A3.6.05

### SMART-1 Lunar First Year Highlights

Dr. Bernard Foing, European Space Agency/ESTEC, Noordwijk, The Netherlands

## IAC-06-A3.6.06

### SMART-1 lunar mission: from capture to impact

Mr. Jurriaan De Bruin, European Space Agency/ESOC, Darmstadt, Germany

Mr. Octavio Camino, European Space Agency/ESOC, Darmstadt, Germany, Mr. Per Bodin, Swedish Space Corporation, Solna, Sweden, Mr. Peter Rathsmann, Swedish Space Corporation, Solna, Sweden, Mrs. Maria Alonso, European Space Agency/ESOC, Darmstadt, Germany, Mr. Johannes Schoenmaekers, European Space Agency/ESOC, Darmstadt, Germany

## IAC-06-A3.6.07

### Vision-aided Inertial Navigation for Pinpoint Lunar Landing

Dr. Shuang Li, Harbin Institute of Technology, Harbin, China

Mr. Cui Hutao, Harbin Institute of Technology, Harbin, China, Mr. Pingyuan Cui, Harbin Institute of Technology, Harbin, China

## IAC-06-A3.6.08

### High Autonomy Lunar Surface Mobility Systems

Prof. Ernesto Vallerani, International Space Pioneers, Miasino, Italy

Msc Alberto Della Torre, Carlo Gavazzi Space, Milan, Italy, Dr. Gian Paolo Guizzo, Carlo Gavazzi Space, Milan, Italy, Dr. Igor Vukman, Carlo Gavazzi Space, Milan, Italy

## IAC-06-A3.6.09

### Developing an Anorthositic Lunar Regolith Simulant

Ms. Melissa Battler, University of New Brunswick, Fredericton, NB, Canada

Mr. Jim Richard, Electric Vehicle Controllers Ltd., Val Caron, Canada, Mr. Dale Boucher, Norcat, Sudbury, ONT, Canada, Dr. John Spray, University of New Brunswick, Fredericton, Canada

# 88

October 05 2006, 10:10 - Room 3

### B1. Earth Observation Symposium

Coordinators: W. John Hussey (United States), Pierre Ranzoli (Germany)

#### B1.6. Global Earth Observation Initiatives

Chairmen: Jan Kolar (Czech Republic), David Brent Smith (United States)

Rapporteur: Y.J.A. Chong (Rep. Of Singapore)

## IAC-06-B1.6.01

### Group on Earth Observations (GEO) - GEONETCast

Mr. Thomas Adang, National Oceanic and Atmospheric Administration (NOAA), Camp Springs, MD, United States

Mr. Charles Bryant, National Oceanic and Atmospheric Administration (NOAA), Camp Springs, MD, United States, Mrs. Linda Moodie, National Oceanic and Atmospheric Administration (NOAA), Camp Springs, MD, United States, Mr. Gerald Dittberner, National Oceanic and Atmospheric Administration (NOAA), Camp Springs, MD, United States

## IAC-06-B1.6.02

### EUMETSAT Contributions to Global Earth Observation Initiatives

Dr. Werner Balogh, Eumetsat, Darmstadt, Germany

Dr. Piero Valabrega, Eumetsat, Darmstadt, Germany, Dr. David Williams, Eumetsat, Darmstadt, Germany

### **IAC-06-B1.6.03**

**World Meteorological Organization (WMO) and its Integrated Global Data Dissemination Service (IGDDS)**

*Dr. Donald Hinsman, World Meteorological Organization (WMO), Geneva, Switzerland*

### **IAC-06-B1.6.04**

**COMMS Mission - KARI (Invited paper)**

*Mr. Pierre Ranzoli, EADS Astrium, Munich, Germany*

### **IAC-06-B1.6.05**

**Present and Future Oceanography Missions - AAS (Invited Paper)**

*Mr. Paul Kamoun, Alcatel Alenia Space, Cannes La Bocca, France*

### **IAC-06-B1.6.06**

**Japanese Meteorological Satellites - JAXA (Invited Paper)**

*Mr. Pierre Ranzoli, EADS Astrium, Munich, Germany*

### **IAC-06-B1.6.07**

**Future NOAA Programme - NOAA (Invited Paper)**

*Mr. Thomas Adang, National Oceanic and Atmospheric Administration (NOAA), Camp Springs, MD, United States*  
*Mr. Gerald Dittberner, National Oceanic and Atmospheric Administration (NOAA), Camp Springs, MD, United States*

### **IAC-06-B1.6.08**

**Post-Launch Status of EPS (Invited Paper)**

*Dr. Marc Cohen, Eumetsat, Darmstadt, Germany*

### **IAC-06-B1.6.09**

**Integrated Mission Planning for FORMOSAT-2 Imaging Satellite and FORMOSAT-3 Meteorological Constellation**

*Dr. An-Ming Wu, National Space Organization, Hsin-chu, Taiwan, China*

### **IAC-06-B1.6.10**

**Future Geostationary Earth Observation Systems**

*Dr. Ralf Münzenmayer, EADS Astrium GmbH, Friedrichshafen, Germany*

*Dr. Heinrich Bovensmann, University of Bremen, Bremen, Germany, Dr. Bernhard Grafmüller, EADS Astrium GmbH, Friedrichshafen, Germany, Dr. Rolf Mager, EADS Astrium GmbH, Friedrichshafen, Germany, Mr. Thido Reinert, EADS Astrium GmbH, Friedrichshafen, Germany*

# 89

**October 05 2006, 10:10 - Room 5**

**B3. Space Communications and Navigation Symposium**

*Coordinators: Robert D. Briskman (United States), MG Chandrasekhar (United States)*

**B3.4. Communication Satellite Infrastructure and Economics**

*Chairmen: Venugopal Desaraju (India), Corinne Jorgenson (United States)*

### **IAC-06-B3.4.01**

**Lunar Network Coverage Analysis**

*Dr. Charles Lee, California State University, Fullerton, United States*

*Dr. Kar-Ming Cheung, Jet Propulsion Laboratory, Pasadena, United States*

### **IAC-06-B3.4.02**

**AmerHis: Triple play by Satellite**

*Mrs. Ana Yun, Alcatel Alenia Space, Madrid, Spain*

*Mr. Josep Prat, Alcatel Alenia Space, Madrid, Spain*

### **IAC-06-B3.4.03**

**Design of Multibeam Antenna System for Winds**

*Dr. Satoru Ozawa, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan*

*Mr. Yoichi Koishi, NEC Toshiba Space Systems, Ltd., Tokyo, Japan*

### **IAC-06-B3.4.04**

**Development of the optical ground station for the OICETS satellite**

*Dr. Morio Toyoshima, National Information and Communications Technology, Koganei, Tokyo, Japan*

*Dr. Toshiaki Kuri, National Institute of Information and Communications Technology, Koganei, Japan, Dr. Werner Klaus, National Institute of Information and Communications Technology, Koganei, Japan, Mr. Masahiro Toyoda, National Institute of Information and Communications Technology, Koganei, Japan, Mr. Hiroo Kunimori, National Institute of Information and Communications Technology, Koganei, Japan*

### **IAC-06-B3.4.05**

**An Integrated Satellite Communication System for Data Relay, Mobile Communication and Disaster Communications**

*Mr. Manfred Wittig, European Space Agency/ESTEC, Noordwijk, The Netherlands*

### **IAC-06-B3.4.06**

**S@tMax: Commercial Space-Based Mobile IP for Vehicles - Economic Feasibility**

*Mr. Bart Peeters, Ursa Minor, Delft, The Netherlands*

*Mrs. Wencke van der Meulen, Netherlands Agency for Aerospace Programs (NIVR), Delft, The Netherlands, Mr. Robert Mueller, National Aeronautics and Space Administration (NASA)/Kennedy Space Center, Florida, United States, Mr. George Gafka, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States, Mr. Joerg Kreisel, JOERG KREISEL International Consultant (JKIC), Aachen, Germany*

### **IAC-06-B3.4.07**

**Development of DFH-4, the third generation of China GEO platform**

*Mr. Feng Li, China Academy of Space Technology (CAST), Beijing, China*

*Mr. Zhicheng Zhou, China Academy of Space Technology (CAST), Beijing, China, Mr. Zhijia Li, China Academy of Space Technology (CAST), Beijing, China, Mr. Bao Zhang, China Academy of Space Technology (CAST), Beijing, China*

### **IAC-06-B3.4.08**

**Nigcomsat-1, the First Export Commercial Communications Satellite of China**

*Mr. Min Wang, China Academy of Space Technology (CAST), Beijing, China*

*Mr. Zhicheng Zhou, China Academy of Space Technology (CAST), Beijing, China*

## IAC-06-B3.4.09

### Demystifying the ITAR in international space cooperation

Mrs. Corinne Jorgenson, *Advancing Space Consulting Group, Fairfax, VA, United States*

Mr. John Ordway, *Berliner, Corcoran & Rowe, L.L.P., Washington DC, United States*, Mr. Karl Abendschein, *Berliner, Corcoran & Rowe, L.L.P., Washington, DC, United States*

# 90

**October 05 2006, 10:10 - Room 13**

### B4. Space Stations Symposium

*Coordinators: Mag Iskander (Canada), Carlo Mirra (The Netherlands)*

#### B4.4. Space Stations Evolution, Enhancement, New Programs

*Chairmen: Mag Iskander (Canada), Sergey K. Shaevich (Russia)*

*Rapporteur: Raimondo Fortezza (Italy)*

## IAC-06-B4.4.01

### Commercial Space Systems

*Mr. Alexander Derechin, S.P. Korolev Rocket and Space Corporation Energia, Moscow, Russia*

## IAC-06-B4.4.02

### The Crew Exploration Vehicle (CEV): the Next Generation of Human Spaceflight

*Mr. Todd Fox, The Boeing Company, Houston, United States*

*Mr. Michael Raftery, Boeing Integrated Defense Systems, Houston, United States*

## IAC-06-B4.4.03

### Feature Extraction Through Time

*Mr. Elliott Coleshill, University of Guelph, Milton, Ontario, Canada*

*Dr. Alex Ferworn, Ryerson University, Toronto, Ontario, Canada, Dr. Deborah Stacey, University of Guelph, Guelph, Canada*

## IAC-06-B4.4.04

### Space Stations: Evolution And New Programs

*Mr. Nikolay Sevastyanov, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Russia*

## IAC-06-B4.4.05

### A Multi-Purpose Astronaut Shower for Long-Duration Microgravity Missions

*Dr. Marco C Bernasconi, MCB Consultants, Dietikon, Switzerland*

*Mr. Meindert Versteeg, MCB Consultants, Dietikon, Switzerland, Mr. Roland Zenger, HTS AG, Wallisellen, Switzerland*

## IAC-06-B4.4.06

### International Approach for Commercial Cargo Logistics to ISS and Beyond

*Mr. James Harvey, Boeing Launch Services, Huntington Beach, United States*

*Mr. Rachid Amekrane, EADS SPACE Transportation, Bremen, Germany, Mr. Yasunobu Yoshida, Mitsubishi Heavy Industries, Ltd., Komaki-shi, Aichi-ken, Japan, Mr. Frank A. Slazer, The Boeing Company, Huntington Beach, CA, United States*

## IAC-06-B4.4.07

### Use of Speech Technologies in Space Operations

*Mr. Maurizio Martignano, Serco FM B.V., Noordwijk, The Netherlands*

## IAC-06-B4.4.08

### Functional state evaluation and prediction problems during flight to the Mars

*Dr. Roman Baevsky, Institute for Biomedical Problems, Moscow, Russia*

*Dr. Irina I. Funtova, Institute for Biomedical Problems, Moscow, Russia, Dr. Victor M. Baranov, Institute for Biomedical Problems, Moscow, Russia, M.D. Andrew Pashchenko, Institute for Biomedical Problems, Moscow, Russia*

# 91

**October 05 2006, 10:10 - Room 4**

### B5. Small Satellites Missions Symposium

*Coordinators: Rhoda Shaller Hornstein (United States), Rainer Sandau (Germany)*

#### B5.5. Small Spacecraft Launch, Injection, and Orbit Transfer Systems

*Chairmen: Alex da Silva Curriel (United Kingdom), Jeffery Emdee (United States)*

## IAC-06-B5.5.01

### The FALCON I Launch Vehicle

*Mr. Hans Koenigsmann, Space Exploration Technologies, El Segundo, CA, United States*

*Mrs. Gwynne Shotwell, Space Exploration Technologies, El Segundo, United States*

## IAC-06-B5.5.02

### Space Test Program-1 (STP-1)—Raising the Standard

*Major David Rodriguez, Space and Missile Systems Center, Kirtland AFB, NM, United States*

*Major Raymond L. Galik, Space and Missile Systems Center, Kirtland AFB, NM, United States*

## IAC-06-B5.5.03

### Launch of CNES small satellites : lessons learned and perspectives

*Mr. Pierre W. Bousquet, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

*Mr. Joël Dejoie, Centre National d'Etudes Spatiales (CNES), Toulouse, France, Mr. Vincent Dubourg, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

## IAC-06-B5.5.04

### Options for Small Satellite Deorbit from LEO

*Mr. Angelo Grubisic, University of Surrey, Kildminster, United Kingdom*

*Mr. D. Gibbon, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom, Mr. Sanjay Mistry, Surrey Satellite Technology Ltd., Guildford, United Kingdom, Prof. Sir. Martin Sweeting, Surrey Space Centre, Guildford, United Kingdom*

## IAC-06-B5.5.05

### KAP - a new standard platform for in-orbit verification providing efficient access to space

*Dr. Clemens Kaiser, Kayser-Threde GmbH, Munich, Germany*

*Mr. Eckart Wulf, Kayser-Threde GmbH, Munich, Germany*

## IAC-06-B5.5.06

Development and mission status report of gas-liquid equilibrium thruster for the small satellite

*Dr. Takayuki Yamamoto, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan*

*Dr. Osamu Mori, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Kanagawa, Japan, Mr. Maki Shida, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan*

## IAC-06-B5.5.07

The Aquarius, a proposal for a nano-satellites launcher vehicle

*Dr. Julian Simon, Instituto Nacional de Tecnica Aeroespacial (INTA), Torrejón de Ardoz, Spain*

## IAC-06-B5.5.08

The Replenishment of LEO Small Satellite Constellations

*Mr. Gerry Webb, Commercial Space Technologies Ltd, Hanwell - London, United Kingdom*

## IAC-06-B5.5.09

A Hybrid Launch System for Affordable Independent Microsatellite Launch

*Mr. Charles Lauer, Rocketplane Ltd., MI, United States*

## IAC-06-B5.5.10

Structures for multiple launch configurations of Zenit Launch Vehicle: gained experiences, perspective and aspects of protection against space debris

*Ms. Natalia Kocherga, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine*

*Mr. Alexander Degtyarev, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine, Mr. Alexander Kushnarev, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine*

## IAC-06-B5.5.11

NERVA Romanian Non-orbital Entry-Return Vehicle Assessor Project

*Dr. Radu Rugescu, Politechnic University of Bucharest, Bucharest, Romania*

## IAC-06-B5.5.12

Miniaturization of components and systems for space using MEMS technology

*Mr. Tor-Arne Grönland, NanoSpace AB, Solna, Sweden*

*Dr. Pelle Rangsten, NanoSpace AB, Solna, Sweden, Dr. Martin Nese, Presens, Oslo, Norway, Dr. Martin Lang, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-B5.5.13

Design and Development of a Propulsion System for a CUBESAT

*Mr. Nico Rackemann, Technical University of Berlin, Berlin, Germany*

*Mr. Berry Sanders, TNO Defence, Security & Safety, Rijswijk, The Netherlands, Mr. Laurens van Vliet, TNO Defence, Security & Safety, Rijswijk, The Netherlands, Mr. Jean-Luc Moerel, TNO Defence, Security & Safety, Rijswijk, The Netherlands*

# 92

## October 05 2006, 10:10 - Room 6

### B6. Space Debris Symposium

*Coordinators: Christophe Bonnal (France), Walter Flury (Germany), Nicholas L. Johnson (United States)*

### B6.3. Hypervelocity Impacts and Protection

*Chairmen: Eric Christiansen (United States), Michel Lambert (The Netherlands)*

*Rapporteur: Wei Zhang (China)*

### IAC-06-B6.3.01

Hypervelocity impact damage models of viewports by orbit debris

*Prof. Hwei Pang, Beijing institute of satellite environment engineering, Beijing, China*

### IAC-06-B6.3.02

An excitation function for hypervelocity impact-induced wave propagation in satellite structures

*Mr. Shannon Ryan, School of Aerospace, Mechanical and Manufacturing Engineering, RMIT University, Melbourne, Australia*

*Dr. Frank Schaefer, Fraunhofer-Institut für Kurzzzeitdynamik, Ernst-Mach-Institut (EMI), Freiburg, Germany, Mr. Guy Spencer, Ernst-Mach Institut, Freiburg, Germany, Dr. Stefan Hiermaier, Fraunhofer-Institut für Kurzzzeitdynamik, Ernst-Mach-Institut (EMI), Freiburg, Germany, Mr. Matthieu Guyot, EADS Astrium SAS, Toulouse, France, Mr. Michel Lambert, European Space Agency/ESTEC, Noordwijk, The Netherlands*

### IAC-06-B6.3.03

Overview of Recent Enhancements to the BUMPER-II Meteoroid & Orbital Debris Risk Assessment Tool

*Mr. James L. Hyde, National Aeronautics and Space Administration (NASA), Houston, TX 77058, United States*

*Dr. Eric Christiansen, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States, Mrs. Dana M. Lear, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States, Mr. Thomas G. Prior, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States*

### IAC-06-B6.3.04

The computer program for calculation of space station loss risks caused by meteoroids and space debris

*Mr. Andrei Gorbenko, S.P. Korolev Rocket and Space Corporation Energia, Moscow, Russia*

*Dr. Valeri Afanasjev, Chemical Machinery Design Bureau (CMDB), Korolev, Russia, Dr. Alexander G. Brovkin, Chemical Machinery Design Bureau (CMDB), Korolev, Russia, Dr. Vjacheslav G. Sokolov, Chemical Machinery Design Bureau (CMDB), Korolev, Russia*

### IAC-06-B6.3.05

Space Station MMOD Shielding

*Dr. Eric Christiansen, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States*

### IAC-06-B6.3.06

Wireless Instrumentation for Impact Monitoring on Space Shuttle, International Space Station, Inflatable Habitats and Future Vehicles

*Mr. George Studor, National Aeronautics and Space Administration (NASA), Houston, TX, United States*

## IAC-06-B6.3.07

### On the protection constructions for the Spektr

Dr. Sergey Meshcheryakov, Central Research Institute of Machine Building (TSNIIMASH), Korolev, Russia  
Dr. Olga Kuzenova, Khimki, Russia, Dr. Svyatoslav Ustinov, Khimki, Russia

## IAC-06-B6.3.08

### Comparison between New Satellite Impact Test Results and the NASA Standard Breakup Model

Mr. Yoshihiro Tsuruda, Kyushu University, Fukuoka, Japan  
Prof. Toshiya Hanada, Kyushu University, Fukuoka, Japan,  
Mr. Yasuhiro Akahoshi, Kyushu Institute of Technology, Kitakyushu, Japan, Dr. J.-C. Liou, ESCG/ERC, Houston, United States

## IAC-06-B6.3.09

### Calorimetric energy detector for space debris

Dr. Michael Kobusch, Physikalisch-Technische Bundesanstalt, Braunschweig, Germany  
Dr. Frank Jäger, Physikalisch-Technische Bundesanstalt, Braunschweig, Germany, Dr. Karl Dietrich Bunte, etamax Space GmbH, Braunschweig, Germany, Dr. Torsten Fichna, Braunschweig, Germany, Dr. Ernst Keffler, Institut für Physikalische Hochtechnologie e.V., Jena, Germany

## IAC-06-B6.3.10

### Improving the Near-Earth Micrometeoroid and Orbital Debris Environment Definition with LAD-C

Dr. J.-C. Liou, ESCG/ERC, Houston, United States  
Dr. F. Giovane, Naval Research Laboratory, Washington, DC, United States, Dr. Robert Corsaro, Naval Research Laboratory, Washington D. C., United States, Mr. Eugene Stansbery, National Aeronautics and Space Administration (NASA), Houston, Texas, United States

## IAC-06-B6.3.11

### Experimental and numerical study to investigate impact-induced wave propagation in spacecraft

Dr. Frank Schaefer, Fraunhofer-Institut für Kurzezeitdynamik, Ernst-Mach-Institut (EMI), Freiburg, Germany  
Mr. Guy Spencer, Ernst-Mach Institut, Freiburg, Germany,  
Mr. Shannon Ryan, School of Aerospace, Mechanical and Manufacturing Engineering, RMIT University, Melbourne, Australia, Dr. Markus Wicklein, Ernst-Mach Institut, Freiburg, Germany, Mr. Michel Lambert, European Space Agency/ESTEC, Noordwijk, The Netherlands

# 93

**October 05 2006, 10:10 - Room 10**

### C1. Astrodynamics Symposium

Coordinators: Alberto Foni (Italy), Arun Misra (Canada)

#### C1.6. Mission Operations

Chairmen: Therese Donath (France), Veniamin V. Malyshev (Russia)

Rapporteur: Ming Li (China)

## IAC-06-C1.6.01

### Ground Guided CX-OLEV Rendez-vous with Uncooperative Geostationary Satellite

Mr. Lorenzo Tarabini, GMV S.A., Tres cantos, Spain  
Mr. Jesus Gil-Fernandez, GMV S.A., PTM Tres Cantos (Madrid), Spain, Mr. Fernando Gandia, GMV S.A., Tres Cantos (Madrid), Spain, Mr. Miguel Angelo Molina, GMV S.A., Tres Cantos, Madrid, Spain, Mr. Juan Manuel del Cura, SENER Ingenieria y Sistemas, S.A., Tres Cantos (Madrid), Spain, Dr. Guillermo Ortega, European Space Agency/ESTEC, Noordwijk, The Netherlands

## IAC-06-C1.6.02

### Asvis, an operational vehicle servicing the ISS

Mr. Juan Manuel del Cura, SENER Ingenieria y Sistemas, S.A., Tres Cantos (Madrid), Spain  
Mr. Amador Lopez, SENER Ingenieria y Sistemas, S.A., Tres Cantos (Madrid), Spain, Mr. Victor Marco, Tres Cantos (Madrid), Spain, Mr. Emilio Vez, SENER Ingenieria y Sistemas, S.A., Tres Cantos (Madrid), Spain, Mr. Pablo Colmenarejo, GMV S.A., Tres Cantos (Madrid), Spain, Mr. Fernando Gandia, GMV S.A., Tres Cantos (Madrid), Spain, Mr. Luigi Strippoli, GMV S.A., Tres Cantos (Madrid), Spain, Mrs. Pia Mitschdoerfer, European Space Agency/ESTEC, Noordwijk, The Netherlands, Dr. Guillermo Ortega, European Space Agency/ESTEC, Noordwijk, The Netherlands

## IAC-06-C1.6.03

### INSAT-4A Launch and Early Orbit Phase Orbit Determination

Dr. Vighnesam Narayanasetti Venkata, Indian Space Research Organization (ISRO), Bangalore, India  
Mr. Pramod Kumar Soni, Indian Space Research Organization (ISRO), Bangalore, India, Mr. Anatta Sonney, Indian Space Research Organization (ISRO), Bangalore, India

## IAC-06-C1.6.04

### MORE: an advanced tracking experiment for the exploration of Mercury with the mission BepiColombo.

Prof. Luciano Iess, University of Rome "La Sapienza", Rome, Italy  
Mr. Sami W. Asmar, Jet Propulsion Laboratory, Pasadena, CA, United States, Dr. Paolo Tortora, University of Bologna, Forli, Italy

## IAC-06-C1.6.05

### Science-Driven Design of ENCELADUS Flyby Geometry

Mr. Brent Buffington, Jet Propulsion Laboratory / CalTech, Pasadena, United States  
Mr. Nathan Strange, Jet Propulsion Laboratory / CalTech, Montrose, CA, United States

## IAC-06-C1.6.06

### The Mission Operations of HAYABUSA Asteroid Explorer

Mr. Takeshi Oshima, NEC TOSHIBA Space Systems (NTS), Tokyo, Japan  
Dr. Junichiro Kawaguchi, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan, Mr. Shinji Hagino, NEC TOSHIBA Space Systems (NTS), Yokohama, Japan

## IAC-06-C1.6.07

### Differential orbit estimation for formation flying

Mr. Xavier Vanwijck, Office National d'Etudes et de Recherches Aéropatiales (ONERA), Lille, France  
Mrs. Ana Diaz, European Space Agency/Student Participation Programme, Madrid, Spain

## IAC-06-C1.6.08

### State transition matrix of relative motion for the non-circular orbit. Relation with partial-derivative matrix in the satellite coordinate system

Prof. Andrey Nazarenko, Space Observation Center, Moscow, Russia

## IAC-06-C1.6.09

### Mission Analysis and Design of Formation Flying InSAR Remote Sensing Missions with Electric Propulsion

*Ms. Stefania Cornara, DEIMOS Space S.L., Tres Cantos, Madrid, Spain*

*Mr. Vicente Fernández, DEIMOS Space S.L., Tres Cantos, Spain, Dr. Luis F. Penin, DEIMOS Engenharia, Lisboa, Portugal, Mr. Juan-Carlos Bastante, DEIMOS Space, Tres Cantos, Madrid, Spain, Mr. Jose Gonzalez del Amo, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Bernardo Carnicero Domínguez, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Michael E. Price, Qinetiq, Farnborough, Hampshire, United Kingdom*

## IAC-06-C1.6.10

### Ground Station Network to Improve Operation Efficiency of Small Satellites and Its Operation Scheduling Method

*Mr. Yuya Nakamura, University of Tokyo, Tokyo, Japan*

*Prof. Shinichi Nakasuka, University of Tokyo, Tokyo, Japan*

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**October 05 2006, 10:10 - Room 15**

## C2. Materials and Structures Symposium

*Coordinators: Constantinos P. Stavrinidis (The Netherlands), Pavel M. Trivailo (Australia)*

### C2.6. Space Environmental Effects and Spacecraft Protection

*Chairmen: Murray Hirschbein (United States), Akira Meguro (Japan)*

*Rapporteur: Frédéric Leleu (France)*

## IAC-06-C2.6.01

### The GIBLI Plasma Wind Tunnel: description of the new CIRA-PWT facility

*Mr. Carlo Purpura, C.I.R.A. Italian Aerospace Research Centre, Capua, Italy*

## IAC-06-C2.6.02

### Survival Probability of Double Strand Tether with Knots against Orbital Debris Impacts

*Prof. Toshiya Hanada, Kyushu University, Fukuoka, Japan*

*Dr. Hiroshi Hirayama, Kyushu University, Fukuoka, Japan*

## IAC-06-C2.6.03

### Active electro-magnetic radiation shield

*Mr. Stuart Allan, Kingston University, Kingston on Thames, United Kingdom*

## IAC-06-C2.6.04

### Limitations of current and future radiation protection schemes on the future of human space travel beyond low earth orbit

*Mr. Kevin Stube, Tucson, United States*

## IAC-06-C2.6.05

### In-flight measurement of radiation effects on electrical components

*Mr. Alejandro Salado, Universidad Politécnica de Valencia, Alicante, Spain*

## IAC-06-C2.6.06

### Simulation of Atomic oxygen erosion of polymer materials: comparison between at ground experimental results and the spherical thermal spike model.

*Dr. Scaglione Salvatore, ENEA, Rome, Italy*

*Dr. Fazi Mario, ENEA, Rome, Italy*

## IAC-06-C2.6.07

### Arc discharges ground experiment of solar array module plasma interactions

*Prof. Jingyu Tong, Beijing institute of satellite environment engineering, Beijing, China*

## IAC-06-C2.6.08

### Equivalent Properties of Single Event Burnout in Power MOSFET Induced by Heavy Ion and <sup>252</sup>Cf Fission Fragment

*Dr. Cao Zhou, Lanzhou Institute of Physics, Lanzhou, China*

## IAC-06-C2.6.09

### Surface Characterization of Metallic and Ceramic TPS-Materials for Reusable Space Vehicles

*Mr. Markus Schuessler, University of Stuttgart, Stuttgart, Germany*

*Mrs. Monika Auweter-Kurtz, Institute of Space Systems, Stuttgart, Germany, Mr. Georg Herdrich, University of Stuttgart, Stuttgart, Germany*

## IAC-06-C2.6.10

### Analysis of the long-term evolution of the scd1 satellite temperatures

*Dr. Issamu Muraoka, Instituto Nacional de Pesquisas Espaciais (INPE), São José dos Campos-SP, Brazil*

*Ms. Andreia Sorice, Technological Institute of Aeronautics - ITA/CTA, São José dos Campos - SP, Brazil, Dr. Ezio Castejon Garcia, Instituto Tecnológico de Aeronáutica - ITA - IEM, São José dos Campos, Brazil*

## IAC-06-C2.6.11

### The ablation of hybrid carbon/carbon composites under the condition of high-temperature and high-pressure

*Prof. Huang Haiming, Beijing Jiaotong University, Beijing, China*

*Dr. Gao Suowen, China Academy of Launch Vehicle Technology, Beijing, China*

# 95

**October 05 2006, 10:10 - Room 8**

## C3. Space Power Symposium

*Coordinators: John C. Mankins (United States)*

### C3.4. Joint Session on Advanced Concepts for Space Power: Enabling Ambitious Space Exploration and Utilization with D3.4.

*Chairmen: Ivan Bekey (United States), Leopold Summerer (The Netherlands)*

*Rapporteur: George Morgenthaler (United States), Harvey J. Willenberg (United States)*

## IAC-06-C3.4.-D3.4.01

### European Options for Power Systems for Space Exploration Missions

*Dr. Leopold Summerer, European Space Agency/ESTEC, Noordwijk, The Netherlands*



### **IAC-06-C3.4.-D3.4.02**

#### **A Solar Electric Propulsion Mission for Lunar Power Beaming**

*Dr. Henry Brandhorst, Auburn University, Auburn University, AL, United States*

Mr. Mark J. O'Neill, ENTECH, Inc., Keller, TX, United States, Mr. Ron Spores, Aerojet, Redmond, WA, United States, Mr. Christian Carpenter, Aerojet, Redmond, WA, United States, Mrs. Julie Rodiek, Auburn University, AL, United States, Mr. Michael Crumpler, Auburn University, AL, United States

### **IAC-06-C3.4.-D3.4.03**

#### **A lunar In Situ Resource Utilization Nuclear powered mission**

*Dr. Elvina Finzi, Politecnico di Milano, Milan, Italy*

Dr. Andrea Davighi, Politecnico di Milano, Milan, Italy, Mr. Giovanni Giardini, Politecnico di Milano, Milan, Italy, Mrs. Amalia Ercoli Finzi, Politecnico di Milano, Milan, Italy

### **IAC-06-C3.4.-D3.4.04**

#### **In orbit performance of the UNISAT-3 solar arrays**

*Mr. Fabio Santoni, Scuola di Ingegneria Aerospaziale, Rome, Italy*

Mr. Fabrizio Piergentili, Scuola di Ingegneria Aerospaziale, Rome, Italy, Prof. Filippo Graziani, University of Rome "La Sapienza", Rome, Italy

### **IAC-06-C3.4.-D3.4.05**

#### **Optimization of the New Horizons Spacecraft Power Demand for a Single Radioisotope Thermoelectric Generator**

*Mr. Chris Hersman, The John Hopkins University Applied Physics Laboratory, Laurel, MD, United States*

Mr. David Y. Kusnierkiewicz, The John Hopkins University, Laurel, MD, United States

### **IAC-06-C3.4.-D3.4.06**

#### **The Space Power Grid**

*Prof. Narayanan Komerath, Georgia Institute of Technology, Atlanta, United States*

### **IAC-06-C3.4.-D3.4.07**

#### **Building large structures in space using identical components**

*Dr. Dario Izzo, European Space Agency/ESTEC, Noordwijk, The Netherlands*

Mr. Lorenzo Pettazzi, ZARM - University of Bremen, Bremen, Germany

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## **October 05 2006, 10:10 - Room 9**

### **C4. Space Propulsion Symposium**

*Coordinators: Dana G. Andrews (United States), Giorgio Saccoccia (The Netherlands)*

#### **C4.4. Electric Propulsion**

*Chairmen: Garri Popov (Russia), Giorgio Saccoccia (The Netherlands)*

*Rapporteur: Oleg A. Gorshkov (Russia)*

### **IAC-06-C4.4.01**

#### **Overview and research status of the JAXA 150-mN Ion Engine**

*Dr. Shoji Kitamura, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan*

Dr. Yasushi Ohkawa, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan, Mr. Yukio Hayakawa, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan, Mr. Hideki Yoshida, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan, Mr. Katsuhiro Miyazaki, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan

### **IAC-06-C4.4.02**

#### **A Solar Electrical Propulsion Lunar Exploration Architecture Evaluation**

*Mr. William Kosmann, Orbital Sciences Corporation, Middleburg, United States*

### **IAC-06-C4.4.03**

#### **Experimental Investigations on Thermal Arcjet Thruster Development for a Science Mission to the Moon**

*Ms. Dagmar Bock, Institute of Space Systems, Stuttgart, Germany*

Mrs. Monika Auweter-Kurtz, Institute of Space Systems, Stuttgart, Germany, Mr. Helmut L. Kurtz, Institute of Space Systems, Stuttgart, Germany, Prof. Hans-Peter Roeser, University of Stuttgart, Stuttgart, Germany

### **IAC-06-C4.4.04**

#### **SEP for a lander mission to the jovian moon europa**

*Dr. Horst W. Loeb, University of Giessen, Giessen, Germany*

Dr. Karl-Heinz Schartner, Giessen University, Giessen, Germany, Dr. Wolfgang Seboldt, German Aerospace Center (DLR), Cologne, Germany, Mr. Joern Streppel, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Cologne, Germany, Dr. Bernd Dachwald, German Aerospace Center (DLR), Wessling, Germany

### **IAC-06-C4.4.05**

#### **Ion Engine Products and Applications by Qinetiq**

*Mr. Richard Blott, Qinetiq Ltd., Farnborough, United Kingdom*

### **IAC-06-C4.4.06**

#### **Easy engineering technique of optimal electric propulsion trajectory estimation**

*Prof. Mikhail S. Konstantinov, Moscow Aviation Institute, Moscow, Russia*

Dr. Vyacheslav Petukhov, Khronichev State Research & Production Space Center, Moscow, Russia

### **IAC-06-C4.4.07**

#### **The Innovative Dual-Stage 4-Grid Ion Thruster Concept – Theory And Experimental Results**

*Dr. Cristina Bramanti, European Space Agency (ESA), Noordwijk, The Netherlands*

Dr. Roger Walker, European Space Agency/ESTEC, Noordwijk, The Netherlands, Dr. David G. Fearn, EP Solutions, Fleet, Hans, United Kingdom, Dr. Orson Sutherland, Australian National University, Canberra, Australia, Mr. Pierre Etienne Frigot, European Space Agency (ESA), Noordwijk, The Netherlands, Ms. Marika Orlandi, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Jose Gonzalez del Amo, European Space Agency/ESTEC, Noordwijk, The Netherlands, Prof. Rod Boswell, Canberra, Australia, Dr. Christine Charles, Canberra, Australia

### **IAC-06-C4.4.08**

#### **The experience of hall thruster research and development**

*Dr. Andrey Shagayda, Keldysh Research Center, Moscow, Russia*

Dr. Anatoly Koroteev, Keldysh Research Center, Moscow, Russia, Dr. Oleg A. Gorshkov, Keldysh Research Center, Moscow, Russia, Mr. Viatcheslav Muravlev, Keldysh Research Center, Moscow, Russia

### **IAC-06-C4.4.09**

#### **Hall Thruster System Qualification Provides Major Satellite Benefits**

*Mr. Bill Smith, Aerojet, Redmond, United States*

## IAC-06-C4.4.10

### Performance Improvement of the Microwave Discharge Ion Thruster

Mr. Tatsuya NAKAI, University of Tokyo, Kanagawa, Japan

Dr. Kazutaka Nishiyama, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Kanagawa, Japan, Dr. Hitoshi Kuninaka, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagamihara, Japan

# 97

October 05 2006, 10:10 - Room 12

### D1. Space Systems Symposium

Coordinators: Hans F.A. Roefs (The Netherlands), Lawrence Dale Thomas (United States)

### D1.3. System Engineering Tools, Processes & Training

Chairmen: Hans F.A. Roefs (The Netherlands), Lawrence Dale Thomas (United States)

Rapporteur: Wiley Larson (United States)

## IAC-06-D1.3.01

### Spacecraft Operations Training Centre: a Cost and Time Efficient Solution for Operations Training

Mr. Christian D. Bodemann, VEGA Informations - Technologien GmbH, Darmstadt, Germany

Mr. Filippo De Rose, VEGA Group, Darmstadt, Germany, Mr. Joachim Ochs, VEGA Informations - Technologien GmbH, Darmstadt, Germany

## IAC-06-D1.3.02

### Model-based Design and Verification – State of the Art from Galileo Constellation down to Small University Satellites

Dr. Jens Eickhoff, EADS SPACE Transportation, Friedrichshafen, Germany

Mr. Albert Falke, University of Stuttgart, Stuttgart, Germany, Prof. Hans-Peter Roeser, University of Stuttgart, Stuttgart, Germany

## IAC-06-D1.3.03

### Mission Lifecycle Management: integrating people, data and systems

Mr. Julien Feyeux, Processia Solutions Inc., Laval, QC, Canada

## IAC-06-D1.3.04 (WITHDRAWN)

### Interactive Visual Design Optimization and Analysis for Solid Rocket Motor

Dr. Ou Haiying, National University of Defense Technology, Changsha, China

## IAC-06-D1.3.05

### Requirement Generation for Space Infrastructure Systems

Mr. Mark Hempell, University of Bristol, Bristol, United Kingdom

## IAC-06-D1.3.06

### An HLA Based Design of Space System Simulation Environment

Dr. Yinghua Li, China Academy of Space Technology (CAST), Beijing, China

Dr. Yong Li, China Academy of Space Technology (CAST), Beijing, China, Dr. Jie Liu, Beijing University of Aeronautics and Astronautics, Beijing, China

## IAC-06-D1.3.07

### A Computational Method for Mapping the Decision Space of the Lunar Exploration Program

Mr. Willard L. Simmons, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States

Prof. Edward Crawley, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States, Dr. Benjamin Koo, Fei-Yao International, Beitou, Taipei, Taiwan, China

## IAC-06-D1.3.08

### Integrated Transportation System Design for Space Exploration Logistics

Ms. Christine Taylor, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States

Dr. Olivier de Weck, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States, Dr. Diego Klabjan, Massachusetts Institute of Technology (MIT), Cambridge, United States, Dr. David Simchi-Levi, Massachusetts Institute of Technology (MIT), Cambridge, United States

## IAC-06-D1.3.09

### An Innovative Methodology for Allocating Reliability and Cost in a Lunar Exploration Architecture

Mr. David Young, Georgia Institute of Technology, Atlanta, United States

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October 05 2006, 10:10 - Room 2

### D2. Space Transportation Symposium

Coordinators: Christophe Bonnal (France), Richard Tyson (United States)

### D2.6. Future Space Transportation Systems Technologies In-Flight Experimentation

Chairmen: Christian Dujarric (France), J. Phil Sumrall (United States)

Rapporteur: Shigeru Aso (Japan)

## IAC-06-D2.6.01

### The Flight of SHEFEX

Dr. Norbert Puettmann, German Aerospace Center (DLR), Bonn, Germany

Dr. José Longo, German Aerospace Center (DLR), Braunschweig, Germany

## IAC-06-D2.6.02

### NASA Crew Launch Vehicle Flight Test Options

Mr. Michael L. Burris, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, Virginia, United States

Mr. Stephan Davis, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States, Ms. Kimberly Robinson, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States, Dr. Margaret Tuma, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Cleveland, Ohio, United States

## IAC-06-D2.6.03

### Technology for the European Next Generation Launcher: integrated on-ground and in-flight development approach

Mr. Dario Boggiatto, Alenia Aerospazio S.p.A, Turin, Italy

Mr. Rodrigo da Costa, Turin, Italy, Mr. Thomas Franck, EADS Space Transportation GmbH, Turin, Italy, Mr. Giorgio Tumino, European Space Agency/Headquarters, Paris, France

## IAC-06-D2.6.04

### FLEX In-flight testbed for validating Next Generation Launcher Technologies

*Mr. Christophe Chavagnac, EADS SPACE Transportation, Les Mureaux, France*

*Mr. Yves Prel, Centre National d'Etudes Spatiales (CNES), Evry, France, Mr. Pascal Bultel, Centre National d'Etudes Spatiales (CNES), Evry, France, Dr. Anton Kolozevny, TSNIIMASH, Korolev, Russia, Dr. Alexey Romashkin, TSNIIMASH, Korolev, Russia, Mr. David Iranzo-Greus, EADS SPACE Transportation, Les Mureaux, France*

## IAC-06-D2.6.05

### FLPP Re-entry In-Flight Experimentation: current status of the Intermediate eXperimental Vehicle (IXV)

*Mr. Yves Gerard, EADS SPACE Transportation, St Medard en Jalles, France*

*Mr. Giorgio Tumino, European Space Agency/Headquarters, Paris, France*

## IAC-06-D2.6.06

### Reuse-X Vehicle Approach – A Key Element of FLPP In-flight Technology Experimentation and Demonstration

*Mr. herbert grallert, NGL Co Office, Turin, Italy*

*Mr. Laurent Bouaziz, Next Generation Launcher Prime SpA, Turin, Italy*

## IAC-06-D2.6.07

### EXPERT aerothermodynamic flight instrumentation environment and integration

*Mr. Jean-Marie Muylaert, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-D2.6.08

### Numerical prediction of aerothermodynamic effects on a reentry vehicle body flap configuration

*Mr. Marco Di Clemente, C.I.R.A. Italian Aerospace Research Centre, Capua, Italy*

*Dr. Marco Marini, C.I.R.A. Italian Aerospace Research Centre, Capua, Italy, Mrs. Sara Di Benedetto, C.I.R.A. Italian Aerospace Research Centre, Capua, Italy, Mr. Antonio Schettino, capua, Italy, Dr. Giuliano Ranuzzi, C.I.R.A. Italian Aerospace Research Centre, Capua, Italy*

## IAC-06-D2.6.09

### The Rational for a Hypersonic/Airbreathing launch Vehicle Technology Deonstrator

*Prof. Dr. Masataka Maita, Japan Aerospace Exploration Agency (JAXA), Chofu, Tokyo, Japan*

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## October 05 2006, 10:10 - Room 17

### E1. Space Education and Outreach Symposium

*Coordinators: Pierre-Louis Contreras (France)*

#### E1.3. Educational Outreach

*Chairmen: Carsten Holze (Germany), Olga Zhdanovich (Russia)*

*Rapporteur: Vera Mayorova (Russia)*

## IAC-06-E1.3.01

### Bees in Space: Creating a buzz about space science

*Ms. Naomi Mathers, Victorian Space Science Education Centre, Melbourne, Australia*

*Prof. Lachlan Thompson, Royal Melbourne Institute of Technology (RMIT), Melbourne, Australia, Mrs. Anne Brumfitt, European Space Agency/ESTEC, South Holland, The Netherlands, Mr. Patrick Honan, Melbourne Zoo, Parkville, Australia*

## IAC-06-E1.3.02

### Attracting Young People to Participation in Educational Experiments on Board of International Space Station

*Mrs. Galina Nechitailo, Institute of Biochemical Physics, Moscow, Russia*

*Mrs. Vera Mayorova, Moscow State Technical University named Bauman, Moscow, Russia*

## IAC-06-E1.3.03

### Tomatosphere - To Mars and Beyond: An educational outreach project for primary and secondary schools

*Mr. Robert Morrow, Tomatosphere, Dundas, Ontario, Canada*

*Dr. Mike Dixon, University of Guelph, Guelph, Canada, Dr. Robert Thirsk, LBJ Space Centre, Houston, United States, Mrs. Marilyn Steinberg, Canadian Space Agency, Saint-Hubert, QC, Canada*

## IAC-06-E1.3.04

### Satellite Investigator: an artist-in-residence at the University of British Columbia

*Ms. Joanna Griffin, Joanna Griffin, Newton Abbot, United Kingdom*

## IAC-06-E1.3.05

### Student Activities before Formosa Satellites Launches

*Dr. Jeng-Shing Chern, National Space Organization, Hsinchu, Taiwan, China*

*Dr. Shao-Shing Chen, National Space Organization, Hsinchu, Taiwan, China, Dr. Lance Wu, National Space Organization, Hsinchu, Taiwan, China*

## IAC-06-E1.3.06

### Interdisciplinary Space Architecture Graduate Education at the University of Houston - SICSA

*Dr. Larry Bell, Sasakawa International Center for Space Architecture, Houston, TX, United States*

## IAC-06-E1.3.07

### An Education and Public Outreach Program for Space Weather Activities and Effects on Human Life

*Dr. Isabelle Scholl, International Space University (ISU), Illkirch-Graffestaden, France*

*Mr. Morten Hansen, International Space University (ISU), Strasbourg, France, Mr. Vladimir Ivkovic, Institute for Anthropological Research (Zagreb, Croatia) & International Space University, Illkirch-Graffestaden, Croatia*

## IAC-06-E1.3.08

### Espacial.com: Analysis of a long-term web-based space educational experience

*Dr. Antoni Pérez-Poch, Universitat Politècnica de Catalunya, Barcelona, Spain*

*Mr. Roberto Solans, Buenos Aires, Argentina*

## IAC-06-E1.3.09

### Educating the next generation of space explorers: cultivating public participation for space exploration

*Dr. Marlene MacLeish, National Space and Biomedical Research Institute, Atlanta, GA, United States*

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**October 05 2006, 10:10 - Room 14**

**E3. Symposium on Which Direction in Space? Balancing Applications and Exploration**

*Coordinators: Gérard Brachet (France), Debra Facktor Lepore (United States)*

**E3.5. Scientific-Legal Roundtable: Nuclear Power Systems in Space - The New Reality (IAA.5.13/IISL)**

*Chairmen: Vladimír Kopal (Czech Republic), Wendell Mendell (United States)*  
*Rapporteur: Patricia Sterns (United States)*

**IAC-06-E3.5.**

**Legal Aspects of the Use of Nuclear Power and the Debate in UNCOPUOS**

*Dr. Frans G. Von der Dunk, International Institute of Air and Space Law, Leiden, The Netherlands*

**IAC-06-E3.5.**

**Nuclear Power Sources as a Problematic Topic in the Public Debate**

*Dr. Kai-Uwe Schrögl, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Cologne, Germany*

**IAC-06-E3.5.**

**European plans for the use of Nuclear Power Sources**

*Prof. Gerhard Haerendel, International University of Bremen, Bremen, Germany*

**IAC-06-E3.5.**

**Utilization of Nuclear Power Sources in the U.S. Vision for Space Exploration**

*Dr. David E. Bartine, National Aeronautics and Space Administration (NASA)/Kennedy Space Center, FL, United States*

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**October 05 2006, 10:10 - Room 16**

**E5. 17th Symposium on Space Activity and Society**

*Coordinators: Roger Malina (France), David Raitt (The Netherlands)*

**E5.3. Popularization of Space**

*Chairmen: David Raitt (The Netherlands), Arthur R. Woods (Switzerland)*  
*Rapporteur: Patrick J. Gyger (Switzerland)*

**IAC-06-E5.3.01**

**The Virtual Global Space Exploration Education Portal**

*Ms. Carol Oliver, Macquarie University, North Ryde, NSW, Australia*

**IAC-06-E5.3.02**

**Space resources for the classroom**

*Mrs. Birgit Strömsholm, Narom/Andoya Rocket Range, Andenes, Norway*

**IAC-06-E5.3.03**

**Victorian Space Science Education Centre: Communicating Space to the Community**

*Ms. Naomi Mathers, Victorian Space Science Education Centre, Melbourne, Australia*

*Mr. Michael Pakakis, Melbourne, Australia, Mrs. Anne Brumfitt, European Space Agency/ESTEC, South Holland, The Netherlands, Prof. Lachlan Thompson, Royal Melbourne Institute of Technology (RMIT), Melbourne, Australia*

**IAC-06-E5.3.04**

**Space Art and Media Art for Everyone**

*Ms. Ayako Ono, Tokyo National University of Fine Arts and Music, Taito-ku, Japan*

**IAC-06-E5.3.05**

**Frontier? Or wilderness? The role of metaphor in popular conceptions of space exploration**

*Dr. Linda Billings, SETI Institute, Arlington, VA, United States*

**IAC-06-E5.3.06**

**The Art of Space Mission Patches and their Origins in Society**

*Mrs. Anne Brumfitt, European Space Agency/ESTEC, South Holland, The Netherlands*

*Prof. Lachlan Thompson, Royal Melbourne Institute of Technology (RMIT), Melbourne, Australia, Dr. David Raitt, European Space Agency/ESTEC, Noordwijk, The Netherlands*

**IAC-06-E5.3.07**

**Introduction to Astrosociology: An Assessment of its Definition, Scope, and Relevance**

*Mr. Jesper Jørgensen, SpaceArch, Copenhagen V, Denmark*  
*Dr. Jim Pass, Astrosociology.com, California, United States*

**IAC-06-E5.3.08**

**Society motivation to space activities**

*Mrs. Leila Khaladjzadeh, Aerospace Research Institute, Tehran, Iran*

*Mr. Ahmad Talebzadeh, Aerospace Research Institute, Tehran, Iran*

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**October 05 2006, 14:20 - Room 11**

**A1. Space Life Sciences Symposium**

*Coordinators: Gerda Horneck (Germany), Inessa Kozlovskaya (Russia)*

**A1.P.1. Poster Session on Space Life Sciences - Part I**

*Rapporteur: Peter Graef (Germany)*

**IAC-06-A1.P.1.01**

**Group dynamics in long term blind endeavors on earth as an analog for remote space missions (lewis & clark expedition, 1803 – 1806, dynamic analysis)**

*Mr. Matthew Allner, University of North Dakota, Sioux City, United States*

*Dr. Vadim Rygalov, University of North Dakota, Grand Forks, United States, Ms. Kaily Bell-McGrath, Student, Somis, United States*

### **IAC-06-A1.P.1.02**

**A review of multi-cultural adaptability and compatibility factors in extreme environments**

*Dr. Maite Trujillo San Martin, National Aeronautics and Space Administration (NASA)/Ames Research Center, California, United States*

### **IAC-06-A1.P.1.03**

**Cosmonauts Personal Traits Transformation During Preparation and Space Exploration**

*Prof. Vladimir Prisniakov, Institute of Geotechnical Mechanics, National Academy of Sciences, Dnipropetrovsk, Ukraine*

*Prof. Ludmila Prisniakova, Dnipropetrovsk Humanitarian University, Dnipropetrovsk, Ukraine, Mr. A. O. Paschko, Interregional Academy of Personnel Management, Dnipropetrovsk, Ukraine*

### **IAC-06-A1.P.1.04**

**Functional state periodic oscillations and long space flight adaptation problem**

*Dr. Roman Baeusky, Institute for Biomedical Problems, Moscow, Russia*

*Mrs. Irina Larina, Institute for Biomedical Problems, Moscow, Russia*

### **IAC-06-A1.P.1.05**

**The effects of a novel 'fluid-loading' strategy combining creatine and glycerol on fluid retention and distribution in humans**

*Mr. Chris Easton, University of Glasgow, Glasgow, United Kingdom*

*Dr. Alyson Calder, Hairmyres Hospital, Glasgow, United Kingdom, Mr. David Kingsmore, Gartnavel Royal Hospital, Glasgow, United Kingdom, Dr. Yannis Pitsiladis, University of Glasgow, Glasgow, United Kingdom*

### **IAC-06-A1.P.1.06**

**Color design requirement in microgravity long duration missions.**

*Mrs. Irene Schlacht, Politecnico di Milano, Milan, Italy*

### **IAC-06-A1.P.1.07**

**Human Arm Control in Weightlessness and ISS Experiment on Alteration of Graphical Skills**

*Dr. Radu Rugescu, Politechnic University of Bucharest, Bucharest, Romania*

*Dr. Iulia Busuioceanu, Politechnic University of Bucharest, Bucharest, Romania, Mrs. Anca Rugescu, ADDA-Association Dedicated to Development in Astronautics, Vallejo, United States*

### **IAC-06-A1.P.1.08**

**Genomic instability in the testis of mice exposed to modeled microgravity.**

*Dr. James DuMond, Texas Southern University, Houston, United States*

### **IAC-06-A1.P.1.09**

**Mechanosensitivity of osteoblast cells observed via parabolic flight.**

*Mr. Stephen Kearney, University College Dublin, Dublin 4, Ireland*

### **IAC-06-A1.P.1.10**

**Immune response in microgravity: genetic basis and countermeasure development implications.**

*Dr. Diana Risin, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States*

*Dr. Nancy Ward, Wyle Laboratories, Houston, TX, United States, Dr. Semyon A. Risin, UT-Houston Medical School, Houston, TX, United States, Dr. Neal R. Pellis, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States*

## **103**

**October 05 2006, 14:20 - Room 2**

**A2. Microgravity Sciences and Processes Symposium**

*Coordinators: Antonio Viviani (Italy), Rainer Willnecker (Germany)*

**A2.P. Poster Session on Microgravity Sciences and Processes**

*Rapporteur: Antonio Viviani (Italy)*

### **IAC-06-A2.P.01**

**Experimental study of a microchannel bubble injector for microgravity applications.**

*Mr. Santiago Arias, Universitat Politècnica de Catalunya, Castelldefels, Spain*

*Dr. Xavier Ruiz, Universitat Rovira i Virgili, Tarragona, Spain, Dr. Laureano Ramírez-Piscina, Institut d'Estudis Espacials de Catalunya, Barcelona, Spain, Mr. Jordi Carrera, Llíssa, Spain, Dr. Jaume Casademunt, University of Barcelona, Barcelona, Spain, Dr. Ricard González-Cinca, Universitat Politècnica de Catalunya, Castelldefels, Spain*

### **IAC-06-A2.P.02**

**Numerical study of the generation and dispersion of a bubble jet in microgravity**

*Mr. Pau Bitlloch, University of Barcelona, Blanes, Spain*

*Dr. Xavier Ruiz, Universitat Rovira i Virgili, Tarragona, Spain, Dr. Laureano Ramírez-Piscina, Institut d'Estudis Espacials de Catalunya, Barcelona, Spain, Dr. Ricard González-Cinca, Universitat Politècnica de Catalunya, Castelldefels, Spain, Dr. Jaume Casademunt, University of Barcelona, Barcelona, Spain*

### **IAC-06-A2.P.03**

**Bion-M Satellite – the Unique Special-Purpose Laboratory**

*Mrs. Anfisa Kazakova, State Research and Production Space-Rocket Center "TsSKB-Progress", Samara, Russia*

*Mr. N. Stratilatov, State Research and Production Space-Rocket Center "TsSKB-Progress", Samara, Russia, Dr. V.I. Abrashkin, State Research and Production Space-Rocket Center "TsSKB-Progress", Samara, Russia*

### **IAC-06-A2.P.04**

**DECLIC Scientific Program - Critical Fluids**

*Dr. Yves Garrabos, CNRS, Pessac, France*

### **IAC-06-A2.P.05**

**DECLIC Scientific Program - Directional Solidification**

*Mr. Bernard Billia, Faculté de Saint Jérôme, Marseille, France*

## IAC-06-A2.P.06

### Ground Based Verification Tests and Equipment for Selection of Root-Zone Media for Higher Plant Cultivation in Space

*Mr. Plamen Kostov, Space Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria*

Dr. Tania Ivanova, Space Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria, Mrs. Svetlana Sapunova, Space Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria, Ms. Iliana Ilieva, Space Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria, Dr. Snejana Doncheva, Institute of Plant Physiology, Bulgarian Academy of Sciences, Sofia, Bulgaria, Dr. Nikolina Tzvetkova, Forest University, Sofia, Bulgaria

## IAC-06-A2.P.07

### Validation of a newly developed LBNP-system

*Prof. Thais Russomano, Microgravity Laboratory/PUCRS, Porto Alegre, Brazil*

Dr. Dario Francisco Azevedo, Microgravity Laboratory/PUCRS, Porto Alegre, Brazil, Mr. Felipe Falcao, Microgravity Laboratory/PUCRS, Porto Alegre, Brazil, Mr. Celso dos Santos, Microgravity Laboratory/PUCRS, Porto Alegre, Brazil, Dr. Luis Beck, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Cologne, Germany

## IAC-06-A2.P.08

### Solid segregation and translational deterministic g-jitters

*Dr. Xavier Ruiz, Universitat Rovira i Virgili, Tarragona, Spain*

## IAC-06-A2.P.09

### Cavitation Bubbles and Shock Waves Inside Water Drops in Microgravity

*Mr. Danail Obreschkow, European Space Agency/Student Participation Programme, Oxford, United Kingdom*

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**October 05 2006, 14:20 - Room 13**

### A3. Space Exploration Symposium

*Coordinators: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)*

#### A3.P. Poster Session on Space Exploration

*Rapporteur: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)*

## IAC-06-A3.P.01

### HP3: An Integrated sensor package to explore the regolith layers of planets and moons

*Mr. Riccardo Nadalini, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Berlin, Germany*

## IAC-06-A3.P.02

### Application of Tisserand's Criterion to the Analysis of Gravity Assist

*Mr. Qiao Dong, Harbin Institute of Technology, Harbin, China*

Mr. Pingyuan Cui, Harbin Institute of Technology, Harbin, China, Mr. Cui Hutao, Harbin Institute of Technology, Harbin, China, Mrs. Yan Xia, Beijing, China

## IAC-06-A3.P.03

### Differences in aeolian material genesis of martian dunes – can we find water deposits on Northern Lowlands?

*Mr. Krzysztof Skocki, Space Research Center PAS, Warsaw, Poland*

## IAC-06-A3.P.04

### Distributed systems applied to a space observatory with a network of operations centers

*Mr. Juan Carlos Vallejo, GMV S.A., Villafranca del Castillo, Spain*

Mr. Rafael Vazquez, GMV S.A., Tres Cantos, Spain

## IAC-06-A3.P.05

### UHF Communication relays

*Mr. Richard Blott, Qinetiq Ltd., Farnborough, United Kingdom*

## IAC-06-A3.P.06

### Use the Water: In-Situ Resource Technology on a Europa Lander

*Mr. Sanjoy Som, University of Washington, Seattle, United States*

Mr. Zachary Adam, University of Washington, Seattle, United States, Ms. Michele Cash, University of Washington, Seattle, United States, Mr. John Kirkpatrick, University of Washington, Seattle, United States, Mr. Steve Vance, University of Washington, Seattle, United States, Mr. Jonathan Wrobel, University of Washington, Seattle, United States

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**October 05 2006, 14:20 - Room 13**

### A3. Space Exploration Symposium

*Coordinators: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)*

#### A3.P.1. Poster Session on Space Based Astronomy

*Rapporteur: Henk Olthof (The Netherlands)*

## IAC-06-A3.P.1.01

### GAIA: Making Virtual Space a Reality

*Dr. Cees Bil, Royal Melbourne Institute of Technology (RMIT), Melbourne, Australia*

## IAC-06-A3.P.1.02

### Interferometric Image Acquisition and Reconstruction

*Dr. Haithem Altwaijry, King Abdulaziz City for Science & Technology (KACST), Riyadh, Saudi Arabia*

Prof. David Hyland, Texas A&M University, College Station, United States

## IAC-06-A3.P.1.03

### The Ariane 5 based Lunar Telescope – Status and perspective

*Mr. Hartmut Mueller, EADS Space Transportation GmbH, Syke, Germany*

Prof. Dr. Uwe Apel, Hochschule Bremen, Bremen, Germany

## IAC-06-A3.P.1.04

### The SIM-PlanetQuest Science Program

*Mr. Stephen Edberg, Jet Propulsion Laboratory, Pasadena, CA, United States*

Dr. Wesley Traub, Jet Propulsion Laboratory, Pasadena, CA, United States, Dr. Stephen Unwin, Jet Propulsion Laboratory, Pasadena, CA, United States, Mr. James C. Marr, Jet Propulsion Laboratory, Pasadena, CA, United States

## IAC-06-A3.P.1.05

### SIM-PlanetQuest Technology Completion: A Retrospective View

*Dr. Robert Laskin, Jet Propulsion Laboratory, Pasadena, CA, United States*

Mr. James C. Marr, Jet Propulsion Laboratory, Pasadena, CA, United States

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## October 05 2006, 14:20 - Room 13

### A3. Space Exploration Symposium

*Coordinators: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)*

### A3.P.2. Poster Session on Solar System Exploration

*Rapporteur: James Middleton (Canada)*

## IAC-06-A3.P.2.01

### Design and Performance Assessment of Hazard Avoidance Techniques For Vision Based Landing

*Mr. Emanuele Di Sotto, DEIMOS Engenharia, Lisbon, Portugal*

Mr. Francisco Câmara, DEIMOS Engenharia, Lisbon, Portugal, Mrs. Paola Rogata, DEIMOS Engenharia, Lisbon, Portugal, Mr. Augusto Caramagno, DEIMOS Space, Tres Cantos, Madrid, Spain, Prof. José Manuel Rebordão, INETI, Lisbon, Portugal, Mr. Salvatore Mancuso, European Space Agency/ESTEC, Noordwijk, The Netherlands

## IAC-06-A3.P.2.02

### Mercury's model of rotation: the short periodic terms

*Mr. Julien Dufey, Facultés Universitaires Notre-Dame de la Paix Namur, Namur, Belgium*

Prof. Anne Lemaître, Facultés Universitaires Notre-Dame de la Paix Namur, Namur, Belgium, Mrs. Sandrine D Hoedt, Facultés Universitaires Notre-Dame de la Paix Namur, Namur, Belgium

## IAC-06-A3.P.2.03

### Therman Analysis of HP3, a Penetrometer to Measure the Planetary Surface Heat Flow

*Mr. Gabriele Messina, Politecnico di Milano, Tarcento (Udine), Italy*

Mr. Riccardo Nadalini, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Berlin, Germany, Mr. Jörg Knollenberg, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Berlin, Germany

## IAC-06-A3.P.2.04

### Mercury libration determination and the link with the interior of the planet

*Mr. Gregor Pfytter, Royal Observatory of Belgium, Brussels, Belgium*

Dr. Veronique Dehant, Royal Observatory of Belgium, Brussels, Belgium, Mr. Nicolas Rambaux, Royal Observatory of Belgium, Uccle, Belgium, Mr. Attilio Rivoldini, Royal Observatory of Belgium, Uccle, Belgium, Dr. Tim Van Hoolst, Royal Observatory of Belgium, Uccle, Belgium

## IAC-06-A3.P.2.05

### BepiColombo mission: Estimation of Mercury gravity field, rotation and relativity parameters

*Mrs. Noelia Sánchez-Ortiz, DEIMOS Space S.L., Tres Cantos, Spain*

Mr. Miguel Bello Mora, DEIMOS Space S.L., Madrid, Spain, Mr. Rudiger Jehn, European Space Agency/ESOC, Darmstadt, Germany, Mrs. Laura Martin, DEIMOS Space S.L., Tres Cantos, Spain

## IAC-06-A3.P.2.06

### Lander mission to Europa with solar electric propulsion

*Dr. Wolfgang Seboldt, German Aerospace Center (DLR), Cologne, Germany*

Mr. Joern Streppel, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Cologne, Germany, Dr. Bernd Dachwald, German Aerospace Center (DLR), Wessling, Germany, Dr. Horst W. Loeb, University of Giessen, Giessen, Germany, Dr. Karl-Heinz Schartner, Giessen University, Giessen, Germany

## IAC-06-A3.P.2.07

### Design and Optimization of Low-Thrust Transfer Trajectory with Aerogravity Assist

*Dr. Haibin Shang, Harbin Institute of Technology, Harbin, China*

## IAC-06-A3.P.2.08 (WITHDRAWN)

### Global Mapping Via Hyperbolic Flybys

*Mr. Nathan Strange, Jet Propulsion Laboratory / CalTech, Montrose, CA, United States*

Mr. Brent Buffington, Jet Propulsion Laboratory / CalTech, Pasadena, United States

## IAC-06-A3.P.2.09

### Micro-pore optic developments for x-ray imaging

*Ms. Kotska Wallace, European Space Agency/ESTEC, Noordwijk ZH, The Netherlands*

Dr. Marcos Bavdaz, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Ray Fairbend, Photonis, Brive, France, Mr. Maximillien Collon, Cosine Research BV, Leiden, The Netherlands, Dr. Michael Krumrey, PTB, Berlin, Germany

## IAC-06-A3.P.2.10

### Efficiency of the Visir Optic Appliances Designed for Observation on the Board of Spaceships

*Mr. Zhivko Zhekov, Space Research Institute (IKI), RAS, Shumen, Bulgaria*

Prof. Petar S. Getsov, Bulgarian Academy of Sciences, Sofia, Bulgaria, Prof. Garo Mardirossian, Bulgarian Academy of Sciences, Sofia, Bulgaria, Mr. Angel Manev, Bulgarian Academy of Sciences, Stara Zagora, Bulgaria, Dr. Kunyu Palazov, Bulgarian Academy of Sciences, Stara Zagora, Bulgaria, Dr. Stilian Stoyanov, Bulgarian Academy of Sciences, Shumen, Bulgaria

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## October 05 2006, 14:20 - Room 1

### A5. Symposium on Integrated Approaches to the Exploration of the Moon and Mars

*Coordinators: George Morgenthaler (United States), Christian Sallaberger (Canada)*

### A5.P. Poster Session on Integrated Approaches to the Exploration and Utilization of the Moon and Mars

*Rapporteur: George Morgenthaler (United States), Christian Sallaberger (Canada)*

## IAC-06-A5.P.01

### Moon, Mars, and Beyond - International exploration efforts learning from ISS experience

*Ms. Tina Büchner, EADS SPACE Transportation, Bremen, Germany*

*Ms. Eniko Patkos, Garching/München, Germany, Ms. Cindy Mahler, Boeing, Houston, TX, United States, Mr. Kilian A. Engel, Technical University of Munich, Gaisach, Germany*

## IAC-06-A5.P.02

### Non Deterministic Planning with Evidence and Paradoxical Reasoning Theories

*Mr. Matteo Ceriotti, Politecnico di Milano, Dairago (MI), Italy*

*Dr. Massimiliano Vasile, University of Glasgow, Glasgow, United Kingdom, Mr. Mauro Massari, Politecnico di Milano, Milan, Italy, Mr. Giovanni Giardini, Politecnico di Milano, Milan, Italy*

## IAC-06-A5.P.03

### Biomimetic Approach to the Design of Climbing Robots for Planetary Exploration

*Ms. Nicola Soper, University of Bath, Bath, United Kingdom*

## IAC-06-A5.P.04

### Information Requirements for Self-Reproducing Systems in Lunar Robotic Colonies

*Mr. Amor Menezes, University of Michigan, Ann Arbor, Michigan, United States*

*Dr. Pierre Kabamba, University of Michigan, Ann Arbor, United States*

## IAC-06-A5.P.05

### Remote Science Operations With a Robotic Mars-prototype Drilling Platform

*Ms. Sarah Huffman, National Aeronautics and Space Administration (NASA)/Ames Research Center, Moffett Field, United States*

*Dr. Brian Glass, National Aeronautics and Space Administration (NASA)/Ames Research Center, Moffett Field, CA, United States, Dr. Carol Stoker, National Aeronautics and Space Administration (NASA)/Ames Research Center, Moffett Field, CA, United States, Ms. Jennifer Jasper, National Aeronautics and Space Administration (NASA)/Ames Research Center, Moffett Field, United States, Ms. Sandra Dashora, National Aeronautics and Space Administration (NASA)/Ames Research Center, Moffett Field, United States*

## IAC-06-A5.P.06

### Integrated Mole-carried instrument suites to explore the regolith layers of the Moon and Mars

*Mr. Riccardo Nadalini, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Berlin, Germany*

*Mr. Lutz Richter, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Cologne, Germany, Prof. Tilman Spohn, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Berlin, Germany, Dr. Andrew J. Ball, The Open University, Milton Keynes, United Kingdom, Dr. Pierre Coste, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Jörg Knollenberg, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Berlin, Germany, Mr. Andreas Grzesik, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Cologne, Germany, Mr. Edoardo Re, Galileo Avionica S.p.A., Milan, Italy, Dr. Pier Giovanni Magnani, Galileo Avionica S.p.A., Milan, Italy, Dr. Jens Romstedt, European Space Agency/ESTEC, Noordwijk, The Netherlands, Dr. Frank Sohl, Deutsches Zentrum für Luft und Raumfahrt e.V. (DLR), Berlin, Germany*

## IAC-06-A5.P.07

### ESA's SMART-1 Mission at the Moon: Highlights of results after one year

*Dr. Bernard Foing, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-A5.P.08

### Ballistic analysis for the manned mission to Mars with the use of solar electric propulsion system

*Prof. Garri Popov, RIAME MAI, Moscow, Russia*

*Dr. Vladimir Obukhov, RIAME MAI, Moscow, Russia, Dr. E.L. Akim, Keldysh Research Center, Moscow, Russia, Dr. Grigory Zaslavsky, Keldysh Research Center, Moscow, Russia, Dr. Sergey Klimov, TSNIMASH, Korolev, Russia, Prof. Mikhail S. Konstantinov, Moscow Aviation Institute, Moscow, Russia, Mr. Gennady G. Fedotov, Moscow Aviation Institute, Moscow, Russia, Dr. Yuri Vasiliev, RIAME MAI, Moscow, Russia, Dr. Alexander Pokryshkin, RIAME MAI, Moscow, Russia, Mrs. Victoria Svyotina, RIAME MAI, Moscow, Russia, Dr. Vladimir Letin, Moscow, Russia*

## IAC-06-A5.P.09

### Conceptual design of the solar electric propulsion system for the manned mission to Mars based on the technology of the immediate future

*Dr. Vladimir Obukhov, RIAME MAI, Moscow, Russia*

*Prof. Garri Popov, RIAME MAI, Moscow, Russia, Dr. Vladimir Kim, RIAME MAI, Moscow, Russia, Dr. Vladimir Kulkov, RIAME MAI, Moscow, Russia, Mr. Yuri Yegorov, RIAME MAI, Moscow, Russia, Mr. V.M. Murashko, EDB "Fakel", Kaliningrad, Russia, Mr. S.V. Ivanov, Lavochkin Association, Khimki, Moscow Region, Russia*

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## October 05 2006, 14:20 - Room 3

### B1. Earth Observation Symposium

*Coordinators: W. John Hussey (United States), Pierre Ranzoli (Germany)*

#### B1.P.1. Poster Session on Earth Observation

*Rapporteur: Andrew Court (The Netherlands)*

### IAC-06-B1.P.1.01

#### Korean Sounding Rocket Program in Korea

*Dr. Seung-Hyun Hwang, Korea Aerospace Research Institute, Daejeon, Korea*

*Dr. Eui Seung Chung, Korea Aerospace Research Institute, Daejeon, Korea, Dr. Jeong Joo Park, Korea Aerospace Research Institute, Daejeon, Korea, Dr. Gwang-Rae Cho, Korea Aerospace Research Institute, Daejeon, Korea*

### IAC-06-B1.P.1.02

#### Vegetation Stress Indicators Derived from Multispectral and Multitemporal Data

*Dr. R. Kancheva, Solar-Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Sofia, Bulgaria*

*Mrs. D. Borisova, Solar-Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Sofia, Bulgaria*

### IAC-06-B1.P.1.03

#### Ekman transport analysis along the Galician Coast (NW Spain) using QuikSCAT Satellite data. Comparison with modeled data provided by METEO-GALICIA

*Mrs. Elisabet Novoa, Universidad de Vigo, Ourense, Spain*

*Dr. Ines Alvarez, Universidad de Vigo, Ourense, Spain, Dr. Maite deCastro, Universidad de Vigo, Ourense, Spain, Dr. Moncho Gomez-Gesteira, Universidad de Vigo, Ourense, Spain*



### **IAC-06-B1.P.1.04**

#### **Equipment Development for Magnetic Measure - Linear Nucleus Fluxgate Magnetometer**

*Mr. Cassio Espindola Antunes, Laboratório de Ciências Espaciais de Santa Maria, LACESM/CT - UFSM and Centro Regional Sul de Pesquisas Espaciais, CRSPE/INPE - MCT, Santa Maria, RS, Brazil*

Mr. Eduardo Andrighetto, Universidade Federal de Santa Catarina - Instituto de Engenharia, Florianópolis, SC, Brazil, Mr. Severino L. Guimarães Dutra, Instituto Nacional de Pesquisas Espaciais (INPE), São José dos Campos, Brazil, Mr. Nalin Babulau Trivedi, Instituto Nacional de Pesquisas Espaciais (INPE), São José dos Campos, Brazil, Mr. Nelson Jorge Schuch, Centro Regional Sul de Pesquisas Espaciais - CRSPE/INPE - MCT, Santa Maria, RS, Brazil

### **IAC-06-B1.P.1.05**

#### **Modelling and Data Analysis of GPS reflections from Low Earth Orbit**

*Ms. Ka Bian, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom*

Mr. Scott Gleason, Surrey Space Centre, University of Surrey, Guildford, United Kingdom

### **IAC-06-B1.P.1.06**

#### **Enabling Responsive Space and Earth Observation Satellite Applications using Multifunctional MEMS Miniaturization**

*Dr. Fredrik Bruhn, Angstrom Aerospace Corporation, Uppsala, Sweden*

Mr. Petrus Hyvönen, Angstrom Aerospace Corporation, Uppsala, Sweden, Dr. Gerd Hofschuster, OHB-System AG, Bremen, Germany, Mr. Bent Ziegler, OHB-System AG, Bremen, Germany, Dr. Thomas George, ViaLogy Corporation, Pasadena, United States, Dr. Milind Pimprikar, CANEUS, Montreal, Canada, Mr. Johan Leijtens, TNO TPD, Delft, The Netherlands, Prof. Lars Stenmark, Angstrom Aerospace Corporation, Uppsala, Sweden

### **IAC-06-B1.P.1.07**

#### **Systems Design for a 1-M Resolution Small Satellite Earth Observation Mission.**

*Mr. George Prassinis, Surrey Satellite Technology Ltd., Guildford, United Kingdom*

### **IAC-06-B1.P.1.08**

#### **Performance Optimization for the RADARSAT Constellation**

*Dr. Ralph Girard, Canadian Space Agency, Longueuil, Canada*

### **IAC-06-B1.P.1.09**

#### **Construction and results from an aerosol detector for middle atmosphere research**

*Mr. Lars Helge Surdal, Narvik University College, Narvik, Norway*

### **IAC-06-B1.P.1.10**

#### **Verification and Validation of N-18 Products using the EPS CAL/VAL**

*Dr. Ruzbeh Mossavati, Vega IT GmbH, Darmstadt, Germany*

### **IAC-06-B1.P.1.11**

#### **Comparison of Motion Deblur Algorithms and real world deployment**

*Mr. Sebastian Schuon, Technical University of Munich, Puchheim, Germany*  
Prof. Dr.-Ing. Klaus Diepold, Technical University of Munich, Munich, Germany

### **IAC-06-B1.P.1.12**

#### **Novel Approach to Evaluation of Space-borne SAR Performance**

*Dr. Hongwei Cheng, Beijing Institute of Tracking and Telecommunication Technology, Beijing, China*

### **IAC-06-B1.P.1.13**

#### **Interferometric synthesis aperture radiometer calibration fundamentals and error budget.**

*Mrs. Ana Olea, EADS CASA Espacio, Madrid, Spain*

Mr. Andres Borges, EADS CASA Espacio, Madrid, Spain, Mr. Andrés Solana, EADS CASA Espacio, Madrid, Spain, Mr. Carlos Garcia, EADS CASA Espacio, Madrid, Spain, Mr. Adriano Camps, Universitat Politècnica de Catalunya, Barcelona, Spain, Mr. Ignasi Corbella, Universitat Politècnica de Catalunya, Barcelona, Spain

### **IAC-06-B1.P.1.14**

#### **Don Quijote - Can we protect ourselves from the inbound NEO?**

*Mr. Richard Blott, Qinetiq Ltd., Farnborough, United Kingdom*

### **IAC-06-B1.P.1.15**

#### **Ground Image Acquisition System for China Geostationary Meteorological Satellite**

*Mr. Fan Shiming, Beijing Institute of Satellite Information Engineering, Beijing, China*

Mr. Yan Wang, Beijing Institute of Satellite Information Engineering, Beijing, China, Mrs. Fang Zhong, Beijing Institute of Satellite Information Engineering, Beijing, China, Mr. Zhixiang Zhou, Beijing Institute of Satellite Information Engineering, Beijing, China

### **IAC-06-B1.P.1.16**

#### **Disaster management decision support systems for local authorities in Poland - concept**

*Mrs. Agnieszka Izykowska, Space Research Center PAS, Warsaw, Poland*

Mr. Krzysztof Skocki, Space Research Center PAS, Warsaw, Poland

### **IAC-06-B1.P.1.17**

#### **Application of Remote Sensing and GIS in identifying and mapping Sandfly Distribution in endemic and Non-endemic Kala-azar foci in Bihar and Jharkhand**

*Mr. Saikat Paul, Indian Space Research Organization (ISRO), Kharagpur, India*

Dr. A. Jeyaram, Indian Space Research Organization (ISRO), Kharagpur, India, Dr. V Jayaraman, Indian Space Research Organization (ISRO), Bangalore, India

## **109**

**October 05 2006, 14:20 - Room 5**

#### **B3. Space Communications and Navigation Symposium**

*Coordinators: Robert D. Briskman (United States), MG Chandrasekhar (United States)*

#### **B3.P.1. Poster Session on Near-Earth and Interplanetary Communications Systems**

*Rapporteur: Makoto Kajii (Japan)*

### **IAC-06-B3.P.1.01**

#### **Autonomous determination of unknown characteristics of an asteroid using optical and altimeter information**

*Mr. Yufei Liu, Harbin Institute of Technology, Harbin, China*

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October 05 2006, 14:20 - Room 5

**B3. Space Communications and Navigation Symposium**

*Coordinators: Robert D. Briskman (United States), MG Chandrasekhar (United States)*

**B3.P.4. Poster Session on Communication Satellite Infrastructure and Economics**

## IAC-06-B3.P.4.01

**Flexible channel assignment as a method to provide bandwidth in emergency communication**

*Mr. Jin Fei Tang, China Academy of Space Technology (CAST), Beijing, China*

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October 05 2006, 14:20 - Room 5

**B3. Space Communications and Navigation Symposium**

*Coordinators: Robert D. Briskman (United States), MG Chandrasekhar (United States)*

**B3.P.6. Poster Session on Mobile Communications and Satellite Navigation**

*Rapporteur: MG Chandrasekhar (United States)*

## IAC-06-B3.P.6.01

**GIOVE-A: The first step in the new era of multi-constellation satellite navigation user services**

*Mr. Miguel Manteiga, European Space Agency/ESTEC, Noordwijk, The Netherlands*

*Mr. Antonio Garutti, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mrs. Sonia Toribio, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Giuseppe Mandorlo, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-B3.P.6.02

**A Multi-layered Routing Algorithm for the Space Information Network**

*Mrs. Gao Lijuan, Beijing, China*

## IAC-06-B3.P.6.03

**Subset Parallel Volterra Filter for Narrowband Interference Suppression in DSSS Communications**

*Dr. Ma Wenqiang, Xi'an Institute of Space Radio Technology, Xi'an, China*

## IAC-06-B3.P.6.04

**Integrated Approach combining Doppler Positioning and Celestial Navigation based on UKF**

*Dr. Qi Zhenqiang, Beijing Aerospace Automatic Control Institute, Beijing, China*

*Dr. Yang Zhaohua, Beijing University of Aeronautics and Astronautics, Beijing, China*

## IAC-06-B3.P.6.05

**Research on fiber optical gyro attitude determination system of long life aircraft**

*Dr. Pu Zhongqi, Beijing Institute of Control Devices, Beijing, China*

*Dr. Liqing Wang, Beijing Institute of Control Devices, Beijing, China*

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October 05 2006, 14:20 - Room 6

**B6. Space Debris Symposium**

*Coordinators: Christophe Bonnal (France), Walter Flury (Germany), Nicholas L. Johnson (United States)*

**B6.P.1. Poster Session on Space Debris - Part I**

*Rapporteur: Clare E. Martin (United Kingdom)*

## IAC-06-B6.P.1.01

**Trails processing at space debris and artificial satellites.**

*Mr. Vadym Biryukov, Crimean Laboratory of Sternberg Astronomical Institute, Moscow Lomonosov State University, Nauchny, Ukraine*

*Mr. Vasilij Rumyantsev, Crimean Astrophysical Observatory, Nauchny, Ukraine*

## IAC-06-B6.P.1.02

**System design of space vehicle for small size orbital debris observation**

*Mr. Yunir V. Gataullin, Ruhr University Bochum, Bochum, Germany*

## IAC-06-B6.P.1.03

**New international program for space debris research**  
*Dr. Igor Molotov, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia*

*Dr. Vladimir Agapov, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia, Dr. Alexander Konovalenko, Institute of Radio Astronomy, NASU, Kharkov, Ukraine, Dr. Efraim Akim, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia, Dr. Alla Sochilina, Central Astronomical Observatory, RAS, Saint-Petersburg, Russia, Dr. Thomas Schildknecht, Astronomical Institute University of Bern (AIUB), Bern, Switzerland, Dr. Gino Tuccari, INAF - Istituto Nazionale di AstroFisica, Noto (Sr), Italy, Dr. Nikolay Dugin, Radiophysical Research Institute, N. Novgorod, N. Novgorod, Russia, Dr. Yuriy Gorshenkov, Special Research Bureau of Moscow Power Engineering Institute, Moscow, Russia, Dr. Ivar Shmeld, Institute of Astronomy, University of Latvia, Riga, Latvia*

## IAC-06-B6.P.1.04

**Observations of high altitude objects from multiple sites**

*Mr. Reto Musci, Astronomical Institute University of Bern (AIUB), Bern, Switzerland*

*Dr. Thomas Schildknecht, Astronomical Institute University of Bern (AIUB), Bern, Switzerland, Prof. Gerhard Beutler, Astronomical Institute University of Bern (AIUB), Bern, Switzerland, Dr. Vladimir Agapov, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia*

## IAC-06-B6.P.1.05

**Estimation Method of Micro-debris Population from Solar Array Images**

*Dr. Koki Fujita, Kyushu University, Fukuoka, Japan*

*Prof. Toshiya Hanada, Kyushu University, Fukuoka, Japan*

## IAC-06-B6.P.1.06

**Performance Analysis of Orbit Determination from Sparse Space-Based Observations**

*Dr. Han Lei, National University of Defense Technology, Changsha, Hunan, China*

*Mr. Chen Lei, National University of Defense Technology, ChangSha, Hunan, China, Mr. Bozhao Zhou, National University of Defense Technology, ChangSha, China*

## IAC-06-B6.P.1.07

**Recognition of space image target based on improved fractal technique**

*Dr. Balin Tian, Northwestern Polytechnical University, Xi'an, China, China*

*Prof. Jianping Yuan, Northwestern Polytechnical University, Xi'an, China*

## IAC-06-B6.P.1.08

**Tracked unknown objects identification with possible source of origin: algorithms and results**

*Dr. Vladimir Agapov, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia*

*Dr. Sergey Kamenskiy, KIA Systems, Moscow, Russia, Dr. Zakhary Khutorovskiy, Moscow, Russia, Dr. Viktor Stepanyants, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia, Mrs. Nataliya Golosova, KIA Systems, Moscow, Russia, Mr. Nikolay Sbytov, KIA Systems, Moscow, Russia*

## IAC-06-B6.P.1.09

**Coordinated efforts to catalogue high area-to-mass ratio GEO objects**

*Dr. Vladimir Agapov, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia*

*Dr. Thomas Schildknecht, Astronomical Institute University of Bern (AIUB), Bern, Switzerland, Mr. Reto Musci, Astronomical Institute University of Bern (AIUB), Bern, Switzerland, Ms. Edith Stöveken, Astronomical Institute University of Bern (AIUB), Bern, Switzerland, Dr. Vladimir Titenko, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia, Dr. Vasilij Yurasov, Space Informatics Analytical Systems JSC, Moscow, Russia*

# 113

**October 05 2006, 14:20 - Room 4**

**C1. Astrodynamics Symposium**

*Coordinators: Alberto Foni (Italy), Arun Misra (Canada)*

**C1.P.1. Poster Session Attitude Dynamics, Modelling and Determination**

*Rapporteur: Paolo Teofilatto (Italy)*

## IAC-06-C1.P.1.01

**Feedback Control for Attitude Maneuver Using Matlab/Simulink**

*Dr. Li-ni Zhou, National University of Defense Technology, Changsha, China*

*Dr. Guo-jin Tang, National University of Defense Technology, Changsha, China, Dr. Hai-yang Li, National University of Defense Technology, Changsha, China*

## IAC-06-C1.P.1.02

**A New Integrated Algorithm for Spacecraft Attitude Determination**

*Prof. Xiaokui Yue, Northwestern Polytechnical University, Xi'an, China*

*Prof. Jianping Yuan, Northwestern Polytechnical University, Xi'an, China*

## IAC-06-C1.P.1.03

**Attitude profile generator algorithm for a LEO avionic architecture based on high torque actuators.**

*Mr. Mauro Pantaleoni, Alcatel Alenia Space, Rome, Italy  
Mr. Giovanni Campolo, Alcatel Alenia Space, Rome, Italy,  
Mr. Leonardo Mazzini, Alcatel Alenia Space, Rome, Italy*

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**October 05 2006, 14:20 - Room 4**

**C1. Astrodynamics Symposium**

*Coordinators: Alberto Foni (Italy), Arun Misra (Canada)*

**C1.P.2. Poster Session on Attitude Control, Sensors and Actuators**

*Rapporteur: Christopher Dean Hall (United States)*

## IAC-06-C1.P.2.01

**UniNa Micro Sun Sensor as Technology Demonstration Payload**

*Dr. Giancarlo Rufino, University of Naples "Federico II", Naples, Italy*

*Mrs. Michele Grassi, University of Naples, Naples, Italy, Mr. Danilo Rolfi, University of Naples, Naples, Italy*

## IAC-06-C1.P.2.02

**Hardware in the Loop Test on Air Bearing Trolley for Nano-satellites**

*Mr. Warren Soh, Astronautic Technology (M) Sdn Bhd, Shah Alam, Malaysia*

## IAC-06-C1.P.2.03

**ALMASat Attitude Control Hardware-In-The-Loop Simulations**

*Dr. Paolo Tortora, University of Bologna, Forli, Italy*

*Dr. Fabrizio Giulietti, University of Bologna, Forli, Italy, Mr. Alberto Corbelli, University of Bologna, Forli, Italy, Mr. Valentino Fabbri, University of Bologna, Forli, Italy*

## IAC-06-C1.P.2.04

**Use of New Developments of Attitude Control Sensors for the Micro-Satellite Flying Laptop**

*Mr. Christian Waidmann, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany*

*Mr. Georg Grillmayer, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany, Mr. Dominik Saile, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany, Mr. Matthias Waidmann, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany, Mrs. Viola Wolter, Steinbeis Transferzentrum Raumfahrt, Gäufelden, Germany*

# 115

**October 05 2006, 14:20 - Room 4**

**C1. Astrodynamics Symposium**

*Coordinators: Alberto Foni (Italy), Arun Misra (Canada)*

**C1.P.3. Poster Session on Multibody Dynamics**

*Rapporteur: Andre Mazzoleni (United States)*

## IAC-06-C1.P.3.01

**Numerical Simulations on the Tether Deployment including an Attitude Motion of the Mother Satellite**

*Mr. Shoichi Yoshimura, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan*

## IAC-06-C1.P.3.02

**A System Concept Design Study of Tether-Controlled Spinning Solar Sail**

*Mr. Shinji Masumoto, Tokyo Institute of Technology, Tokyo, Japan*

*Mr. Kuniyuki Omagari, Tokyo Institute of Technology, Tokyo, Japan, Mr. Tomio Yamanaka, Tokyo Institute of Technology, Tokyo, Japan, Prof. Saburo Matunaga, Tokyo Institute of Technology, Tokyo, Japan*

### IAC-06-C1.P.3.03

**Dynamics of tetrahedron tethered satellite formation**  
*Dr. Anna Guerman, University of Beira Interior, Covilha, Portugal*

*Dr. Pedro Paglione, Instituto Tecnológico de Aeronáutica - ITA, Sao Jose dos Campos, Brazil, Dr. Georgi Smirnov, University of Porto, Porto, Portugal, Mrs. Ana M<sup>a</sup> Seabra, Escola Superior de Tecnologia de Viseu, Viseu, Portugal*

### IAC-06-C1.P.3.04

**Autonomous structure assembly using potential field functions**

*Mr. Ahmed Badawy, Student, Cumbernauld, United Kingdom*

*Prof. Colin R. McInnes, University of Strathclyde, Glasgow, United Kingdom*

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**October 05 2006, 14:20 - Room 10**

### C1. Astrodynamics Symposium

*Coordinators: Alberto Foni (Italy), Arun Misra (Canada)*

#### C1.P.4. Poster Session on Optimization

*Rapporteur: Jean-Paul Aguttes (France)*

### IAC-06-C1.P.4.01

**Rapid Lunar soft-landing trajectory optimization by a Legendre pseudospectral method**

*Dr. Jianjun Luo, Northwestern Polytechnical University, Xian, China*

*Dr. Mingguang Wang, Northwestern Polytechnical University, Xian, China, Prof. Jianping Yuan, Northwestern Polytechnical University, Xi'an, China*

### IAC-06-C1.P.4.02

**Optimal Reconfiguration for Formation Flying Subject to Several Constraints**

*Dr. Liu Jianfeng, Harbin Institute of Technology, Harbin, China*

*Dr. Siyuan Rong, Harbin Institute of Technology, Harbin, China, Dr. Naigang Cui, Harbin Institute of Technology, Harbin, China*

### IAC-06-C1.P.4.03

**Indirect Optimization of Two Dimensional Finite-Burning Interplanetary Transfers Including Spiral Dynamics**

*Mr. Christopher Ranieri, The University of Texas at Austin, Austin, TX, United States*

*Dr. Cesar Ocampo, The University of Texas at Austin, Austin, TX, United States*

### IAC-06-C1.P.4.04

**Mars Ascent Trajectory for Rendezvous Operations into Elliptical Orbit**

*Mr. Emanuele Di Sotto, DEIMOS Engenharia, Lisbon, Portugal*

*Mr. Juan-Carlos Bastante, DEIMOS Space, Tres Cantos, Madrid, Spain, Mr. Christian Philippe, European Space Agency/ESTEC, Noordwijk, The Netherlands*

### IAC-06-C1.P.4.05

**Planetary Atmosphere Entry Vehicles: Multiobjective Optimization PSO Algorithm Applied to a Multi-Body Multiple Flight Regime Modelling**

*Ms. Michelle Lavagna, Politecnico di Milano, Milan, Italy*

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**October 05 2006, 14:20 - Room 10**

### C1. Astrodynamics Symposium

*Coordinators: Alberto Foni (Italy), Arun Misra (Canada)*

#### C1.P.5. Poster Session on Orbital Dynamics

*Rapporteur: Colin R. McInnes (United Kingdom)*

### IAC-06-C1.P.5.01

**Simulation of the Cassini solar conjunction experiment with GRETCHEN**

*Mrs. Noelia Sánchez-Ortiz, DEIMOS Space S.L., Tres Cantos, Spain*

*Mr. Miguel Bello Mora, DEIMOS Space S.L., Madrid, Spain, Mrs. Laura Martin, DEIMOS Space S.L., Tres Cantos, Spain, Mr. Rudiger Jehn, European Space Agency/ESOC, Darmstadt, Germany, Dr. Paolo Tortora, University of Bologna, Forli, Italy, Prof. Luciano Iess, University of Rome "La Sapienza", Rome, Italy*

### IAC-06-C1.P.5.02

**Gravitational Capture by the Major Primary in the Restricted Four-Body Problem**

*Dr. Antonio Prado, Instituto Nacional de Pesquisas Espaciais (INPE), Sao Jose dos Campos, Brazil*

### IAC-06-C1.P.5.03

**International Best Practice for using Two Line Element Sets**

*Dr. Paul Crawford, University of Dundee, Dundee, United Kingdom*

*Mr. David Vallado, Analytical Graphics, Inc., Colorado Springs, United States, Dr. Richard Hujsak, Analytical Graphics, Inc., Exton, PA, United States, Dr. T.S. Kelso, Center for Space Standards and Innovation, Colorado Springs, United States*

### IAC-06-C1.P.5.04

**A Study of Properties of Relative Orbits of Formation Flying Spacecraft**

*Dr. Balaji Shankar Kumar, Center of Applied Space Technology & Microgravity, Bremen, Germany*

### IAC-06-C1.P.5.05

**Orbit design for Moon-Orbiting-Satellite**

*Prof. Lin Liu, Nanjing University, Nanjing, China*

*Dr. Hai-hong Wang, Nanjing University, Nanjing, China, Mr. Hou Xiyun, Nanjing University, Nanjing, China*

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**October 05 2006, 14:20 - Room 10**

### C1. Astrodynamics Symposium

*Coordinators: Alberto Foni (Italy), Arun Misra (Canada)*

#### C1.P.6. Poster Session on Mission Operations

*Rapporteur: Ming Li (China)*

## IAC-06-C1.P.6.01

### Validation, Verification & Upgrading of Southampton University Formation Flying Test-bed

Mr. Jonathan Stephens, University of Southampton, Southampton, United Kingdom

Mr. Christian Abellsson, University of Southampton, Southampton, United Kingdom, Mr. Peter Ashworth, University of Southampton, Derbyshire, United Kingdom, Mr. Jeremie Bach, University of Southampton, Poitiers, France, Mr. Manoj Marathe, University of Southampton, Southampton, United Kingdom

## IAC-06-C1.P.6.02

### Exploring Space(s): The space mission lifecycle, evolutionary algorithms, and a novel approach to mission planning optimisation

Dr. Ed Chester, SciSys GmbH / ESA-ESOC, Darmstadt, Germany

Mr. Joao Graciano, Gertec Consult GmbH, Regensburg, Germany

## IAC-06-C1.P.6.03

### Hyperbolic Orbital Transfers with Fuel Constraint Applied to Maintenance of a Satellite Constellation

Dr. Evandro Marconi Rocco, Instituto Nacional de Pesquisas Espaciais (INPE), São José dos Campos, Brazil

Dr. Marcelo Lopes de Oliveira e Souza, Instituto Nacional de Pesquisas Espaciais (INPE), São José dos Campos, Brazil, Dr. Antonio Prado, Instituto Nacional de Pesquisas Espaciais (INPE), Sao Jose dos Campos, Brazil

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**October 05 2006, 14:20 - Room 15**

## C2. Materials and Structures Symposium

Coordinators: Constantinos P. Stavrinidis (The Netherlands), Pavel M. Trivailo (Australia)

### C2.P.1. Poster Session on Materials and Structures - Part I

Rapporteur: Michael J. Eiden (The Netherlands)

## IAC-06-C2.P.1.01

### Modal analysis of the DOBSON SPACE TELESCOPE

Mrs. Kerstin Kracht, Technical University of Berlin, Schwaberow, Germany

## IAC-06-C2.P.1.02

### A Positioning System for On-orbit Assembly Robot Using Multiple Images

Mr. Heihachiro Kamimura, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan

Dr. Shin-ichiro Nishida, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan

## IAC-06-C2.P.1.03

### SWENET – ESA's portal for Services and Data on Space Weather Effects

Mr. Pablo Beltrami, eta\_max Space GmbH, Braunschweig, Germany

Mr. Kai Ruhl, eta\_max Space GmbH, Braunschweig, Germany, Dr. Alain Hilgers, European Space Agency (ESA), Noordwijk, The Netherlands, Dr. Alexi Glover, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Daniel Heynderickx, BIRA, Brussels, Belgium

## IAC-06-C2.P.1.04

### Assessment of Environmental Effects and Protection Systems using ESABASE2

Dr. Karl Dietrich Bunte, eta\_max Space GmbH, Braunschweig, Germany

Mr. Alexander Langwost, eta\_max Space GmbH, Braunschweig, Germany, Mr. Holger Sdunnus, eta\_max Space GmbH, Braunschweig, Germany, Dr. Gerhard Drolshagen, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. John Sorensen, European Space Agency/ESTEC, Noordwijk, The Netherlands

## IAC-06-C2.P.1.05

### Heat Transfer Coupling (Conduction, Convection and Radiation) in Pipes

Dr. Ezio Castejon Garcia, Instituto Tecnológico de Aeronáutica – ITA – IEM, São José dos Campos, Brazil

MSc Robson Leal da Silva, Instituto Tecnológico de Aeronáutica - ITA, São José dos Campos, Brazil

## IAC-06-C2.P.1.06

### Analysis and Optimization of Quadrifilar Antennas for Brazilian Satellites

Mss. Luzia Lux Lock, Laboratório de Ciências Espaciais de Santa Maria, LACESM/CT - UFSM and Centro Regional Sul de Pesquisas Espaciais, CRSPE/INPE - MCT, Santa Maria, Brazil

Dr. Carlos Alberto Iennaco Miranda, Instituto Nacional de Pesquisas Espaciais (INPE) - MCT, São José dos Campos, Brazil, Mr. Thiago Brum Pretto, Laboratório de Ciências Espaciais de Santa Maria, LACESM/CT - UFSM and Centro Regional Sul de Pesquisas Espaciais, CRSPE/INPE - MCT, Santa Maria, Brazil, Mr. Diego dos Santos, Laboratório de Ciências Espaciais de Santa Maria, LACESM/CT - UFSM and Centro Regional Sul de Pesquisas Espaciais, CRSPE/INPE - MCT, Santa Maria, Brazil, Mr. Nelson Jorge Schuch, Centro Regional Sul de Pesquisas Espaciais - CRSPE/INPE - MCT, Santa Maria, RS, Brazil

## IAC-06-C2.P.1.07

### Material Considerations in the STEREO Solar Array Design

Ms. Jennifer R. Tanzman, The John Hopkins University, Laurel, MD, United States

## IAC-06-C2.P.1.08

### Verification by analysis for the ESA 2nd Young Engineers Satellite system

Mr. Antonios Vavouliotis, University of Patras, Patras, Hellas, Greece

Mr. Dimitrios Lamprou, University of Patras, Patras, Greece, Prof. Vassilis Kostopoulos, University of Patras, Patras, Hellas, Greece, Mr. Erik Van der Heide, Delta-Utec SRC, Leiden, The Netherlands, Mr. Matteo Appolloni, AOES, Noordwijk, The Netherlands

## IAC-06-C2.P.1.09

### A study on the effect of micro and nano-debris impact on aerospace thermal barrier coating at high temperature

Ms. Barbara Codan, DMNR, Trieste, Italy

Prof. Valter Sergo, CENMAT - Center of Excellence for Nanostructured Materials, Trieste, Italy, Dr. Stefano Visintin, DMNR, University of Trieste, Trieste, Italy

## IAC-06-C2.P.1.10

### Ultra-light Weight Inflatable Actuated Rod for Antenna Extendable Along Spin Axis

Mr. Kazuki Watanabe, WEL Research Co., Ltd., Chiba, Japan

Dr. Ken Higuchi, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami-hara, Kanagawa, Japan, Mr. Akihito Watanabe, Sakase Adtech Co., Ltd., Sakai-shi, Fukui, Japan, Dr. Hiroshi Yamakawa, Waseda University, Shinjuku-ku, Tokyo, Japan, Dr. Hiroaki Tsunoda, Waseda University, Shinjuku-ku, Tokyo, Japan

## IAC-06-C2.P.1.11

### New Concept for Weight Optimization of Launcher Nose Firings Made of Honeycomb Structures

*Dr. Volodymyr Slyvyns'kyy, Research Institute of Engineering Technique, Dnipropetrovsk, Ukraine*

Mr. Mykhajilo Slyvyns'kyy, Research Institute of Engineering Technique, Dnipropetrovsk, Ukraine, Dr. Alexander Gajdachuk, Kharkov Aviation Institute, Kharkov, Ukraine, Dr. Vitalij Gajdachuk, Kharkov Aviation Institute, Kharkov, Ukraine, Ms. Nonna Slyvynska, NITOM Scientific-Production Enterprise, Dnipropetrovsk, Ukraine, Dr. V.V. Kirichenko, Kharkov Aviation Institute, Kharkov, Ukraine

## IAC-06-C2.P.1.12

### A New Concept for the Design of Filament Wound Composite Pressure Vessels

*Dr. R. Ramesh Kumar, Indian Space Research Organization (ISRO), VSSC, Thiruvananthapuram, India*

Mr. Rajesh P. Nair, Jyothi Engineering College, Kerala, India

## IAC-06-C2.P.1.13

### Hot Structure Design Modelling of Reusable Re-entry Vehicles

*Dr. Marco Gigliotti, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy*

Dr. Aniello Riccio, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy, Mr. Domenico Tescione, C.I.R.A. Italian Aerospace Research Centre, Capua, Italy

## IAC-06-C2.P.1.14

### The mechanical properties and corrosion resistance of microarc oxidation coatings on Al18B4O33w/AZ91 Mg matrix composite

*Ms. Yanqiu Wang, Harbin Institute of Technology, Harbin, China*

Dr. Kun Wu, Harbin Institute of Technology, Harbin, China, Dr. Min Zhao, Harbin Institute of Technology, Harbin, China, Dr. Mingyi Zheng, Harbin Institute of Technology, Harbin, China

## IAC-06-C2.P.1.15

### The Effects of Large Space Micro-Strip Antenna Thermal Distortion to Releasing and Deploying Analysis

*Ms. Juan-Fang Wei, Xi an Institute of Space Radio Technology, Xi an, China*

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## October 05 2006, 14:20 - Room Auditorium

### C4. Space Propulsion Symposium

*Coordinators: Dana G. Andrews (United States), Giorgio Saccoccia (The Netherlands)*

### C4.P.1. Poster Session on Propulsion Systems I

*Rapporteur: Marcel F.M. Poulighen (France)*

## IAC-06-C4.P.1.01

### Plasma catalytic monopropellant decomposition

*Mr. Junichiro Aoyagi, Tokyo Institute of Technology, Tokyo, Japan*

Mr. Yuki Kotake, University of Tokyo, Tokyo, Japan, Prof. Haruki Takegahara, Tokyo Institute of Technology, Tokyo, Japan, Dr. Kyoichi Kuriki, Tokyo Institute of Technology, Tokyo, Japan

## IAC-06-C4.P.1.02

### Evaluation of frictional drag increase in M-34 extensible nozzle

*Dr. Shinsuke Takeuchi, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan*

Prof. Toru Shimada, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagamihara, Japan, Mr. Masatoshi Nakamura, IHI Aerospace Co, Ltd., Gunma-ken, Japan, Ms. Kyoko Nagayama, IHI Aerospace Co, Ltd., Tomioka, Japan, Mr. Katsunori Chinen, IHI Aerospace Co, Ltd., Tomioka, Japan

## IAC-06-C4.P.1.03

### Improved propellant loading strategy and launch operation of hydrazine propulsion subsystem to enhance safety of solar synchronous orbit satellite

*Dr. Xin Hong, Shanghai Institute of Space Propulsion, Shanghai, China*

Dr. Jie Chen, Shanghai Institute of Space Propulsion, Shanghai, China

## IAC-06-C4.P.1.04

### Modelling of Major Parameters for the LV Propellant Tanks Pressurization Systems

*Mr. Anatoly Logvinenko, Yuzhnoye State Design Office, Dnipropetrovsk, Ukraine*

## IAC-06-C4.P.1.05

### Analysis of Peculiarities of Liquid Propellant Rocket Engine Startup

*Dr. Igor Fatuev, NPO Energomash, Khimki, Moscow region, Russia*

## IAC-06-C4.P.1.06

### Flow field numerical study within thrust chamber of aerospace small liquid propellant rocket engine

*Mrs. Kunmei Xu, Beijing University of Aeronautics and Astronautics, Beijing, China*

Prof. Guobiao Cai, Beijing University of Aeronautics and Astronautics, Beijing, China, Mrs. Yuntao Zheng, Beijing University of Aeronautics and Astronautics, Beijing, China

## IAC-06-C4.P.1.07

### Study on the forward-sweep inducer for LRE turbopumps

*Dr. Chang Ho Choi, Korea Aerospace Research Institute, Daejeon, Korea*

Mr. Jin-Sun Kim, Korea Aerospace Research Institute, Daejeon, Korea, Dr. Soon-Sam Hong, Korea Aerospace Research Institute, Daejeon, Korea, Dr. Jinhan Kim, Korea Aerospace Research Institute, Daejeon, Korea

## IAC-06-C4.P.1.08

### Numerical and experimental study of plume impingement effects

*Mr. Zhang Jianhua, Beijing University of Aeronautics and Astronautics, Beijing, China*

Mr. He Bijiao, Beijing University of Aeronautics and Astronautics, Beijing, China, Mr. Hou Fenglong, Beijing University of Aeronautics and Astronautics, Beijing, China, Prof. Guobiao Cai, Beijing University of Aeronautics and Astronautics, Beijing, China

## IAC-06-C4.P.1.09

### Monopropellant Rotary Liquid Propulsion

*Prof. Sergey Finogenov, Moscow Aviation Institute (State Technical University), Moscow, Russia*

Prof. Valery P. Burdakov, Moscow State Aviation Institute, Moscow, Russia, Prof. Alexander A. Sergienko, Moscow Aviation Institute, Moscow, Russia

## IAC-06-C4.P.1.10

### Characterizing High-Energy-Density Propellants for Space Propulsion Applications

*Mr. Timothy Kokan, Georgia Institute of Technology, Atlanta, Georgia, United States*

*Dr. John Olds, SpaceWorks Engineering, Inc. (SEI), Atlanta, United States*

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### October 05 2006, 14:20 - Room Auditorium

#### C4. Space Propulsion Symposium

*Coordinators: Dana G. Andrews (United States), Giorgio Saccoccia (The Netherlands)*

#### C4.P.2. Poster Session on Propulsion Systems II

*Rapporteur: I-Shih Chang (United States)*

## IAC-06-C4.P.2.01

### Influence of two air inlets on combustion efficiency of fuel-rich flow field laden with boron particle

*Mr. Lu Xiang, Northwestern Polytechnical University, Xi'an, China*

*Prof. Guoqiang He, Northwestern Polytechnical University, Xi'an, China, Prof. Pei-Jing Liu, Northwestern Polytechnical University, Xi'an, China, Mr. Qin Fei, Northwestern Polytechnical University, Xi'an, China*

## IAC-06-C4.P.2.02

### Particle collection and influence of aggregation condition on particles size distribution of solid rocket motor

*Mr. Liu Yang, Northwestern Polytechnical University, Xi'an, China*

*Prof. Guoqiang He, Northwestern Polytechnical University, Xi'an, China, Prof. Jiang Li, Northwestern Polytechnical University, Xi'an, China*

## IAC-06-C4.P.2.03

### Numerical study on 3-d two-phase flow field for tail-pipe nozzle srm under high acceleration

*Mr. Liu Yang, Northwestern Polytechnical University, Xi'an, China*

*Prof. Guoqiang He, Northwestern Polytechnical University, Xi'an, China, Prof. Jiang Li, Northwestern Polytechnical University, Xi'an, China*

## IAC-06-C4.P.2.04

### Ablation model of thermal insulator in oxygen-rich condition

*Mr. Yu Xiao-Jing, Northwestern Polytechnical University, Xi'an, China*

*Prof. Guoqiang He, Northwestern Polytechnical University, Xi'an, China, Prof. Jiang Li, Northwestern Polytechnical University, Xi'an, China*

## IAC-06-C4.P.2.05

### Experimental research on the low vulnerability of HTPB and NEPE solid propellant

*Mr. Xianggeng Wei, Northwestern Polytechnical University, Xi'an, China*

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### October 05 2006, 14:20 - Room 12

#### D1. Space Systems Symposium

*Coordinators: Hans F.A. Roefs (The Netherlands), Lawrence Dale Thomas (United States)*

#### D1.P.1. Poster Session on Space Systems

*Rapporteur: Moshe Guelman (Israel), Erick Lansard (France)*

## IAC-06-D1.P.1.01

### Reduction design on the magnetic noise generated by the activation of korean initiator system

*Mr. Kwang Soo Kim, Korea Aerospace Research Institute, Daejeon, Korea*

*Mr. Soo Jin Lee, Korea Aerospace Research Institute, Daejeon, Korea, Dr. Eui Seung Chung, Korea Aerospace Research Institute, Daejeon, Korea, Dr. Jeong Joo Park, Korea Aerospace Research Institute, Daejeon, Korea*

## IAC-06-D1.P.1.02

### Modeling Planetary Entry, Descent and Landing System Technologies for Interplanetary Mission Design Studies

*Mr. Ben Bieber, University of North Dakota, Grand Forks, United States*

*Mr. Craig Peterson, Jet Propulsion Laboratory, Pasadena, United States*

## IAC-06-D1.P.1.03

### A System-Level Approach to the Design and Development of Space-Based Embedded Systems

*Mr. Andrew Riha, Iowa State University, Ames, Iowa, United States*

*Dr. Diane Rover, Iowa State University, Ames, IA, United States*

## IAC-06-D1.P.1.04

### DATO (Descent & Ascent Trajectory Optimisation): From the Launch Pad to Orbit and Back

*Mr. Davide Starnone, JAQAR Space Engineering, Naples, Italy*

*Mr. Robin Biesbroek, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-D1.P.1.05

### New Horizons Solid State Recorder Electronics and Software

*Mr. Alan Mick, The John Hopkins University Applied Physics Laboratory, Laurel, United States*

*Mr. Jacob Firer, The John Hopkins University Applied Physics Laboratory, Laurel, United States, Mr. Joseph Bogdanski, The John Hopkins University Applied Physics Laboratory, Laurel, United States, Mr. Steve Williams, The John Hopkins University Applied Physics Laboratory, Laurel, United States, Mr. Bruce Savadkin, The John Hopkins University Applied Physics Laboratory, Laurel, United States, Ms. Joanna Mellert, The John Hopkins University Applied Physics Laboratory, Laurel, United States, Mr. David Frankford, The John Hopkins University Applied Physics Laboratory, Laurel, United States*

## IAC-06-D1.P.1.06

### An Architecture for Incorporating Interactive Visualizations Into Scientific Simulations

*Mr. Ravishankar Mathur, The University of Texas at Austin, Austin, United States*

*Dr. Cesar Ocampo, The University of Texas at Austin, Austin, TX, United States*

### **IAC-06-D1.P.1.07**

**Universal technologies of space microwave payloads in china: present status and future prospect**

*Dr. Shi-Wei Dong, Xi'an Institute of Space Radio Technology, Xi'an, China*

Mr. Chong-Di Duan, Xi'an Institute of Space Radio Technology, Xi'an, China, Mrs. Yi Zhang, Xi'an Institute of Space Radio Technology, Xi'an, China, Dr. Quan Zhou, Xi'an Institute of Space Radio Technology, Xi'an, China, Mr. Wei Ma, Xi'an Institute of Space Radio Technology, Xi'an, China, Mr. Hong-Tai Zhang, Xi'an Institute of Space Radio Technology, Xi'an, China

### **IAC-06-D1.P.1.08**

**SpaceWire: What, Why, Where**

*Mr. Paul Walker, 4Links Limited, Milton Keynes, United Kingdom*

Dr. Barry Cook, 4Links Limited, Milton Keynes, United Kingdom

### **IAC-06-D1.P.1.09**

**An Investigation on Thermal Modeling and Heat Load Mitigation for Satellite Electronic Components**

*Mr. Mehran Shahryari, ITRC, Tehran, Iran*

### **IAC-06-D1.P.1.10**

**Geometrical analysis of isls in multilayered satellite communication networks**

*Mr. Hui Li, Harbin Institute of Technology, shenzhen, China*

Mr. Zhang Qinyu, Harbin Institute of Technology, Shenzhen, China, Mr. Zhang Naitong, Harbin Institute of Technology, Shenzhen, China

### **IAC-06-D1.P.1.11**

**Rosetta Lander Software Simulator**

*Dr. Sandor Szalai, SGF Ltd, Budapest, Hungary*

Mr. Andras Balazs, SGF Ltd, Budapest, Hungary, Mr. Attila Baksa, KFKI Institute for Particle and Nuclear Physics, Budapest, Hungary, Mr. Gabor Troznai, SGF Ltd, Budapest, Hungary

### **IAC-06-D1.P.1.12**

**Canadian Contribution to TECSAS Mission for a Space Demonstration of On-Orbit Servicing**

*Dr. Jean-Claude Piedboeuf, Canadian Space Agency, St-Hubert, QC, Canada*

Mr. Gilles Brassard, Canadian Space Agency, St-Hubert, QC, Canada, Mr. Michel Doyon, Canadian Space Agency, St-Hubert, QC, Canada, Mr. Erick Dupuis, Canadian Space Agency, St-Hubert, QC, Canada, Dr. Eric Martin, Canadian Space Agency, St-Hubert, QC, Canada

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## **October 05 2006, 14:20 - Room 8**

**D2. Space Transportation Symposium**

*Coordinators: Christophe Bonnal (France), Richard Tyson (United States)*

**D2.P.1. Poster session on Space Transportation**

*Rapporteur: David E. Glass (United States)*

### **IAC-06-D2.P.1.01**

**Optical Correlator for Landing and Identification of Landing Sites**

*Dr. Alain Bergeron, INO, Québec, Canada*

Dr. Bernd Harnisch, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Pascal Bourqui, INO, Sainte-Foy, Québec, Canada

### **IAC-06-D2.P.1.02**

**Crew Launch Vehicle (CLV) Avionics and Software Integration Overview**

*Mr. Michael L. Burris, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, Virginia, United States*

Mr. Donald Monell, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States, Mr. Kevin Flynn, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States

### **IAC-06-D2.P.1.03**

**Experimental study of fuselage effects on the aerodynamic performances of reusable launch vehicle (rlv)**

*Mr. Takuro Ishida, Kyushu University, Fukuoka, Japan*

Prof. Shigeru Aso, Kyushu University, Fukuoka, Japan, Dr. Yasuhiro Tani, Kyushu University, Fukuoka, Japan, Dr. Kenji Tadakuma, Kyushu University, Fukuoka, Japan, Mr. Mitsumasa Nishimura, Kyushu University, Fukuoka, Japan

### **IAC-06-D2.P.1.04**

**Assessment of vehicle concepts for Space transportation and Re-entry Experimental missions**

*Mr. Rodrigo Haya Ramos, DEIMOS Space S.L., Tres Cantos, Spain*

Mr. Davide Bonetti, European Space Agency/Student Participation Programme, Sesto San Giovanni (MI), Italy, Mr. Massimiliano Bottacini, Alcatel Alenia Space, Turin, Italy

### **IAC-06-D2.P.1.05**

**EUROCKOT - An Established LEO Launch Service Provider**

*Mrs. Anna Zorina, Eurockot Launch Services GmbH, Bremen, Germany*

Mr. Mark Kinnersley, Eurockot Launch Services GmbH, Bremen, Germany, Mr. Jacques Leclerc, Eurockot Launch Services GmbH, Bremen, Germany, Mr. Peter Freeborn, Eurockot Launch Services GmbH, Bremen, Germany

### **IAC-06-D2.P.1.06**

**Prospects for advancement and problems of developing reusable aerospace systems with horizontal takeoff and landing**

*Dr. Vladimir Plokhikh, TsAGI, Zhukovskiy, Moscow Region, Russia*

### **IAC-06-D2.P.1.07**

**Current Status of Development of Pilot Engine with high reliability**

*Dr. Makoto Yoshida, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan*

Mr. Hiroshi Aoki, Japan Aerospace Exploration Agency (JAXA), Chofu-city, Japan, Mr. Moriyasu Fukuzoe, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Ibaraki, Japan, Dr. Yoshihiro Naruo, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami-hara, Japan

### **IAC-06-D2.P.1.08**

**Exploitation of the lift force during atmospheric reentry**

*Prof. Rodolfo Monti, University of Naples "Federico II", Naples, Italy*

Mr. Raffaele Savino, University of Naples "Federico II", Naples, Italy, Mr. Mario De Stefano Fumo, University of Naples "Federico II", Naples, Italy

### **IAC-06-D2.P.1.09**

**Evaluation of Dynamic Base Pitching Moment of a Blunt Reentry Capsule in the Transonic Region**

*Dr. Nobuyuki Iizuka, Japan Aerospace Exploration Agency (JAXA), Kanagawa-ken, Japan*



**D2. Space Transportation Symposium**

*Coordinators: Christophe Bonnal (France), Richard Tyson (United States)*

**D2.P.2. Poster session on Space Transportation**

*Rapporteur: Yuriy Sumin (Russia)*

**IAC-06-D2.P.2.01 (WITHDRAWN)****Falcon I, First Flight**

*Mr. Hans Koenigsmann, Space Exploration Technologies, El Segundo, CA, United States*

*Mrs. Gwynne Shotwell, Space Exploration Technologies, El Segundo, United States*

**IAC-06-D2.P.2.02****The Pre-X atmospheric re-entry experimental lifting body: program status and system synthesis**

*Mr. Paolo Baiocco, Centre National d'Etudes Spatiales (CNES), Courcouronnes, France*

**IAC-06-D2.P.2.03****Projectplan for the deimos leo launcher**

*Mr. Peter Batenburg, Technical University of Delft (TUDelft), Delft, The Netherlands*

*Mr. Steven Engelen, Technical University of Delft (TUDelft), Pijnacker, The Netherlands*

**IAC-06-D2.P.2.04****The USV\_X Mission as Advanced Reentry Technologies Testbed**

*Mr. Pier De Matteis, C.I.R.A. Italian Aerospace Research Centre, Capua (CE), Italy*

**IAC-06-D2.P.2.05****Adopting low-tech components for rocketplane with global range**

*Mr. Cyrus Foster, McGill University, Montreal, Canada*

**IAC-06-D2.P.2.06****Comparative assessment of Air-Based Launch Systems competitiveness for the space launch market**

*Dr. Anton Kolozevny, TSNIIMASH, Korolev, Russia*

*Mr. Joerg Behrens, EADS SPACE Transportation, Bremen, Germany, Dr. Alexey Romashkin, TSNIIMASH, Korolev, Russia, Prof. Vladimir Vakhnichenko, TSNIIMASH, Korolev, Russia*

**IAC-06-D2.P.2.07****Sensitivity of Pre-cooled Air-breathing Engine Performance to Heat Exchanger Design Parameters**

*Ms. Helen Webber, University of Bristol, Bristol, United Kingdom*

*Mr. Alan Bond, Reaction Engines Ltd., Abingdon, United Kingdom, Mr. Mark Hempell, University of Bristol, Bristol, United Kingdom*

**IAC-06-D2.P.2.08****Aerodynamic conceptual design for a wing-body transporter**

*Dr. Wei Tang, China Aerodynamics Research and Development Center, Mianyang, China*

**IAC-06-D2.P.2.09****Development of the RFBB "Bargouzine" concept for Ariane 5 evolution**

*Dr. Yuriy Sumin, TSNIIMASH, Korolev, Russia*

*Mr. Sergey F. Kostromin, TSNIIMASH, Korolev, Moscow Region, Russia, Mr. Nikolai Panichkin, TSNIIMASH, Korolev, Moscow Region, Russia, Mr. Yves Prel, Centre National d'Etudes Spatiales (CNES), Evry, France, Dr. Mikhail Osin, NPO Molniya, Moscow, Russia, Mr. David Iranzo-Greus, EADS SPACE Transportation, Les Mureaux, France, Mr. Marco Prampolini, EADS SPACE Transportation, Les Mureaux, France*

**E1. Space Education and Outreach Symposium**

*Coordinators: Pierre-Louis Contreras (France)*

**E1.P.1. Poster Session on Hands-On Space Education**

*Rapporteur: Stephen Brock (United States)*

**IAC-06-E1.P.1.01****The Vega 1 educational payload**

*Mr. Guerric Pont, European Space Agency/ESTEC, Noordwijk, The Netherlands*

*Mr. Ruedeger Reinhard, European Space Agency/ESTEC, Noordwijk, The Netherlands*

**IAC-06-E1.P.1.02****Experimental Rockets as an introduction to engineering**

*Mr. Fernando Stancato, Metropolitana-IESB, São Paulo, SP, Brazil*

*Prof. José Fernando, Jr. Mangili, Metropolitana - IESB, Londrina, Brazil, Prof. Jancer F. Z. Destro, Metropolitana - IESB, Londrina, Brazil, Prof. Arlindo Tribess, Escola Politécnica, São Paulo, Brazil*

**IAC-06-E1.P.1.03****Hands-On Education and students formation for aerospace systems engineering : looking back upon the SOPRANO experience**

*Dr. Manola Romero, AAAF, Toulouse, France*

*Mr. Yves Gourinat, ENSICA, Toulouse, France, Mrs. Bénédicte Escudier, SUPAERO- Ecole Nationale Supérieure de l'Aéronautique et de l'Espace, Toulouse, France*

**IAC-06-E1.P.1.04****The European Student Moon Orbiter (ESMO) Project**

*Mr. Trond Krøvel, International Space University (ISU), Illkirch-Graffenstaden, France*

*Mr. Kristian Jerpetjøn, Oslo, Norway, Mr. Steve Ulrich, Université de Sherbrooke, Sherbrooke, Canada*

**IAC-06-E1.P.1.05****A Lunar Colony in the Playground: Low-cost Exploration Simulations**

*Ms. Kerrie Dougherty, Power House Museum, Haymarket, NSW, Australia*

*Ms. Jennie Young, Arndell Anglican College, Pitt Town, NSW, Australia*

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**October 05 2006, 14:20 - Room 17**

**E1. Space Education and Outreach Symposium**  
*Coordinators: Pierre-Louis Contreras (France)*

**E1.P.2. Poster Session on Structures for Space Education**

*Rapporteur: Bénédicte Escudier (France)*

## **IAC-06-E1.P.2.01**

**Space as a Strategic Support Tool for Blended Learning**  
*Mrs. Anne Brumfitt, European Space Agency/ESTEC, South Holland, The Netherlands*

## **IAC-06-E1.P.2.02**

**The SICSA Space Architecture Seminar Lecture Series: A Free Reference for Education and Practice**  
*Dr. Larry Bell, Sasakawa International Center for Space Architecture, Houston, TX, United States*

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**October 05 2006, 14:20 - Room 14**

**E3. Symposium on Which Direction in Space? Balancing Applications and Exploration**  
*Coordinators: Gérard Brachet (France), Debra Facktor Lepore (United States)*

**E3.P.1. Poster Session on Policies for a New Era in Space**

*Rapporteur: Jakub Ryzenko (Poland)*

## **IAC-06-E3.P.1.01**

**Space Vision for Austria**  
*Mrs. Andrea Kleinsasser, BMVIT - Federal Ministry for Transport, Innovation and Technology, Vienna, Austria*

## **IAC-06-E3.P.1.02**

**Policies to Establish a 'System Internationale' for Space Protocols and Technology**  
*Dr. William Marshall, Space Policy Institute, George Washington University, Washington, United States*  
*Mr. Robbie Schingler, Space Generation Advisory Council (SGAC), Washington, United States, Ms. Jessie Cowan-Sharp, Washington, United States, Mr. George T. Whitesides, National Space Society, Washington, DC, United States*

## **IAC-06-E3.P.1.03**

**US Space Exploration Initiative – Risk or Opportunity For Transatlantic Co-operation?**  
*Ms. Agnes Mellot, International Space University (ISU), Noisy le Grand, France*

## **IAC-06-E3.P.1.04**

**International Cooperation in Space Exploration: towards a shift in the traditional space powers distribution?**  
*Ms. Aurélie Trur Nicli, International Space University (ISU), Vendenheim, France*

## **IAC-06-E3.P.1.05**

**Protecting "The Fragile Frontier" – The Need For a Policy**  
*Mr. Mark Williamson, International Space Review, Kirkby Thore, Cumbria, United Kingdom*

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**October 05 2006, 14:20 - Room 14**

**E3. Symposium on Which Direction in Space? Balancing Applications and Exploration**  
*Coordinators: Gérard Brachet (France), Debra Facktor Lepore (United States)*

**E3.P.3. Poster Session on Space and Global Security**

*Rapporteur: Nicolas Peter (United States)*

## **IAC-06-E3.P.3.01**

**The search for security and defence space capabilities in Europe. A legal perspective.**  
*Ms. Anna Burzykowska, International Institute of Air and Space Law, Leiden University, The Netherlands, Lowicz, Poland*

## **IAC-06-E3.P.3.02**

**A Security Analysis of Space-based Weapons and Credible Alternatives**  
*Dr. William Marshall, Space Policy Institute, George Washington University, Washington, United States*

## **IAC-06-E3.P.3.03**

**Towards a Global Command and Control Structure for Planetary Defense from Near-Earth Objects**  
*Mr. Alexander MacDonald, University of Oxford, Oxford, United Kingdom*  
*Team Cassandra, Illkirch-Graffenstaden, France*

## **IAC-06-E3.P.3.04**

**Cassandra: A political strategy to protect our planet from Near-Earth Objects**  
*Mrs. Vicky Chouinard, ART Advanced Research Technologies Inc., Montréal, Canada*  
*Mrs. Laura Appolloni, Centre National d'Etudes Spatiales (CNES), Evry-Courcouronnes, France, Mr. Olivier Leonard, European Space Agency/ESRIN, Frascati, Italy*

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**October 05 2006, 14:20 - Room 14**

**E3. Symposium on Which Direction in Space? Balancing Applications and Exploration**  
*Coordinators: Gérard Brachet (France), Debra Facktor Lepore (United States)*

**E3.P.4. Poster Session on Space Tourism: Keeping the Dream Alive**

*Rapporteur: André Van Gaver (France)*

## **IAC-06-E3.P.4.01**

**Consideration of a Space Wedding as a New Market for Commercial Space Flight**  
*Ms. Misuzu Onuki, Space Frontier Foundation, Saitama, Japan*

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## October 05 2006, 14:20 - Room 7

**E4. 40th Symposium on the History of Astronautics**  
*Coordinators: Marsha Freeman (United States), George James (United States), Christophe Rothmund (France), Ake Ingemar Skoog (Germany)*

**E4.P. Poster Session on History of Astronautics**

*Rapporteur: Emily Springer (United States)*

### IAC-06-E4.P.01

**Euroavia the european association of aerospace students**

*Mr. Sergio Benítez, Escuela Universitaria de Ingeniería Técnica Aeronáutica, Madrid, Spain*

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## October 05 2006, 14:20 - Room 7

**E5. 17th Symposium on Space Activity and Society**  
*Coordinators: Roger Malina (France), David Raitt (The Netherlands)*

**E5.P. Poster Session on Space Activity and Society**

*Rapporteur: Päivi Jukola (Finland)*

### IAC-06-E5.P.01

**Mars Mission Political Feasibility**

*Mr. Fabio Sau, University of North Dakota, Grand Forks, United States*

### IAC-06-E5.P.02

**Motivating Public/Mass to Explore Space**

*Mr. Amrut Yalagi, The Planetary Society of Youth, Bagalkot, India*

*Mr. Basavaprabhu Sheeparamatti, The Planetary Society of Youth, Bagalkot, India*

### IAC-06-E5.P.03

**Children's Art and Micro-sensors as Educational Probe Payloads**

*Mr. James Burke, The Planetary Society, Sierra Madre, United States*

### IAC-06-E5.P.04

**Popularization of FORMOSAT-2 Images in Taiwan**

*Dr. Jeng-Shing Chern, National Space Organization, Hsinchu, Taiwan, China*

### IAC-06-E5.P.05

**Thick Space –Surface/Interface, Perception, and Space Exploration**

*Ms. Martha Blassnigg, University of Plymouth, Plymouth, United Kingdom*

*Dr. Michael Punt, University of Plymouth, Plymouth, United Kingdom, Mrs. Nina Czegledy, Critical Media Society, ISEA, Toronto, Canada*

### IAC-06-E5.P.06

**CANSAT-KIT for non-engineering people**

*Ms. Tomoko Marukawa, Qoo-An Ltd., Hyogo, Japan*  
*Ms. Naomi Kashima, Qoo-An Ltd., Hyogo, Japan, Dr. Yoshiki Sugawara, University of Tokyo, Tokyo, Japan, Mr. Yuya Nakamura, University of Tokyo, Tokyo, Japan, Prof. Shinichi Nakasuka, University of Tokyo, Tokyo, Japan*

### IAC-06-E5.P.07

**Space Art: Defining Cultural Identity Through Technology**

*Mr. Jimmy Hazin, Self Employed, Calgary, Canada*  
*Ms. Catherine Hazin, Calgary, Canada*

### IAC-06-E5.P.08

**NASA Historical Studies on the Societal Impact of Spaceflight**

*Dr. Steven Dick, National Aeronautics and Space Administration (NASA)/Headquarters, Washington, DC, United States*

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## October 05 2006, 15:30 - Room 11

**A1. Space Life Sciences Symposium**

*Coordinators: Gerda Horneck (Germany), Inessa Kozlovskaya (Russia)*

**A1.7. Joint session on Life and Physical Sciences for Space Exploration with A2.7.**

*Chairmen: Benton C. Clark (United States), Rainer Willnecker (Germany)*

*Rapporteur: Vladislav Petrov (Russia), M. Ziad Saghir (Canada)*

### IAC-06-A1.7.-A2.7.01

**The Alcriss project on board the International Space Station**

*Dr. Dario Castagnolo, MARS s.r.l., Naples, Italy*

*Dr. Marco Casolino, National Institute of Nuclear Physics - INFN, Rome, Italy, Dr. Raimondo Fortezza, MARS s.r.l., Naples, Italy*

### IAC-06-A1.7.-A2.7.02

**Radiation research without frontiers - from ISS to Mars**

*Dr. Guenther Reitz, German Aerospace Center (DLR), Cologne, Germany*

### IAC-06-A1.7.-A2.7.03

**New models for radiation doses in the Mars environment**

*Dr. Giovanni De Angelis, Istituto Superiore di Sanita' (ISS), Rome, Italy, Rome, Italy*

### IAC-06-A1.7.-A2.7.04

**Short term spaceflights influence autonomic cardiovascular control**

*Dr. Frank Beckers, Laboratory of Experimental Cardiology, Leuven, Belgium*

*Mr. Bart Verheyden, K.U. Leuven, Leuven, Belgium, Mr. Kurt Couckuyt, K.U. Leuven, Leuven, Belgium, Mr. Jiexin Liu, K.U. Leuven, Leuven, Belgium, Prof. André Aubert, University Hospital Gasthuisberg, Leuven, Belgium*

### IAC-06-A1.7.-A2.7.05

**Simulation of microgravity long-term effects on blood-forming organs**

*Dr. Antoni Pérez-Poch, Universitat Politècnica de Catalunya, Barcelona, Spain*

## IAC-06-A1.7.-A2.7.06

**Effect of simulated microgravity on the virulence properties of the opportunistic bacterial pathogen *Staphylococcus aureus***

*Prof. Peter W. Taylor, School of Pharmacy, University of London, London, United Kingdom*

*Ms. Helena Rosado, School of Pharmacy, University of London, London, United Kingdom, Dr. Paul D. Stapleton, School of Pharmacy, University of London, London, United Kingdom*

## IAC-06-A1.7.-A2.7.07

**The influence of physical space flight factors on tomato plants grown from seeds carried for a long time at the orbital space station MIR**

*Mrs. Galina Nechitailo, Institute of Biochemical Physics, Moscow, Russia*

*Mr. S.S. Yurov, Institute of Cell Biophysics RAS, Pushchino, Russia*

## IAC-06-A1.7.-A2.7.08

**Low-gravity Orbiting Research Laboratory Environment Potential Impact on Space Biology Research**

*Mr. Kenol Jules, National Aeronautics and Space Administration (NASA), Houston, TX, United States*

## IAC-06-A1.7.-A2.7.09

**Exploration Health Risks: Probabilistic Risk Assessment**

*Dr. Jennifer Rhatigan, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, United States*

*Dr. John Charles, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, United States, Ms. Judith Hayes, National Aeronautics and Space Administration (NASA), Houston, United States, Mr. Kiley Wren, Lockheed Martin, Houston, United States*

# 133

**October 05 2006, 15:30 - Room 13**

### A3. Space Exploration Symposium

*Coordinators: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)*

#### A3.P.3. Poster Session on Mars Exploration

*Rapporteur: Eduardo W. Bergamini (Brazil)*

## IAC-06-A3.P.3.01

**Highlights from HRSC High Resolution Stereo Camera on ESA's Mars Express Mission**

*Dr. Bernard Foing, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-A3.P.3.02

**The design of the compact reconnaissance imaging spectrometer for mars (crism) instrument**

*Mr. Jeffrey Lees, The John Hopkins University Applied Physics Laboratory, Laurel, MD, United States*

*Mr. Scott L. Murchie, The John Hopkins University, Laurel, MD, United States*

## IAC-06-A3.P.3.03

**Prevention of backward contamination for Mars sample return missions: risks and challenges**

*Dr. André Debus, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

## IAC-06-A3.P.3.04

**Derivation of Martian Meteorological Parameters Using Ground-Based Telescopes and Forward-Modelling**

*Mr. Andrew Simpson, Macquarie University, Sydney, Australia*

*Dr. Jeremy Bailey, Sydney, Australia, Ms. Sarah Chamberlain, Sydney, Australia, Dr. David Crisp, Los Angeles, United States, Prof. Malcolm Walter, Sydney, Australia*

## IAC-06-A3.P.3.05

**Basic concepts of base configuration and module structure for a mars habitat**

*Mr. Uwe Derz, RWTH Aachen, Aachen, Germany*

*Mr. Fabian Preller, Aachen, Germany, Mr. Stephan Zajac, Aachen, Germany, Mr. Daniel Noelke, RWTH Aachen - Institut fuer Leichtbau, Aachen, Germany*

## IAC-06-A3.P.3.06

**Tumbleweed rover for planetary exploration**

*Mr. Jonas Jonsson, Student, Västerås, Sweden*

*Dr. Alberto Behar, Jet Propulsion Laboratory, Pasadena, United States, Mr. Ralph D. Lorenz, University of Arizona, Tucson, AZ, United States, Mr. Fabien Nicaise, Jet Propulsion Laboratory, Pasadena, United States*

## IAC-06-A3.P.3.07

**Robust Aerodynamic Airfoil Design Optimization against Wind Variations for Mars Exploratory Airplane**

*Mr. Koji Shimoyama, University of Tokyo, Kanagawa, Japan*

*Dr. Akira Oyama, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan, Prof. Kozo Fujii, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan*

## IAC-06-A3.P.3.08

**Solid: an antibody microarray-based instrument for life detection and planetary exploration**

*Dr. Víctor Parro, Centro de Astrobiología (INTA), Madrid, Spain*

*Mr. Jose Antonio Rodriguez Manfredi, Centro de Astrobiología (INTA), Torrejon de Ardoz, Madrid, Spain, Dr. Luis A. Rivas, Centro de Astrobiología (INTA), Madrid, Spain, Ingeniero Carlos Compostizo, SENER Ingeniería y Sistemas, S.A., Bilbao, Spain, Mr. Pedro L. Herrero, SENER Ingeniería y Sistemas, S.A., Las Arenas, Vizcaya, Spain, Mr. Eduardo Sebastian Martinez, Centro de Astrobiología (INTA), Torrejon de Ardoz, Madrid, Spain, Dr. Mercedes Moreno-Paz, Centro de Astrobiología (INTA), Torrejón de Ardoz, Madrid, Spain, Mrs. Miriam García-Villadangos, Centro de Astrobiología (INTA), Torrejón de Ardoz, Madrid, Spain, Mrs. Patricia Fernández-Calvo, Centro de Astrobiología (INTA), Torrejón de Ardoz, Madrid, Spain, Dr. Carlos Briones, Centro de Astrobiología (INTA), Torrejón de Ardoz, Madrid, Spain, Dr. Javier Gomez-Elvira, Centro de Astrobiología (INTA), Torrejon de Ardoz, Madrid, Spain*

## IAC-06-A3.P.3.09

**Planet Surface Simulation for Testing Vision-Based, Autonomous Planetary Landers**

*Dr. Steve Parkes, University of Dundee, Dundee, United Kingdom*

## IAC-06-A3.P.3.10

**A low-mass lander mission to mars: science and public relations**

*Mr. Arno Wiolders, Space Horizon, Haarlem, The Netherlands*

*Mr. Erik Laan, Nederlandse Vereniging voor Ruimtevaart (NVR), Leiden, The Netherlands, Mr. Robin Sip, den Haag, The Netherlands*

### **IAC-06-A3.P.3.11**

**Development status and performances of a Seismometer for future Martian missions**

*Mr. Gilles Corlay, Sodern, Limeil-Brévannes, France*

Mr. Franck Pecal, Sodern, Limeil Brévannes, France, Mrs. Catherine Delelis, Sodern, Limeil Brévannes, France, Mr. David Mimoun, Institut de Physique du Globe de Paris, Saint Maur des Fossés, France

### **IAC-06-A3.P.3.12**

**Planet-Wide Access: Impact of Spatial and Atmospheric Variability on the Design of Entry, Descent And Landing Systems**

*Mr. Elie Allouis, Surrey Space Centre, University of Surrey, Guildford, United Kingdom*

Dr. Alex Ellery, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom

### **IAC-06-A3.P.3.13**

**Late Hesperian volatile distribution within the Martian upper Crust in eastern circum Chryse, Mars**

*Dr. Alexis Rodriguez, University of Tokyo, Tokyo, Japan*

Dr. Jeffrey Kargel, Tucson, United States, Dr. Sho Sasaki, Mizusawa, Japan

### **IAC-06-A3.P.3.14**

**Radiation Environment Modeling for Human Exploration: Calculations and Assessment with Measured Data for 2002 - 2006**

*Dr. Premkumar Saganti, Prairie View A&M University, Prairie View, TX, United States*

### **IAC-06-A3.P.3.15**

**Planning a manned mission to Mars**

*Mr. Juan Miguel Abellán, Universidad Politécnica de Madrid, Madrid, Spain*

### **IAC-06-A3.P.3.16**

**Degradation of Organics Due to Glow Discharges Under Simulated Martian Conditions**

*Dr. Carlos Calle, National Aeronautics and Space Administration (NASA)/Kennedy Space Center, FL, United States*

Dr. Charles Buhler, ASRC Aerospace, Kennedy Space Center, FL, United States, Dr. Paul Hintze, National Aeronautics and Space Administration (NASA)/Kennedy Space Center, Kennedy Space Center, United States, Dr. Luz Marina Calle, National Aeronautics and Space Administration (NASA)/Kennedy Space Center, Kennedy Space Center, United States, Dr. Steve Trigwell, ASRC Aerospace, Kennedy Space Center, Kennedy Space Center, United States, Dr. Andrew Schuerger, University of Florida, Kennedy Space Center, United States

### **IAC-06-A3.P.3.17**

**MICE: A System of Compact Mobile Nuclear Reactor Probes to Explore the Deep Interior of Mars' North Polar Cap**

*Dr. George Maise, Plus Ultra Technologies, Inc., Stony Brook, NY, United States*

Mr. Jesse Powell, Plus Ultra Technologies, Shoreham, NY, United States, Dr. James Powell, Plus Ultra Technologies, Inc., Shoreham, NY, United States, Dr. John Paniagua, Plus Ultra Technologies, Inc., Stony Brook, NY, United States

# 134

**October 05 2006, 15:30 - Room 13**

**A3. Space Exploration Symposium**

*Coordinators: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)*

**A3.P.5. Poster Session on Small Bodies Missions and Technologies**

*Rapporteur: Zhengxin Liu (China)*

### **IAC-06-A3.P.5.01**

**Precise Binocular-Based Navigation and Guidance for Autonomous Landing on Small Body**

*Dr. Zhang Zexu, Harbin Institute of Technology, Harbin, China*

Mr. Pingyuan Cui, Harbin Institute of Technology, Harbin, China, Mr. Yang Tian, Harbin Institute of Technology, Harbin, China, Mr. Weiguo Zhong, Deep Space Exploration Research Center, Harbin, China

# 135

**October 05 2006, 15:30 - Room 13**

**A3. Space Exploration Symposium**

*Coordinators: Bernard H. Foing (The Netherlands), Christian Sallaberger (Canada)*

**A3.P.6. Poster Session on Moon Exploration**

*Rapporteur: William H. Siegfried (United States)*

### **IAC-06-A3.P.6.01**

**Canadian Expertise as a Contribution to Space Exploration**

*Dr. Jean-Claude Piedboeuf, Canadian Space Agency, St-Hubert, QC, Canada*

Dr. Alain Berinstain, Canadian Space Agency, St. Hubert, QC, Canada, Mr. Erick Dupuis, Canadian Space Agency, St Hubert, QC, Canada

### **IAC-06-A3.P.6.02**

**Canadian Autonomous Landing and Lunar Exploration Technologies**

*Dr. Robert Richards, Optech Incorporated, Toronto, Canada*

Mr. Jeff Tripp, Optech Incorporated, Toronto, Canada, Ms. Claudine Giroud, Optech Incorporated, Toronto, Canada, Mr. James Bolger, MDA, Brampton, Canada, Dr. Nadeem Ghafoor, MacDonald Dettwiler Space and Advanced Robotics Ltd., Brampton, ONT, Canada, Prof. Christian Sallaberger, MDA, Brampton, ONT, Canada

### **IAC-06-A3.P.6.03**

**In-Situ Resource Utilization (ISRU) on the Moon: a real-options analysis**

*Ms. Bijal Thakore, International Space University (ISU), Strasbourg, France*

### **IAC-06-A3.P.6.04**

**In-situ resource utilization for exploration**

*Mr. Arthur Guest, International Space University (ISU), Vancouver, Canada*

Mr. Michele Faragalli, International Space University (ISU), Mont-Tremblant, Canada, Mr. Matthew Killick, International Space University (ISU), St. Albert, Canada

### **IAC-06-A3.P.6.05**

**The thermal design and numerical results of chang'e 1 satellite**

*Dr. Xinbin Hou, China Academy of Space Technology (CAST), Beijing, China*

*Dr. Li Wang, China Academy of Space Technology (CAST), Beijing, China*

### **IAC-06-A3.P.6.06**

**The triaxiality environment path planning for lunar rover in virtual terrain**

*Ms. Lu Xu, Beijing University of Technology, Beijing, China*

*Mr. Ju He-Hua, Beijing University of Technology, Beijing, China, Dr. Yangzhou Chen, Beijing University of Technology, Beijing, China*

### **IAC-06-A3.P.6.07**

**Autonomous deep space navigation for two lunar spacecrafts from relative position measurements**

*Mr. Ye Biao, Beijing University of Aeronautics and Astronautics, Beijing, China*

*Dr. Yang Bo, Beijing University of Aeronautics and Astronautics, Beijing, China*

### **IAC-06-A3.P.6.08**

**Imitating and Computing of the Orbit of Low Altitude Lunar Satellite**

*Mrs. Ping Wang, Northwestern Polytechnical University, Xi'an, China*

*Prof. Jianping Yuan, Northwestern Polytechnical University, Xi'an, China*

### **IAC-06-A3.P.6.09**

**Optimization design and imitation of the soft-landing orbit of the lunar prospector passing through parking orbit**

*Dr. Xingsuo He, Northwestern Polytechnical University, Xi'an, China*

*Prof. Jianping Yuan, Northwestern Polytechnical University, Xi'an, China, Mrs. Qun Fang, Northwestern Polytechnical University, Xi'an, China*

## **136**

**October 05 2006, 15:30 - Room 1**

**A5. Symposium on Integrated Approaches to the Exploration of the Moon and Mars**

*Coordinators: George Morgenthaler (United States), Christian Sallaberger (Canada)*

**A5.1. Strategies to Establish Lunar and Mars Colonies**

*Chairmen: Uwe Apel (Germany), William H. Siegfried (United States)*

*Rapporteur: George Morgenthaler (United States)*

### **IAC-06-A5.1.01**

**Autonomous European Lunar Exploration - Entry Point for a global co-operation towards Moon**

*Mr. Hartmut Mueller, EADS Space Transportation GmbH, Syke, Germany*

*Prof. Dr. Uwe Apel, Hochschule Bremen, Bremen, Germany, Mr. Hans-Joerg Heidmann, EADS Space Transportation GmbH, Bremen, Germany*

### **IAC-06-A5.1.02**

**Minimal capabilities required for a self-sustainable Lunar Settlement**

*Dr. William Marshall, Space Policy Institute, George Washington University, Washington, United States*

*Mr. Robbie Schingler, Space Generation Advisory Council (SGAC), Washington, United States*

### **IAC-06-A5.1.03**

**Augmented Reality as a Tool in a Mars Colonization Effort**

*Mr. Damian Rogers, International Space University (ISU), Burlington, Canada*

*Mr. Julio Aprea Perez, International Space University (ISU), Leiden, The Netherlands, Mr. Tobias Bittner, International Space University (ISU), Ottobrunn, Germany, Mr. Erik Clacey, Swedish Space Corporation, Solna, Sweden*

### **IAC-06-A5.1.04**

**ISRU: Perspectives for Lunar Development**

*Prof. Ernesto Vallerani, International Space Pioneers, Miasimo, Italy*

*Prof. Gian Gabriele Ori, IRSPS, Pescara, Italy, Msc Alberto Della Torre, Carlo Gavazzi Space, Milan, Italy, Msc Marco Grasso, Carlo Gavazzi Space, Milan, Italy, Dr. Gian Paolo Guizzo, Carlo Gavazzi Space, Milan, Italy, Dr. Igor Vukman, Carlo Gavazzi Space, Milan, Italy*

### **IAC-06-A5.1.05**

**An inhabited base on Moon: keystones of strategy of development**

*Dr. Dimitri C. Malashenkov, Institute for Biomedical Problems, Moscow, Russia*

*Mr. Victor Kurilov, Moscow, Russia*

### **IAC-06-A5.1.06**

**The Importance of Private Property Rights for Selected Commercial Applications in Lunar and Martian Settlements**

*Mr. Ricky J. Lee, Flinders University of South Australia, Adelaide, Australia*

### **IAC-06-A5.1.07**

**The Lunar Economic Development Authority: A Municipal Governance Tool**

*Mr. Declan O'Donnell, United Societies in Space, Inc., Castle Rock, CO, United States*

*Mr. Brad Blair, Idaho Springs, United States*

### **IAC-06-A5.1.08**

**Roadmap for Robotic and Human Exploration of the Moon and beyond**

*Dr. Bernard Foing, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## **137**

**October 05 2006, 15:30 - Room 5**

**B3. Space Communications and Navigation Symposium**

*Coordinators: Robert D. Briskman (United States), MG Chandrasekhar (United States)*

**B3.5. Advanced Systems**

*Chairmen: Otto Koudelka (Austria), Robert Prevoux (United States)*

*Rapporteur: Bruno Perrot (Luxembourg)*

### **IAC-06-B3.5.01**

**Development of High-speed Network for WINDS**

*Mr. Yukio Hashimoto, Communications Research Laboratory, Tokyo, Japan*

*Mr. Naoko Yoshimura, Communications Research Laboratory, Tokyo, Japan, Dr. Ryutaro Suzuki, National Institute of Information and Communications Technology, Koganei, Japan*

## IAC-06-B3.5.02

**Skyswitch: the conceptual design of the Chinese broadband multimedia communication satellite system**

*Mr. Zhong Wen Yan, China Academy of Space Technology (CAST), Beijing, China*

## IAC-06-B3.5.03

**General hardware and software design considerations about the satellite on-board ATM switch**

*Mr. Jin Fei Tang, China Academy of Space Technology (CAST), Beijing, China*

## IAC-06-B3.5.04

**Design of Protocol for Broadband Multimedia Satellite Communication Network System**

*Mr. Jinchang Guo, China Academy of Space Technology (CAST), Beijing, China*

*Prof. Zhanqi Xu, Xidian University, Xi'an, China, Dr. Guoping Zhang, Xidian University, Xi'an, China*

## IAC-06-B3.5.05

**LUX – A Small, Versatile GEO-Platform for Turnkey Systems**

*Dr. Dirk Labuhn, OHB-System AG, Bremen, Germany*

*Dr. Andreas Winkler, OHB-System AG, Bremen, Germany, Mr. Dominik Lang, OHB-System AG, Bremen, Germany*

## IAC-06-B3.5.06

**Orbital Traffic Management for Non-GEO Systems**

*Capt. John Draim, Aerospace Consultant, Vienna, VA, United States*

*Dr. Paul J. Cefola, Massachusetts Institute of Technology (MIT), Sudbury, MA, United States*

## IAC-06-B3.5.07

**Anomalies Influence Analysis of the Remote Synchronization System RESSOX for the Japanese Quasi-Zenith Satellite System**

*Mr. Fabrizio Tappero, University of New South Wales, Sydney, NSW, Australia*

## IAC-06-B3.5.08

**An Integrated Navigation System Based on Autonomous Decentralized Technology**

*Dr. Liqing Wang, Beijing Institute of Control Devices, Beijing, China*

*Dr. Pu Zhongqi, Beijing Institute of Control Devices, Beijing, China*

## IAC-06-B3.5.09

**Coherent optical array receiver for ppm signals in the presence of atmospheric turbulence**

*Ms. Michela Munoz Fernandez, Jet Propulsion Laboratory, Pasadena, CA, United States*

*Dr. Babak Hassibi, California Institute of Technology, Pasadena, United States, Dr. Victor Vilnrotter, Jet Propulsion Laboratory, Pasadena, United States, Dr. Ryan Mukai, Jet Propulsion Laboratory, Pasadena, United States*

## IAC-06-B3.5.10

**Optical Inter-Orbit Communication Engineering Test Satellite (OICETS)**

*Dr. Yuuichi Fujiwara, Japan Aerospace Exploration Agency (JAXA), Ibaraki, Japan*

*Mr. Toshihiko Yamawaki, Japan Aerospace Exploration Agency (JAXA), Ibaraki, Japan, Dr. Katsuyoshi Arai, Japan Aerospace Exploration Agency (JAXA), Ibaraki, Japan, Mr. Masaaki Mokuno, Japan Aerospace Exploration Agency (JAXA), Ibaraki, Japan, Mr. Takashi Jono, Japan Aerospace Exploration Agency (JAXA), Ibaraki, Japan*

# 138

**October 05 2006, 15:30 - Room 4**

**B5. Small Satellites Missions Symposium**

*Coordinators: Rhoda Shaller Hornstein (United States), Rainer Sandau (Germany)*

**B5.6. Design and Technology for Small Satellites**

*Chairmen: Philip Davies (United Kingdom), Richard Holdaway (United Kingdom)*

## IAC-06-B5.6.01

**Development and qualification of the NANOSAT Programme at INTA**

*Mr. Manuel Angulo, Instituto Nacional de Tecnica Aeroespacial (INTA), Madrid, Spain*

*Mrs. Maria del Rosario Canchal, Instituto Nacional de Tecnica Aeroespacial (INTA), Madrid, Spain, Mr. Juan Maria Mi Cabezudo, Instituto Nacional de Tecnica Aeroespacial (INTA), Torrejon de Ardoz/Madrid, Spain, Mr. Pedro de Vicente, Instituto Nacional de Tecnica Aeroespacial (INTA), Madrid, Spain*

## IAC-06-B5.6.02

**Hard disk drives for spacecraft application**

*Dr. Guglielmo Aglietti, University of Southampton, Southampton, United Kingdom*

*Mr. Luis Gomes, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom, Mr. Alex da Silva Curiel, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom*

## IAC-06-B5.6.03

**Study on the relationship between SAR imaging and small satellite system parameters**

*Dr. Zhang Running, DFH Satellite Co. Ltd., Beijing, China*

## IAC-06-B5.6.04

**3D-MCM Miniaturized Spacecraft Platform Modules**

*Mr. Petrus Hyvönen, Angstrom Aerospace Corporation, Uppsala, Sweden*

*Mr. Peter Nilsson-Zandkarimi, Angstrom Aerospace Corporation, Uppsala, Sweden, Mr. Bertil Linder, SAAB Ericsson Space AB, Göteborg, Sweden, Mr. Stefan Asserhäll, SAAB Ericsson Space AB, Göteborg, Sweden, Prof. Lars Stenmark, Angstrom Aerospace Corporation, Uppsala, Sweden, Dr. Fredrik Bruhn, Angstrom Aerospace Corporation, Uppsala, Sweden*

## IAC-06-B5.6.05

**Analysis of Different Structure Options for a Lunar Small Satellite**

*Mr. Richard Haarmann, University of Stuttgart, Stuttgart, Germany*

*Mr. Michael Lengowski, University of Stuttgart, Stuttgart, Germany, Mr. Rene Laufer, University of Stuttgart, Stuttgart, Germany, Prof. Hans-Peter Roeser, University of Stuttgart, Stuttgart, Germany*

## IAC-06-B5.6.06

**A Low-Cost Femtosatellite to Enable Distributed Space Missions**

*Mr. David J. Barnhart, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom*

*Dr. Tanya Vladimirova, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom, Dr. Adam M. Baker, Surrey Satellite Technology Ltd., Guildford, United Kingdom*

## IAC-06-B5.6.07

### Thermal control issues for nano- and picosatellites

Mr. Jeroen Rotteveel, Technical University of Delft (TUDelft), Delft, The Netherlands

Mr. Abe Bonnema, Technical University of Delft (TUDelft), Delft, The Netherlands

## IAC-06-B5.6.08

### Nanosat01A communication subsystem: design and implementation

Mr. Jordi Palau, Instituto Nacional de Tecnica Aeroespacial (INTA), Torrejon de Ardoz, Spain

Mr. Manuel Angulo, Instituto Nacional de Tecnica Aeroespacial (INTA), Madrid, Spain, Mr. Sergio Chavero, Barcelona, Spain

## IAC-06-B5.6.09

### ALMASat Microsatellite Structural Analysis: finite elements techniques, vibration tests and results correlation

Dr. Enrico Troiani, University of Bologna, Forli, Italy

Mr. Davide Bruzzi, University of Bologna, Forli, Italy, Dr. Stefano Gianotti, University of Bologna, Correggio (Re), Italy, Dr. Paolo Tortora, University of Bologna, Forli, Italy

## IAC-06-B5.6.10

### The investigation of 3 Dimensional Reaction Wheel

Mr. Atsushi Iwakura, University of Toukai, Kanagawa, Japan

Dr. Yuichi Tsuda, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Kanagawa, Japan

## IAC-06-B5.6.11 (WITHDRAWN)

### Contamination and disturbance analysis from plume impingement of a satellite by using the parallel dsmc code

Dr. Kun-Chang Tseng, National Space Organization, Hsinchu, Taiwan, China

Dr. Lee-Her Hu, National Space Organization, Hsinchu, Taiwan, China, Dr. Tien-Chuan Kuo, National Space Organization, Hsinchu, Taiwan, China, Mr. Yun-Min Lee, National Space Organization, Hsinchu, Taiwan, China, Prof. Jong-Shinn Wu, National Space Organization, Hsinchu, Taiwan, China

## IAC-06-B5.6.12

### From Demonstration to Application —China CAST2000 Smallsat Platform and Its Fleet

Dr. Ming Li, China Academy of Space Technology (CAST), Beijing, China

## IAC-06-B5.6.13

### First Micro-satellite and New Enhanced Small Satellite Series in DFH Satellite Co.Ltd

Mr. Xie Bin, DFH Satellite Co. Ltd., Beijing, China

Dr. Zhang Xiaomin, DFH Satellite Co. Ltd., Beijing, China

## IAC-06-B5.6.14

### Rubin – a Frequent Flyer Testbed for Micro- and Nanotechnologies

Mr. Bent Ziegler, OHB-System AG, Bremen, Germany

Mr. Indulis Kalnins, COSMOS International GmbH, Bremen, Germany, Dr. Fredrik Bruhn, Angstrom Aerospace Corporation, Uppsala, Sweden, Prof. Lars Stenmark, Angstrom Aerospace Corporation, Uppsala, Sweden

## IAC-06-B5.6.15

### Li-ion autonomous battery module for space vehicles

Mr. Carlo Del Vecchio Blanco, University of Naples "Federico II", Naples, Italy

Prof. Marco D Errico, Seconda Universita di Napoli, Aversa (CE), Italy

## IAC-06-B5.6.16

### Attitude Control System for NANOSAT-1

Mr. Pedro Vicente, Instituto Nacional de Tecnica Aeroespacial (INTA), Pozuelo de Alarcon, Spain

Mr. Manuel Angulo, Instituto Nacional de Tecnica Aeroespacial (INTA), Madrid, Spain

## IAC-06-B5.6.17

### Underactuated Attitude Control of Small Satellites Using Two CMGs

Ms. Congying Han, Surrey Space Centre, University of Surrey, Guildford, United Kingdom

Dr. Alexandre Pechev, Surrey Space Centre, University of Surrey, Guildford, United Kingdom, Mr. Yoshi Hashida, Surrey Space Centre, University of Surrey, Guildford, United Kingdom

## IAC-06-B5.6.18

### Use of New Developments of Attitude Control Sensors for the Micro-Satellite Flying Laptop

Mr. Matthias Waidmann, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany

Mr. Georg Grillmayer, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany, Mr. Dominik Saile, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany, Mr. Christian Waidmann, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany, Mrs. Viola Wolter, Steinbeis Transferzentrum Raumfahrt, Gäufelden, Germany

# 139

## October 05 2006, 15:30 - Room 6

### B6. Space Debris Symposium

Coordinators: Christophe Bonnal (France), Walter Flury (Germany), Nicholas L. Johnson (United States)

### B6.4. Mitigation and Standards

Chairmen: W. John Hussey (United States), Seishiro Kibe (Japan)

Rapporteur: Christophe Bonnal (France)

## IAC-06-B6.4.01

### Satellites Deorbit with Electrodynamical Tethered System. Statement of Problems on Research with Nanosatellites.

Dr. Anatoliy Alpatov, Institute of Technical Mechanics of the National Academy of Science and National Space Agency of Ukraine, Dnepropetrovsk, Ukraine

Dr. Vjacheslav Gusinin, National space agency of Ukraine, Kiev, Ukraine, Dr. Alexandr Pirozhenko, Institute of Technical Mechanics of the National Academy of Science and National Space Agency of Ukraine, Dnepropetrovsk, Ukraine

## IAC-06-B6.4.02

### Space Debris Removal System using a Small Satellite

Dr. Shin-ichiro Nishida, Japan Aerospace Exploration Agency (ISTA/JAXA), Chofu, Japan

Ms. Satomi Kawamoto, Japan Aerospace Exploration Agency (ISTA/JAXA), Tokyo, Japan, Dr. Yasushi Okawa, Japan Aerospace Exploration Agency (ISTA/JAXA), Chofu, Tokyo, Japan, Dr. Fuyuto Terui, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan, Dr. Shoji Kitamura, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan

## IAC-06-B6.4.03

### Self balanced electrodynamic tethers for space debris mitigation

Dr. Jesus Pelaez, Technical University of Madrid (UPM), Madrid, Spain

Mr. M. Sanjurjo, Technical University of Madrid (UPM), Madrid, Spain



## **IAC-06-B6.4.04**

**Active removal of space debris – Discussing technical and economical issues**

*Mr. Alexander Karl, Meerbusch, Germany*

## **IAC-06-B6.4.05**

**De-orbiting microscope spacecraft by drag enhancement**

*Mr. Pierre W. Bousquet, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

*Mr. Christian Dupuy, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

## **IAC-06-B6.4.06**

**ZOHREH GEO satellite re-orbiting at her end-of-life**

*Mr. Reza Kalantari Nezhad, Aerospace Research Institute, Tehran, Iran*

*Mr. Shahram Yazdanpanah, Aerospace Research Institute, Tehran, Iran, Prof. Mohsen Bahrami, Aerospace Research Institute, Tehran, Iran*

## **IAC-06-B6.4.07**

**A low cost, autonomus deorbiting system for microsatellites: SIRDARIA**

*Mr. Fabrizio Piergentili, Scuola di Ingegneria Aerospaziale, Rome, Italy*

*Prof. Filippo Graziani, University of Rome "La Sapienza", Rome, Italy*

## **IAC-06-B6.4.08**

**Space debris mitigation activity in China**

*Dr. Gaofeng Guo, China Academy of Space Technology (CAST), Beijing, China*

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**October 05 2006, 15:30 - Room 10**

### **C1. Astrodynamics Symposium**

*Coordinators: Alberto Foni (Italy), Arun Misra (Canada)*

#### **C1.7. Guidance and Control**

*Chairmen: Filippo Graziani (Italy), Junichiro Kawaguchi (Japan)*

*Rapporteur: Werner Enderle (Australia)*

## **IAC-06-C1.7.01**

**Autonomous Guidance & Control of Earth-Orbiting Formation Flying Spacecraft**

*Mr. Jean-Francois Hamel, Université de Sherbrooke, Sherbrooke, Canada*

*Prof. J. de Lafontaine, Université de Sherbrooke, Sherbrooke, QC, Canada*

## **IAC-06-C1.7.02**

**Adaptive Backstepping Control for Satellite Formation Flying with Thruster Magnitude Error**

*Mr. Hyung-Chul Lim, Korea Astronomy and Space Science Institute, Daejeon, Korea*

*Mr. Hyochong Bang, Korea Advanced Institute of Science and Technology, Daejeon, Korea, Dr. Byoungsoo Kim, Korea Institute of S&T Evaluation and Planning, Seoul, Korea*

## **IAC-06-C1.7.03**

**Rendezvous Guidance Trajectories via Multiple-Subarc Sequential Gradient-Restoration Algorithm**

*Dr. Angelo Miele, Rice University, Houston, TX, United States*

*Mr. Marco Ciarcia, Rice University, Houston, United States*

## **IAC-06-C1.7.04**

**Hayabusa - Final Autonomous Descent and Landing based on Target Marker Tracking**

*Dr. Junichiro Kawaguchi, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan*

*Mr. Masashi Uo, NEC TOSHIBA Space Systems (NTS), Yokohama, Japan, Dr. Tatsuaki Hashimoto, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami-hara, Japan*

## **IAC-06-C1.7.05**

**Optical Navigation for Lunar Exploration Missions**

*Dr. Markus Landgraf, European Space Agency/ESOC, Darmstadt, Germany*

*Dr. Gerhard Thiele, European Space Agency/EAC, Cologne, Germany, Dr. Detlef Koschny, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Bogdan Udrea, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## **IAC-06-C1.7.06**

**Design and Performance Assessment of GNC Algorithms for Vision Based Rendezvous in Mars Orbit**

*Mr. Emanuele Di Sotto, DEIMOS Engenharia, Lisbon, Portugal*

*Dr. Luis F. Penin, DEIMOS Engenharia, Lisboa, Portugal, Mr. Tiago S. Hormigo, DEIMOS Engenharia, Lisbon, Portugal, Mr. Juan L. Cano, DEIMOS Space S.L., Tres Cantos, Spain, Mr. Francisco Cámara, DEIMOS Engenharia, Lisbon, Portugal, Mr. Augusto Caramagno, DEIMOS Space, Tres Cantos, Madrid, Spain, Prof. José Manuel Rebordão, INETI, Lisbon, Portugal, Mr. Ivo Vieira, Lisbon, Portugal, Mr. Baltazar Parreira, Lisbon, Portugal, Mr. Salvatore Mancuso, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## **IAC-06-C1.7.07**

**Navigation and Guidance Algorithm for Spacecraft Autonomous Rendezvous**

*Dr. Yingzi He, Beijing Institute of Control Engineering, Beijing, China*

*Dr. Ying Chen, Beijing Institute of Control Engineering, Beijing, China, Mr. Guo Li, Beijing Institute of Control Engineering, Beijing, China*

## **IAC-06-C1.7.08**

**A New Strategy for Space V-bar Rendezvous Based on Combined Maneuvers**

*Prof. Yang Leping, National University of Defense Technology, Changsha, China*

*Mr. Zhu Yanwei, National University of Defense Technology, Changsha, China, Mrs. An Xueying, National University of Defense Technology, Changsha, China*

## **IAC-06-C1.7.09**

**Far Range Automatic Rendezvous and Soft Docking Demonstration Mission without the use of GPS.**

*Mr. José María Fernández Ibarz, SENER Ingeniería y Sistemas, S.A., Tres Cantos (Madrid), Spain*

*Mr. Amador Lopez, SENER Ingeniería y Sistemas, S.A., Tres Cantos (Madrid), Spain, Mr. Peter Rathsmann, Swedish Space Corporation, Solna, Sweden, Mr. Björn Jakobsson, Swedish Space Corporation, Solna, Sweden, Mr. Davy Vrancken, Verhaert Space, Kruibeke, Belgium, Mr. Pablo Colmenarejo, GMV S.A., Tres Cantos (Madrid), Spain, Mr. Ulrich Thomas, European Space Agency/ESTEC, Noordwijk, The Netherlands*

**C2. Materials and Structures Symposium**

Coordinators: *Constantinos P. Stavrinos (The Netherlands), Pavel M. Trivailo (Australia)*

**C2.7. Space Vehicles, Mechanical/Thermal/Fluidic Systems**

Chairmen: *Oleg Alifanov (Russia), Mario Marchetti (Italy)*  
Rapporteur: *Guoliang Mao (China)*

**IAC-06-C2.7.01****Ablation analysis and test for the outstanding obstacle of manned spacecraft**

Prof. *Guoting Wu, China Academy of Space Technology (CAST), Beijing, China*

**IAC-06-C2.7.02****Stability analysis of a solid rocket motor's composite case under external pressure**

Mr. *Yuan Li, Academy of Aerospace Propulsion Technology, CASC, Xi'an, China*

**IAC-06-C2.7.03****Auxiliary Internal Structures (AUXIS) for an Expandable Habitat: Configuration Aspects and Hierarchical Structuring**

Dr. *Marco C Bernasconi, MCB Consultants, Dietikon, Switzerland*

Mr. *Meindert Versteeg, MCB Consultants, Dietikon, Switzerland*, Mr. *Roland Zenger, HTS AG, Wallisellen, Switzerland*

**IAC-06-C2.7.04****FEA implemented Thermal Lumped Parameter - Analysis**

Mr. *Arne Sauer, Technical University of Braunschweig, Reinbek, Germany*

**IAC-06-C2.7.05****Reasoning under an uncertain thermal state**

Dr. *Daniela Girimonte, Advanced Concepts Team, Noordwijk, The Netherlands*

Dr. *Dario Izzo, European Space Agency/ESTEC, Noordwijk, The Netherlands*

**IAC-06-C2.7.06****Micro heat spreaders based on microchannels for concentrated heat fluxes on spacecraft subsystems**

Mr. *Rafael Rebol Gomez, SENER Ingenieria y Sistemas, S.A., Tres Cantos, Spain*

Mrs. *Paula Alvarez, SENER Ingenieria y Sistemas, S.A., Tres Cantos, Spain*, Dr. *Johan Steelant, European Space Agency/ESTEC, Noordwijk, The Netherlands*, Dr. *Ezequiel González Martínez, Universidad Politécnica de Madrid, Madrid, Spain*

**IAC-06-C2.7.07****LPSS a clamp band release system inducing very low shocks at payload interface**

Mr. *Miguel Llancho Doncel, EADS CASA Espacio, Madrid, Spain*

Mr. *Francisco Javier Rivas Sánchez, EADS CASA Espacio, Madrid, Spain*, Mr. *Eugenio Grande Sáez, EADS CASA Espacio, Madrid, Spain*, Mr. *Christophe Bardet, EADS SPACE Transportation, St Médard en Jalles, France*, Mr. *Michel Ranchoux, EADS SPACE Transportation, Les Mureaux, France*

**IAC-06-C2.7.08****Simulation of a multilayer thermal protection system submitted to conditions representative of atmospheric reentry**

Dr. *Gino Genaro, Instituto Nacional de Pesquisas Espaciais (INPE), Sao Jose dos Campos, Brazil*

Dr. *José Bezerra Pessoa-Filho, CTA-IAE, São José dos Campos, Brazil*

**IAC-06-C2.7.09****An experimental-computational system for materials thermal properties determination and its application for spacecraft structures testing**

Prof. *Oleg Alifanov, Moscow Aviation Institute, Moscow, Russia*

Mr. *Aleksey V. Nenarokomov, Moscow Aviation Institute, Moscow 125993, Russia*, Mr. *Valeriy V. Mikhaylov, Moscow Aviation Institute, Moscow, Russia*, Mr. *Dmitry M. Titov, Moscow Aviation Institute, Moscow, Russia*, Mr. *Valeriy M. Yudin, Central Aero-Hydrodynamic Institute, Zukovskiy, Russia*, Mr. *Sergey A. Budnik, Moscow Aviation Institute, Moscow, Russia*

**IAC-06-C2.7.10****Vega fourth stage thermal control design and verification by test**

Mr. *Francesco Fratoni, ELV S.p.A., Colleferro, Italy*

Mrs. *Claudia Di Trapani, AVIO S.p.A., Colleferro, Italy*, Mr. *Attilio Cretella, AVIO S.p.A., Colleferro, Italy*, Mr. *Antonio Pizzicaroli, AVIO S.p.A., Colleferro, Italy*, Dr. *Nicola Ierardo, AVIO S.p.A., Colleferro, Italy*

**IAC-06-C2.7.11****Sensitivity analysis for the aeroelastic stability of a launch vehicle**

Dr. *Franco Mastroddi, University of Rome "La Sapienza", Rome, Italy*

Dr. *Fulvio Stella, University of Rome "La Sapienza", Rome, Italy*, Dr. *Gian Mario Polli, University of Rome "La Sapienza", Rome, Italy*, Dr. *Fabio Paglia, University of Rome "La Sapienza", Rome, Italy*

**C4. Space Propulsion Symposium**

Coordinators: *Dana G. Andrews (United States), Giorgio Saccoccia (The Netherlands)*

**C4.P.3. Poster Session on Propulsion Technology**

Rapporteur: *Vladimir Prisniakov (Ukraine)*

**IAC-06-C4.P.3.01****A mass tensor in relativistic spacecraft motion**

Dr. *Sergio Elaskar, Universidad Nacional de Córdoba and CONICET, Córdoba, Argentina*

Prof. *Hector Brito, Instituto Universitario Aeronautico, Cordoba, Argentina*

**IAC-06-C4.P.3.02****Dual-Oxidizer Metallized Solid Propellants for Low-Cost Space Access**

Dr. *Luigi T. DeLuca, Politecnico di Milano, Milan, Italy*

Mr. *Derek Tomasi, Politecnico di Milano, Milan, Italy*, Mr. *Daniele Signoriello, Politecnico di Milano, Milan, Italy*, Mr. *Saul Levi, Politecnico di Milano, Milan, Italy*, Mr. *Stefano Cianfanelli, AVIO S.p.A., Colleferro, RM, Italy*, Dr. *Valery P. Sinditskii, Moscow, Russia*, Dr. *Valery A. Babuk, Baltic State Technical University, St. Petersburg, Russia*, Dr. *Gennady F. Klyakin, Novocherkassk, Russia*, Dr. *Alexander B. Vorozhtsov, Tomsk, Russia*

**IAC-06-C4.P.3.03****Flame Structure Simulation of Nonaluminized Composite Propellants**

*Mr. Filippo Maggi, Politecnico di Milano, Milan, Italy*  
 Dr. Luciano Galfetti, Politecnico di Milano, Milan, Italy,  
 Dr. Francesco Miccio, Institute for Energy, Le Petten, The Netherlands, Dr. Luigi T. DeLuca, Politecnico di Milano, Milan, Italy

**IAC-06-C4.P.3.04****Burning Rate Measurements on Damaged Propellant Samples under Mechanical Loads**

*Mr. Giuseppe Sandri Tussiwand, Politecnico di Milano, Milan, Italy*  
 Dr. Luigi T. DeLuca, Politecnico di Milano, Milan, Italy

**IAC-06-C4.P.3.05****Application of self-adaptive voronoi grid technology in dsmc method**

*Mr. Hou Fenglong, Beijing University of Aeronautics and Astronautics, Beijing, China*  
 Mr. Jianhua Zhang, Beijing University of Aeronautics and Astronautics, Beijing, China, Mr. He Bijiao, Beijing University of Aeronautics and Astronautics, Beijing, China, Prof. Guobiao Cai, Beijing University of Aeronautics and Astronautics, Beijing, China

**IAC-06-C4.P.3.06****Study on local heat transfer enhancement technique for high pressure chamber**

*Mr. Jianhua Chen, Northwestern Polytechnical University, Xi'an, China*  
 Mr. Guitian Zhang, Northwestern Polytechnical University, Xi'an, China

**IAC-06-C4.P.3.07****Research on gas-dynamic resonance igniter for simultaneous multi-ignition of hydrogen-oxygen rocket engine**

*Dr. Nanjia Yu, Beijing University of Aeronautics and Astronautics, Beijing, China*  
 Prof. Guobiao Cai, Beijing University of Aeronautics and Astronautics, Beijing, China

**IAC-06-C4.P.3.08****Key creative technologies in structural design of small solid rocket motor**

*Mr. Ma Liang, China Aerospace Science and Technology Corporation, Xi'an, China*  
 Mr. Chen Guangxue, China Aerospace Science and Technology Corporation, Xi'an, China

**IAC-06-C4.P.3.09****Theoretical study of dynamic characteristic of open-end liquid swirl injector**

*Mr. Yang Lijun, Beijing University of Aeronautics and Astronautics, Beijing, China*  
 Mr. Fu Qingfei, Beijing University of Aeronautics and Astronautics, Beijing, China

**IAC-06-C4.P.3.10****The Development of Japanese 20N Thruster Valve for a Spacecraft Propulsion System**

*Dr. Taiichi Nagata, Japan Aerospace Exploration Agency (IAT/JAXA), Ibaraki, Japan*  
 Mr. Kenichi Kushiki, Japan Aerospace Exploration Agency (IAT/JAXA), Ibaraki, Japan, Mr. Kenichi Kajiwara, Japan Aerospace Exploration Agency (IAT/JAXA), Ibaraki, Japan, Mr. Yoshiharu Sugimura, MOOG Japan, Ltd, Kanagawa, Japan, Mr. Masayuki Kobayashi, MOOG Japan, Ltd, Kanagawa, Japan, Mr. Hiroyasu Itoh, MOOG Japan, Ltd, Kanagawa, Japan

**C4. Space Propulsion Symposium**

*Coordinators: Dana G. Andrews (United States), Giorgio Saccoccia (The Netherlands)*

**C4.P.4. Poster Session on Electric Propulsion**

*Rapporteur: Oleg A. Gorshkov (Russia)*

**IAC-06-C4.P.4.01****Development of a Hollow Cathode Micro-Thruster for Small Satellites**

*Mr. Angelo Grubisic, University of Surrey, Kildemminster, United Kingdom*

**IAC-06-C4.P.4.02****Power Absorption Mechanism in a Non-Uniform Helicon Plasma**

*Mr. Charles Lee, The University of Texas at Austin, Austin, United States*  
 Mr. Dan Berisford, The University of Texas at Austin, Austin, United States, Dr. Roger Bengtson, University of Texas at Austin, Austin, United States

**IAC-06-C4.P.4.03****Scalable Flat Panel Nano-Particle Thruster**

*Mr. Louis Musinski, University of Michigan, Ann Arbor, United States*

**IAC-06-C4.P.4.04****Mathematical Modeling of a High Efficiency Pulsed Plasma Thruster for Microsatellites**

*Mr. Peter Shaw, Surrey Space Centre, University of Surrey, Guildford, United Kingdom*  
 Dr. Vaios J. Lappas, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom, Mr. Max Meerman, Surrey Satellite Technology Ltd., Guildford, Surrey, United Kingdom

**IAC-06-C4.P.4.05****Micronewton/millinewton-rit, characterization test in epl, estec**

*Dr. Davar Feili, Justus-Liebig Universität Giessen, Giessen, Germany*

**IAC-06-C4.P.4.06****High Power Space Propulsion System TIHTUS - an Overview**

*Ms. Hannah Boehrk, Institute of Space Systems, Stuttgart, Germany*  
 Mrs. Monika Auweter-Kurtz, Institute of Space Systems, Stuttgart, Germany

**IAC-06-C4.P.4.07****Investigation of Efficient Designs of Hollow Cathodes**

*Ms. Janice Hendry, University of Southampton, Southampton, United Kingdom*

## IAC-06-C4.P.4.08

### P4S-1 Solid Propellant Pulsed Plasma Thruster - Development Tests

*Prof. Hector Brito, Instituto Universitario Aeronautico, Cordoba, Argentina*

Mr. Roque De Alessandro, Instituto Universitario Aeronautico, Cordoba, Argentina, Mr. Carlos Dominguez, Instituto Universitario Aeronautico, Cordoba, Argentina, Mr. Enrique Calcagni, Instituto Universitario Aeronautico, Cordoba, Argentina, Mr. Eugenio Galian, Instituto Universitario de Microgravedad "Ignacio Da Riva"; IDR/UPM, Cordoba, Argentina

## IAC-06-C4.P.4.09

### Concept Study of a Solid Propellant Magnetoplasma-dynamic Microthruster

*Prof. Hector Brito, Instituto Universitario Aeronautico, Cordoba, Argentina*

Dr. Sergio Elaskar, Universidad Nacional de Córdoba and CONICET, Córdoba, Argentina, Mr. Livio Maglione, Universidad Nacional de Río Cuarto, Río Cuarto, Argentina, Mr. Raul Dean, Universidad Nacional de Río Cuarto, Río Cuarto, Argentina, Mr. Rodolfo Duelli, Universidad Nacional de Río Cuarto, Río Cuarto, Argentina

## IAC-06-C4.P.4.10

### Numerical simulation of MGD flows for plasma propulsion

*Dr. Sergio Elaskar, Universidad Nacional de Córdoba and CONICET, Córdoba, Argentina*

Mr. Livio Maglione, Universidad Nacional de Río Cuarto, Río Cuarto, Argentina, Mr. Oscar Falcinelli, Universidad Nacional de Córdoba and CONICET, Villa Carlos Paz, Argentina, Prof. Hector Brito, Instituto Universitario Aeronautico, Cordoba, Argentina, Dr. José Tamagno, Instituto Universitario Aeronautico, Córdoba, Argentina

## IAC-06-C4.P.4.11

### Using the Magnetic Field of Earth for Creation of the Thrust of the Electric Propulsion

*Mr. Sergiy Moskal'ov, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine*

## IAC-06-C4.P.4.12

### High Performance Ceramic Discharge Chambers

*Mr. Iñaki Caro, INASMET-TECNALIA, San Sebastian, Spain*

Mr. Eduardo Ahedo, Universidad Politécnica de Madrid, Madrid, Spain, Mrs. Cristina Guraya, INASMET-TECNALIA, Donostia / San Sebastián, Spain, Dr. Aitor Landaberea, INASMET-TECNALIA, Donostia, Spain, Mr. Jesús Marcos, INASMET-TECNALIA, Donostia, Spain

## IAC-06-C4.P.4.13

### Experimental Study for Electrode Configuration Problem in an MPD Thruster

*Mr. Daisuke Nakata, University of Tokyo, Kanagawa, Japan*

## IAC-06-C4.P.4.14

### A high current compact ECR ion source

*Dr. Kazutaka Nishiyama, Japan Aerospace Exploration Agency (JAXA), Sagami-hara, Kanagawa, Japan*

Mr. Ryoichi Kikuchi, Tokyo Institute of Technology, Hino, Tokyo, Japan, Dr. Hitoshi Kuninaka, Japan Aerospace Exploration Agency (JAXA) / ISAS, Sagami-hara, Japan, Prof. Haruki Takegahara, Tokyo Institute of Technology, Tokyo, Japan

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**October 05 2006, 15:30 - Room Auditorium**

## C4. Space Propulsion Symposium

*Coordinators: Dana G. Andrews (United States), Giorgio Saccoccia (The Netherlands)*

## C4.P.5. Poster Session on Hypersonic and Combined Cycle Propulsion

*Rapporteur: Shigeru Aso (Japan)*

## IAC-06-C4.P.5.01

### A Method for Optimising the Stability of Flight Velocity of Modern Aeroreactive Propulsion Systems

*Dr. Adrian Coman, Military Technical Academy of Bucharest, Bucharest, Romania*

Dr. Mircea Boscoianu, Military Technical Academy of Bucharest, Bucharest, Romania, Prof. Dr. Virgil Stanciu, Politechnic University of Bucharest, Bucharest, Romania

## IAC-06-C4.P.5.02

### Numerical simulation of high enthalpy gas flows

*Dr. Sergio Elaskar, Universidad Nacional de Córdoba and CONICET, Córdoba, Argentina*

Mr. Oscar Falcinelli, Universidad Nacional de Córdoba and CONICET, Villa Carlos Paz, Argentina, Dr. José Tamagno, Instituto Universitario Aeronautico, Córdoba, Argentina

## IAC-06-C4.P.5.03

### Rbcc engine performance analysis model

*Mr. Lu Xiang, Northwestern Polytechnical University, Xi'an, China*

Prof. Pei-Jing Liu, Northwestern Polytechnical University, Xi'an, China, Prof. Guoqiang He, Northwestern Polytechnical University, Xi'an, China

## IAC-06-C4.P.5.04

### The Role Of Scramjet Flowpath Design In Multidisciplinary Design Optimization Of Hypersonic Vehicle

*Mr. Xu Dajun, Beijing University of Aeronautics and Astronautics, Beijing, China*

Prof. Guobiao Cai, Beijing University of Aeronautics and Astronautics, Beijing, China, Prof. Xu Xu, Beijing University of Aeronautics and Astronautics, Beijing, China

## IAC-06-C4.P.5.05

### Aerodynamic loads determination in supersonic and hypersonic flows based on PIV

*Mr. Louis Souverein, Technical University of Delft (TUDelft), Dordrecht, The Netherlands*

## IAC-06-C4.P.5.06

### Development of advanced propulsion technology: bringing energy across scale boundaries

*Mr. Philip Venturelli, University of California, Los Angeles, El Segundo, CA, United States*

Mr. Yuki D. Takahashi, University of Glasgow, Glasgow, United Kingdom

**D1. Space Systems Symposium**

*Coordinators: Hans F.A. Roefs (The Netherlands), Lawrence Dale Thomas (United States)*

**D1.4. Space Systems Architectures**

*Chairmen: Charles D. Edwards (United States), Erick Lansard (France)*

*Rapporteur: Genesio Luiz Hubscher (Brazil)*

**IAC-06-D1.4.01****Space Exploration: Man or Machine**

*Mr. John Lymer, MDA, Brampton, Canada*

*Mr. Dan King, MacDonald Dettwiler Space and Advanced Robotics Ltd., Brampton, Ontario, Canada*

**IAC-06-D1.4.02****From value to architecture - ranking the objectives of space exploration**

*Prof. Geilson Loureiro, Instituto Nacional de Pesquisas Espaciais (INPE), Sao José dos Campos, SP, Brazil*

*Prof. Edward Crawley, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States, Mr. Sandro Catanzaro, Massachusetts Institute of Technology (MIT), Cambridge, United States, Dr. Eric Rebentisch, Massachusetts Institute of Technology (MIT), Cambridge, United States*

**IAC-06-D1.4.03****Self-Similar Modular Architectures for Reconfigurable Space Systems**

*Ms. Afreen Siddiqi, Massachusetts Institute of Technology (MIT), Cambridge, United States*

*Dr. Olivier de Weck, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States*

**IAC-06-D1.4.04****On-Orbit Servicing system architectures for GEO and MEO constellations**

*Mr. Claude Cougnet, EADS Astrium, Toulouse, France*

*Mr. Bernard Gerber, EADS Astrium, Toulouse, France, Mr. Gianfranco Visentin, European Space Agency/ESTEC, Noordwijk, The Netherlands*

**IAC-06-D1.4.05****Formation flying enabling technologies for a big leap in science missions and perspectives for space projects**

*Mr. Xavier Roser, Alcatel Alenia Space, Cannes, France*

**IAC-06-D1.4.06****A Roadmap for Progressive Autonomy in Mission Operations**

*Ms. Cindy Kurt, United Space Alliance, Houston, United States*

**IAC-06-D1.4.07****Autonomous Safeing and Fault Protection for the New Horizons Mission to Pluto**

*Mr. Robert Moore, The John Hopkins University Applied Physics Laboratory, Laurel MD, United States*

**IAC-06-D1.4.08****Executive Modular Control of Heterogeneous Spacecraft Components and Agents**

*Dr. Brian Glass, National Aeronautics and Space Administration (NASA)/Ames Research Center, Moffett Field, CA, United States*

*Mr. Howard Cannon, National Aeronautics and Space Administration (NASA)/Ames Research Center, Moffett Field, CA, United States, Mr. Scott Christa, National Aeronautics and Space Administration (NASA)/Ames Research Center, Moffett Field, United States, Dr. Jerome Johnson, US Army Cold Regions Research and Engineering Laboratory (CRREL), Ft. Wainwright, AK, United States, Ms. Sarah Huffman, National Aeronautics and Space Administration (NASA)/Ames Research Center, Moffett Field, United States*

**IAC-06-D1.4.09****New generations of spacecraft data handling systems: Less Harness, More Reliability**

*Mr. Rouzbeh Amini, Technical University of Delft (TUDelft), Delft, The Netherlands*

*Mr. Gerard Aalbers, Technical University of Delft (TUDelft), Delft, The Netherlands, Mr. Rob Hamann, Technical University of Delft (TUDelft), Delft, The Netherlands, Dr. Wim Jongkind, Technical University of Delft (TUDelft), Delft, The Netherlands, Mr. Pieter Beerthuizen, Dutch Space B.V., Leiden, The Netherlands*

**IAC-06-D1.4.10 (WITHDRAWN)****Software Controlled Thermal and Power Management on New Horizons**

*Mr. Edward Birrane, The John Hopkins University Applied Physics Laboratory, Laurel, United States*

*Mr. Steve Williams, The John Hopkins University Applied Physics Laboratory, Laurel, United States, Mr. Doug Mehoke, The John Hopkins University Applied Physics Laboratory, Laurel, United States*

**D2. Space Transportation Symposium**

*Coordinators: Christophe Bonnal (France), Richard Tyson (United States)*

**D2.8. Joint session on Nuclear Propulsion and Power with C3.5 C4.7 and D3.5.**

*Chairmen: Roger X. Lenard (United States), Douglas Stanley (United States)*

*Rapporteur: Michael L. Burris (United States)*

**IAC-06-D2.8.-C3.5.-D3.5.-C4.7.01****Invited Paper - IAA Position Paper on Nuclear Power and Propulsion**

*Prof. Claudio Bruno, University of Rome "La Sapienza", Rome, Italy*

**IAC-06-D2.8.-C3.5.-D3.5.-C4.7.02****Use of Mini-Mag Orion and Superconducting Coils for Near-Term Interstellar Travel**

*Mr. Roger X. Lenard, Sandia National Laboratories, Albuquerque, NM, United States*

**IAC-06-D2.8.-C3.5.-D3.5.-C4.7.03****Very High Delta-V Missions To The Edge Of The Solar System And Beyond Enabled By The Dual-Stage 4-Grid Ion Thruster Concept**

*Dr. Cristina Bramanti, European Space Agency (ESA), Noordwijk, The Netherlands*

*Dr. Roger Walker, European Space Agency/ESTEC, Noordwijk, The Netherlands, Dr. David G. Fearn, EP Solutions, Fleet, Hans, United Kingdom, Dr. Dario Izzo, European Space Agency/ESTEC, Noordwijk, The Netherlands*

### **IAC-06-D2.8.-C3.5.-D3.5.-C4.7.04**

**An HTGR for interplanetary space missions: pre design phase**

*Dr. Elvina Finzi, Politecnico di Milano, Milan, Italy*  
*Dr. Leopold Summerer, European Space Agency/ESTEC, Noordwijk, The Netherlands*

### **IAC-06-D2.8.-C3.5.-D3.5.-C4.7.05**

**The Advent of Clean Nuclear Fusion: Superperformance Space Power and Propulsion**

*Dr. Robert W. Bussard, EMC2, Del Mar, CA, United States*

### **IAC-06-D2.8.-C3.5.-D3.5.-C4.7.06**

**The MITEE Hopper: A Compact NTP Spacecraft to Explore Multiple Surface Sites Using In-Situ Propellants**

*Dr. James Powell, Plus Ultra Technologies, Inc., Shoreham, NY, United States*  
*Dr. George Maise, Plus Ultra Technologies, Inc., Stony Brook, NY, United States, Dr. John Paniagua, Plus Ultra Technologies, Inc., Stony Brook, NY, United States*

### **IAC-06-D2.8.-C3.5.-D3.5.-C4.7.07**

**A nuclear powered Cyclor mission to Mars**

*Dr. Elvina Finzi, Politecnico di Milano, Milan, Italy*  
*Mrs. Amalia Ercoli Finzi, Politecnico di Milano, Milan, Italy, Dr. Petri Giovanni Hanninen, Politecnico di Milano, Milan, Italy*

### **IAC-06-D2.8.-C3.5.-D3.5.-C4.7.08**

**A lunar IPWR: a pre-feasibility study**

*Dr. Elvina Finzi, Politecnico di Milano, Milan, Italy*  
*Mr. C.V. Lombardi, Politecnico di Milano, Milan, Italy, Dr. Leopold Summerer, European Space Agency/ESTEC, Noordwijk, The Netherlands*

### **IAC-06-D2.8.-C3.5.-D3.5.-C4.7.09**

**The Potential of Space Rocket System Using Nuclear Power Plants**

*Dr. Mykola M. Slyunyaev, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine*  
*Dr. Stanislav Konyukhov, Yuzhnoye State Design Office, Dnepropetrovsk, Ukraine*

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### **October 05 2006, 15:30 - Room 8**

**D3. Symposium on Stepping Stones to the Future: Strategies, Architectures, Concepts and Technologies**  
*Coordinators: John C. Mankins (United States), Dietrich Vennemann (The Netherlands)*

**D3.P. Poster Session on Novel Concepts and Technologies for the Exploration and Utilization of Space**

*Rapporteur: Benjamin Neumann (United States)*

### **IAC-06-D3.P.01**

**New Experts systems for asteroid detection**

*Mr. Daniel Rojo, Universidad Carlos III de Madrid, Madrid, Spain*

### **IAC-06-D3.P.02**

**Keeping the Link at Interstellar Distances by Exploiting the Sun as a Gravitational Lens.**

*Mr. Nicolo Antonietti, Politecnico di Torino, Turin, Italy*  
*Mr. Salvatore Pluchino, Visiting Research Fellow, IRA-INAF Radiotelesopes, Medicina (Bologna), Italy, Dr. Claudio Maccone, Member of the International Academy of Astronautics, Turin, Italy*

### **IAC-06-D3.P.03**

**Biomimetics for Space Engineering**

*Dr. Carlo Menon, European Space Agency/ESTEC, Noordwijk, The Netherlands*  
*Mr. Nicholas Lan, European Space Agency (ESA), Noordwijk, The Netherlands*

### **IAC-06-D3.P.04**

**Detecting the Fingerprints of Life: Current Status and Recent Advances**

*Dr. Scott Hubbard, SETI Institute, Mountain View, CA, United States*  
*Ms. Lisa Chu-Thielbar, SETI Institute, Mountain View, CA, United States, Dr. Gregory T. Kovacs, Stanford University, Stanford, CA, United States*

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### **October 05 2006, 15:30 - Room 16**

**D5. 39th Symposium on Safety and Quality in Space Activities**

*Coordinators: Max Grimard (France)*

**D5.2. Coping with Space Environment in Near-Earth and Exploration Missions**

*Chairmen: Magdeleine Dinguirard (France), Tateo Goka (Japan), Juan Cueto Rodriguez (Spain)*  
*Rapporteur: Manola Romero (France)*

### **IAC-06-D5.2.01**

**Space environment threats and their impact on spacecrafts in Near Earth Orbits**

*Mr. Alexandre Nicolas, Corona Space Surveillance Centre, Oslo, Norway*  
*Mr. Shahram Ariafar, Corona Space Surveillance Centre (CSSC), Oslo, Norway*

### **IAC-06-D5.2.02**

**Measurement of near earth radiation environment -overview and plan-**

*Dr. Tateo Goka, Japan Aerospace Exploration Agency (JAXA), Ibaraki, Japan*

### **IAC-06-D5.2.03**

**Small total dose measurement system for satellite**

*Mr. Yugo Kimoto, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan*  
*Dr. Hiroshi Tachihara, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan*

### **IAC-06-D5.2.04**

**Solar Cycle Electron Radiation Environment at GNSS Like Altitude**

*Dr. Angelica Sicard, Centre National d'Etudes Spatiales (CNES), Toulouse, France*

## IAC-06-D5.2.05

### Radiation and Plasma Environments for Lunar Missions

*Dr. Joe Minow, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, AL, United States*

*Dr. David L. Edwards, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, AL, United States, Mr. Richard L. Altstatt, Jacobs Sverdrup, Marshall Space Flight Center Group, Huntsville, AL, United States, Ms. Anne M. Diekmann, Jacobs Sverdrup, Marshall Space Flight Center Group, Huntsville, AL, United States, Mr. William C. Blackwell, Jr., Jacobs Sverdrup, Marshall Space Flight Center Group, Huntsville, AL, United States, Ms. Katherine J. Harine, Raytheon ITSS, Marshall Space Flight Center Group, Huntsville, AL, United States*

## IAC-06-D5.2.06

### Radiation Environments of the Earth-Moon and Earth/Moon-Sun Libration Points

*Dr. Joe Minow, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, AL, United States*

*Dr. David L. Edwards, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, AL, United States, Mr. William C. Blackwell, Jr., Jacobs Sverdrup, Marshall Space Flight Center Group, Huntsville, AL, United States, Ms. Anne M. Diekmann, Jacobs Sverdrup, Marshall Space Flight Center Group, Huntsville, AL, United States*

## IAC-06-D5.2.07

### Messenger Performance Assurance

*Mr. Stan Purwin, The Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland, United States*

## IAC-06-D5.2.08

### Progress of Multi-Utility Spacecraft Charging Analysis Tool (MUSCAT) and Evolution for Space Exploration

*Dr. Shinji Hatta, Kyushu Institute of Technology, Kitakyushu, Japan*

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## October 05 2006, 15:30 - Room 17

### E1. Space Education and Outreach Symposium

*Coordinators: Pierre-Louis Contreras (France)*

#### E1.4. Beyond Education

*Chairmen: Jean-Daniel Dessimoz (Switzerland), Vera Mayorova (Russia)*

*Rapporteur: Gulnara T. Omarova (Kazakhstan)*

## IAC-06-E1.4.01

### Advancing Public Understanding by "Attitude Adjustment": Strategic Communication About Space Science and Exploration

*Dr. Linda Billings, SETI Institute, Arlington, VA, United States*

## IAC-06-E1.4.02

### Practical Training for Spacecraft Operations, a New Concept

*Mr. Filippo De Rose, VEGA Group, Darmstadt, Germany*  
*Mr. Christian D. Bodemann, VEGA Informations - Technologien GmbH, Darmstadt, Germany, Mr. Joachim Ochs, VEGA Informations - Technologien GmbH, Darmstadt, Germany*

## IAC-06-E1.4.03

### Eduspace, a multi-lingual Earth Observation Webportal for Teaching and Learning

*Ms. Laurence Ghaye, European Space Agency/ESRIN, Frascati, Italy*

*Mr. Maurizio Fea, European Space Agency/ESRIN, Frascati, Italy*

## IAC-06-E1.4.04

### Utilising the EyasSAT Concept in Space Systems Engineering Courses at the University of Surrey

*Mr. David J. Barnhart, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom*

*Dr. Tanya Vladimirova, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom, Dr. Alex Ellery, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom, Dr. Craig I. Underwood, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom*

## IAC-06-E1.4.05

### University's Annual Fall Space Day

*Ms. Cindy Mahler, Boeing, Houston, TX, United States*

*Mrs. Ann Broughton, Purdue University, West Lafayette, Indiana, United States*

## IAC-06-E1.4.06

### Small Satellites for Student Education

*Dr. Stephan Theil, Center of Applied Space Technology & Microgravity, Bremen, Germany*

*Mr. Daniel Bindel, ZARM - University of Bremen, Bremen, Germany, Mr. Lorenzo Pettazzi, ZARM - University of Bremen, Bremen, Germany, Prof. Michael Yu. Ovchinnikov, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia, Mr. Martins Sudars, ZARM - University of Bremen, Bremen, Germany, Mr. Thomas Walter, ZARM - University of Bremen, Bremen, Germany*

## IAC-06-E1.4.08

### Scientific Competitions in the German Aerospace Center as a Tool for Space Education and Outreach

*Dr. Nicola Rohner, German Aerospace Center (DLR), Cologne, Germany*

## IAC-06-E1.4.09

### Scouts and Guides Forefront users of 21st Century Space Technology

*Mrs. Anne Brumfitt, European Space Agency/ESTEC, South Holland, The Netherlands*

*Prof. Lachlan Thompson, Royal Melbourne Institute of Technology (RMIT), Melbourne, Australia*

## IAC-06-E1.4.10

### MiniSpace - Introducing space to young children.

*Mr. Jesper Jørgensen, SpaceArch, Copenhagen V, Denmark*

## IAC-06-E1.4.11

### Astroseti.org: Online Collaborative Translations for Science Public Outreach

*Mr. Sergio Alonso, Astroseti.org, Granada, Spain*

*Mr. Emilio González, Astroseti.org, Els Monjos, Barcelona, Spain*

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**October 05 2006, 15:30 - Room 14**

**E3. Symposium on Which Direction in Space? Balancing Applications and Exploration**

*Coordinators: Gérard Brachet (France), Debra Facktor Lepore (United States)*

**E3.3. Space and Global Security**

*Chairmen: Xavier Pasco (France), Ray A. Williamson (United States)*

*Rapporteur: Nicolas Peter (United States)*

**IAC-06-E3.3.01**

**Using Geospatial Technologies to Improve Maritime Security**

*Mr. Nicolas Peter, George Washington University, Washington, United States*

*Dr. Ray A. Williamson, Space Policy Institute, George Washington University, Washington, DC, United States*

**IAC-06-E3.3.02**

**The Space Security Index – Trends and Developments in Space Security in 2005**

*Dr. William Marshall, Space Policy Institute, George Washington University, Washington, United States*

*Ms. Sarah Estabrooks, Project Ploughshares, Waterloo, ONT, Canada, Mr. Simon Collard-Wexler, Foreign Affairs Canada, Ottawa, ONT, Canada*

**IAC-06-E3.3.03**

**Galileo – Same programme, different language?**

*Ms. Jasmina Lijesevic, University of Wales, Swansea, United Kingdom*

**IAC-06-E3.3.04**

**Space Technologies, Warfare and Force Buildup in Large and Small Powers**

*Mrs. Deganit Paikowsky, Tel Aviv University, Tel Aviv, Israel*

**IAC-06-E3.3.05**

**The use of space surveillance systems to improve global security and international relations**

*Mr. Alexandre Nicolas, Corona Space Surveillance Centre, Oslo, Norway*

*Mr. Shahram Ariaifar, Corona Space Surveillance Centre (CSSC), Oslo, Norway*

**IAC-06-E3.3.06**

**Identifying Space-Based Security Needs**

*Mr. Gerhard Brauer, European Space Agency (ESA), Paris, France*

**IAC-06-E3.3.07**

**ASTRO+ a step forward for Space and Security**

*Mr. Alain Claverie, EADS Astrium, Toulouse, France*  
*Mr. Jakub Ryzenko, Polish Space Office & Institute of International Relations, Warsaw University, Warszawa, Poland*

**IAC-06-E3.3.08**

**Challenges of Multilateral Negotiation and Space Security**

*Dr. Lucy Stojak, Institute of Air and Space Law, McGill University, Montreal, Canada*

**IAC-06-E3.3.09**

**Benefiting from Space for Maritime security – Ensuring the continuity of surveillance from open seas to coastal areas**

*Mrs. Fabienne Jacq, CLS, Ramonville Ste Agne, France*

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**October 05 2006, 15:30 - Room 7**

**E4. 40th Symposium on the History of Astronautics**

*Coordinators: Marsha Freeman (United States), George James (United States), Christophe Rothmund (France), Ake Ingemar Skoog (Germany)*

**E4.3. Scientific & Technical Reviews**

*Chairmen: Kerrie Dougherty (Australia), Philippe Jung (France)*

*Rapporteur: Julius Braun (United States), John Harlow (United Kingdom)*

**IAC-06-E4.3.01**

**X-15B: The Spaceplane That Almost Was**

*Dr. L. Parker Temple, The Aerospace Corporation, Burke, United States*

**IAC-06-E4.3.02**

**Swedish Sounding Rocket Projects**

*Dr. Ake Ingemar Skoog, Immenstaad, Germany*

**IAC-06-E4.3.03**

**Maruca: an early French navy liquid-fuelled rocket**

*Mr. Philippe Jung, AAAF, Grasse, France*

*Mr. Jean-Jacques Serra, AAAF, Font Romeu, France, Mr. Jean Robert, AAAF, Toulouse, France*

**IAC-06-E4.3.04**

**Fluorine rocket engine demonstrators**

*Mr. Christophe Rothmund, Snecma, Vernon, France*

**IAC-06-E4.3.05**

**Goddard's 85 Years Optimal Ascent Problem Finally Solved**

*Dr. Radu Rugescu, Politechnic University of Bucharest, Bucharest, Romania*

**IAC-06-E4.3.06**

**The Fabric of Flight: From Early Balloons to Modern Spacecraft**

*Mr. Anthony Springer, National Aeronautics and Space Administration (NASA)/Headquarters, Washington, United States*

*Mrs. Emily Springer, AIAA, Reston, Virginia, United States*

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**October 05 2006, 18:40 - Room 16**

**A1. Space Life Sciences Symposium**

*Coordinators: Gerda Horneck (Germany), Inessa Kozlovskaya (Russia)*

**A1.P.2. Poster Session on Space Life Sciences - Part II**

*Rapporteur: Petra Rettberg (Germany)*



### **IAC-06-A1.P.2.01**

#### **Characterization of a Novel Miniature Cell Culture Device**

*Ms. Sandra Geffert, University of Houston, Kingwood Texas, United States*

Dr. Stanley J. Kleis, Houston, United States

### **IAC-06-A1.P.2.02**

#### **Utilization of Microfabricated Gel Electrophoresis for Spaceflight Applications**

*Ms. Rene Elms, Texas A&M University, College Station, TX, United States*

Dr. Steve Gonda, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States, Dr. Victor Ugaz, Texas A&M University, College Station, TX, United States

### **IAC-06-A1.P.2.03**

#### **Discovery of Inhibitors of Methionine aminopeptidase from *Enterococcus faecalis***

*Ms. Omonike Omotoso, The John Hopkins School of Medicine (SOM), Baltimore, United States*

Prof. Jun Liu, The John Hopkins School of Medicine (SOM), Baltimore, United States

### **IAC-06-A1.P.2.04**

#### **Crew Health Support on Long-Duration Missions in Microgravity: Some Considerations**

*Dr. Marco C Bernasconi, MCB Consultants, Dietikon, Switzerland*

Mr. Roland Zenger, HTS AG, Wallisellen, Switzerland, Mr. Meindert Versteeg, MCB Consultants, Dietikon, Switzerland

### **IAC-06-A1.P.2.05**

#### **3D Silicon Detector Telescope for Determining the Equivalent Dose of Astronauts**

*Mr. Attila Hirn, Hungarian Academy of Sciences KFKI Atomic Energy Research Institute, Budapest, Hungary*

Dr. Tamás Pázmándi, Hungarian Academy of Sciences KFKI Atomic Energy Research Institute, Budapest, Hungary, Dr. Sándor Deme, Hungarian Academy of Sciences KFKI Atomic Energy Research Institute, Budapest, Hungary, Mr. István Apáthy, Hungarian Academy of Sciences KFKI Atomic Energy Research Institute, Budapest, Hungary, Mr. Antal Csoke, Hungarian Academy of Sciences KFKI Atomic Energy Research Institute, Budapest, Hungary, Mr. László Bodnár, BL-Electronics, Solymár, Hungary

### **IAC-06-A1.P.2.06**

#### **Study of capability of microorganisms to develop on construction materials used in space objects.**

*Mrs. Yulia Svistunova, Institute for Biomedical Problems, Moscow, Russia*

### **IAC-06-A1.P.2.07**

#### **The Prospects of Using Plasma-Optical Technologies for Air Disinfection**

*Mr. Nikolai Polikarpov, Institute for Biomedical Problems, Moscow, Russia*

Mr. Yakov Goldshtein, Melitta Science and Production Company, Moscow, Russia, Dr. Natalia Novikova, Institute for Biomedical Problems, Moscow, Russia, Mrs. Elena Desevaya, Institute for Biomedical Problems, Moscow, Russia, Mr. Sergey Shashkovskiy, Melitta Science and Production Company, Moscow, Russia

### **IAC-06-A1.P.2.08**

#### **Design of a mars habitat by an interdisciplinary working group – basic concepts for a life support system**

*Mr. Martin Gruhlke, Space Research Group, Aachen, Germany*

Ms. Britta Langen, Space Research Group, Aachen, Germany, Mr. Daniel Noelke, RWTH Aachen - Institut fuer Leichtbau, Aachen, Germany

### **IAC-06-A1.P.2.09**

#### **New results for radiation doses on the Lunar surface** *Dr. Giovanni De Angelis, Istituto Superiore di Sanita' (ISS), Rome, Italy, Rome, Italy*

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**October 05 2006, 18:40 - Room 6**

#### **B6. Space Debris Symposium**

*Coordinators: Christophe Bonnal (France), Walter Flury (Germany), Nicholas L. Johnson (United States)*

#### **B6.P.2. Poster Session on Space Debris - Part II**

*Rapporteur: Clare E. Martin (United Kingdom)*

### **IAC-06-B6.P.2.01**

#### **Collision risk effects on Low Earth targets due to satellite breakups**

*Dr. A.K. Anilkumar, Vikram Sarabhai Space Center, Trivandrum, India*

### **IAC-06-B6.P.2.02**

#### **Metal Foam Shields**

*Dr. Eric Christiansen, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States*

Mr. Frankel Lyons, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States, Mrs. Dana M. Lear, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States

### **IAC-06-B6.P.2.03**

#### **China's Future Activity in Space Debris Protection**

*Dr. Zengyao Han, China Academy of Space Technology (CAST), Beijing, China*

Mr. Baojun Pang, Harbin Institute of Technology, Harbin, China, Dr. Ming Li, China Academy of Space Technology (CAST), Beijing, China, Mr. Yong Zhang, China Academy of Space Technology (CAST), Beijing, China

### **IAC-06-B6.P.2.04**

#### **Modeling of "Zones of Mechanical Conflicts" in a System of Orbital Objects**

*Ms. Tatyana Labutkina, Dnepropetrovsk National University, Dnepropetrovsk, Ukraine*

Prof. Vladimir O. Larin, Dnepropetrovsk National University, Dnepropetrovsk, Ukraine, Mr. Vladimir Belikov, Dnepropetrovsk National University, Dnepropetrovsk, Ukraine, Mr. Vladimir Bulanenko, Dnepropetrovsk National University, Dnepropetrovsk, Ukraine, Ms. Tatyana Mokshankina, Dnepropetrovsk National University, Dnepropetrovsk, Ukraine

### **IAC-06-B6.P.2.05**

#### **Approach to collision avoidance optimal maneuvers with perturbation analysis**

*Mr. Chen Lei, National University of Defense Technology, Changsha, Hunan, China*

Dr. Han Lei, National University of Defense Technology, Changsha, Hunan, China, Dr. Ma Zhihao, National University of Defense Technology, Changsha, Hunan, China

### **IAC-06-B6.P.2.06**

#### **Orbital debris impact detection satellites using a structure health monitoring**

*Mr. Kyohei Nakashima, Kyushu University, Fukuoka, Japan*

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**October 05 2006, 18:40 - Room 10**

## C1. Astrodynamics Symposium

*Coordinators: Alberto Foni (Italy), Arun Misra (Canada)*

### C1.P.7. Poster Session on Guidance and Control

*Rapporteur: Werner Enderle (Australia)*

#### IAC-06-C1.P.7. 01

**Efficient feedbacks for low thrust orbital transfers**  
*Mr. Bombrun Alex, INRIA, Sophia Antipolis, France*

#### IAC-06-C1.P.7. 02

**Optical Correlator for Real-Time Rendez-Vous and Docking**

*Mr. Pascal Bourqui, INO, Sainte-Foy, Québec, Canada*  
*Dr. Bernd Harnisch, European Space Agency/ESTEC, Noordwijk, The Netherlands, Dr. Alain Bergeron, INO, Québec, Canada*

#### IAC-06-C1.P.7. 03

**Achieving Precision Landing to a Pre-Selected Landing Site on Mars**

*Dr. Jean de Lafontaine, NGC Aerospace Ltd., Sherbrooke (Quebec), Canada*  
*Dr. Aymeric Kron, NGC Aerospace Ltd., Sherbrooke, Canada, Mr. David Neveu, NGC Aerospace Ltd., Sherbrooke, Canada, Mr. Jean-Francois Hamel, Université de Sherbrooke, Sherbrooke, Canada*

#### IAC-06-C1.P.7. 04

**Guided Recovery of Payloads from High Altitudes, Using a Self-Organising Fuzzy Logic Control (SOFLC) Algorithm**

*Mr. Armin Ellis, Dartmouth College / Astro Pioneer Ltd, NH, United States*

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**October 05 2006, 18:40 - Room 10**

## C1. Astrodynamics Symposium

*Coordinators: Alberto Foni (Italy), Arun Misra (Canada)*

### C1.P.8. Poster Session on Mission and Constellation Design

*Rapporteur: Erick Lansard (France)*

#### IAC-06-C1.P.8.01

**Design of formation missions for Earth observation: relative motion model, validation, and application**

*Prof. Marco D Errico, Seconda Università di Napoli, Aversa (CE), Italy*  
*Mr. Giancarmine Fasano, University of Naples "Federico II", Naples, Italy*

#### IAC-06-C1.P.8.02

**Maintaining Long term constellation coverage without orbital corrections**

*Prof. Raz Tamir, Polytechnic University, Brooklyn Campus, New York, NY, United States*  
*Mrs. Danna Linn Barnett, RAFAEL, Haifa, Israel*

#### IAC-06-C1.P.8.03

**Satellite constellation design for complex missions**  
*Dr. Yuri Ulybyshev, S.P. Korolev Rocket and Space Corporation Energia, Korolev, Moscow Region, Russia*

# 156

**October 05 2006, 18:40 - Room 15**

## C2. Materials and Structures Symposium

*Coordinators: Constantinos P. Stavrinidis (The Netherlands), Pavel M. Trivailo (Australia)*

### C2.P.2. Poster Session on Materials and Structures - Part II

*Rapporteur: Oleg Alifanov (Russia), Mario Marchetti (Italy)*

#### IAC-06-C2.P.2.01

**Application analysis of the structural shield technique on spacecrafts**

*Dr. Zhang Jiarun, China Academy of Space Technology (CAST), Beijing, China*

#### IAC-06-C2.P.2.02

**Qualification of the Setup to Simulate the External Thermal Balance Test of the CBERS-2B Satellite Using a Infrared Lamp Technique**

*Dr. Marcio Bueno dos Santos, Instituto Nacional de Pesquisas Espaciais (INPE), São José dos Campos, SP, Brazil*

*Dr. Ezio Castejon Garcia, Instituto Tecnológico de Aeronáutica - ITA - IEM, São José dos Campos, Brazil, Mr. Herbert Paula de Vasconcelos, Instituto Tecnológico de Aeronáutica - ITA - IEM, São José dos Campos, SP, Brazil, Mr. Eduardo De Oliveira Pontes, Instituto Nacional de Pesquisas Espaciais (INPE), Sao Jose dos Campos SP, Brazil*

#### IAC-06-C2.P.2.03

**Analysis and Design of a Spray Cooling Thermal Control System for Spacecraft High Power Density Components**

*Dr. Wei Yao, China Academy of Space Technology (CAST), Beijing, China*

#### IAC-06-C2.P.2.04

**Plume Interaction by Strap-On Launch Vehicles**

*Dr. Paulo Moraes Jr., CTA/ Institute of Aeronautics and Space, Sao Jose dos Campos-SP, Brazil*

#### IAC-06-C2.P.2.05

**Aeroheating Wind Tunnel Test And Thermal Protection System Design For Hypersonic Vehicle**

*Mr. Xu Dajun, Beijing University of Aeronautics and Astronautics, Beijing, China*  
*Prof. Guobiao Cai, Beijing University of Aeronautics and Astronautics, Beijing, China, Dr. Liming Zheng, Beijing University of Aeronautics and Astronautics, Beijing, China, Mr. Le Chuan, Beijing University of Aeronautics and Astronautics, Beijing, China*

#### IAC-06-C2.P.2.06

**Investigation on Scramjet Thermal environment and Thermal Structure**

*Dr. Liming Zheng, Beijing University of Aeronautics and Astronautics, Beijing, China*  
*Mr. Bing Sun, Beijing University of Aeronautics and Astronautics, Beijing, China*

## IAC-06-C2.P.2.07

### Mitigating Extreme Environments for In-Situ Jupiter and Venus Missions

*Dr. Tibor S. Balint, Jet Propulsion Laboratory / CalTech, Pasadena, CA, United States*

*Dr. Elizabeth A. Kolawa, Jet Propulsion Laboratory, Pasadena, CA, United States, Dr. James A. Cutts, Jet Propulsion Laboratory, Pasadena, CA, United States*

## IAC-06-C2.P.2.08

### Thermal control design of SUNRISE, a balloon-borne solar telescope

*Dr. Isabel Pérez Grande, Universidad Politécnica de Madrid, Madrid, Spain*

*Mr. Klaus Haertel, Kayser-Threde GmbH, Munich, Germany*

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# 157

## October 05 2006, 18:40 - Room 12

### D1. Space Systems Symposium

*Coordinators: Hans F.A. Roefs (The Netherlands), Lawrence Dale Thomas (United States)*

#### D1.P.2. Poster Session on Space Systems

*Rapporteur: Moshe Guelman (Israel), Erick Lansard (France)*

## IAC-06-D1.P.2.01

### Standard Ionospheric and Tropospheric Models for GPS on Aerospace Applications: Geometrical Extension

*Mr. Gustavo Baldo Carvalho, Center of Applied Space Technology and Microgravity - ZARM - University of Bremen, Bremen, Germany*

*MSc. Per Gustavsson, Luleå Technical University, Floda, Sweden, Dr. Stephan Theil, Center of Applied Space Technology & Microgravity, Bremen, Germany, Dr. Helio Koiti Kuga, Instituto Nacional de Pesquisas Espaciais (INPE), São José dos Campos-SP, Brazil*

## IAC-06-D1.P.2.02

### Multichip modules of 3-d assembling on unpacked VLSI for on-board space radioelectronic systems

*Dr. Genady Blinov, Roscosmos, Moscow, Russia*

*Dr. Aleksander Grushevski, Roscosmos, Moscow, Russia, Dr. Aleksander Kotov, Roscosmos, Moscow, Russia*

## IAC-06-D1.P.2.03

### Results of a Ground-Based Demonstration of Autonomous Tracking and Capture of a Satellite

*Ms. Laurie Chappell, MDA, Brampton, ON, Canada*

## IAC-06-D1.P.2.04

### SERVIS-1 COTS Technical Knowledge Bases for Space Applications

*Mr. Kazumori Hama, Institute for Unmanned Space Experiment Free Flyer (USEF), Tokyo, Japan*

*Dr. Masatsugu Akiyama, Institute for Unmanned Space Experiment Free Flyer (USEF), Tokyo, Japan, Mr. Norio Natsuka, New Energy and Industrial Technology Development Organization (NEDO), Kawasaki, Japan, Mr. Hiroshi Kanai, Institute for Unmanned Space Experiment Free Flyer (USEF), Tokyo, Japan*

## IAC-06-D1.P.2.05

### The experimental space module for working off of service operations in an orbit

*Dr. Victor Ivanov, Central Research Institute of Machine Building (TSNIIMASH), Korolev, Russia*

*Dr. V.V. Bulanov, Central Research Institute of Machine Building (TSNIIMASH), Korolev, Russia, Dr. V.I. Lukyashenko, Central Research Institute of Machine Building (TSNIIMASH), Korolev, Russia, Dr. George Uspensky, TSNIIMASH, Korolev, Russia*

## IAC-06-D1.P.2.06

### Development and Evaluation of Test Circuit for Spotty Byte Error Control Codes

*Mr. Takeshi Sasada, Japan Aerospace Exploration Agency (IAT/JAXA), Tsukuba, Japan*

*Dr. Haruhiko Kaneko, Japan Aerospace Exploration Agency (IAT/JAXA), Tsukuba, Japan*

## IAC-06-D1.P.2.07

### Use of New Developments of Attitude Control Sensors for the Micro-Satellite Flying Laptop

*Mrs. Viola Wolter, Steinbeis Transferzentrum Raumfahrt, Gäufelden, Germany*

*Mr. Matthias Waidmann, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany, Mr. Dominik Saile, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany, Mr. Christian Waidmann, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany, Mr. Georg Grillmayer, Institute of Space Systems, Universität Stuttgart, Stuttgart, Germany*

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# 158

## October 05 2006, 18:40 - Room 17

### E1. Space Education and Outreach Symposium

*Coordinators: Pierre-Louis Contreras (France)*

#### E1.P.3. Poster Session on Educational Outreach

*Rapporteur: Vera Mayorova (Russia)*

## IAC-06-E1.P.3.01

### How 'Leonardo da Vinci' brings space closer to people

*Mr. Ferdi de Bruijn, Technical University of Delft (TUDelft), Delft, The Netherlands*

## IAC-06-E1.P.3.02

### Achieving NASA's Moon Mission with a Program of Public Education and Industry Partnership

*Mr. Miguel Daal, U.C. Berkeley, Berkeley, United States*

*Mr. Yuki Takahashi, University of California, Berkeley, United States*

## IAC-06-E1.P.3.03

### Educating Program - Space Activity in the Global Society

*Ms. Natalia Korotkih, Moscow, Russia*

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# 159

## October 05 2006, 18:40 - Room 17

### E1. Space Education and Outreach Symposium

*Coordinators: Pierre-Louis Contreras (France)*

#### E1.P.4. Poster Session on Beyond Education

*Rapporteur: Gulnara T. Omarova (Kazakhstan)*

## IAC-06-E1.P.4.01

The most important rockets and satellites throughout the history of Astronautics

*Mrs. Beatriz Jilete, Madrid, Spain*

## IAC-06-E1.P.4.02

Expanding New Frontiers of Space Weather Education

*Ms. Shaneen Braswell, National Aeronautics and Space Administration (NASA)/Headquarters, West Bloomfield, United States*

## IAC-06-E1.P.4.03

PHASE: A platform for educational experiments and space operations training

*Dr. Ed Chester, SciSys GmbH / ESA-ESOC, Darmstadt, Germany*

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## October 05 2006, 18:40 - Room 17

### E1. Space Education and Outreach Symposium

*Coordinators: Pierre-Louis Contreras (France)*

#### E1.P.5. Poster Session on Space Exploration Education

*Rapporteur: Christyne Legault (Canada)*

## IAC-06-E1.P.5.01

Vision for a new educational strategy for space flight.

*Mr. Jesper Jørgensen, SpaceArch, Copenhagen V, Denmark*

## IAC-06-E1.P.5.02

Bringing together space professionals and schools with the 'RuimteWijs' project

*Mr. Erik Laan, Nederlandse Vereniging voor Ruimtevaart (NVR), Leiden, The Netherlands*

## IAC-06-E1.P.5.03

World Space Week Impact on Education

*Mr. Dennis A. Stone, Spaceweek International Association, Houston TX, United States*

## IAC-06-E1.P.5.04

Making the Exploration of Space a Reality for Everyone

*Prof. Lachlan Thompson, Royal Melbourne Institute of Technology (RMIT), Melbourne, Australia*

*Mrs. Anne Brumfitt, European Space Agency/ESTEC, South Holland, The Netherlands, Mr. Patrick Honan, Melbourne Zoo, Parkville, Australia, Ms. Naomi Mathers, Victorian Space Science Education Centre, Melbourne, Australia*

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## October 06 2006, 10:10 - Room 5

### B3. Space Communications and Navigation Symposium

*Coordinators: Robert D. Briskman (United States), MG Chandrasekhar (United States)*

#### B3.6. Mobile Communications and Satellite Navigation

*Chairmen: Calin Rosetti (France), Ryutaro Suzuki (Japan)  
Rapporteur: MG Chandrasekhar (United States)*

## IAC-06-B3.6.01

Satellite Based Location: the Technological Challenges

*Mr. Arnaud Masson, Alcatel Alenia Space, Toulouse, France*

## IAC-06-B3.6.02

GNSS Liability Critical Applications through the Provision of User-Level Integrity

*Ms. Audrey Mark, GMV S.A., Tres Cantos, Spain  
Mr. Miguel Ángel Martínez Olagüe, GMV S.A., Tres Cantos, Spain, Mr. Joaquín Cosmen Schortmann, GMV S.A., Tres Cantos, Spain*

## IAC-06-B3.6.03

Converging Mobile VoIP with Navigation and GIS, a Feasibility Study

*Ms. Jennie Eckardt, Plantronics, Santa Cruz, United States  
Mr. Filippo De Rose, VEGA Group, Darmstadt, Germany*

## IAC-06-B3.6.04

Group force mobility model

*Mr. Sean Williams, Student, Tempe, United States*

## IAC-06-B3.6.05

On-orbit experience of the first Galileo satellite, GIOVE-A

*Mr. Philip Davies, Surrey Space Centre, University of Surrey, Guildford, Surrey, United Kingdom*

*Prof. Sir. Martin Sweeting, Surrey Space Centre, Guildford, United Kingdom, Mr. Martin J. Unwin, University of Surrey, Guildford, Surrey, United Kingdom, Dr. John Paffett, Surrey Satellite Technology Ltd., Guildford, United Kingdom, Ms. Elizabeth Rooney, Surrey Satellite Technology Ltd., Guildford, United Kingdom, Mr. Andy Bradford, Surrey Satellite Technology Ltd., Guildford, United Kingdom, Mr. Antonio Garutti, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Giuliano Gatti, European Space Agency/ESTEC, Noordwijk, The Netherlands*

## IAC-06-B3.6.06

Initial radiation measurement results from Europe's Galileo test-bed satellite, Giove-A

*Mr. Richard Blott, Qinetiq Ltd., Farnborough, United Kingdom*

## IAC-06-B3.6.07

PROBLEMS RELATED TO GLOBAL NAVIGATION SATELLITE SYSTEMS (GPS/GLONAS/GALILEO)

*Mr. Calin Rosetti, Retired, European Space Agency/Headquarters, Paris, France*

## IAC-06-B3.6.08

A Satellite Communications Systems for Helicopters

*Prof. Otto Koudelka, Graz University of Technology, Graz, Austria*

## IAC-06-B3.6.09

Development of a MatLab Based Global Navigation Satellite System Orbit Model

*Ms. Janice Hendry, University of Southampton, Southampton, United Kingdom*

## IAC-06-B3.6.10

### S@tMax - A Space-Based System Enabling Mobile IP Applications in Vehicles

Mr. Marco Arcioni, European Space Agency/ESTEC, Noordwijk, The Netherlands

Mr. Erik Daehler, Boeing Space and Intelligence Systems, Seal Beach, CA, United States, Mr. Zeger de Groot, Ursa Minor Space & Navigation, Delft, The Netherlands, Mrs. Wencke van der Meulen, Netherlands Agency for Aerospace Programs (NIVR), Delft, The Netherlands

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### October 06 2006, 10:10 - Room 4

#### B5. Small Satellites Missions Symposium

Coordinators: Rhoda Shaller Hornstein (United States), Rainer Sandau (Germany)

#### B5.7. Interface Standards for Small Robotic Explorers

Chairmen: Marco D Errico (Italy), Jaime Esper (United States)

Rapporteur: Luisella Giulicchi (The Netherlands)

## IAC-06-B5.7.01

### Ethernet Over SpaceWire - Hardware Issues

Dr. Barry Cook, 4Links Limited, Milton Keynes, United Kingdom

Mr. Paul Walker, 4Links Limited, Milton Keynes, United Kingdom

## IAC-06-B5.7.02

### Ethernet over SpaceWire - Software Support

Dr. Barry Cook, 4Links Limited, Milton Keynes, United Kingdom

Mr. Paul Walker, 4Links Limited, Milton Keynes, United Kingdom

## IAC-06-B5.7.03

### SpaceWire Higher-Layer Protocols

Dr. Steve Parkes, University of Dundee, Dundee, United Kingdom

## IAC-06-B5.7.04

### Exploiting the CAN bus as a potential interface for future aerospace vehicles based on a modular, intelligent, and autonomous architecture

Mr. Carlo Del Vecchio Blanco, University of Naples "Federico II", Naples, Italy

Prof. Marco D Errico, Seconda Università di Napoli, Aversa (CE), Italy

## IAC-06-B5.7.05

### CDHS Design for a university nano-satellite

Mr. Gerard Aalbers, Technical University of Delft (TUDelft), Delft, The Netherlands

## IAC-06-B5.7.06

### Information architecture technologies for realization of panel extension satellite (PETSAT)

Mr. Kanichi Koyama, Astro-Technology SOHLA, Osaka, Japan

Mr. Takanori Okada, Astro-Technology SOHLA, Osaka, Japan, Ms. Chisato Kobayashi, Astro-Technology SOHLA, Higashi Osaka, Japan, Prof. Shinichi Nakasuka, University of Tokyo, Tokyo, Japan

## IAC-06-B5.7.07

### Reliability design for realization of Panel Extension Satellite (PETSAT)

Mr. Okada Takanori, Astro-Technology SOHLA, Osaka, Japan

Mr. Kanichi Koyama, Astro-Technology SOHLA, Osaka, Japan, Ms. Chisato Kobayashi, Astro-Technology SOHLA, Higashi Osaka, Japan, Prof. Shinichi Nakasuka, University of Tokyo, Tokyo, Japan

## IAC-06-B5.7.08

### Structure and Thermal Control of Panel Extension Satellite (PETSAT)

Dr. Yoshiki Sugawara, University of Tokyo, Tokyo, Japan

Prof. Shinichi Nakasuka, University of Tokyo, Tokyo, Japan, Mr. Kenji Higashi, DaVinci Co Ltd, Nabari City, Mie Pref., Japan, Ms. Chisato Kobayashi, Astro-Technology SOHLA, Higashi Osaka, Japan, Mr. Kanichi Koyama, Astro-Technology SOHLA, Osaka, Japan, Mr. Takanori Okada, Astro-Technology SOHLA, Osaka, Japan

## IAC-06-B5.7.09

### Satellite Reliability Assessment Based on Bayes Approach

Mr. Guo ZhenWei, DFH Satellite Co. Ltd., Beijing, China

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### October 06 2006, 10:10 - Room 10

#### C1. Astrodynamics Symposium

Coordinators: Alberto Foni (Italy), Arun Misra (Canada)

#### C1.8. Mission and Constellation Design

Chairmen: Miguel Bello Mora (Spain), Antonio Prado (Brazil)

Rapporteur: Erick Lansard (France)

## IAC-06-C1.8.01

### Control of Satellite Imaging Formations in Multi-Body Regimes

Dr. Kathleen Howell, Purdue University, West Lafayette, IN, United States

Ms. Lindsay Millard, Purdue University, West Lafayette, IN, United States

## IAC-06-C1.8.02

### A Relayed Formation Flying Control with Analogy Discussion to Traffic System

Dr. Junichiro Kawaguchi, Japan Aerospace Exploration Agency (JAXA) / ISAS, Kanagawa, Japan

Mr. Hiroya Mizuta, University of Tokyo, Kanagawa, Japan

## IAC-06-C1.8.03

### Rendez-vous in lissajous orbits using the effective phase plane

Ms. Elisabet Canalias, Universitat Politècnica de Catalunya, Barcelona, Spain

Mr. Josep J. Masdemont, Universitat Politècnica de Catalunya, Barcelona, Spain

## IAC-06-C1.8.04

### Space Flight from Geostationary Orbit to the Earth Using Lunar Gravity Assist

Dr. Viacheslav Ivashkin, Keldysh Institute of Applied Mathematics, RAS, Moscow, Russia

## IAC-06-C1.8.05

### A New Approach to the Design of Navigation Constellations around MARS: The MARCO POLO Evolutionary System

Mr. Fabrizio Pirondini, DEIMOS Space S.L., Tres Cantos (Madrid), Spain

Mr. Antonio Fernández, DEIMOS Space S.L., Tres Cantos (Madrid), Spain, Dr. Guy Janin, European Space Agency/ESOC, Darmstadt, Germany

## IAC-06-C1.8.06

### Next Generation GNSS for Navigation of Future SAR Constellations

Prof. Werner Enderle, Queensland University of Technology, Brisbane, Old, Australia

Dr. Hauke Fiedler, German Aerospace Center (DLR), Oberpfaffenhofen, Germany, Mr. Sergio De Florio, German Aerospace Center (DLR), Wessling, Germany, Mr. Friedrich Jochim, German Aerospace Center (DLR), Wessling, Germany, Mr. William Kellar, Queensland University of Technology, Brisbane, Australia, Mr. Shannon Dawson, Queensland University of Technology, Brisbane, Australia, Mr. Simone D'Amico, German Aerospace Center (DLR), Wessling, Germany

## IAC-06-C1.8.07

### Trajectory design for the Bepi-Colombo mission to Mercury

Mr. Daniel Garcia Yarnoz, GMV S.A. at ESA/ESOC, Darmstadt, Germany

Mr. Rudiger Jehn, European Space Agency/ESOC, Darmstadt, Germany, Mr. Paolo de Pascale, European Space Agency/ESOC, Darmstadt, Germany

## IAC-06-C1.8.08

### Conexpress orbital life extension vehicle (cx-olev) gnc

Mr. Juan Manuel del Cura, SENER Ingenieria y Sistemas, S.A., Tres Cantos (Madrid), Spain

Mr. Alberto Sebastian, SENER Ingenieria y Sistemas, S.A., Tres Cantos (Madrid), Spain, Mr. Lorenzo Tarabini, GMV S.A., Tres Cantos, Spain, Dr. Guillermo Ortega, European Space Agency/ESTEC, Noordwijk, The Netherlands, Mr. Jean-Pascal Lejault, European Space Agency/ESTEC, Noordwijk ZH, The Netherlands

## IAC-06-C1.8.09

### ExoMars Transfer and Approach Phase Navigation

Mr. Jose Manuel Sanchez Perez, GMV S.A., Madrid, Spain

Mr. Michael Khan, European Space Agency/ESOC, Darmstadt, Germany

## IAC-06-C1.8.10

### Mission Analysis of Formation Flying with Three Satellites for Earth Gravity Field Exploring

Mr. Tan Tian, DFH Satellite Co. Ltd., Beijing, China

Dr. Zhang Xiaomin, DFH Satellite Co. Ltd., Beijing, China, Mr. Zhang Jialei, DFH Satellite Co. Ltd., Beijing, China

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**October 06 2006, 10:10 - Room 15**

## C2. Materials and Structures Symposium

Coordinators: Constantinos P. Stavriniadis (The Netherlands), Pavel M. Trivailo (Australia)

## C2.8. Specialized Technologies, including Nanotechnology

Chairmen: Mario Marchetti (Italy), Pierre Rochus (Belgium)  
Rapporteur: Pavel M. Trivailo (Australia)

## IAC-06-C2.8.01

### Multifunctional Polyimides for Space Applications

Dr. Ruth H. Pater, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, VA, United States

Dr. Paul Curto, National Aeronautics and Space Administration (NASA)/Headquarters, Washington, DC, United States

## IAC-06-C2.8.02

### Design and Characterization of Nanostructured Frequency - Selective Surfaces for Aerospace Applications

Mr. Marco Regi, University of Rome "La Sapienza", Rome, Italy

Prof. Mario Marchetti, University of Rome "La Sapienza", Rome, Italy, Dr. Fabrizio Frezza, University of Rome "La Sapienza", Rome, Italy, Dr. Luca Amantini, University of Rome "La Sapienza", Rome, Italy, Dr. Simone Paulotto, University of Rome "La Sapienza", Rome, Italy

## IAC-06-C2.8.03

### Mwcnt-modified fiber reinforced composites with nano-sensing capabilities: a way towards the development of the new functional materials for space applications

Mr. Antonios Vavouliotis, University of Patras, Patras, Hellas, Greece

Dr. Panagiota Tsotra, Applied Mechanics Laboratory, Rion-Patras, Greece, Prof. Vassilis Kostopoulos, University of Patras, Patras, Hellas, Greece, Mr. Petros Karapappas, University of Patras, Rion-Patras, Greece, Mr. Angelos Miaris, University of Patras, Rion-Patras, Greece, Mr. Nikolaos Nikolaou, University of Patras, Rion-Patras, Greece

## IAC-06-C2.8.04

### Statistical Risks in High Performance Nano-Composites Technology for Space Structures

Mr. Florin Tache, Politechnic University of Bucharest, Ploiesti,, Romania

## IAC-06-C2.8.05

### New applications of rapid prototyping and rapid manufacturing (RP/RM) technologies for space instrumentation

Prof. Pierre Rochus, Centre Spatial de Liège, Angleur - Liège, Belgium

Prof. Jean-Pierre Kruth, Katholieke Universiteit Leuven, Heverlee, Belgium, Dr. Maarten Van Elsen, Katholieke Universiteit Leuven, Heverlee, Belgium, Mr. Thierry Dormal, CRIF, Seraing, Belgium, Mr. Raoul Carrus, CRIF, Seraing, Belgium, Mr. Jean-Yves Plessier, Centre Spatial de Liège, Liège, Belgium

## IAC-06-C2.8.06

### Preparation of Lightweight Nanocrystalline and Mesoporous Barium Ferrite

Mrs. Huang Ying, Northwestern Polytechnical University, Xi'an, China

Mr. Huang Fei, Northwestern Polytechnical University, Xi'an, China, Mrs. Qi Shuhua, Northwestern Polytechnical University, Xi'an, China

## IAC-06-C2.8.07

### Innovative Packaging Solution for Power and Thermal Management of Wide-Bandgap Semiconductor Devices in Space Applications

*Dr. Chris Merveille, INASMET-TECNALIA, San Sebastian, Spain*

Mr. Jorge Bárcena, INASMET-TECNALIA, San Sebastian, Spain, Mr. Jon Maudes, INASMET-TECNALIA, San Sebastian, Spain, Dr. Miquel Vellvehí, Universidad Autonoma de Barcelona, Bellaterra, Spain, Mr. Xavier Jordà, Universidad Autonoma de Barcelona, Bellaterra, Spain, Dr. Isabel Obieta, INASMET-TECNALIA, San Sebastian, Spain, Dr. Cristina Jiménez, INASMET-TECNALIA, San Sebastian, Spain, Mrs. Cristina Guraya, INASMET-TECNALIA, Donostia / San Sebastian, Spain, Ms. Leire Bilbao, INASMET-TECNALIA, San Sebastian, Spain, Dr. Javier Coletto, INASMET-TECNALIA, San Sebastian, Spain

## IAC-06-C2.8.08

### Study on electroless ni-p plating technology applying for ocean

*Mrs. Bian Xiaoli, Changzhi Qinghua Machinery Factory, Changzhi, Shanxi, China*

## IAC-06-C2.8.09

### Use of Long-Term Entangled States for Low Power Space Communications

*Mr. Roger X. Lenard, Sandia National Laboratories, Albuquerque, NM, United States*

## IAC-06-C2.8.10

### Multifunctional structures using high thermal conductivity fibres

*Ms. Garbiñe Atxaga, INASMET-TECNALIA, Donostia, Spain*

Mr. Jesús Marcos, INASMET-TECNALIA, Donostia, Spain, Mr. Miguel Segura, INASMET-TECNALIA, Donostia, Spain, Dr. Aitor Landaberea, INASMET-TECNALIA, Donostia, Spain, Mr. Juan Carlos Antolin, INASMET-TECNALIA, Donostia, Spain, Mr. Félix Lamela, EADS CASA Espacio, Madrid, Spain

## IAC-06-C2.8.11

### Structural Concept Design of Functionally Graded Sandwich Materials (FGSM) for Space Exploration

*Prof. Leo Daniel, University of California at Berkeley, Berkeley, CA, United States*

Dr. Piyush K. Dutta, US Army Research and Development Center, Hanover, NH, United States, Prof. David Hui, University of New Orleans, New Orleans, United States

## IAC-06-C2.8.12

### A Mechanistic Study of the Friction Stir Welding Process

*Mr. Reginald Crawford, Vanderbilt University, GCRC, Nashville, United States*

Dr. George E. Cook, Vanderbilt University, Nashville, United States, Dr. Alvin M. Strauss, Vanderbilt University, Nashville, United States

# 165

**October 06 2006, 10:10 - Room 9**

## C4. Space Propulsion Symposium

*Coordinators: Dana G. Andrews (United States), Giorgio Saccoccia (The Netherlands)*

### C4.6. Advanced Propulsion - Non Chemical, non Electric

*Chairmen: Timothy J. Lawrence (United States), Vladimir Prisniakov (Ukraine)*

*Rapporteur: Marcel F.M. Pouliquen (France)*

## IAC-06-C4.6.01

### Recent Advances In Solar Sail Propulsion Systems at NASA

*Mr. Les Johnson, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, AL, United States*

Mr. Edward Montgomery, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, United States

## IAC-06-C4.6.02

### Assessment of Open Magnetic Fusion for Space Propulsion

*Prof. Claudio Bruno, University of Rome "La Sapienza", Rome, Italy*

*Dr. Francesco Romanelli, ENEA, Frascati (Roma), Italy*

## IAC-06-C4.6.03

### R & D of Pulsed Laser Microthruster with Hybrid Mechanism of Plasma Flows Acceleration for Small Space Apparatus and Orbit Platforms

*Prof. Yury S. Protasov, Moscow State Technical University named Bauman, Moscow, Russia*

Dr. Yury Yu. Protasov, Moscow State Technical University named Bauman, Moscow, Russia, Dr. Victor Telekh, Moscow State Technical University named Bauman, Moscow, Russia, Dr. Vladimir Christoforov, Moscow State Technical University named Bauman, Moscow, Russia

## IAC-06-C4.6.04

### Solar-Sail Earth Defense (SOSED) from NEO Impacts

*Dr. Gregory L. Matloff, Bangs / Matloff Aerospace Consulting Co., Brooklyn, NY, United States*

## IAC-06-C4.6.05

### Propellantless propulsion in magnetic fields by partially shielded current.

*Dr. Luzi Bergamin, European Space Agency/ESTEC, Noordwijk, The Netherlands*

Dr. Alexander Pinchook, Mozyr State Pedagogical University, Mozyr, Belarus, Dr. Dario Izzo, European Space Agency/ESTEC, Noordwijk, The Netherlands

## IAC-06-C4.6.06

### Bases of Calculation of the Asteroid Laser Rocket Engine

*Prof. Vladimir Prisniakov, Institute of Geotechnical Mechanics, National Academy of Sciences, Dnipropetrovsk, Ukraine*

Mr. Konstantin Prisniakov, Institute of Geotechnical Mechanics, National Academy of Sciences, Dnipropetrovsk, Ukraine

# 166

**October 06 2006, 10:10 - Room 12**

## D1. Space Systems Symposium

*Coordinators: Hans F.A. Roefs (The Netherlands), Lawrence Dale Thomas (United States)*

### D1.5. Lessons Learned in Space Systems

*Chairmen: Jean-Paul Aguttes (France), Genesio Luiz Hub-scher (Brazil)*

*Rapporteur: Todd Fox (United States)*

## IAC-06-D1.5.01

### The NASA Engineering Network: Embedding Lessons Into Engineering Processes and Learning at NASA

*Ms. Jeanne Holm, Jet Propulsion Laboratory / CalTech, Pasadena, CA, United States*

Mr. Gregory Robinson, National Aeronautics and Space Administration (NASA)/Headquarters, Washington DC, United States, Dr. Daniel Schumacher, National Aeronautics and Space Administration (NASA)/Headquarters, Washington DC, United States, Mr. Manson Yew, Jet Propulsion Laboratory / CalTech, Pasadena, CA, United States

## IAC-06-D1.5.02

### Selected Systems Engineering Process Deficiencies & Their Consequences

*Dr. Lawrence Dale Thomas, National Aeronautics and Space Administration (NASA), Huntsville, AL, United States*

## IAC-06-D1.5.03

### System Engineering Challenges on the New Horizons Project

*Mr. David Y. Kusnierkiewicz, The John Hopkins University, Laurel, MD, United States*

Mr. James Stratton, The John Hopkins University, Laurel, MD, United States, Mr. Steve Vernon, The John Hopkins University Applied Physics Laboratory, Laurel, MD, United States, Mr. Glen Fountain, The John Hopkins University Applied Physics Laboratory, Laurel, MD, United States, Mr. Chris Hersman, The John Hopkins University Applied Physics Laboratory, Laurel, MD, United States

## IAC-06-D1.5.04

### Down To Earth Systems Engineering: The forgotten ground segment

*Dr. Ed Chester, SciSys GmbH / ESA-ESOC, Darmstadt, Germany*

## IAC-06-D1.5.05

### Innovative Approaches to Integrated Training of Complex Systems: Lessons Learned from Crew and Ground Controller Robotics Training

*Ms. Lindsay Evans, Canadian Space Agency, Saint-Hubert, Canada*

## IAC-06-D1.5.06

### Satellite Assembly, Integration and Test (AIT) System Quality Assurance Approaches - A Brazilian Experience

*Mr. Adalberto Silva, Instituto Nacional de Pesquisas Espaciais (INPE), São José dos Campos, Brazil*

## IAC-06-D1.5.07

### Qualitative fault tree analysis applied as a design tool in a low cost satellite design: method and lessons learned

*Mr. Eddie van Breukelen, Technical University of Delft (TUDelft), Delft, The Netherlands*

## IAC-06-D1.5.08

### XMM Newton 1000 Orbits: More than 50.000 Hours Pointing at X-ray Sources

*Mr. Andrea Guidi, SciSys GmbH / ESA-ESOC, Darmstadt, Germany*

Mr. Oscar Ojanguren, European Space Agency/ESOC, Darmstadt, Germany

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## October 06 2006, 10:10 - Room 1

### D2. Space Transportation Symposium

*Coordinators: Christophe Bonnal (France), Richard Tyson (United States)*

### D2.7. Joint session on Access to Space for Exploration Missions with A3.7.

*Chairmen: Luigi Bussolino (Italy)*

*Rapporteur: Walter Faulconer (United States), David E. Glass (United States)*

## IAC-06-D2.7.-A3.7.01

### Systems Integration Processes for NASA's Crew Launch Vehicle

*Mr. James Taylor, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States*

Mr. James Reuter, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States, Mr. Jeff Sexton, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States, Mr. Michael L. Burris, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, Virginia, United States

## IAC-06-D2.7.-A3.7.02

### Crew Launch Vehicle First Stage Design, Development, Test and Evaluation

*Mr. Michael L. Burris, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, Virginia, United States*

Mr. Richard Burt, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States

## IAC-06-D2.7.-A3.7.03

### Status, Plans, and Initial Results for Crew Launch Vehicle Aerodynamics

*Mr. Lawrence D. Huebner, Huntsville, Alabama, United States*

Mr. Davy Haynes, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States, Mr. Terry Taylor, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States, Dr. C. Mark Seaford, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States, Mr. Robert Hall, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, Virginia, United States, Mr. Bandu Pamadi, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, Virginia, United States, Mr. Michael L. Burris, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, Virginia, United States

## IAC-06-D2.7.-A3.7.04

### CLV Upper Stage Configuration Selection Process

*Mr. Jerry Cook, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States*

Mr. Daniel J. Davis, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States, Mr. Michael L. Burris, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, Virginia, United States



## **IAC-06-D2.7.-A3.7.05**

### **Propulsion for CLV/CALV Building on the Apollo Program for Lunar Return Missions**

*Mr. Jimmy Snoddy, National Aeronautics and Space Administration (NASA)/Marshall Space Flight Center, Huntsville, Alabama, United States*

*Mr. Michael L. Burris, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, Virginia, United States*

## **IAC-06-D2.7.-A3.7.06**

### **Design Options for NASA's Lunar Surface Access Module**

*Mr. Paul Wooster, Massachusetts Institute of Technology (MIT), Cambridge, United States*

*Mr. Wilfried Hofstetter, Massachusetts Institute of Technology (MIT), Cambridge, United States, Prof. Edward Crawley, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States*

## **IAC-06-D2.7.-A3.7.07**

### **The European launcher option for exploration**

*Mr. David Iranzo-Greus, EADS SPACE Transportation, Les Mureaux, France*

*Mr. Christophe Talbot, Centre National d'Etudes Spatiales (CNES), Evry, France, Mr. Christophe Chavagnac, EADS SPACE Transportation, Les Mureaux, France*

## **IAC-06-D2.7.-A3.7.08**

### **Transportation Infrastructure Options for Moon Exploration**

*Mr. Philippe Augros, EADS SPACE Transportation, Les Mureaux, France*

## **IAC-06-D2.7.-A3.7.09**

### **Space Transportation Network Model for Rapid Lunar Architectures Analysis**

*Ms. Gergana Bounova, Massachusetts Institute of Technology (MIT), Cambridge, United States*

*Dr. Olivier de Weck, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States*

## **IAC-06-D2.7.-A3.7.10**

### **Electric Propulsion applications for lunar Cargo missions**

*Mr. Rafael Contreras Fernandez, Escuela Técnica Superior de Ingenieros Aeronáuticos, Madrid, Spain*

*MSc Gustav Johannson, Lulea University of Technology, Lulea, Sweden, Mr. Karanjeet Singh, Space Generation Advisory Council (SGAC), Ontario, Canada*

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## **October 06 2006, 10:10 - Room 17**

### **E1. Space Education and Outreach Symposium**

*Coordinators: Pierre-Louis Contreras (France)*

#### **E1.5. Space Exploration Education**

*Chairmen: Piero Messina (France), Lyn Wigbels (United States)*

*Rapporteur: Christyne Legault (Canada)*

## **IAC-06-E1.5.01**

### **Enhancing Higher Education Science & Technology**

*Mr. Jeffery Cardenas, Universities Space Research Association, Houston, United States*

## **IAC-06-E1.5.02**

### **The NASA Radiation Interuniversity Science and Engineering (RaISE) Project: A Model for Inter-collaboration and Distance Learning in Radiation Physics and Nuclear Engineering**

*Dr. Pamela Denkins, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States*

*Dr. Premkumar Saganti, Prairie View A&M University, Prairie View, TX, United States, Dr. Victor Obot, Texas Southern University, Houston, TX, United States, Dr. Robert Singletery, National Aeronautics and Space Administration (NASA)/Langley Research Center, Hampton, VA, United States*

## **IAC-06-E1.5.03**

### **Exploration as a Central Motivating Theme in Space Education and Outreach**

*Dr. John Farrow, International Space University (ISU), Strasbourg, France*

*Mr. Walter Peeters, International Space University (ISU), Illkirch-Graffenstaden, France*

## **IAC-06-E1.5.04**

### **Training a crew for human exploration crew training by using Mars analogue research stations**

*Mr. Ryan Kobrick, University of Colorado at Boulder, Boulder, CO, United States*

*Ms. Melissa Battler, University of New Brunswick, Fredericton, NB, Canada, Mr. Rocky Persaud, Interplanetary Expeditions (IPX) Inc., Brampton, Canada, Mr. Nicholas Wilkinson, UBC, Vancouver, Canada*

## **IAC-06-E1.5.05**

### **Engaging Students, Educators and the Public in Exploring the Moon, Mars and Beyond**

*Ms. Debbie Ladwig, National Aeronautics and Space Administration (NASA), Washington, DC, United States*

*Ms. Patricia Currier, Raytheon Technical Services Company, Washington, DC, United States, Ms. Loretta Hidalgo, Freedom Information Systems, Washington DC, United States*

## **IAC-06-E1.5.06**

### **Marsbase: A User-friendly Simulator of Human Activities on the Surface of Mars**

*Dr. Jean Marc Salotti, Laboratoire de Science Cognitive, Bordeaux, France*

## **IAC-06-E1.5.07**

### **Young Lunar Explorers group and its first project results**

*Mr. Yuki Takahashi, University of California, Berkeley, United States*

## **IAC-06-E1.5.08**

### **Space Exploration and Development Systems-SEEDS. Preparing European Experts for the Future Space Exploration**

*Prof. Ernesto Vallerani, International Space Pioneers, Miasino, Italy*

*Mrs. Bénédicte Escudier, SUPAERO- Ecole Nationale Supérieure de l'Aéronautique et de l'Espace, Toulouse, France, Dr. Stephan Theil, Center of Applied Space Technology & Microgravity, Bremen, Germany, Prof. Gianfranco Chiccochia, Politecnico di Torino, Turin, Italy*

## **IAC-06-E1.5.09**

### **Students for Exploration and Development of Space, an international student framework**

*Mr. Adolfo Vazquez, Universidad Complutense de Madrid, Madrid, Spain*

*Mr. Kirk Kittell, University of Illinois at Urbana-Champaign, Urbana, IL, United States, Ms. Maryam Aljoaan, Student, Kaifan, Kuwait, Mr. Pradeep Nair, Mumbai, India*

## IAC-06-E1.5.10

### Space Stations: Communications and Education and Their Importance in Human Spaceflight

Mr. Roger H. Weiss, National Aeronautics and Space Administration (NASA)/Johnson Space Center, Houston, TX, United States

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## October 06 2006, 10:10 - Room 14

**E6. 49th Colloquium on Law of Outer Space (IISL)**  
Coordinators: Tanja Masson-Zwaan (The Netherlands)

### E6.5. Other Legal Matters, including the Relationship between Government and Private Sector in Space Activities

Chairmen: Marco Ferrazzani (France), Maria del Carmen Munoz Rodriguez (Spain)

## IAC-06-E6.5.01

### International space law in its first half century

Mr. Stephan Hobe, Institute of Air & Space Law, Cologne, Germany

## IAC-06-E6.5.02

### Small States and Space

Prof. Dr. Francis Lyall, University of Aberdeen, Scotland, U.K., Aberdeen, U.K., United Kingdom

## IAC-06-E6.5.03

### Terrorism related to space activities

Mr. Philippe Achilleas, Institute of Space and Telecommunications Law, Sceaux, France

## IAC-06-E6.5.04

### The Future of Planetary Protection: Is There Reason For Optimism?

Mr. Leslie Tennen, Law Offices of Sterns and Tennen, Phoenix, AZ, United States  
Mrs. Patricia Sterns, Law Offices of Sterns and Tennen, Phoenix, AZ, United States

## IAC-06-E6.5.05

### For a Charter on Space as a Common Good

Ms. Mélanie Vincent, Université Paris 11, Sceaux, France

## IAC-06-E6.5.06

### Satellite Telecommunications as a Tool for Bridging the Digital Divide – Public International Law Implications

Ms. Julia Neumann, University of Cologne, Cologne, Germany

## IAC-06-E6.5.07

### State control and privatization of telecommunications: a review of international experience

Mr. Atip Latipulhayat, Monash University, Melbourne, Australia

## IAC-06-E6.5.08

### Mexico's Licensing Process For The Rights Of Transmission And Reception Of Signals Related To Bands Of Frequencies Of Foreign Satellite Systems Which Could Offer Services In National Territory

Mr. Gudino Otto, Ramirez de Arellano y Abogados, S.C. Law Firm, Mexico, D. F., Mexico

## IAC-06-E6.5.09

### Reflection on Chinese future space legislation

Mr. Haijeng Zhao, Harbin Institute of Technology, Harbin, China

Ms. Xiaodan Wu, Harbin Institute of Technology, Harbin, China

## IAC-06-E6.5.10

### Lack of national law in Iran, the main obstacle for private sector in space activities

Dr. Ali Akbar Golrounia, Aerospace Research Institute, Tehran, Iran

Prof. Mohsen Bahrami, Aerospace Research Institute, Tehran, Iran

## IAC-06-E6.5.11

### The Flight of Brazil's First Astronaut

Mr. Alvaro Fabricio Dos Santos, Instituto Nacional de Pesquisas Espaciais (INPE), Sao José dos Campos, Brazil

## IAC-06-E6.5.12

### GNSS Third Party Liability: the European experience of Galileo

Ms. Chiara Lucchini Gilera, University of Milan, Milan, Italy

Mr. Tirso Velasco, University of Valencia, Valencia, Spain

## IAC-06-E6.5.13

### Legal aspects of Galileo satellite frequencies.

Mr. Jeroen Seydel, International Institute of Air and Space Law, Leiden University, The Netherlands, Leiden, The Netherlands

Mrs. Suzanne Rosmalen, Leiden, The Netherlands

## IAC-06-E6.5.14

### Taking Garbage Outside: The Geostationary Orbit and Graveyard Orbits

Dr. Martha Mejia-Kaiser, Independent Researcher, Heinsberg, Germany

## IAC-06-E6.5.15

### In Defense of Advertising in Space

Dr. J. H. Huebert, Global-Weyer Media Company, Columbus, Ohio, United States

Dr. Walter Block, Loyola University New Orleans, New Orleans, Louisiana, United States

## IAC-06-E6.5.16

### Applying international space law precedent to space tourism, mining and settlement

Ms. Edythe Weeks, Northern Arizona University, Flagstaff, AZ, United States

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Baecker	A	17	IAC-06-A1.2.03	Becerra Ortiz	A	51	IAC-06-E6.2.A.07
Baecker	CA	17	IAC-06-A1.2.05	Beck	CA	103	IAC-06-A2.P.07
Baevsky	A	90	IAC-06-B4.4.08	Beckers	A	132	IAC-06-A1.7.-A2.7.04
Baevsky	A	102	IAC-06-A1.P.1.04	Bedard	A	8	IAC-06-B5.2.03
Baevsky	CA	68	IAC-06-A1.5.04	Beerthuisen	CA	145	IAC-06-D1.4.09
Baevsky	CA	56	IAC-06-B4.3.07	Beghin	CA	21	IAC-06-B1.2.09
Bahrani	CA	169	IAC-06-E6.5.10	Behar	CA	85	IAC-06-A1.6.04
Bahrani	CA	139	IAC-06-B6.4.06	Behar	CA	133	IAC-06-A3.P.3.06
Bailey	CA	133	IAC-06-A3.P.3.04	Behrens	CA	124	IAC-06-D2.P.2.06
Baines	CA	19	IAC-06-A3.2.04	Bei	A	8	IAC-06-B5.2.09
Baiocco	A	124	IAC-06-D2.P.2.02	Belikov	CA	13	IAC-06-D3.1.06
Bajo	A	10	IAC-06-C2.1.06	Belikov	CA	153	IAC-06-B6.P.2.04
Baker	A	54	IAC-06-A5.2.08	Bell	A	126	IAC-06-E1.P.2.02
Baker	A	21	IAC-06-B1.2.06	Bell	A	99	IAC-06-E1.3.06
Baker	CA	138	IAC-06-B5.6.06	Bell	A	14	IAC-06-D4.1.02
Baksa	CA	122	IAC-06-D1.P.1.11	Bell-McGrath	CA	102	IAC-06-A1.P.1.01
Balat Pichelin	CA	59	IAC-06-C2.4.04	Bellerose	A	74	IAC-06-C1.5.05
Balazs	CA	122	IAC-06-D1.P.1.11	Bello Mora	CA	58	IAC-06-C1.4.09
Baldo Carvalho	A	157	IAC-06-D1.P.2.01	Bello Mora	CA	24	IAC-06-B6.1.09
Balint	A	156	IAC-06-C2.P.2.07	Bello Mora	CA	106	IAC-06-A3.P.2.05
Balint	A	54	IAC-06-A5.2.06	Bello Mora	CA	117	IAC-06-C1.P.5.01
Ball	CA	107	IAC-06-A5.P.06	Belmana	CA	2	IAC-06-A2.1.04
Balogh	A	88	IAC-06-B1.6.02	Belokonov	A	22	IAC-06-B3.2.01
Balogh	A	67	IAC-06-E6.3.02	Belotserkovets	CA	43	IAC-06-C4.5.10
Balogh	A	16	IAC-06-E3.1.A.02	Beltrami	A	119	IAC-06-C2.P.1.03
Balty	A	72	IAC-06-B3.3.04	Belyayev	CA	56	IAC-06-B4.3.09
Bandera	A	77	IAC-06-C4.3.01	Bemis	CA	29	IAC-06-D2.2.09
Bandyopadhyay	A	39	IAC-06-B6.2.11	Benaroya	A	30	IAC-06-D4.2.06
Banerjee	CA	67	IAC-06-E6.3.05	Bengherbia	A	43	IAC-06-C4.5.08
Bang	CA	140	IAC-06-C1.7.02	Bengtson	CA	143	IAC-06-C4.P.4.02
Bannova	A	64	IAC-06-E3.4.08	Benítez	A	130	IAC-06-E4.P.01
Bannova	CA	64	IAC-06-E3.4.10	Benz	CA	37	IAC-06-B1.3.02
Bansal	CA	71	IAC-06-B1.5.03	Berardino	CA	63	IAC-06-E2.3.03
				Berenbach	CA	62	IAC-06-D2.4.06
				Berend	A	62	IAC-06-D2.4.09
				Berend	CA	15	IAC-06-E1.1.08
				Bergamin	A	165	IAC-06-C4.6.05
				Berge	CA	25	IAC-06-C1.2.03

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Bergeron	A	123	IAC-06-D2.P.1.01	Boehrk	A	143	IAC-06-C4.P.4.06
Bergeron	CA	154	IAC-06-C1.P.7. 02	Boese	CA	17	IAC-06-A1.2.03
Berglund	A	12	IAC-06-D2.1.05	Bogdanski	CA	122	IAC-06-D1.P.1.05
Bergouignan	A	17	IAC-06-A1.2.08	Boggiatto	A	98	IAC-06-D2.6.03
Berinstain	CA	135	IAC-06-A3.P.6.01	Bogomolov	CA	56	IAC-06-B4.3.02
Berisford	CA	143	IAC-06-C4.P.4.02	Bogomolov	CA	34	IAC-06-A1.3.02
Berland	CA	5	IAC-06-B1.1.03	Bohlmann	CA	51	IAC-06-E6.2.A.03
Bernasconi	A	90	IAC-06-B4.4.05	Boissin	CA	5	IAC-06-B1.1.04
Bernasconi	A	141	IAC-06-C2.7.03	Bolger	CA	28	IAC-06-D1.1.03
Bernasconi	A	152	IAC-06-A1.P.2.04	Bolger	CA	135	IAC-06-A3.P.6.02
Betenbaugh	A	10	IAC-06-C2.1.02	Bolik	A	15	IAC-06-E1.1.07
Bettarini	CA	61	IAC-06-D1.2.01	Bolle	CA	63	IAC-06-E2.3.03
Beutler	CA	112	IAC-06-B6.P.1.04	Bond	CA	124	IAC-06-D2.P.2.07
Bhaskaranarayana	CA	66	IAC-06-E5.1.05	Bonerba	CA	63	IAC-06-E2.3.03
Bhatt	A	84	IAC-06-E6.4.03	Bonetti	CA	123	IAC-06-D2.P.1.04
Bian	A	108	IAC-06-B1.P.1.05	Bonhomme	A	77	IAC-06-C4.3.07
Biancu	CA	4	IAC-06-A4.1.08	Bonnal	CA	44	IAC-06-D2.3.03
Biao	A	135	IAC-06-A3.P.6.07	Bonnefond	A	44	IAC-06-D2.3.08
Bieber	A	122	IAC-06-D1.P.1.02	Bonnefond	A	45	IAC-06-D3.2.02
Biesbroek	A	58	IAC-06-C1.4.02	Bonnema	CA	138	IAC-06-B5.6.07
Biesbroek	CA	122	IAC-06-D1.P.1.04	Bonnet	CA	78	IAC-06-D2.5.10
Bijiao	CA	142	IAC-06-C4.P.3.05	Bonnet	CA	10	IAC-06-C2.1.04
Bijiao	CA	120	IAC-06-C4.P.1.08	Borges	A	21	IAC-06-B1.2.05
Bik	A	40	IAC-06-C1.3.05	Borges	CA	108	IAC-06-B1.P.1.13
Bil	A	105	IAC-06-A3.P.1.01	Borisov	CA	24	IAC-06-B6.1.10
Bilbao	CA	164	IAC-06-C2.8.07	Borisova	CA	5	IAC-06-B1.1.09
Billia	A	103	IAC-06-A2.P.05	Borisova	CA	108	IAC-06-B1.P.1.02
Billings	A	149	IAC-06-E1.4.01	Boscoianu	A	83	IAC-06-E5.2.02
Billings	A	101	IAC-06-E5.3.05	Boscoianu	CA	47	IAC-06-D5.1.07
Bin	A	52	IAC-06-A1.4.04	Boscoianu	CA	144	IAC-06-C4.P.5.01
Bin	A	138	IAC-06-B5.6.13	Bosisio	CA	27	IAC-06-C4.2.01
Bindel	CA	149	IAC-06-E1.4.06	Boswell	CA	96	IAC-06-C4.4.07
Biolo	A	17	IAC-06-A1.2.02	Bottacini	A	62	IAC-06-D2.4.02
Birrane	A	145	IAC-06-D1.4.10	Bottacini	CA	123	IAC-06-D2.P.1.04
Biryukov	A	112	IAC-06-B6.P.1.01	Bou	CA	30	IAC-06-D4.2.09
Biryukov	CA	24	IAC-06-B6.1.10	Bouaziz	CA	29	IAC-06-D2.2.07
Bischof	CA	44	IAC-06-D2.3.01	Bouaziz	CA	98	IAC-06-D2.6.06
Bishop	A	1	IAC-06-A1.1.01	Bouaziz	CA	29	IAC-06-D2.2.02
Bitlloch	A	103	IAC-06-A2.P.02	Boucher	CA	87	IAC-06-A3.6.09
Bittner	CA	136	IAC-06-A5.1.03	Boulade	CA	3	IAC-06-A3.1.06
Blackwell, Jr.	CA	148	IAC-06-D5.2.05	Bounova	A	167	IAC-06-D2.7.-A3.7.09
Blackwell, Jr.	CA	148	IAC-06-D5.2.06	Bourbonniere	A	84	IAC-06-E6.4.07
Blair	CA	136	IAC-06-A5.1.07	Bourbonniere	CA	84	IAC-06-E6.4.10
Blake	CA	57	IAC-06-B5.3.08	Bourgaie	CA	62	IAC-06-D2.4.09
Blanc	CA	17	IAC-06-A1.2.08	Bourqui	A	154	IAC-06-C1.P.7. 02
Blanchard	A	26	IAC-06-C2.2.02	Bourqui	CA	123	IAC-06-D2.P.1.01
Blarre	A	25	IAC-06-C1.2.10	Boury	A	27	IAC-06-C4.2.05
Blasco	A	46	IAC-06-D4.3.08	Boury	CA	27	IAC-06-C4.2.03
Blase	CA	32	IAC-06-E3.1.B.06	Bousquet	A	139	IAC-06-B6.4.05
Blassnigg	A	131	IAC-06-E5.P.05	Bousquet	A	91	IAC-06-B5.5.03
Blinov	A	157	IAC-06-D1.P.2.02	Boussarie	CA	5	IAC-06-B1.1.04
Block	CA	169	IAC-06-E6.5.15	Bovensmann	CA	88	IAC-06-B1.6.10
Blome	A	38	IAC-06-B4.2.05	Bozic	A	78	IAC-06-D2.5.02
Blott	A	96	IAC-06-C4.4.05	Braby	CA	17	IAC-06-A1.2.07
Blott	A	73	IAC-06-B5.4.08	Bradford	CA	45	IAC-06-D3.2.01
Blott	A	104	IAC-06-A3.P.05	Bradford	CA	161	IAC-06-B3.6.05
Blott	A	161	IAC-06-B3.6.06	Bramanti	A	96	IAC-06-C4.4.07
Blott	A	108	IAC-06-B1.P.1.14	Bramanti	A	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.03
Bloudek	CA	13	IAC-06-D3.1.01	Brandhorst	A	42	IAC-06-C3.1.05
Blouvac	A	73	IAC-06-B5.4.09	Brandhorst	A	95	IAC-06-C3.4.-D3.4.02
Bo	CA	135	IAC-06-A3.P.6.07	Brassard	CA	8	IAC-06-B5.2.03
Bobe	A	68	IAC-06-A1.5.01	Brassard	CA	122	IAC-06-D1.P.1.12
Bock	A	96	IAC-06-C4.4.03	Braswell	A	159	IAC-06-E1.P.4.02
Bodemann	A	97	IAC-06-D1.3.01	Brauer	A	150	IAC-06-E3.3.06
Bodemann	CA	149	IAC-06-E1.4.02	Brauer	A	38	IAC-06-B4.2.03
Bodin	CA	87	IAC-06-A3.6.06	Breton	CA	44	IAC-06-D2.3.05
Bodin	CA	57	IAC-06-B5.3.08	Bricanes	CA	133	IAC-06-A3.P.3.08
Bodin	CA	25	IAC-06-C1.2.03	Brisson	CA	83	IAC-06-E5.2.08
Bodnár	CA	152	IAC-06-A1.P.2.05	Brisson	CA	83	IAC-06-E5.2.06
Boehme	A	86	IAC-06-A2.5.05				

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Brito	A	77	IAC-06-C4.3.10	Cadau	CA	37	IAC-06-B1.3.08
Brito	A	143	IAC-06-C4.P.4.08	Cai	CA	142	IAC-06-C4.P.3.07
Brito	A	143	IAC-06-C4.P.4.09	Cai	CA	142	IAC-06-C4.P.3.05
Brito	CA	142	IAC-06-C4.P.3.01	Cai	CA	120	IAC-06-C4.P.1.08
Brito	CA	143	IAC-06-C4.P.4.10	Cai	CA	156	IAC-06-C2.P.2.05
Broughton	CA	149	IAC-06-E1.4.05	Cai	CA	144	IAC-06-C4.P.5.04
Brovkin	CA	92	IAC-06-B6.3.04	Cai	CA	120	IAC-06-C4.P.1.06
Brown	A	60	IAC-06-C3.2.07	Calcagni	CA	143	IAC-06-C4.P.4.08
Brown	A	60	IAC-06-C3.2.06	Calder	CA	102	IAC-06-A1.P.1.05
Brox	CA	77	IAC-06-C4.3.08	Calle	CA	55	IAC-06-B1.4.03
Bruckner	CA	85	IAC-06-A1.6.04	Calle	A	133	IAC-06-A3.P.3.16
Bruhn	A	108	IAC-06-B1.P.1.06	Calle	A	54	IAC-06-A5.2.07
Bruhn	CA	138	IAC-06-B5.6.14	Calle	CA	133	IAC-06-A3.P.3.16
Bruhn	CA	138	IAC-06-B5.6.04	Cámara	CA	140	IAC-06-C1.7.06
Brumfitt	A	149	IAC-06-E1.4.09	Cámara	CA	106	IAC-06-A3.P.2.01
Brumfitt	A	101	IAC-06-E5.3.06	Cambon	CA	86	IAC-06-A2.5.02
Brumfitt	A	126	IAC-06-E1.P.2.01	Cameron	A	13	IAC-06-D3.1.03
Brumfitt	CA	160	IAC-06-E1.P.5.04	Camino	A	57	IAC-06-B5.3.08
Brumfitt	CA	99	IAC-06-E1.3.01	Camino	CA	87	IAC-06-A3.6.06
Brumfitt	CA	80	IAC-06-E1.2.06	Campbell	CA	71	IAC-06-B1.5.04
Brumfitt	CA	101	IAC-06-E5.3.03	Campbell	CA	79	IAC-06-D3.3.06
Bruniquel	A	71	IAC-06-B1.5.04	Campion	A	10	IAC-06-C2.1.07
Bruno	A	146	IAC-06-D2.8.-C3.5.-D3.5.- C4.7.01	Campolo	CA	113	IAC-06-C1.P.1.03
Bruno	A	165	IAC-06-C4.6.02	Camps	CA	108	IAC-06-B1.P.1.13
Bruzzo	CA	138	IAC-06-B5.6.09	Canalias	A	163	IAC-06-C1.8.03
Bryant	CA	88	IAC-06-B1.6.01	Canchal	CA	138	IAC-06-B5.6.01
Bryukhanov	A	62	IAC-06-D2.4.01	Cannon	CA	145	IAC-06-D1.4.08
Büchner	A	107	IAC-06-A5.P.01	Cano	A	58	IAC-06-C1.4.09
Buck	CA	55	IAC-06-B1.4.04	Cano	CA	140	IAC-06-C1.7.06
Buckley	A	56	IAC-06-B4.3.04	Cantié	CA	21	IAC-06-B1.2.04
Buckley	CA	7	IAC-06-B4.1.03	Canto	A	85	IAC-06-A1.6.05
Budnik	CA	141	IAC-06-C2.7.09	Cantoni	CA	59	IAC-06-C2.4.04
Bueno dos Santos	A	156	IAC-06-C2.P.2.02	Caparrini	A	37	IAC-06-B1.3.06
Buffington	A	93	IAC-06-C1.6.05	Caparrini	CA	55	IAC-06-B1.4.04
Buffington	CA	106	IAC-06-A3.P.2.08	Caporicci	CA	62	IAC-06-D2.4.02
Buhler	CA	133	IAC-06-A3.P.3.16	Caporicci	CA	78	IAC-06-D2.5.04
Buhler	CA	54	IAC-06-A5.2.07	Caramagno	CA	140	IAC-06-C1.7.06
Bukley	CA	34	IAC-06-A1.3.03	Caramagno	CA	106	IAC-06-A3.P.2.01
Bulanenko	CA	153	IAC-06-B6.P.2.04	Cardenas	A	168	IAC-06-E1.5.01
Bulanov	CA	157	IAC-06-D1.P.2.05	Cardenas	A	14	IAC-06-D4.1.07
Bulgarelli	CA	73	IAC-06-B5.4.06	Carmina	CA	85	IAC-06-A1.6.05
Bulgarelli	CA	15	IAC-06-E1.1.10	Carnelli	CA	70	IAC-06-A3.5.05
Bullock	A	15	IAC-06-E1.1.08	Carnicero	CA	93	IAC-06-C1.6.09
Bultel	CA	98	IAC-06-D2.6.04	Domínguez			
Bunte	A	119	IAC-06-C2.P.1.04	Caro	A	143	IAC-06-C4.P.4.12
Bunte	CA	92	IAC-06-B6.3.09	Carosio	CA	66	IAC-06-E5.1.03
Bunzeluk	CA	1	IAC-06-A1.1.01	Carpenter	CA	95	IAC-06-C3.4.-D3.4.02
Buravkova	A	52	IAC-06-A1.4.01	Carpi	CA	28	IAC-06-D1.1.05
Burdakov	CA	120	IAC-06-C4.P.1.09	Carpi	CA	28	IAC-06-D1.1.06
Buret	CA	22	IAC-06-B3.2.04	Carr	CA	36	IAC-06-A3.3.07
Burke	A	131	IAC-06-E5.P.03	Carrera	CA	103	IAC-06-A2.P.01
Burris	A	167	IAC-06-D2.7.-A3.7.02	Carrigan	A	4	IAC-06-A4.1.12
Burris	A	123	IAC-06-D2.P.1.02	Carrijo	CA	12	IAC-06-D2.1.08
Burris	A	98	IAC-06-D2.6.02	Carroll	CA	17	IAC-06-A1.2.07
Burris	A	29	IAC-06-D2.2.01	Carrozza	CA	34	IAC-06-A1.3.08
Burris	A	62	IAC-06-D2.4.04	Carrus	CA	164	IAC-06-C2.8.05
Burris	CA	167	IAC-06-D2.7.-A3.7.04	Cartier, LL.M.	A	33	IAC-06-E6.1.08
Burris	CA	167	IAC-06-D2.7.-A3.7.01	Cartmell	CA	46	IAC-06-D4.3.07
Burris	CA	167	IAC-06-D2.7.-A3.7.05	Cartmell	CA	45	IAC-06-D3.2.06
Burris	CA	167	IAC-06-D2.7.-A3.7.03	Cartmell	CA	46	IAC-06-D4.3.03
Burt	CA	167	IAC-06-D2.7.-A3.7.02	Casademunt	CA	103	IAC-06-A2.P.02
Burzykowska	A	128	IAC-06-E3.P.3.01	Casademunt	CA	103	IAC-06-A2.P.01
Bussard	A	146	IAC-06-D2.8.-C3.5.-D3.5.- C4.7.05	Casas	CA	30	IAC-06-D4.2.09
Busuiocanu	CA	102	IAC-06-A1.P.1.07	Casas	A	81	IAC-06-E3.2.08
Buttfield	CA	28	IAC-06-D1.1.05	Cash	CA	104	IAC-06-A3.P.06
Buzzard	A	38	IAC-06-B4.2.07	Casini	CA	61	IAC-06-D1.2.01
				Casolino	CA	132	IAC-06-A1.7.-A2.7.01
				Casotto	CA	58	IAC-06-C1.4.05

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Cassandra	CA	128	IAC-06-E3.P.3.03	Christiansen	A	92	IAC-06-B6.3.05
Cassandra	CA	70	IAC-06-A3.5.07	Christiansen	CA	92	IAC-06-B6.3.03
Castagnolo	A	132	IAC-06-A1.7.-A2.7.01	Christoforov	CA	165	IAC-06-C4.6.03
Castejon Garcia	A	119	IAC-06-C2.P.1.05	Chu-Thielbar	CA	147	IAC-06-D3.P.04
Castejon Garcia	CA	94	IAC-06-C2.6.10	Chuan	CA	156	IAC-06-C2.P.2.05
Castejon Garcia	CA	156	IAC-06-C2.P.2.02	Chun	CA	43	IAC-06-C4.5.05
Castillan	CA	73	IAC-06-B5.4.09	Chung	CA	108	IAC-06-B1.P.1.01
Castronuovo	CA	37	IAC-06-B1.3.08	Chung	CA	122	IAC-06-D1.P.1.01
Catalano Sgrosso	A	84	IAC-06-E6.4.04	Chunhua	CA	59	IAC-06-C2.4.08
Catanzaro	CA	13	IAC-06-D3.1.03	Chuvieco	CA	55	IAC-06-B1.4.03
Catanzaro	CA	145	IAC-06-D1.4.02	Cianfanelli	CA	142	IAC-06-C4.P.3.02
Cecchi	A	4	IAC-06-A4.1.09	Ciarcia	CA	140	IAC-06-C1.7.03
Cefola	CA	22	IAC-06-B3.2.02	Ciofani	A	34	IAC-06-A1.3.08
Cefola	CA	137	IAC-06-B3.5.06	Citi	CA	28	IAC-06-D1.1.05
Cefola	CA	74	IAC-06-C1.5.02	Clacey	CA	136	IAC-06-A5.1.03
Ceriotti	A	107	IAC-06-A5.P.02	Clacey	CA	21	IAC-06-B1.2.07
Cervone	CA	55	IAC-06-B1.4.09	Clark	A	54	IAC-06-A5.2.02
Cha	CA	18	IAC-06-A2.2.06	Claudel	A	12	IAC-06-D2.1.02
Chamberlain	CA	133	IAC-06-A3.P.3.04	Claverie	A	150	IAC-06-E3.3.07
Chamon	A	8	IAC-06-B5.2.01	Cledassou	CA	3	IAC-06-A3.1.08
Champlaud	CA	75	IAC-06-C2.5.04	Clement	A	34	IAC-06-A1.3.03
Chandrasekhar	CA	72	IAC-06-B3.3.01	Clement	A	1	IAC-06-A1.1.06
Chang	A	62	IAC-06-D2.4.10	Clement	A	80	IAC-06-E1.2.01
Chapkin	CA	17	IAC-06-A1.2.07	Cliquet	CA	15	IAC-06-E1.1.08
Chappell	A	157	IAC-06-D1.P.2.03	Cloutet	CA	27	IAC-06-C4.2.03
Charania	A	64	IAC-06-E3.4.01	Cocho	CA	37	IAC-06-B1.3.09
Charles	CA	96	IAC-06-C4.4.07	Cocho	CA	40	IAC-06-C1.3.01
Charles	CA	132	IAC-06-A1.7.-A2.7.09	Codan	A	119	IAC-06-C2.P.1.09
Chasset	A	25	IAC-06-C1.2.03	Coe	CA	26	IAC-06-C2.2.05
Chavagnac	A	29	IAC-06-D2.2.02	Cohen	A	88	IAC-06-B1.6.08
Chavagnac	A	98	IAC-06-D2.6.04	Coldwell	CA	4	IAC-06-A4.1.11
Chavagnac	CA	167	IAC-06-D2.7.-A3.7.07	Coldwell	CA	4	IAC-06-A4.1.10
Chavagnac	CA	78	IAC-06-D2.5.08	Coleman	A	82	IAC-06-E4.2.04
Chavero	CA	138	IAC-06-B5.6.08	Coleman	CA	65	IAC-06-E4.1.02
Chen	A	77	IAC-06-C4.3.09	Coleshill	A	90	IAC-06-B4.4.03
Chen	A	142	IAC-06-C4.P.3.06	Coleshill	CA	38	IAC-06-B4.2.02
Chen	CA	120	IAC-06-C4.P.1.03	Coletto	A	75	IAC-06-C2.5.03
Chen	CA	27	IAC-06-C4.2.06	Coletto	CA	164	IAC-06-C2.8.07
Chen	CA	99	IAC-06-E1.3.05	Collard-Wexler	CA	150	IAC-06-E3.3.02
Chen	CA	69	IAC-06-A2.4.02	Collon	CA	106	IAC-06-A3.P.2.09
Chen	A	57	IAC-06-B5.3.05	Colmenarejo	CA	93	IAC-06-C1.6.02
Chen	CA	135	IAC-06-A3.P.6.06	Colmenarejo	CA	140	IAC-06-C1.7.09
Chen	CA	140	IAC-06-C1.7.07	Colombo	CA	27	IAC-06-C4.2.01
Cheng	A	108	IAC-06-B1.P.1.12	Colombo	A	70	IAC-06-A3.5.08
Cheng	A	41	IAC-06-C2.3.02	Colombo	CA	27	IAC-06-C4.2.01
Chern	A	99	IAC-06-E1.3.05	Colombo	CA	27	IAC-06-C4.2.07
Chern	A	131	IAC-06-E5.P.04	Coman	A	144	IAC-06-C4.P.5.01
Chern	A	57	IAC-06-B5.3.04	Coman	CA	83	IAC-06-E5.2.02
Chernikova	CA	68	IAC-06-A1.5.04	Comoretto	CA	6	IAC-06-B3.1.05
Chertok	CA	38	IAC-06-B4.2.04	Compostizo	CA	133	IAC-06-A3.P.3.08
Chester	A	159	IAC-06-E1.P.4.03	Conley	CA	52	IAC-06-A1.4.05
Chester	A	166	IAC-06-D1.5.04	Contini	CA	78	IAC-06-D2.5.10
Chester	A	118	IAC-06-C1.P.6.02	Contreras Fernan-	A	167	IAC-06-D2.7.-A3.7.10
Cheung	CA	89	IAC-06-B3.4.01	dez			
Chhun	CA	2	IAC-06-A2.1.01	Cook	A	162	IAC-06-B5.7.01
Chiappa	CA	66	IAC-06-E5.1.03	Cook	A	162	IAC-06-B5.7.02
Chinen	CA	120	IAC-06-C4.P.1.02	Cook	CA	122	IAC-06-D1.P.1.08
Chiocchia	CA	168	IAC-06-E1.5.08	Cook	CA	164	IAC-06-C2.8.12
Cho	CA	108	IAC-06-B1.P.1.01	Cook	A	167	IAC-06-D2.7.-A3.7.04
Cho	CA	60	IAC-06-C3.2.02	Coppotelli	A	41	IAC-06-C2.3.03
Chobotov	A	46	IAC-06-D4.3.05	Corban	CA	2	IAC-06-A2.1.07
Choi	A	120	IAC-06-C4.P.1.07	Corbella	CA	108	IAC-06-B1.P.1.13
Choi	A	36	IAC-06-A3.3.03	Corbelli	CA	114	IAC-06-C1.P.2.03
Chou	CA	41	IAC-06-C2.3.02	Corlay	A	133	IAC-06-A3.P.3.11
Chouinard	A	128	IAC-06-E3.P.3.04	Cornara	A	93	IAC-06-C1.6.09
Chouinard	A	67	IAC-06-E6.3.13	Corradi	A	61	IAC-06-D1.2.04
Christa	CA	145	IAC-06-D1.4.08	Corsaro	CA	92	IAC-06-B6.3.10
Christensen	CA	82	IAC-06-E4.2.04	Cosmen	CA	161	IAC-06-B3.6.02
Christian	A	28	IAC-06-D1.1.07	Schort-			
Christiansen	A	153	IAC-06-B6.P.2.02	mann			
				Cosmovici	A	4	IAC-06-A4.1.07

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Cosmovici	CA	4	IAC-06-A4.1.08
Costa Franco Jr.	CA	75	IAC-06-C2.5.06
Coste	CA	107	IAC-06-A5.P.06
Costessi	A	52	IAC-06-A1.4.08
Couckuyt	CA	132	IAC-06-A1.7.-A2.7.04
Cougnet	A	145	IAC-06-D1.4.04
Court	A	37	IAC-06-B1.3.03
Court	CA	37	IAC-06-B1.3.07
Cowan-Sharp	CA	6	IAC-06-B3.1.04
Cowan-Sharp	CA	127	IAC-06-E3.P.1.02
Cozart	CA	62	IAC-06-D2.4.10
Crawford	A	117	IAC-06-C1.P.5.03
Crawford	A	164	IAC-06-C2.8.12
Crawley	CA	97	IAC-06-D1.3.07
Crawley	CA	13	IAC-06-D3.1.03
Crawley	CA	167	IAC-06-D2.7.-A3.7.06
Crawley	CA	145	IAC-06-D1.4.02
Cretella	CA	141	IAC-06-C2.7.10
Crisp	CA	133	IAC-06-A3.P.3.04
Cristoiu, LL.M.	CA	33	IAC-06-E6.1.08
Crowley	CA	57	IAC-06-B5.3.05
Crumpler	CA	95	IAC-06-C3.4.-D3.4.02
Cruz Gomez	CA	55	IAC-06-B1.4.02
Csengeri	A	31	IAC-06-E2.1.06
Csoke	CA	152	IAC-06-A1.P.2.05
Cugno	CA	61	IAC-06-D1.2.04
Cugno	CA	38	IAC-06-B4.2.09
Cui	CA	116	IAC-06-C1.P.4.02
Cui	CA	134	IAC-06-A3.P.5.01
Cui	CA	58	IAC-06-C1.4.08
Cui	CA	87	IAC-06-A3.6.07
Cui	CA	104	IAC-06-A3.P.02
Cunningham	CA	75	IAC-06-C2.5.02
Cunningham	CA	41	IAC-06-C2.3.10
Currier	CA	168	IAC-06-E1.5.05
Curto	CA	164	IAC-06-C2.8.01
Cutts	CA	156	IAC-06-C2.P.2.07
Czegledy	CA	131	IAC-06-E5.P.05

## D

D Arrigo	CA	70	IAC-06-A3.5.06
D Arrigo	CA	3	IAC-06-A3.1.07
D Errico	A	155	IAC-06-C1.P.8.01
D Errico	CA	138	IAC-06-B5.6.15
D Errico	CA	162	IAC-06-B5.7.04
D Hoedt	CA	106	IAC-06-A3.P.2.02
D'Amico	CA	163	IAC-06-C1.8.06
da Costa	CA	98	IAC-06-D2.6.03
Da Fonseca	A	41	IAC-06-C2.3.06
da Silva Curiel	A	73	IAC-06-B5.4.10
da Silva Curiel	A	57	IAC-06-B5.3.01
da Silva Curiel	A	23	IAC-06-B5.1.02
da Silva Curiel	A	8	IAC-06-B5.2.04
da Silva Curiel	CA	138	IAC-06-B5.6.02
Daal	A	158	IAC-06-E1.P.3.02
Dachwald	CA	96	IAC-06-C4.4.04
Dachwald	CA	106	IAC-06-A3.P.2.06
Daehler	CA	161	IAC-06-B3.6.10
Dajun	A	156	IAC-06-C2.P.2.05
Dajun	A	144	IAC-06-C4.P.5.04
Daly	CA	36	IAC-06-A3.3.03
Daniel	A	164	IAC-06-C2.8.11
Dario	CA	34	IAC-06-A1.3.08
Dario	CA	28	IAC-06-D1.1.05
Dashora	CA	107	IAC-06-A5.P.05
Davies	A	161	IAC-06-B3.6.05
Davies	CA	21	IAC-06-B1.2.06

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Davighi	CA	95	IAC-06-C3.4.-D3.4.03
Davis	CA	167	IAC-06-D2.7.-A3.7.04
Davis	CA	98	IAC-06-D2.6.02
Dawson	CA	163	IAC-06-C1.8.06
Dawson	CA	1	IAC-06-A1.1.01
De Alessandro	CA	143	IAC-06-C4.P.4.08
De Angelis	A	152	IAC-06-A1.P.2.09
De Angelis	A	132	IAC-06-A1.7.-A2.7.03
de Brabander	CA	83	IAC-06-E5.2.06
de Bruijn	A	158	IAC-06-E1.P.3.01
De Bruin	A	87	IAC-06-A3.6.06
De Bruin	CA	57	IAC-06-B5.3.08
de Fatima	CA	24	IAC-06-B6.1.04
Dominguez			
Palmero			
De Florio	CA	163	IAC-06-C1.8.06
De Gieter	CA	35	IAC-06-A2.3.01
de Groot	CA	161	IAC-06-B3.6.10
de Haro Ariet	CA	6	IAC-06-B3.1.08
De Korver	A	11	IAC-06-C4.1.02
De la Torre	A	85	IAC-06-A1.6.02
de Lafontaine	CA	140	IAC-06-C1.7.01
de Lafontaine	A	154	IAC-06-C1.P.7. 03
De Laurentiis	A	66	IAC-06-E5.1.03
de Leon	CA	24	IAC-06-B6.1.04
De Matteis	A	124	IAC-06-D2.P.2.04
De Micco	A	68	IAC-06-A1.5.07
de Negueruela	CA	28	IAC-06-D1.1.05
De Oliveira Pontes	CA	156	IAC-06-C2.P.2.02
De Pascale	A	15	IAC-06-E1.1.05
de Pascale	CA	3	IAC-06-A3.1.04
de Pascale	CA	163	IAC-06-C1.8.07
de Pascale	CA	58	IAC-06-C1.4.05
De Paula	CA	6	IAC-06-B3.1.03
De Rose	A	149	IAC-06-E1.4.02
De Rose	CA	97	IAC-06-D1.3.01
De Rose	CA	161	IAC-06-B3.6.03
De Rossi	CA	28	IAC-06-D1.1.05
De Rossi	CA	28	IAC-06-D1.1.06
De Stefano Fumo	CA	123	IAC-06-D2.P.1.08
de Vicente	CA	138	IAC-06-B5.6.01
de Vries	A	37	IAC-06-B1.3.07
de Weck	CA	79	IAC-06-D3.3.03
de Weck	CA	145	IAC-06-D1.4.03
de Weck	CA	97	IAC-06-D1.3.08
de Weck	CA	167	IAC-06-D2.7.-A3.7.09
de Weck	CA	79	IAC-06-D3.3.01
Dean	CA	143	IAC-06-C4.P.4.09
Debus	A	133	IAC-06-A3.P.3.03
deCastro	CA	108	IAC-06-B1.P.1.03
Deems	A	57	IAC-06-B5.3.06
Defoort	CA	62	IAC-06-D2.4.09
Degtyarev	CA	91	IAC-06-B5.5.10
Degtyarev	CA	12	IAC-06-D2.1.04
Dehant	CA	106	IAC-06-A3.P.2.04
Dejoie	CA	91	IAC-06-B5.5.03
del Cura	A	93	IAC-06-C1.6.02
del Cura	A	163	IAC-06-C1.8.08
del Cura	CA	74	IAC-06-C1.5.04
del Cura	CA	93	IAC-06-C1.6.01
Del Gaudio	A	31	IAC-06-E2.1.05
Del Vecchio	CA	59	IAC-06-C2.4.04
Del Vecchio	CA	59	IAC-06-C2.4.05
Del Vecchio Blanco	A	138	IAC-06-B5.6.15
Del Vecchio Blanco	A	162	IAC-06-B5.7.04
Delelis	CA	133	IAC-06-A3.P.3.11
Della Torre	CA	87	IAC-06-A3.6.08
Della Torre	CA	136	IAC-06-A5.1.04
DeLuca	A	142	IAC-06-C4.P.3.02
DeLuca	A	27	IAC-06-C4.2.01



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DeLuca	A	27	IAC-06-C4.2.07
DeLuca	CA	142	IAC-06-C4.P.3.04
DeLuca	CA	142	IAC-06-C4.P.3.03
DeLuca	CA	77	IAC-06-C4.3.03
DeLuca	CA	77	IAC-06-C4.3.01
Deme	CA	152	IAC-06-A1.P.2.05
Demets	CA	35	IAC-06-A2.3.01
Dempsey	A	33	IAC-06-E6.1.13
Denaro	CA	59	IAC-06-C2.4.02
Deniel	CA	21	IAC-06-B1.2.09
Denkins	A	168	IAC-06-E1.5.02
Denning	A	20	IAC-06-A4.2.02
DePasquale	CA	64	IAC-06-E3.4.01
Derechin	A	90	IAC-06-B4.4.01
Derz	A	133	IAC-06-A3.P.3.05
Desaraju	A	72	IAC-06-B3.3.01
Deschamps	A	8	IAC-06-B5.2.07
Deshevaya	CA	68	IAC-06-A1.5.06
Deshevaya	CA	152	IAC-06-A1.P.2.07
Désilets	CA	42	IAC-06-C3.1.07
Destro	CA	125	IAC-06-E1.P.1.02
Di Benedetto	CA	98	IAC-06-D2.6.08
Di Clemente	A	98	IAC-06-D2.6.08
Di Clemente	CA	59	IAC-06-C2.4.05
Di Francescantonio	CA	35	IAC-06-A2.3.03
Di Sotto	A	140	IAC-06-C1.7.06
Di Sotto	A	106	IAC-06-A3.P.2.01
Di Sotto	A	116	IAC-06-C1.P.4.04
Di Trapani	CA	141	IAC-06-C2.7.10
Diaz	CA	93	IAC-06-C1.6.07
Dick	A	20	IAC-06-A4.2.01
Dick	A	82	IAC-06-E4.2.03
Dick	A	131	IAC-06-E5.P.08
Diedrich	CA	68	IAC-06-A1.5.04
Dieker	CA	41	IAC-06-C2.3.08
Diekmann	CA	148	IAC-06-D5.2.05
Diekmann	CA	148	IAC-06-D5.2.06
Diepold	CA	108	IAC-06-B1.P.1.11
Dillon	A	32	IAC-06-E3.1.B.05
Dittberner	CA	88	IAC-06-B1.6.01
Dittberner	CA	88	IAC-06-B1.6.07
Dittrich	CA	59	IAC-06-C2.4.10
Diwakar	CA	71	IAC-06-B1.5.09
Dixon	CA	99	IAC-06-E1.3.03
Djojodihardjo	A	41	IAC-06-C2.3.09
Djojodihardjo	A	23	IAC-06-B5.1.05
Dodel	CA	6	IAC-06-B3.1.02
Doherty	CA	7	IAC-06-B4.1.03
Doldirina	CA	67	IAC-06-E6.3.08
Domingo	CA	85	IAC-06-A1.6.05
Dominguez	CA	143	IAC-06-C4.P.4.08
Domínguez Santos	CA	53	IAC-06-A3.4.05
Doncheva	CA	103	IAC-06-A2.P.06
Dondé	CA	27	IAC-06-C4.2.07
Dong	A	104	IAC-06-A3.P.02
Dong	A	122	IAC-06-D1.P.1.07
Dorado Gutierrez	A	49	IAC-06-E4.4.02
Dormal	CA	164	IAC-06-C2.8.05
Dos Santos	A	169	IAC-06-E6.5.11
dos Santos	CA	103	IAC-06-A2.P.07
dos Santos	CA	119	IAC-06-C2.P.1.06
Dougherty	A	82	IAC-06-E4.2.05
Dougherty	A	125	IAC-06-E1.P.1.05
Doyle	CA	26	IAC-06-C2.2.05
Doyon	CA	122	IAC-06-D1.P.1.12
Dragas	A	22	IAC-06-B3.2.06
Drain	A	22	IAC-06-B3.2.02
Drain	A	137	IAC-06-B3.5.06
Drescher	CA	68	IAC-06-A1.5.04
Drolshagen	CA	119	IAC-06-C2.P.1.04

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Drossart	CA	19	IAC-06-A3.2.04
Duan	CA	122	IAC-06-D1.P.1.07
Dubois	A	53	IAC-06-A3.4.02
Dubourg	CA	91	IAC-06-B5.5.03
Dubrovskiy	A	2	IAC-06-A2.1.05
Duchon	CA	3	IAC-06-A3.1.08
Duclos	CA	86	IAC-06-A2.5.02
Duelli	CA	143	IAC-06-C4.P.4.09
Dufey	A	106	IAC-06-A3.P.2.02
Dufour	CA	26	IAC-06-C2.2.02
Duggan	CA	38	IAC-06-B4.2.05
Dugin	CA	112	IAC-06-B6.P.1.03
Dumesnil	CA	83	IAC-06-E5.2.08
DuMond	A	102	IAC-06-A1.P.1.08
DuMond	CA	52	IAC-06-A1.4.07
Dünne	A	68	IAC-06-A1.5.05
Dunne	CA	37	IAC-06-B1.3.06
Dupas	A	32	IAC-06-E3.1.B.01
Dupont	CA	15	IAC-06-E1.1.08
Dupuis	CA	75	IAC-06-C2.5.04
Dupuis	CA	122	IAC-06-D1.P.1.12
Dupuis	CA	135	IAC-06-A3.P.6.01
Dupy	CA	139	IAC-06-B6.4.05
Durao	A	23	IAC-06-B5.1.06
Dushin	CA	69	IAC-06-A2.4.06
Dutil	A	20	IAC-06-A4.2.04
Dutta	CA	164	IAC-06-C2.8.11
Dyrkoren	CA	38	IAC-06-B4.2.01

## E

Eagleson	CA	8	IAC-06-B5.2.07
Easton	A	102	IAC-06-A1.P.1.05
Eckardt	CA	37	IAC-06-B1.3.02
Eckardt	A	161	IAC-06-B3.6.03
Eckert	A	81	IAC-06-E3.2.03
Edberg	A	105	IAC-06-A3.P.1.04
Edberg	CA	3	IAC-06-A3.1.01
Edgell	A	52	IAC-06-A1.4.02
Edwards	A	6	IAC-06-B3.1.03
Edwards	CA	148	IAC-06-D5.2.05
Edwards	CA	148	IAC-06-D5.2.06
Egbers	CA	18	IAC-06-A2.2.05
Eggins	CA	1	IAC-06-A1.1.01
Egorov	CA	35	IAC-06-A2.3.04
Ehrenfreund	A	85	IAC-06-A1.6.07
Eichstadt	A	79	IAC-06-D3.3.06
Eickhoff	A	97	IAC-06-D1.3.02
Ejova	A	33	IAC-06-E6.1.02
Elaskar	A	142	IAC-06-C4.P.3.01
Elaskar	A	144	IAC-06-C4.P.5.02
Elaskar	A	143	IAC-06-C4.P.4.10
Elaskar	CA	77	IAC-06-C4.3.10
Elaskar	CA	143	IAC-06-C4.P.4.09
Ellery	CA	149	IAC-06-E1.4.04
Ellery	CA	54	IAC-06-A5.2.08
Ellery	CA	133	IAC-06-A3.P.3.12
Elliot	CA	75	IAC-06-C2.5.07
Elliott	A	20	IAC-06-A4.2.06
Ellis	A	154	IAC-06-C1.P.7. 04
Elms	A	152	IAC-06-A1.P.2.02
Emvin	A	77	IAC-06-C4.3.08
Enderle	A	163	IAC-06-C1.8.06
Engel	A	73	IAC-06-B5.4.05
Engel	CA	107	IAC-06-A5.P.01
Engelen	CA	48	IAC-06-E2.2.04
Engelen	CA	124	IAC-06-D2.P.2.03
Enokuchi	CA	76	IAC-06-C3.3.04

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Enya	CA	26	IAC-06-C2.2.07
Ereau	A	72	IAC-06-B3.3.06
Erhard	A	16	IAC-06-E3.1.A.01
Escobar	CA	63	IAC-06-E2.3.04
Escudero	CA	37	IAC-06-B1.3.07
Escudier	CA	168	IAC-06-E1.5.08
Escudier	CA	125	IAC-06-E1.P.1.03
Esnault	CA	27	IAC-06-C4.2.03
Esper	CA	73	IAC-06-B5.4.04
Espindola Antunes	A	108	IAC-06-B1.P.1.04
Espinosa	CA	44	IAC-06-D2.3.03
Esquivel de Cocca	A	84	IAC-06-E6.4.06
Estabrooks	CA	150	IAC-06-E3.3.02
Evans	A	166	IAC-06-D1.5.05
Eymar	A	81	IAC-06-E3.2.05

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Fabbri	CA	114	IAC-06-C1.P.2.03
Fabrega	CA	19	IAC-06-A3.2.02
Fabry	CA	3	IAC-06-A3.1.04
Fahem	CA	12	IAC-06-D2.1.02
Fairbend	CA	106	IAC-06-A3.P.2.09
Falcao	CA	103	IAC-06-A2.P.07
Falcinelli	CA	144	IAC-06-C4.P.5.02
Falcinelli	CA	143	IAC-06-C4.P.4.10
Falke	CA	97	IAC-06-D1.3.02
Falzon	CA	26	IAC-06-C2.2.02
Fang	CA	135	IAC-06-A3.P.6.09
Faragalli	CA	135	IAC-06-A3.P.6.04
Faraminan Gilbert	CA	67	IAC-06-E6.3.03
Farrés	CA	37	IAC-06-B1.3.06
Farrés	CA	55	IAC-06-B1.4.04
Farrow	A	168	IAC-06-E1.5.03
Fasano	CA	155	IAC-06-C1.P.8.01
Fatuev	A	120	IAC-06-C4.P.1.05
Faye	CA	3	IAC-06-A3.1.03
Faye	CA	19	IAC-06-A3.2.08
Fea	CA	149	IAC-06-E1.4.03
Fearn	CA	96	IAC-06-C4.4.07
Fearn	CA	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.03
Fedorenko	CA	63	IAC-06-E2.3.05
Fedotov	CA	107	IAC-06-A5.P.08
Fei	CA	164	IAC-06-C2.8.06
Fei	CA	121	IAC-06-C4.P.2.01
Feili	A	143	IAC-06-C4.P.4.05
Fenglong	A	142	IAC-06-C4.P.3.05
Fenglong	CA	120	IAC-06-C4.P.1.08
Ferencz	CA	56	IAC-06-B4.3.09
Ferguson	CA	42	IAC-06-C3.1.05
Fernández	CA	163	IAC-06-C1.8.05
Fernández	CA	93	IAC-06-C1.6.09
Fernández Ibarz	A	140	IAC-06-C1.7.09
Fernández-Calvo	CA	133	IAC-06-A3.P.3.08
Ferraiuolo	A	10	IAC-06-C2.1.08
Ferrando	CA	3	IAC-06-A3.1.08
Ferrera	A	69	IAC-06-A2.4.01
Ferrera	A	69	IAC-06-A2.4.08
Ferretti	A	38	IAC-06-B4.2.09
Ferretti	CA	61	IAC-06-D1.2.04
Ferrez	CA	28	IAC-06-D1.1.05
Ferri	A	70	IAC-06-A3.5.03
Ferworn	CA	90	IAC-06-B4.4.03
Feyeux	A	97	IAC-06-D1.3.03
Fichna	CA	92	IAC-06-B6.3.09
Fiedler	CA	163	IAC-06-C1.8.06
Fiedler	CA	37	IAC-06-B1.3.05

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Figgess	CA	3	IAC-06-A3.1.04
Figueroa	CA	71	IAC-06-B1.5.04
Fikes	A	79	IAC-06-D3.3.08
Filatyeve	A	26	IAC-06-C2.2.08
Filatyeve	CA	64	IAC-06-E3.4.03
Finarelli	CA	32	IAC-06-E3.1.B.03
Finogenov	A	120	IAC-06-C4.P.1.09
Finogenov	A	76	IAC-06-C3.3.07
Finogenov	CA	11	IAC-06-C4.1.09
Finzi	CA	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.07
Finzi	CA	95	IAC-06-C3.4.-D3.4.03
Finzi	A	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.07
Finzi	A	95	IAC-06-C3.4.-D3.4.03
Finzi	A	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.04
Finzi	A	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.08
Fiorucci	A	31	IAC-06-E2.1.01
Firer	CA	122	IAC-06-D1.P.1.05
Flamini	CA	4	IAC-06-A4.1.07
Flegel	CA	39	IAC-06-B6.2.01
Flohrer	A	24	IAC-06-B6.1.01
Flohrer	CA	24	IAC-06-B6.1.04
Florin	A	86	IAC-06-A2.5.07
Florin	CA	35	IAC-06-A2.3.02
Flury	CA	24	IAC-06-B6.1.04
Flynn	CA	123	IAC-06-D2.P.1.02
Foerstner	A	19	IAC-06-A3.2.07
Foing	A	107	IAC-06-A5.P.07
Foing	A	87	IAC-06-A3.6.05
Foing	A	136	IAC-06-A5.1.08
Foing	A	133	IAC-06-A3.P.3.01
Foisy	CA	8	IAC-06-B5.2.07
Forcada	A	5	IAC-06-B1.1.03
Ford	CA	17	IAC-06-A1.2.07
Förster	CA	37	IAC-06-B1.3.02
Fortezza	CA	35	IAC-06-A2.3.03
Fortezza	CA	132	IAC-06-A1.7.-A2.7.01
Fortov	CA	56	IAC-06-B4.3.06
Foruria	CA	66	IAC-06-E5.1.01
Foster	A	124	IAC-06-D2.P.2.05
Foucalt	CA	59	IAC-06-C2.4.03
Fountain	CA	166	IAC-06-D1.5.03
Fox	A	90	IAC-06-B4.4.02
Fragnito	A	78	IAC-06-D2.5.10
Fragnito	A	10	IAC-06-C2.1.04
Francesconi	A	59	IAC-06-C2.4.02
Franck	CA	98	IAC-06-D2.6.03
Frankford	CA	122	IAC-06-D1.P.1.05
Fratoni	A	141	IAC-06-C2.7.10
Freeborn	CA	123	IAC-06-D2.P.1.05
Freeland	A	84	IAC-06-E6.4.09
Freitas	CA	26	IAC-06-C2.2.01
Frenkiel	A	40	IAC-06-C1.3.07
Frezza	CA	164	IAC-06-C2.8.02
Fricker	CA	80	IAC-06-E1.2.01
Frigot	CA	96	IAC-06-C4.4.07
Frings	CA	17	IAC-06-A1.2.03
Frings	CA	17	IAC-06-A1.2.05
Fu Danying	A	37	IAC-06-B1.3.01
Fujii	CA	133	IAC-06-A3.P.3.07
Fujino	A	76	IAC-06-C3.3.06
Fujita	CA	43	IAC-06-C4.5.02
Fujita	A	112	IAC-06-B6.P.1.05
Fujita	A	76	IAC-06-C3.3.08
Fujita	CA	42	IAC-06-C3.1.04
Fujiwara	CA	70	IAC-06-A3.5.02
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Fukuyama	CA	18	IAC-06-A2.2.09
Fukuzoe	CA	123	IAC-06-D2.P.1.07
Funane	CA	76	IAC-06-C3.3.04
Funase	CA	76	IAC-06-C3.3.04
Funtova	CA	68	IAC-06-A1.5.04
Funtova	CA	90	IAC-06-B4.4.08
Furuya	A	26	IAC-06-C2.2.10
Furuya	CA	75	IAC-06-C2.5.10
Futterer	A	18	IAC-06-A2.2.05

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Gafka	CA	89	IAC-06-B3.4.06
Gajdachuk	CA	119	IAC-06-C2.P.1.11
Gajdachuk	CA	119	IAC-06-C2.P.1.11
Gajewski	CA	52	IAC-06-A1.4.06
Galaktionov	A	44	IAC-06-D2.3.07
Galfetti	A	77	IAC-06-C4.3.03
Galfetti	CA	27	IAC-06-C4.2.01
Galfetti	CA	142	IAC-06-C4.P.3.03
Galfetti	CA	27	IAC-06-C4.2.07
Galian	CA	143	IAC-06-C4.P.4.08
Galik	CA	91	IAC-06-B5.5.02
Galinsky	CA	43	IAC-06-C4.5.10
Gallicchio	CA	4	IAC-06-A4.1.11
Gallicchio	CA	4	IAC-06-A4.1.10
Galvez	A	70	IAC-06-A3.5.05
Gandia	CA	93	IAC-06-C1.6.02
Gandia	CA	93	IAC-06-C1.6.01
Ganzer	A	61	IAC-06-D1.2.08
Gao	CA	26	IAC-06-C2.2.06
Gao	CA	54	IAC-06-A5.2.08
Garcia	CA	12	IAC-06-D2.1.08
Garcia	CA	108	IAC-06-B1.P.1.13
Garcia Primo	CA	72	IAC-06-B3.3.03
Garcia Sancho	CA	85	IAC-06-A1.6.02
Garcia Yarnoz	A	163	IAC-06-C1.8.07
Garcia-Galan	A	61	IAC-06-D1.2.07
García-Villadangos	CA	133	IAC-06-A3.P.3.08
Gardi	CA	10	IAC-06-C2.1.08
Gardi	CA	59	IAC-06-C2.4.05
Gardonio	CA	75	IAC-06-C2.5.07
Garon	A	47	IAC-06-D5.1.02
Garon	CA	8	IAC-06-B5.2.03
Garrabos	A	103	IAC-06-A2.P.04
Garutti	CA	161	IAC-06-B3.6.05
Garutti	CA	111	IAC-06-B3.P.6.01
Gasbarri	A	25	IAC-06-C1.2.07
Gasbarri	CA	41	IAC-06-C2.3.03
Gasbarri	CA	40	IAC-06-C1.3.04
Gassend	CA	30	IAC-06-D4.2.03
Gataullin	A	112	IAC-06-B6.P.1.02
Gathier	A	64	IAC-06-E3.4.07
Gati	CA	2	IAC-06-A2.1.07
Gatti	CA	161	IAC-06-B3.6.05
Gaudenzi	A	10	IAC-06-C2.1.03
Gauquelin-Koch	CA	17	IAC-06-A1.2.08
Gavrilov	CA	68	IAC-06-A1.5.01
Gayrard	A	72	IAC-06-B3.3.08
Gayrard	A	22	IAC-06-B3.2.04
Geelen	A	3	IAC-06-A3.1.07
Geffert	A	152	IAC-06-A1.P.2.01
Gellert	CA	18	IAC-06-A2.2.05
Genaro	A	141	IAC-06-C2.7.08
Genta	A	54	IAC-06-A5.2.05
George	CA	108	IAC-06-B1.P.1.06
Georges	CA	3	IAC-06-A3.1.06

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Georgieva	CA	56	IAC-06-B4.3.09
Gerard	A	98	IAC-06-D2.6.05
Gerber	CA	145	IAC-06-D1.4.04
Germain	CA	37	IAC-06-B1.3.06
Gerstenmaier	A	7	IAC-06-B4.1.01
Gestal	CA	57	IAC-06-B5.3.08
Getsov	CA	106	IAC-06-A3.P.2.10
Ghafoor	A	54	IAC-06-A5.2.03
Ghafoor	CA	36	IAC-06-A3.3.03
Ghafoor	CA	36	IAC-06-A3.3.07
Ghafoor	CA	135	IAC-06-A3.P.6.02
Gharib	CA	17	IAC-06-A1.2.08
Ghaye	A	149	IAC-06-E1.4.03
Ghiron	A	83	IAC-06-E5.2.03
Gianotti	CA	138	IAC-06-B5.6.09
Giardini	CA	107	IAC-06-A5.P.02
Giardini	CA	95	IAC-06-C3.4.-D3.4.03
Gibbon	CA	91	IAC-06-B5.5.04
Gibbs	CA	7	IAC-06-B4.1.03
Gigliotti	A	119	IAC-06-C2.P.1.13
Gigliotti	CA	59	IAC-06-C2.4.05
Gil	CA	10	IAC-06-C2.1.06
Gil-Fernandez	A	58	IAC-06-C1.4.01
Gil-Fernandez	A	44	IAC-06-D2.3.01
Gil-Fernandez	CA	93	IAC-06-C1.6.01
Gillies	CA	18	IAC-06-A2.2.10
Gillies	CA	86	IAC-06-A2.5.01
Gily	A	36	IAC-06-A3.3.05
Ginati	A	21	IAC-06-B1.2.01
Giorgio	A	36	IAC-06-A3.3.06
Giovane	CA	92	IAC-06-B6.3.10
Girard	A	108	IAC-06-B1.P.1.08
Girimonte	A	141	IAC-06-C2.7.05
Giroud	CA	135	IAC-06-A3.P.6.02
Gisbert	CA	63	IAC-06-E2.3.04
Giulietti	CA	114	IAC-06-C1.P.2.03
Glass	A	145	IAC-06-D1.4.08
Glass	CA	107	IAC-06-A5.P.05
Glass	CA	78	IAC-06-D2.5.09
Gleason	CA	108	IAC-06-B1.P.1.05
Gleyzes	CA	5	IAC-06-B1.1.04
Glick	CA	77	IAC-06-C4.3.01
Glover	CA	119	IAC-06-C2.P.1.03
Goehlich	CA	64	IAC-06-E3.4.09
Gogdet	A	29	IAC-06-D2.2.03
Gogosheva	CA	2	IAC-06-A2.1.08
Goka	A	148	IAC-06-D5.2.02
Goldshtein	CA	152	IAC-06-A1.P.2.07
Golikov	A	64	IAC-06-E3.4.03
Golikov	CA	26	IAC-06-C2.2.08
Golosova	CA	112	IAC-06-B6.P.1.08
Golrounia	A	169	IAC-06-E6.5.10
Gomes	CA	57	IAC-06-B5.3.01
Gomes	CA	138	IAC-06-B5.6.02
Gomes	A	82	IAC-06-E4.2.08
Gomez-Elvira	CA	53	IAC-06-A3.4.05
Gomez-Elvira	CA	133	IAC-06-A3.P.3.08
Gomez-Gesteira	CA	108	IAC-06-B1.P.1.03
Gómez-Molinero	A	10	IAC-06-C2.1.01
Gomis	CA	85	IAC-06-A1.6.05
Goncharov	CA	56	IAC-06-B4.3.02
Gonda	CA	152	IAC-06-A1.P.2.02
Gondoin	CA	3	IAC-06-A3.1.04
Gonidou	CA	41	IAC-06-C2.3.04
González	CA	149	IAC-06-E1.4.11
Gonzalez	A	21	IAC-06-B1.2.09
González	CA	22	IAC-06-B3.2.06
Gonzalez del Amo	CA	96	IAC-06-C4.4.07
Gonzalez del Amo	CA	93	IAC-06-C1.6.09

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González-Cinca	CA	103	IAC-06-A2.P.01
Gonzalo	A	53	IAC-06-A3.4.05
Gonzalo	CA	6	IAC-06-B3.1.08
Gonzalo	CA	55	IAC-06-B1.4.03
Gorbenko	A	92	IAC-06-B6.3.04
Gorev	CA	35	IAC-06-A2.3.04
Gorev	CA	6	IAC-06-B3.1.07
Gorshenkov	CA	112	IAC-06-B6.P.1.03
Gorshkov	CA	96	IAC-06-C4.4.08
Gosev	CA	68	IAC-06-A1.5.03
Goto	CA	34	IAC-06-A1.3.07
Goto	CA	12	IAC-06-D2.1.03
Goudy	CA	2	IAC-06-A2.1.03
Gough	CA	56	IAC-06-B4.3.09
Gourinat	CA	125	IAC-06-E1.P.1.03
Goursat	CA	41	IAC-06-C2.3.04
Gowrisankar	CA	71	IAC-06-B1.5.05
Gowrisankar	CA	5	IAC-06-B1.1.08
Gowrisankar	CA	71	IAC-06-B1.5.09
Gowrisankar	CA	71	IAC-06-B1.5.08
Gracia	CA	40	IAC-06-C1.3.01
Graciano	CA	118	IAC-06-C1.P.6.02
Graf	A	36	IAC-06-A3.3.01
Grafmüller	CA	88	IAC-06-B1.6.10
Grahn	CA	21	IAC-06-B1.2.07
Gralla	A	79	IAC-06-D3.3.03
Gralla	CA	79	IAC-06-D3.3.01
grallert	A	98	IAC-06-D2.6.06
Grande Sáez	CA	141	IAC-06-C2.7.07
Grant	CA	8	IAC-06-B5.2.07
Grassi	CA	114	IAC-06-C1.P.2.01
Grassini	CA	86	IAC-06-A2.5.06
Grasso	CA	136	IAC-06-A5.1.04
Grau	CA	18	IAC-06-A2.2.01
Graziani	A	73	IAC-06-B5.4.06
Graziani	CA	139	IAC-06-B6.4.07
Graziani	CA	95	IAC-06-C3.4.-D3.4.04
Graziani	CA	15	IAC-06-E1.1.10
Graziano	CA	58	IAC-06-C1.4.01
Graziano	CA	44	IAC-06-D2.3.01
Greco	CA	55	IAC-06-B1.4.02
Greger	CA	86	IAC-06-A2.5.05
Gregnanin	A	63	IAC-06-E2.3.03
Griethe	CA	6	IAC-06-B3.1.02
Griffin	A	99	IAC-06-E1.3.04
Grigoriev	A	56	IAC-06-B4.3.02
Grigoriev	CA	34	IAC-06-A1.3.02
Grillmayer	CA	138	IAC-06-B5.6.18
Grillmayer	CA	63	IAC-06-E2.3.02
Grillmayer	CA	157	IAC-06-D1.P.2.07
Grillmayer	CA	114	IAC-06-C1.P.2.04
Grinberg	A	48	IAC-06-E2.2.05
Griol Barres	A	60	IAC-06-C3.2.08
Groepner	CA	53	IAC-06-A3.4.07
Grönland	A	91	IAC-06-B5.5.12
Grönland	A	11	IAC-06-C4.1.08
Grosjean	CA	2	IAC-06-A2.1.04
Gruber	CA	45	IAC-06-D3.2.03
Grubisic	A	143	IAC-06-C4.P.4.01
Grubisic	A	91	IAC-06-B5.5.04
Grugel	A	18	IAC-06-A2.2.10
Grugel	A	86	IAC-06-A2.5.01
Gruhlke	A	152	IAC-06-A1.P.2.08
Gruntman	A	19	IAC-06-A3.2.09
Gruntman	A	65	IAC-06-E4.1.07
Grushevski	CA	157	IAC-06-D1.P.2.02
Grzesik	CA	107	IAC-06-A5.P.06
Guan	A	40	IAC-06-C1.3.10

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Guangshang	A	11	IAC-06-C4.1.06
Guangxue	CA	142	IAC-06-C4.P.3.08
Guarducci	CA	63	IAC-06-E2.3.03
Guedron	A	78	IAC-06-D2.5.05
Guedron	CA	59	IAC-06-C2.4.03
Guelman	A	73	IAC-06-B5.4.07
Guelman	CA	74	IAC-06-C1.5.08
Guénot	CA	27	IAC-06-C4.2.03
Guenther	CA	86	IAC-06-A2.5.05
Guerman	A	9	IAC-06-C1.1.08
Guerman	A	115	IAC-06-C1.P.3.03
Guerra	CA	87	IAC-06-A3.6.01
Guest	A	135	IAC-06-A3.P.6.04
Guidi	A	166	IAC-06-D1.5.08
Guilherme	A	25	IAC-06-C1.2.06
Guimarães Dutra	CA	108	IAC-06-B1.P.1.04
Guimei	CA	75	IAC-06-C2.5.11
Guiu	A	2	IAC-06-A2.1.02
Guizzo	CA	87	IAC-06-A3.6.08
Guizzo	CA	136	IAC-06-A5.1.04
Guo	A	139	IAC-06-B6.4.08
Guo	A	137	IAC-06-B3.5.04
Guo	CA	59	IAC-06-C2.4.11
Guraya	CA	143	IAC-06-C4.P.4.12
Guraya	CA	164	IAC-06-C2.8.07
Gurtuna	A	66	IAC-06-E5.1.06
Gusev	CA	38	IAC-06-B4.2.04
Gusev	CA	59	IAC-06-C2.4.09
Gushin	CA	1	IAC-06-A1.1.03
Gusinin	CA	43	IAC-06-C4.5.10
Gusinin	CA	139	IAC-06-B6.4.01
Gustafsson	A	31	IAC-06-E2.1.02
Gustavsson	CA	157	IAC-06-D1.P.2.01
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Haarmann	A	138	IAC-06-B5.6.05
Haerendel	A	100	IAC-06-E3.5.
Haertel	CA	156	IAC-06-C2.P.2.08
Haeuplik	A	45	IAC-06-D3.2.03
Haeuplik	A	14	IAC-06-D4.1.03
Hagenfeldt	A	25	IAC-06-C1.2.05
Hagino	CA	93	IAC-06-C1.6.06
Hahne	CA	21	IAC-06-B1.2.05
Haignere	CA	64	IAC-06-E3.4.07
Haignere	CA	29	IAC-06-D2.2.05
Haiming	A	94	IAC-06-C2.6.11
Haiying	A	97	IAC-06-D1.3.04
Hajnssek	CA	37	IAC-06-B1.3.05
Haldin	CA	5	IAC-06-B1.1.09
Haley	CA	61	IAC-06-D1.2.01
Hall	A	24	IAC-06-B6.1.11
Hall	CA	167	IAC-06-D2.7.-A3.7.03
Hall	CA	45	IAC-06-D3.2.01
Hallberg	CA	77	IAC-06-C4.3.08
Hama	A	157	IAC-06-D1.P.2.04
Hamal	CA	24	IAC-06-B6.1.06
Hamann	CA	145	IAC-06-D1.4.09
Hamel	A	140	IAC-06-C1.7.01
Hamel	CA	154	IAC-06-C1.P.7. 03
Hamilton	CA	71	IAC-06-B1.5.07
Han	A	138	IAC-06-B5.6.17
Han	CA	30	IAC-06-D4.2.06
Han	A	6	IAC-06-B3.1.10
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Hanada	CA	63	IAC-06-E2.3.01	Hertzfeld	CA	71	IAC-06-B1.5.02
Hanada	CA	112	IAC-06-B6.P.1.05	Heudier	CA	80	IAC-06-E1.2.08
Hanada	CA	92	IAC-06-B6.3.08	Heynderickx	CA	119	IAC-06-C2.P.1.03
Hanada	CA	39	IAC-06-B6.2.06	Hibiya	CA	18	IAC-06-A2.2.07
Hanninen	CA	146	IAC-06-D2.8.-C3.5.-D3.5.- C4.7.07	Hibiya	CA	18	IAC-06-A2.2.09
Hansen	CA	31	IAC-06-E2.1.04	Hidalgo	CA	168	IAC-06-E1.5.05
Hansen	CA	5	IAC-06-B1.1.10	Hiermaier	CA	92	IAC-06-B6.3.02
Hansen	CA	99	IAC-06-E1.3.07	Higashi	CA	162	IAC-06-B5.7.08
Hara	A	12	IAC-06-D2.1.03	Higuchi	CA	42	IAC-06-C3.1.06
Harada	A	22	IAC-06-B3.2.07	Higuchi	CA	119	IAC-06-C2.P.1.10
Harada	A	31	IAC-06-E2.1.03	Hilgers	CA	119	IAC-06-C2.P.1.03
Hardt	A	40	IAC-06-C1.3.01	Hill	CA	2	IAC-06-A2.1.07
Harine	CA	148	IAC-06-D5.2.05	Hinkebein	A	83	IAC-06-E5.2.05
Harnisch	CA	123	IAC-06-D2.P.1.01	Hinsman	A	88	IAC-06-B1.6.03
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Haruna	A	26	IAC-06-C2.2.07	Hirayama	CA	63	IAC-06-E2.3.01
Harvey	A	90	IAC-06-B4.4.06	Hirayama	CA	94	IAC-06-C2.6.02
Harvey	A	81	IAC-06-E3.2.02	Hirn	A	152	IAC-06-A1.P.2.05
Harvey	CA	7	IAC-06-B4.1.03	Hirosawa	CA	18	IAC-06-A2.2.07
Harvey	CA	8	IAC-06-B5.2.03	Hisada	CA	76	IAC-06-C3.3.08
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Hashimoto	CA	19	IAC-06-A3.2.04	Hockney	CA	74	IAC-06-C1.5.07
Hashimoto	A	42	IAC-06-C3.1.09	Hodgson	CA	23	IAC-06-B5.1.02
Hashimoto	CA	140	IAC-06-C1.7.04	Hoefner	CA	56	IAC-06-B4.3.06
Hashimoto	A	50	IAC-06-E6.2.06	Hoelt	CA	44	IAC-06-D2.3.02
Hashimoto	A	137	IAC-06-B3.5.01	Hofer	CA	37	IAC-06-B1.3.02
Hassibi	CA	137	IAC-06-B3.5.09	Hofmann	A	67	IAC-06-E6.3.01
Hatsutori	CA	76	IAC-06-C3.3.04	Hofmann	A	36	IAC-06-A3.3.08
Hatta	A	148	IAC-06-D5.2.08	Hofmann	A	45	IAC-06-D3.2.01
Haya Ramos	A	123	IAC-06-D2.P.1.04	Hofmann	A	6	IAC-06-B3.1.02
Hayakawa	CA	96	IAC-06-C4.4.01	Hofmann	CA	56	IAC-06-B4.3.06
Haydn	CA	37	IAC-06-B1.3.02	Hofschuster	CA	108	IAC-06-B1.P.1.06
Hayes	CA	132	IAC-06-A1.7.-A2.7.09	Hofstetter	CA	167	IAC-06-D2.7.-A3.7.06
Haynes	CA	167	IAC-06-D2.7.-A3.7.03	Holguin	A	12	IAC-06-D2.1.06
Hazin	CA	131	IAC-06-E5.P.07	Höller	CA	37	IAC-06-B1.3.03
Hazin	A	131	IAC-06-E5.P.07	Holm	A	47	IAC-06-D5.1.08
He	CA	43	IAC-06-C4.5.03	Holm	A	47	IAC-06-D5.1.01
He	CA	121	IAC-06-C4.P.2.01	Holm	A	166	IAC-06-D1.5.01
He	CA	121	IAC-06-C4.P.2.02	Holmes	A	66	IAC-06-E5.1.02
He	CA	121	IAC-06-C4.P.2.03	Holst	CA	15	IAC-06-E1.1.06
He	CA	121	IAC-06-C4.P.2.04	Holsters	CA	3	IAC-06-A3.1.04
He	CA	27	IAC-06-C4.2.08	Holze	CA	15	IAC-06-E1.1.07
He	CA	144	IAC-06-C4.P.5.03	Homeister	CA	39	IAC-06-B6.2.07
He	A	135	IAC-06-A3.P.6.09	Honan	CA	160	IAC-06-E1.P.5.04
He	A	140	IAC-06-C1.7.07	Honan	CA	99	IAC-06-E1.3.01
Heath	A	84	IAC-06-E6.4.05	Hong	CA	120	IAC-06-C4.P.1.07
Hebert	CA	21	IAC-06-B1.2.09	Hong	A	120	IAC-06-C4.P.1.03
Heed	A	33	IAC-06-E6.1.04	Hongo	CA	43	IAC-06-C4.5.02
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Heer	CA	17	IAC-06-A1.2.03	Hormigo	CA	140	IAC-06-C1.7.06
Heer	CA	17	IAC-06-A1.2.02	Horneck	CA	85	IAC-06-A1.6.01
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Heiss	CA	79	IAC-06-D3.3.05	Horsley	A	33	IAC-06-E6.1.12
Helbert	CA	19	IAC-06-A3.2.04	Hou	A	135	IAC-06-A3.P.6.05
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Hempsell	CA	124	IAC-06-D2.P.2.07	Hough	CA	29	IAC-06-D2.2.09
Hendry	A	161	IAC-06-B3.6.09	Howard	A	4	IAC-06-A4.1.11
Hendry	A	143	IAC-06-C4.P.4.07	Howard	CA	4	IAC-06-A4.1.10
Henley	CA	79	IAC-06-D3.3.08	Howard	CA	4	IAC-06-A4.1.11
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Herdrich	CA	94	IAC-06-C2.6.09	Howell	A	42	IAC-06-C3.1.08
Herlach	CA	18	IAC-06-A2.2.07	Howell	CA	79	IAC-06-D3.3.08
Hermetz	CA	62	IAC-06-D2.4.09	Howell	A	163	IAC-06-C1.8.01
Herrero	CA	133	IAC-06-A3.P.3.08	Hrinda	A	59	IAC-06-C2.4.01
Hersman	A	95	IAC-06-C3.4.-D3.4.05	Hsiao	CA	41	IAC-06-C2.3.02
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Hu	CA	18	IAC-06-A2.2.04	Ivanov	CA	107	IAC-06-A5.P.09
Hu	CA	35	IAC-06-A2.3.07	Ivanov	A	157	IAC-06-D1.P.2.05
Hu	CA	59	IAC-06-C2.4.11	Ivanova	A	68	IAC-06-A1.5.09
Hua	CA	18	IAC-06-A2.2.10	Ivanova	CA	103	IAC-06-A2.P.06
Hua	CA	86	IAC-06-A2.5.01	Ivashkin	A	163	IAC-06-C1.8.04
Hubbard	A	147	IAC-06-D3.P.04	Ivashnyov	CA	18	IAC-06-A2.2.03
Hudson	CA	2	IAC-06-A2.1.01	Ivashnyov	CA	69	IAC-06-A2.4.06
Huebert	A	169	IAC-06-E6.5.15	Ivkovic	A	34	IAC-06-A1.3.01
Huebner	A	167	IAC-06-D2.7.-A3.7.03	Ivkovic	CA	68	IAC-06-A1.5.03
Huffman	A	107	IAC-06-A5.P.05	Ivkovic	CA	5	IAC-06-B1.1.10
Huffman	CA	145	IAC-06-D1.4.08	Ivkovic	CA	99	IAC-06-E1.3.07
Hughes	CA	47	IAC-06-D5.1.01	Iwakura	A	138	IAC-06-B5.6.10
Hui	CA	164	IAC-06-C2.8.11	Iwashita	CA	76	IAC-06-C3.3.03
Hujtsak	CA	117	IAC-06-C1.P.5.03	Iwata	CA	60	IAC-06-C3.2.02
Hutao	CA	87	IAC-06-A3.6.07	Iwata	CA	87	IAC-06-A3.6.02
Hutao	CA	104	IAC-06-A3.P.02	Izumi	CA	75	IAC-06-C2.5.08
Hwang	A	108	IAC-06-B1.P.1.01	Izumikawa	CA	43	IAC-06-C4.5.04
Hyde	A	92	IAC-06-B6.3.03	Izykowska	A	108	IAC-06-B1.P.1.16
Hyland	CA	105	IAC-06-A3.P.1.02	Izzo	A	95	IAC-06-C3.4.-D3.4.07
Hyslop	CA	44	IAC-06-D2.3.04	Izzo	CA	53	IAC-06-A3.4.08
Hyslop	CA	44	IAC-06-D2.3.03	Izzo	CA	141	IAC-06-C2.7.05
Hyvönen	A	138	IAC-06-B5.6.04	Izzo	CA	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.03
Hyvönen	CA	108	IAC-06-B1.P.1.06	Izzo	CA	165	IAC-06-C4.6.05

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Iai	CA	57	IAC-06-B5.3.02
Ichiro	CA	56	IAC-06-B4.3.08
Ierardo	CA	141	IAC-06-C2.7.10
Iess	A	93	IAC-06-C1.6.04
Iess	A	6	IAC-06-B3.1.05
Iess	CA	117	IAC-06-C1.P.5.01
Ignatiev	A	79	IAC-06-D3.3.05
Iizuka	A	123	IAC-06-D2.P.1.09
Ijichi	A	35	IAC-06-A2.3.06
Ikeda	A	74	IAC-06-C1.5.09
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Iljic	CA	57	IAC-06-B5.3.02
Ilyin	CA	9	IAC-06-C1.1.06
Ilyin	CA	68	IAC-06-A1.5.08
Imai	CA	57	IAC-06-B5.3.02
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Immer	CA	54	IAC-06-A5.2.07
Imura	CA	60	IAC-06-C3.2.05
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Inbar	A	57	IAC-06-B5.3.03
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Iranzo-Greus	CA	29	IAC-06-D2.2.02
Iranzo-Greus	CA	98	IAC-06-D2.6.04
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Ishimura	CA	42	IAC-06-C3.1.06
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Isono	CA	60	IAC-06-C3.2.05
Ito	A	50	IAC-06-E6.2.03
Ito	CA	27	IAC-06-C4.2.09
itoh	CA	142	IAC-06-C4.P.3.10
Ivanov	CA	18	IAC-06-A2.2.08
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Jaber	A	69	IAC-06-A2.4.09
Jacobsson	CA	25	IAC-06-C1.2.03
Jacq	A	150	IAC-06-E3.3.09
Jäger	CA	92	IAC-06-B6.3.09
Jah	A	74	IAC-06-C1.5.07
Jahjah	A	55	IAC-06-B1.4.01
Jahjah	CA	55	IAC-06-B1.4.05
Jakhu	A	67	IAC-06-E6.3.11
Jakobsson	A	61	IAC-06-D1.2.02
Jakobsson	CA	140	IAC-06-C1.7.09
James	A	6	IAC-06-B3.1.06
Jan	CA	25	IAC-06-C1.2.01
Janin	CA	163	IAC-06-C1.8.05
Jasper	CA	107	IAC-06-A5.P.05
Jayaraman	A	71	IAC-06-B1.5.05
Jayaraman	A	5	IAC-06-B1.1.08
Jayaraman	A	71	IAC-06-B1.5.08
Jayaraman	CA	71	IAC-06-B1.5.09
Jayaraman	CA	108	IAC-06-B1.P.1.17
Jayaraman	CA	71	IAC-06-B1.5.03
Jeanes	CA	3	IAC-06-A3.1.04
Jefferies	CA	29	IAC-06-D2.2.09
Jehn	CA	24	IAC-06-B6.1.01
Jehn	CA	163	IAC-06-C1.8.07
Jehn	CA	24	IAC-06-B6.1.07
Jehn	CA	106	IAC-06-A3.P.2.05
Jehn	CA	117	IAC-06-C1.P.5.01
Jerpetjøn	CA	125	IAC-06-E1.P.1.04
Jessen	A	45	IAC-06-D3.2.04
Jeter	CA	18	IAC-06-A2.2.10
Jeter	CA	86	IAC-06-A2.5.01
Jeyaram	A	71	IAC-06-B1.5.03
Jeyaram	CA	108	IAC-06-B1.P.1.17
Jialei	CA	163	IAC-06-C1.8.10
Jianfeng	A	116	IAC-06-C1.P.4.02
Jianfeng	A	53	IAC-06-A3.4.06
Jiang	CA	8	IAC-06-B5.2.09
Jiang	A	69	IAC-06-A2.4.04
Jianhua	A	120	IAC-06-C4.P.1.08
Jianping Yuan	CA	135	IAC-06-A3.P.6.09
Jianping Yuan	CA	116	IAC-06-C1.P.4.01

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Jianping Yuan	CA	113	IAC-06-C1.P.1.02	Kaneda	CA	26	IAC-06-C2.2.07
Jianping Yuan	CA	58	IAC-06-C1.4.06	Kaneko	CA	157	IAC-06-D1.P.2.06
Jianping Yuan	CA	112	IAC-06-B6.P.1.07	Karapappas	CA	164	IAC-06-C2.8.03
Jiaxun	A	156	IAC-06-C2.P.2.01	Kargel	CA	133	IAC-06-A3.P.3.13
Jilete	A	159	IAC-06-E1.P.4.01	Karl	A	139	IAC-06-B6.4.04
Jiménez	CA	164	IAC-06-C2.8.07	Kashima	CA	131	IAC-06-E5.P.06
Jimenez Monroy	A	51	IAC-06-E6.2.A.02	Kassebom	CA	73	IAC-06-B5.4.03
Jo	CA	52	IAC-06-A1.4.09	Katuntsev	CA	56	IAC-06-B4.3.02
Jochim	CA	163	IAC-06-C1.8.06	Kau	CA	77	IAC-06-C4.3.05
Johannson	CA	167	IAC-06-D2.7.-A3.7.10	Kau	CA	11	IAC-06-C4.1.05
Johnson	CA	145	IAC-06-D1.4.08	Kauffmann	A	62	IAC-06-D2.4.05
Johnson	A	165	IAC-06-C4.6.01	Kauffmann	CA	29	IAC-06-D2.2.07
Johnson	A	24	IAC-06-B6.1.03	Kaufman	CA	52	IAC-06-A1.4.02
Johnson-Green	CA	56	IAC-06-B4.3.04	Kaufmann	CA	37	IAC-06-B1.3.02
Johnston	A	5	IAC-06-B1.1.02	Kaur	CA	52	IAC-06-A1.4.07
Jones	CA	36	IAC-06-A3.3.07	Kavelin	CA	65	IAC-06-E4.1.03
Jongkind	CA	145	IAC-06-D1.4.09	Kawaguchi	A	61	IAC-06-D1.2.05
Jongma	CA	37	IAC-06-B1.3.07	Kawaguchi	A	163	IAC-06-C1.8.02
Jono	CA	137	IAC-06-B3.5.10	Kawaguchi	A	70	IAC-06-A3.5.02
Jonsson	A	85	IAC-06-A1.6.04	Kawaguchi	A	140	IAC-06-C1.7.04
Jonsson	A	133	IAC-06-A3.P.3.06	Kawaguchi	CA	9	IAC-06-C1.1.07
Jordà	CA	164	IAC-06-C2.8.07	Kawaguchi	CA	93	IAC-06-C1.6.06
Jordan	CA	45	IAC-06-D3.2.07	Kawaguchi	CA	48	IAC-06-E2.2.03
Jordan	CA	54	IAC-06-A5.2.06	Kawamoto	CA	139	IAC-06-B6.4.02
Jorgensen	A	30	IAC-06-D4.2.03	Kawamoto	CA	39	IAC-06-B6.2.06
Jorgensen	A	30	IAC-06-D4.2.08	Kawamoto	CA	87	IAC-06-A3.6.02
Jorgenson	A	89	IAC-06-B3.4.09	Kawasaki	CA	42	IAC-06-C3.1.06
Joslin	CA	62	IAC-06-D2.4.10	Kawashima	A	80	IAC-06-E1.2.07
Josset	A	53	IAC-06-A3.4.01	Kaya	A	76	IAC-06-C3.3.03
Jourdainne	A	12	IAC-06-D2.1.01	Kaya	CA	76	IAC-06-C3.3.04
Ju He-Hua	CA	135	IAC-06-A3.P.6.06	Kaya	CA	76	IAC-06-C3.3.05
Juana M.	CA	63	IAC-06-E2.3.04	Kaya	CA	42	IAC-06-C3.1.02
Juchniewicz	CA	56	IAC-06-B4.3.09	Kazakova	A	103	IAC-06-A2.P.03
Judd	CA	11	IAC-06-C4.1.01	Kazakova	CA	18	IAC-06-A2.2.03
Juillet	A	3	IAC-06-A3.1.02	Kazuhiko	A	63	IAC-06-E2.3.01
Jukola	A	20	IAC-06-A4.2.09	Ke	CA	27	IAC-06-C4.2.02
Jules	A	132	IAC-06-A1.7.-A2.7.08	Kearney	A	102	IAC-06-A1.P.1.09
Jules	A	86	IAC-06-A2.5.03	Kelecy	A	24	IAC-06-B6.1.08
Jung	A	151	IAC-06-E4.3.03	Kellar	CA	163	IAC-06-C1.8.06
Jung	A	80	IAC-06-E1.2.08	Keller	CA	24	IAC-06-B6.1.07
Jørgensen	A	64	IAC-06-E3.4.10	Kelso	CA	117	IAC-06-C1.P.5.03
Jørgensen	A	160	IAC-06-E1.P.5.01	Kervin	CA	24	IAC-06-B6.1.08
Jørgensen	A	101	IAC-06-E5.3.07	Kervin	CA	24	IAC-06-B6.1.11
Jørgensen	A	149	IAC-06-E1.4.10	Keßler	CA	92	IAC-06-B6.3.09
				Khaladjzadeh	A	101	IAC-06-E5.3.08
				Khan	CA	3	IAC-06-A3.1.04
				Khan	CA	163	IAC-06-C1.8.09
				Khusnutdinova	A	34	IAC-06-A1.3.09
				Khutorovsky	CA	112	IAC-06-B6.P.1.08
				Kibe	CA	39	IAC-06-B6.2.06
				Kikuchi	CA	143	IAC-06-C4.P.4.14
				Killick	A	68	IAC-06-A1.5.03
				Killick	CA	135	IAC-06-A3.P.6.04
				Kim	CA	140	IAC-06-C1.7.02
				Kim	CA	120	IAC-06-C4.P.1.07
				Kim	CA	120	IAC-06-C4.P.1.07
				Kim	A	122	IAC-06-D1.P.1.01
				Kim	CA	107	IAC-06-A5.P.09
				Kimoto	A	56	IAC-06-B4.3.08
				Kimoto	A	148	IAC-06-D5.2.03
				Kimura	A	61	IAC-06-D1.2.03
				King	CA	145	IAC-06-D1.4.01
				King	CA	28	IAC-06-D1.1.03
				Kingsmore	CA	102	IAC-06-A1.P.1.05
				Kinnersley	CA	123	IAC-06-D2.P.1.05
				Kirchner	CA	24	IAC-06-B6.1.06
				Kirichenko	CA	119	IAC-06-C2.P.1.11
				Kirkham	CA	87	IAC-06-A3.6.01
				Kirkpatrick	CA	104	IAC-06-A3.P.06
Kabamba	CA	107	IAC-06-A5.P.04				
Kafatos	CA	55	IAC-06-B1.4.09				
Kaibin	A	27	IAC-06-C4.2.06				
Kaidy	A	61	IAC-06-D1.2.01				
Kaiser	A	91	IAC-06-B5.5.05				
kajiwara	CA	142	IAC-06-C4.P.3.10				
Kalantari Nezhad	A	139	IAC-06-B6.4.06				
Kalnins	CA	138	IAC-06-B5.6.14				
Kamenskiy	CA	112	IAC-06-B6.P.1.08				
Kamimura	A	119	IAC-06-C2.P.1.02				
Kamoun	A	88	IAC-06-B1.6.05				
Kanai	CA	157	IAC-06-D1.P.2.04				
Kanai	CA	35	IAC-06-A2.3.06				
Kanai	CA	76	IAC-06-C3.3.02				
Kanas	A	1	IAC-06-A1.1.02				
Kanas	CA	1	IAC-06-A1.1.06				
Kanas	CA	1	IAC-06-A1.1.03				
Kancheva	A	5	IAC-06-B1.1.09				
Kancheva	A	55	IAC-06-B1.4.08				
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Kirov	CA	56	IAC-06-B4.3.09	Korpela	CA	4	IAC-06-A4.1.06
Kirschner	CA	3	IAC-06-A3.1.04	Koschny	CA	140	IAC-06-C1.7.05
Kiryanov	CA	35	IAC-06-A2.3.04	Kosmann	A	79	IAC-06-D3.3.02
Kitamura	A	96	IAC-06-C4.4.01	Kosmann	A	96	IAC-06-C4.4.02
Kitamura	CA	139	IAC-06-B6.4.02	Kostarev	CA	69	IAC-06-A2.4.03
Kittell	CA	168	IAC-06-E1.5.09	Kostopoulos	CA	119	IAC-06-C2.P.1.08
Klabjan	CA	97	IAC-06-D1.3.08	Kostopoulos	CA	164	IAC-06-C2.8.03
Klaus	CA	89	IAC-06-B3.4.04	Kostopoulos	CA	26	IAC-06-C2.2.09
Kleinsasser	A	127	IAC-06-E3.P.1.01	Kostov	A	103	IAC-06-A2.P.06
Kleis	CA	152	IAC-06-A1.P.2.01	Kostov	CA	68	IAC-06-A1.5.09
Klettner	CA	30	IAC-06-D4.2.09	Kostromin	CA	124	IAC-06-D2.P.2.09
Klimov	CA	107	IAC-06-A5.P.08	Kosuge	A	50	IAC-06-E6.2.04
Klimov	CA	56	IAC-06-B4.3.09	Kotake	CA	120	IAC-06-C4.P.1.01
Klinkrad	CA	39	IAC-06-B6.2.01	Kotov	CA	157	IAC-06-D1.P.2.02
Klinkrad	CA	39	IAC-06-B6.2.04	Kotzias	A	41	IAC-06-C2.3.05
Klinkrad	CA	39	IAC-06-B6.2.07	Kouchi	CA	43	IAC-06-C4.5.04
Klinkrad	CA	24	IAC-06-B6.1.09	Koudelka	A	8	IAC-06-B5.2.06
Klyakin	CA	142	IAC-06-C4.P.3.02	Koudelka	A	161	IAC-06-B3.6.08
Knapman	A	46	IAC-06-D4.3.04	Kovacs	CA	147	IAC-06-D3.P.04
Knollenberg	CA	106	IAC-06-A3.P.2.03	Koyama	A	162	IAC-06-B5.7.06
Knollenberg	CA	107	IAC-06-A5.P.06	Koyama	CA	162	IAC-06-B5.7.08
Kobatake	CA	18	IAC-06-A2.2.09	Koyama	CA	162	IAC-06-B5.7.07
Kobayashi	CA	11	IAC-06-C4.1.07	Kozak	CA	8	IAC-06-B5.2.08
Kobayashi	CA	162	IAC-06-B5.7.08	Kozlovskaya	A	34	IAC-06-A1.3.02
Kobayashi	CA	162	IAC-06-B5.7.06	Kozlovskaya	CA	34	IAC-06-A1.3.09
Kobayashi	CA	162	IAC-06-B5.7.07	Kracht	A	119	IAC-06-C2.P.1.01
Kobayashi	CA	43	IAC-06-C4.5.02	Krapivin	CA	5	IAC-06-B1.1.09
kobayashi	CA	142	IAC-06-C4.P.3.10	Krastev	CA	2	IAC-06-A2.1.08
Kobayashi	CA	76	IAC-06-C3.3.02	Kreisel	CA	83	IAC-06-E5.2.03
Kobrick	A	168	IAC-06-E1.5.04	Kreisel	CA	89	IAC-06-B3.4.06
Kobusch	A	92	IAC-06-B6.3.09	Krevor	A	28	IAC-06-D1.1.08
Kocherga	A	91	IAC-06-B5.5.10	Krieger	CA	37	IAC-06-B1.3.05
Kochetov	CA	18	IAC-06-A2.2.08	Krishna Murthy	CA	71	IAC-06-B1.5.03
Koeck	A	3	IAC-06-A3.1.03	Krisko	A	39	IAC-06-B6.2.05
Koeck	A	19	IAC-06-A3.2.08	Krisko	CA	39	IAC-06-B6.2.10
Koeck	A	3	IAC-06-A3.1.06	Kristiansen	CA	25	IAC-06-C1.2.09
Koenigsmann	A	124	IAC-06-D2.P.2.01	Kron	CA	154	IAC-06-C1.P.7. 03
Koenigsmann	A	91	IAC-06-B5.5.01	Krueger	CA	29	IAC-06-D2.2.02
Kogan	CA	74	IAC-06-C1.5.08	Kruijff	CA	44	IAC-06-D2.3.04
Koidl	CA	24	IAC-06-B6.1.06	Kruijff	CA	44	IAC-06-D2.3.03
Koishi	CA	89	IAC-06-B3.4.03	Kruijff	CA	15	IAC-06-E1.1.05
Koiti Kuga	CA	157	IAC-06-D1.P.2.01	Kruijff	CA	26	IAC-06-C2.2.09
Kojima	CA	34	IAC-06-A1.3.07	Krumrey	CA	106	IAC-06-A3.P.2.09
Kojima	CA	43	IAC-06-C4.5.02	Kruth	CA	164	IAC-06-C2.8.05
Kokan	A	120	IAC-06-C4.P.1.10	Krøvel	A	125	IAC-06-E1.P.1.04
Kolawa	CA	156	IAC-06-C2.P.2.07	Kubota	A	40	IAC-06-C1.3.02
Kolomentsev	CA	76	IAC-06-C3.3.07	Kugelberg	CA	57	IAC-06-B5.3.08
Kolozezny	A	124	IAC-06-D2.P.2.06	Kulkarni	CA	52	IAC-06-A1.4.07
Kolozezny	CA	29	IAC-06-D2.2.03	Kulkov	CA	107	IAC-06-A5.P.09
Kolozezny	CA	98	IAC-06-D2.6.04	Kunimori	CA	89	IAC-06-B3.4.04
Komatsu	CA	76	IAC-06-C3.3.04	Kuninaka	CA	96	IAC-06-C4.4.10
Komerath	A	45	IAC-06-D3.2.05	Kuninaka	CA	143	IAC-06-C4.P.4.14
Komerath	A	95	IAC-06-C3.4.-D3.4.06	Kuo	CA	41	IAC-06-C2.3.02
Kominato	CA	74	IAC-06-C1.5.09	Kuo	CA	138	IAC-06-B5.6.11
Konda	CA	57	IAC-06-B5.3.02	Kupriyanova	CA	9	IAC-06-C1.1.06
Konoue	CA	57	IAC-06-B5.3.02	Kuri	CA	89	IAC-06-B3.4.04
Konovalenko	CA	112	IAC-06-B6.P.1.03	Kuribayashi	CA	18	IAC-06-A2.2.07
Konstantinov	A	96	IAC-06-C4.4.06	Kuriki	CA	120	IAC-06-C4.P.1.01
Konstantinov	A	44	IAC-06-D2.3.10	Kurilov	CA	136	IAC-06-A5.1.05
Konstantinov	A	58	IAC-06-C1.4.03	Kurosaki	CA	24	IAC-06-B6.1.05
Konstantinov	CA	107	IAC-06-A5.P.08	Kurt	A	145	IAC-06-D1.4.06
Konstantinova	CA	52	IAC-06-A1.4.01	Kurtz	CA	96	IAC-06-C4.4.03
Konyukhov	CA	146	IAC-06-D2.8.-C3.5.-D3.5.- C4.7.09	kushiki	CA	142	IAC-06-C4.P.3.10
Koo	CA	97	IAC-06-D1.3.07	Kushnarev	CA	91	IAC-06-B5.5.10
Kopacek	CA	76	IAC-06-C3.3.05	Kusnierkiewicz	A	166	IAC-06-D1.5.03
Korepanov	A	56	IAC-06-B4.3.09	Kusnierkiewicz	CA	95	IAC-06-C3.4.-D3.4.05
Korepanov	A	8	IAC-06-B5.2.08	Kuusela	CA	24	IAC-06-B6.1.04
Koroteev	CA	96	IAC-06-C4.4.08	Kuzenova	CA	92	IAC-06-B6.3.07
Korotkih	A	158	IAC-06-E1.P.3.03				



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L.S.	CA	66	IAC-06-E5.1.05	Lee	A	14	IAC-06-D4.1.04
Laan	A	160	IAC-06-E1.P.5.02	Lee	A	82	IAC-06-E4.2.07
Laan	CA	37	IAC-06-B1.3.07	Lee	A	136	IAC-06-A5.1.06
Laan	CA	133	IAC-06-A3.P.3.10	Lee	A	32	IAC-06-E3.1.B.06
Labuhn	A	137	IAC-06-B3.5.05	Lee	A	64	IAC-06-E3.4.02
Labutkina	A	153	IAC-06-B6.P.2.04	Lee	A	81	IAC-06-E3.2.07
Lacapere	A	77	IAC-06-C4.3.06	Lee	A	20	IAC-06-A4.2.10
Lacoste	CA	78	IAC-06-D2.5.09	Lee	CA	122	IAC-06-D1.P.1.01
Ladwig	A	168	IAC-06-E1.5.05	Lee	CA	138	IAC-06-B5.6.11
Laffranderie	CA	82	IAC-06-E4.2.07	Lees	A	133	IAC-06-A3.P.3.02
Lalande	CA	37	IAC-06-B1.3.03	Lees	A	70	IAC-06-A3.5.04
Lambert	CA	73	IAC-06-B5.4.01	Legostaev	CA	38	IAC-06-B4.2.04
Lambert	CA	21	IAC-06-B1.2.04	Legros	CA	69	IAC-06-A2.4.06
Lambert	CA	92	IAC-06-B6.3.02	Lei	A	153	IAC-06-B6.P.2.05
Lambert	CA	92	IAC-06-B6.3.11	Lei	CA	112	IAC-06-B6.P.1.06
Lamela	CA	164	IAC-06-C2.8.10	Lei	A	112	IAC-06-B6.P.1.06
Lamprou	CA	119	IAC-06-C2.P.1.08	Lei	CA	153	IAC-06-B6.P.2.05
Lan	CA	147	IAC-06-D3.P.03	lei	A	60	IAC-06-C3.2.04
Lancho Doncel	A	141	IAC-06-C2.7.07	Leijtens	CA	108	IAC-06-B1.P.1.06
Landaberea	CA	164	IAC-06-C2.8.10	Leipold	A	53	IAC-06-A3.4.07
Landaberea	CA	143	IAC-06-C4.P.4.12	Leipold	A	26	IAC-06-C2.2.03
Landgraf	A	140	IAC-06-C1.7.05	Leite Filho	CA	25	IAC-06-C1.2.06
Landi	CA	61	IAC-06-D1.2.01	Lemault	CA	163	IAC-06-C1.8.08
Landiech	CA	73	IAC-06-B5.4.09	Lemaitre	CA	106	IAC-06-A3.P.2.02
Landry Corbin	CA	42	IAC-06-C3.1.07	Lenard	A	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.02
Laneve	A	37	IAC-06-B1.3.08	Lenard	A	164	IAC-06-C2.8.09
Lang	CA	30	IAC-06-D4.2.08	Lengowski	CA	138	IAC-06-B5.6.05
Lang	CA	137	IAC-06-B3.5.05	Lentini	CA	77	IAC-06-C4.3.03
Lang	CA	91	IAC-06-B5.5.12	Leofanti	CA	78	IAC-06-D2.5.10
Langen	CA	152	IAC-06-A1.P.2.08	Leofanti	CA	10	IAC-06-C2.1.04
Langwost	CA	119	IAC-06-C2.P.1.04	Leon	A	1	IAC-06-A1.1.07
Lansdorp	A	46	IAC-06-D4.3.02	Leonard	CA	128	IAC-06-E3.P.3.04
Lanucara	CA	6	IAC-06-B3.1.06	Leping	A	140	IAC-06-C1.7.08
Lanucara	CA	6	IAC-06-B3.1.05	Lepore	A	12	IAC-06-D2.1.09
Lappas	CA	143	IAC-06-C4.P.4.04	Letin	CA	107	IAC-06-A5.P.08
Lapygin	CA	44	IAC-06-D2.3.07	Leushacke	CA	24	IAC-06-B6.1.07
Larichev	CA	41	IAC-06-C2.3.11	Levelt	CA	37	IAC-06-B1.3.07
Larin	CA	153	IAC-06-B6.P.2.04	Levi	CA	142	IAC-06-C4.P.3.02
Larina	A	17	IAC-06-A1.2.06	Levtov	CA	18	IAC-06-A2.2.08
Larina	CA	102	IAC-06-A1.P.1.04	Li	A	89	IAC-06-B3.4.07
Laroche	CA	37	IAC-06-B1.3.03	Li	CA	140	IAC-06-C1.7.07
Larsen	A	51	IAC-06-E6.2.A.04	Li	CA	74	IAC-06-C1.5.01
Laschi	CA	28	IAC-06-D1.1.05	Li	CA	113	IAC-06-C1.P.1.01
Laskin	A	105	IAC-06-A3.P.1.05	Li	A	122	IAC-06-D1.P.1.10
Laskin	CA	3	IAC-06-A3.1.01	Li	CA	121	IAC-06-C4.P.2.02
Lassig	A	69	IAC-06-A2.4.07	Li	CA	121	IAC-06-C4.P.2.03
Lathan	CA	34	IAC-06-A1.3.03	Li	CA	121	IAC-06-C4.P.2.04
Lathrop	CA	29	IAC-06-D2.2.04	Li	CA	27	IAC-06-C4.2.08
Latipulhayat	A	169	IAC-06-E6.5.07	Li	CA	27	IAC-06-C4.2.02
Lauer	A	29	IAC-06-D2.2.06	Li	A	138	IAC-06-B5.6.12
Lauer	A	62	IAC-06-D2.4.08	Li	CA	153	IAC-06-B6.P.2.03
Lauer	A	91	IAC-06-B5.5.09	Li	A	87	IAC-06-A3.6.07
Laufer	CA	138	IAC-06-B5.6.05	Li	A	59	IAC-06-C2.4.11
Laurent	CA	12	IAC-06-D2.1.01	Li	A	97	IAC-06-D1.3.06
Laux	CA	44	IAC-06-D2.3.06	Li	CA	52	IAC-06-A1.4.03
Lavagna	A	116	IAC-06-C1.P.4.05	Li	CA	97	IAC-06-D1.3.06
Lavergne	CA	5	IAC-06-B1.1.03	Li	A	141	IAC-06-C2.7.02
Law	CA	24	IAC-06-B6.1.08	Li	CA	89	IAC-06-B3.4.07
Le Gallo	A	41	IAC-06-C2.3.04	Liang	A	142	IAC-06-C4.P.3.08
Le Tallec	CA	62	IAC-06-D2.4.09	Lichtenberger	CA	56	IAC-06-B4.3.09
Leal da Silva	CA	119	IAC-06-C2.P.1.05	Liebermann	CA	30	IAC-06-D4.2.09
Lear	CA	92	IAC-06-B6.3.03	Liebig	CA	16	IAC-06-E3.1.A.03
Lear	CA	153	IAC-06-B6.P.2.02	Lijesevic	A	150	IAC-06-E3.3.03
Leclerc	CA	123	IAC-06-D2.P.1.05	Lijuan	A	111	IAC-06-B3.P.6.02
Leconte	CA	22	IAC-06-B3.2.04	Lijue Xue	CA	45	IAC-06-D3.2.04
Lee	A	143	IAC-06-C4.P.4.02	Lijun	A	142	IAC-06-C4.P.3.09
Lee	A	89	IAC-06-B3.4.01	Lim	A	140	IAC-06-C1.7.02
Lee	A	84	IAC-06-E6.4.10	Lin	CA	18	IAC-06-A2.2.04
				Lin	CA	86	IAC-06-A2.5.03

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Lindenmoyer	CA	81	IAC-06-E3.2.01
Linder	CA	138	IAC-06-B5.6.04
Linn Barnett	CA	155	IAC-06-C1.P.8.02
Liou	A	92	IAC-06-B6.3.10
Liou	CA	92	IAC-06-B6.3.08
Lipaev	CA	56	IAC-06-B4.3.06
Lipnitskiy	CA	44	IAC-06-D2.3.07
Lisano	CA	74	IAC-06-C1.5.07
Liu	CA	35	IAC-06-A2.3.07
Liu	CA	97	IAC-06-D1.3.06
Liu	CA	132	IAC-06-A1.7.-A2.7.04
Liu	CA	152	IAC-06-A1.P.2.03
Liu	A	117	IAC-06-C1.P.5.05
Liu	CA	38	IAC-06-B4.2.02
Liu	CA	43	IAC-06-C4.5.03
Liu	CA	121	IAC-06-C4.P.2.01
Liu	CA	27	IAC-06-C4.2.08
Liu	CA	144	IAC-06-C4.P.5.03
Liu	CA	69	IAC-06-A2.4.04
Liu	A	69	IAC-06-A2.4.02
Liu	CA	69	IAC-06-A2.4.02
Liu	A	109	IAC-06-B3.P.1.01
Lizunov	CA	8	IAC-06-B5.2.08
Ljung	CA	21	IAC-06-B1.2.07
Llorca	A	49	IAC-06-E4.4.07
Lloro Boada	A	30	IAC-06-D4.2.09
Lock	A	119	IAC-06-C2.P.1.06
Lockerd	CA	34	IAC-06-A1.3.03
Lockowandt	CA	35	IAC-06-A2.3.02
Loeb	A	96	IAC-06-C4.4.04
Loeb	CA	106	IAC-06-A3.P.2.06
Loeth	CA	35	IAC-06-A2.3.02
Logsdon	CA	32	IAC-06-E3.1.B.01
Logvinenko	A	120	IAC-06-C4.P.1.04
Logvinov	CA	69	IAC-06-A2.4.06
Lombardi	CA	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.08
Lombardo	CA	34	IAC-06-A1.3.08
Longo	CA	78	IAC-06-D2.5.02
Longo	CA	98	IAC-06-D2.6.01
Lopes de Oliveira e Souza	CA	118	IAC-06-C1.P.6.03
Lopez	CA	93	IAC-06-C1.6.02
Lopez	CA	140	IAC-06-C1.7.09
Lopez-Baeza	CA	63	IAC-06-E2.3.04
Lorenz	CA	133	IAC-06-A3.P.3.06
Loret	CA	55	IAC-06-B1.4.05
Louaas	A	62	IAC-06-D2.4.06
Louaas	CA	77	IAC-06-C4.3.07
Louaas	CA	78	IAC-06-D2.5.06
Loureiro	A	145	IAC-06-D1.4.02
Loures da Costa	A	35	IAC-06-A2.3.08
Loures da Costa	CA	12	IAC-06-D2.1.08
Lövgren	A	15	IAC-06-E1.1.06
Lucchini Gilera	A	169	IAC-06-E6.5.12
Ludovisi	A	18	IAC-06-A2.2.06
Lukyashenko	CA	157	IAC-06-D1.P.2.05
Luna	CA	85	IAC-06-A1.6.05
Lundin	A	35	IAC-06-A2.3.02
Lundin	A	6	IAC-06-B3.1.01
Lundin	CA	86	IAC-06-A2.5.06
Lundquist	A	65	IAC-06-E4.1.02
Lundquist	CA	82	IAC-06-E4.2.04
Luo	A	116	IAC-06-C1.P.4.01
Lupton	A	17	IAC-06-A1.2.07
Lura	CA	53	IAC-06-A3.4.07
Luz	CA	18	IAC-06-A2.2.10
Luz	CA	86	IAC-06-A2.5.01
Lyall	A	169	IAC-06-E6.5.02

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Lymer	A	145	IAC-06-D1.4.01
Lyngvi	A	3	IAC-06-A3.1.05
Lyngvi	A	3	IAC-06-A3.1.04
Lyons	CA	153	IAC-06-B6.P.2.02
Lysenko	A	10	IAC-06-C2.1.11
Lysy	A	80	IAC-06-E1.2.03

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Ma	CA	122	IAC-06-D1.P.1.07
Maas	CA	37	IAC-06-B1.3.03
Macau	A	60	IAC-06-C3.2.09
Maccone	A	4	IAC-06-A4.1.13
Maccone	CA	147	IAC-06-D3.P.02
Maccone	CA	14	IAC-06-D4.1.01
Maccone	CA	4	IAC-06-A4.1.07
Maccone	CA	4	IAC-06-A4.1.08
Maccone	CA	8	IAC-06-B5.2.02
MacDonald	A	128	IAC-06-E3.P.3.03
Mace	CA	2	IAC-06-A2.1.04
Mackin	CA	57	IAC-06-B5.3.05
Mackin	CA	23	IAC-06-B5.1.02
MacLeish	A	99	IAC-06-E1.3.09
Maddè	CA	6	IAC-06-B3.1.06
Maddè	CA	6	IAC-06-B3.1.05
Maeding	CA	77	IAC-06-C4.3.05
Maeding	CA	11	IAC-06-C4.1.05
Mager	CA	88	IAC-06-B1.6.10
Maggi	A	142	IAC-06-C4.P.3.03
Maggi	CA	27	IAC-06-C4.2.07
Maghsoudi	A	40	IAC-06-C1.3.08
Maglione	CA	143	IAC-06-C4.P.4.09
Maglione	CA	143	IAC-06-C4.P.4.10
Magnani	CA	107	IAC-06-A5.P.06
Mahler	A	149	IAC-06-E1.4.05
Mahler	CA	107	IAC-06-A5.P.01
Maiques	A	83	IAC-06-E5.2.07
Maise	A	133	IAC-06-A3.P.3.17
Maise	A	45	IAC-06-D3.2.07
Maise	CA	61	IAC-06-D1.2.09
Maise	CA	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.06
Maita	A	98	IAC-06-D2.6.09
Majewski	CA	25	IAC-06-C1.2.10
Maksimova	CA	18	IAC-06-A2.2.08
Malashenkov	A	136	IAC-06-A5.1.05
Maliet	A	21	IAC-06-B1.2.04
Malitikov	CA	80	IAC-06-E1.2.03
Mancini	CA	10	IAC-06-C2.1.04
Mancuso	CA	140	IAC-06-C1.7.06
Mancuso	CA	106	IAC-06-A3.P.2.01
Mandorlo	CA	111	IAC-06-B3.P.6.01
Maneeratana	A	59	IAC-06-C2.4.07
Manev	CA	106	IAC-06-A3.P.2.10
Mangili	CA	125	IAC-06-E1.P.1.02
Mangunson	CA	3	IAC-06-A3.1.04
Mankins	A	13	IAC-06-D3.1.04
Mankins	A	79	IAC-06-D3.3.07
Mankins	A	82	IAC-06-E4.2.02
Mankins	A	42	IAC-06-C3.1.03
Mankins	A	45	IAC-06-D3.2.08
Mankins	CA	13	IAC-06-D3.1.02
Mann	A	67	IAC-06-E6.3.12
Manteiga	A	111	IAC-06-B3.P.6.01
Mantovani	CA	54	IAC-06-A5.2.07
Marathe	CA	118	IAC-06-C1.P.6.01
Marchetti	CA	164	IAC-06-C2.8.02
Marchini	CA	82	IAC-06-E4.2.07

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Marco	CA	93	IAC-06-C1.6.02	Matsuoka	CA	74	IAC-06-C1.5.09
Marcos	A	66	IAC-06-E5.1.01	Matthews	CA	85	IAC-06-A1.6.04
Marcos	CA	164	IAC-06-C2.8.10	Matunaga	A	10	IAC-06-C2.1.09
Marcos	CA	143	IAC-06-C4.P.4.12	Matunaga	CA	57	IAC-06-B5.3.02
Marcotte	CA	7	IAC-06-B4.1.03	Matunaga	CA	115	IAC-06-C1.P.3.02
Marcout	A	86	IAC-06-A2.5.02	Matvienko	A	28	IAC-06-D1.1.02
Mardirossian	CA	106	IAC-06-A3.P.2.10	Maudes	CA	75	IAC-06-C2.5.03
Marinangeli	CA	19	IAC-06-A3.2.04	Maudes	CA	164	IAC-06-C2.8.07
Marini	CA	98	IAC-06-D2.6.08	Max	A	16	IAC-06-E3.1.A.04
Marini	CA	44	IAC-06-D2.3.09	Mayorova	A	15	IAC-06-E1.1.01
Marino	CA	10	IAC-06-C2.1.08	Mayorova	CA	99	IAC-06-E1.3.02
Marino	CA	59	IAC-06-C2.4.05	Mazzei	CA	34	IAC-06-A1.3.08
Marino	CA	78	IAC-06-D2.5.04	Mazzini	CA	113	IAC-06-C1.P.1.03
Mario	CA	94	IAC-06-C2.6.06	McCoubrey	A	36	IAC-06-A3.3.07
Marion	CA	59	IAC-06-C2.4.09	McCoy	CA	19	IAC-06-A3.2.02
Mark	A	161	IAC-06-B3.6.02	McInnes	CA	115	IAC-06-C1.P.3.04
Markov	CA	56	IAC-06-B4.3.05	McKay	CA	7	IAC-06-B4.1.01
Marmar	CA	1	IAC-06-A1.1.03	McKenzie	A	46	IAC-06-D4.3.07
Marr	A	3	IAC-06-A3.1.01	McMillan	A	66	IAC-06-E5.1.04
Marr	CA	105	IAC-06-A3.P.1.05	McMullan	CA	21	IAC-06-B1.2.05
Marr	CA	105	IAC-06-A3.P.1.04	McNutt	A	13	IAC-06-D3.1.05
Marra	CA	27	IAC-06-C4.2.07	Md. Said	CA	23	IAC-06-B5.1.05
Marra	CA	77	IAC-06-C4.3.03	Mead	A	4	IAC-06-A4.1.10
Marshall	A	128	IAC-06-E3.P.3.02	Mead	CA	4	IAC-06-A4.1.11
Marshall	A	150	IAC-06-E3.3.02	Meda	CA	27	IAC-06-C4.2.07
Marshall	A	6	IAC-06-B3.1.04	Meda	CA	77	IAC-06-C4.3.03
Marshall	A	136	IAC-06-A5.1.02	Medushevsky	CA	47	IAC-06-D5.1.05
Marshall	A	127	IAC-06-E3.P.1.02	Meerman	CA	143	IAC-06-C4.P.4.04
Marson	CA	63	IAC-06-E2.3.03	Meerman	CA	8	IAC-06-B5.2.04
Martens	CA	8	IAC-06-B5.2.03	Meguro	CA	22	IAC-06-B3.2.07
Martignano	A	90	IAC-06-B4.4.07	Mehlen	CA	40	IAC-06-C1.3.07
Martin	CA	86	IAC-06-A2.5.02	Mehoke	CA	145	IAC-06-D1.4.10
Martin	CA	122	IAC-06-D1.P.1.12	Mehta	A	81	IAC-06-E3.2.04
Martin	CA	106	IAC-06-A3.P.2.05	Mejia-Kaiser	A	169	IAC-06-E6.5.14
Martin	CA	117	IAC-06-C1.P.5.01	Melamed	CA	46	IAC-06-D4.3.05
Martin	CA	77	IAC-06-C4.3.05	Mellert	CA	122	IAC-06-D1.P.1.05
Martin	CA	11	IAC-06-C4.1.05	Mellot	A	127	IAC-06-E3.P.1.03
Martin-de-	A	55	IAC-06-B1.4.02	Melnikov	CA	69	IAC-06-A2.4.05
Mercado				Melnikov	CA	76	IAC-06-C3.3.07
Martin-Neira	CA	55	IAC-06-B1.4.04	Mendeve	A	2	IAC-06-A2.1.08
Martinez	A	51	IAC-06-E6.2.A.03	Menezes	A	107	IAC-06-A5.P.04
Martinez	CA	75	IAC-06-C2.5.03	Menkin	A	39	IAC-06-B6.2.08
Martínez Olagüe	CA	161	IAC-06-B3.6.02	Menkin	CA	39	IAC-06-B6.2.09
Martínez	CA	6	IAC-06-B3.1.08	Menon	A	147	IAC-06-D3.P.03
Rodríguez-Osorio				Menon	A	86	IAC-06-A2.5.04
Martino	A	55	IAC-06-B1.4.05	Menon	A	28	IAC-06-D1.1.05
Marukawa	A	131	IAC-06-E5.P.06	Menon	A	75	IAC-06-C2.5.09
Masaki	CA	43	IAC-06-C4.5.02	Menon	A	28	IAC-06-D1.1.06
Masdemont	CA	163	IAC-06-C1.8.03	Menon	CA	53	IAC-06-A3.4.02
Mashtak	CA	6	IAC-06-B3.1.07	Menshikov	A	71	IAC-06-B1.5.10
Massari	CA	107	IAC-06-A5.P.02	Menshikov	CA	80	IAC-06-E1.2.03
Massobrio	A	78	IAC-06-D2.5.04	Menshikova	CA	80	IAC-06-E1.2.03
Massobrio	CA	62	IAC-06-D2.4.02	Mercier	A	27	IAC-06-C4.2.03
Masson	A	161	IAC-06-B3.6.01	Mercolino	CA	6	IAC-06-B3.1.06
Masson-Zwaan	A	50	IAC-06-E6.2.01	Mercolino	CA	6	IAC-06-B3.1.05
Masson-Zwaan	CA	82	IAC-06-E4.2.07	Merveille	A	164	IAC-06-C2.8.07
Mastroddi	A	141	IAC-06-C2.7.11	Merzhanov	CA	18	IAC-06-A2.2.08
Masumoto	A	115	IAC-06-C1.P.3.02	Meseguer	CA	49	IAC-06-E4.4.03
Masumoto	CA	57	IAC-06-B5.3.02	Meshcheryakov	A	92	IAC-06-B6.3.07
Mathers	A	99	IAC-06-E1.3.01	Messina	A	106	IAC-06-A3.P.2.03
Mathers	A	80	IAC-06-E1.2.06	Messina	A	54	IAC-06-A5.2.01
Mathers	A	101	IAC-06-E5.3.03	Messina	A	32	IAC-06-E3.1.B.02
Mathers	A	22	IAC-06-B3.2.05	Mestreau-Garreau	CA	3	IAC-06-A3.1.04
Mathers	CA	160	IAC-06-E1.P.5.04	Mezzacasa	A	26	IAC-06-C2.2.04
Mathur	A	122	IAC-06-D1.P.1.06	Mi Cabezudo	CA	138	IAC-06-B5.6.01
Matloff	A	165	IAC-06-C4.6.04	Mialdun	CA	69	IAC-06-A2.4.05
Matney	A	39	IAC-06-B6.2.02	Miaris	CA	164	IAC-06-C2.8.03
Matousek	A	19	IAC-06-A3.2.06	Miaris	CA	26	IAC-06-C2.2.09
Matsumoto	CA	42	IAC-06-C3.1.09	Miccio	CA	142	IAC-06-C4.P.3.03
Matsumoto	A	87	IAC-06-A3.6.02	Micera	CA	34	IAC-06-A1.3.08

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Michalenko	CA	54	IAC-06-A5.2.07
Michaud	CA	3	IAC-06-A3.1.06
Mick	A	122	IAC-06-D1.P.1.05
Middleton	CA	82	IAC-06-E4.2.04
Miele	A	140	IAC-06-C1.7.03
Migliore	CA	34	IAC-06-A1.3.08
Mihara	A	76	IAC-06-C3.3.02
Mikhaylov	CA	141	IAC-06-C2.7.09
Mikrin	A	38	IAC-06-B4.2.04
Milic	A	78	IAC-06-D2.5.07
Millan	CA	85	IAC-06-A1.6.05
Millán	CA	28	IAC-06-D1.1.05
Millard	CA	163	IAC-06-C1.8.01
Miller	A	29	IAC-06-D2.2.04
Miller	CA	34	IAC-06-A1.3.06
Mimoun	CA	133	IAC-06-A3.P.3.11
Ming	CA	53	IAC-06-A3.4.03
Minow	A	148	IAC-06-D5.2.05
Minow	A	148	IAC-06-D5.2.06
Miranda	CA	119	IAC-06-C2.P.1.06
Miravet	CA	37	IAC-06-B1.3.09
Mirosh	A	47	IAC-06-D5.1.05
Mirra	CA	38	IAC-06-B4.2.01
Mirra	A	40	IAC-06-C1.3.09
Misra	CA	40	IAC-06-C1.3.03
Mistry	CA	91	IAC-06-B5.5.04
Mitchell	CA	81	IAC-06-E3.2.08
Mitchell	A	19	IAC-06-A3.2.01
Mitschdoerfer	CA	93	IAC-06-C1.6.02
Mitsuyasu	CA	56	IAC-06-B4.3.08
Miyamoto	CA	57	IAC-06-B5.3.02
Miyamura	A	73	IAC-06-B5.4.02
Miyamura	CA	76	IAC-06-C3.3.04
Miyashita	CA	57	IAC-06-B5.3.02
Miyazaki	CA	56	IAC-06-B4.3.08
Miyazaki	CA	96	IAC-06-C4.4.01
Miyazawa	CA	43	IAC-06-C4.5.09
Mizuta	CA	163	IAC-06-C1.8.02
Moerel	CA	91	IAC-06-B5.5.13
Moffat	CA	8	IAC-06-B5.2.07
Mohammed	A	23	IAC-06-B5.1.04
Mokshankina	A	63	IAC-06-E2.3.05
Mokshankina	CA	153	IAC-06-B6.P.2.04
Mokuno	CA	137	IAC-06-B3.5.10
Molina	CA	58	IAC-06-C1.4.01
Molina	CA	93	IAC-06-C1.6.01
Molina	CA	62	IAC-06-D2.4.02
Möllerberg	CA	11	IAC-06-C4.1.08
Molotkov	CA	56	IAC-06-B4.3.06
Molotov	A	112	IAC-06-B6.P.1.03
Molotov	CA	24	IAC-06-B6.1.12
Monari	CA	4	IAC-06-A4.1.07
Monari	CA	4	IAC-06-A4.1.08
Monari	CA	4	IAC-06-A4.1.09
Monell	CA	123	IAC-06-D2.P.1.02
Monrabal Capilla	CA	63	IAC-06-E2.3.04
Monserrat-Filho	A	67	IAC-06-E6.3.06
Montagnon	CA	70	IAC-06-A3.5.03
Montebugnoli	A	4	IAC-06-A4.1.08
Montebugnoli	CA	4	IAC-06-A4.1.07
Monterosso	CA	78	IAC-06-D2.5.10
Montgobert	CA	80	IAC-06-E1.2.02
Montgomery	CA	165	IAC-06-C4.6.01
Monti	A	123	IAC-06-D2.P.1.08
Montminy	A	75	IAC-06-C2.5.04
Moodie	CA	88	IAC-06-B1.6.01
Moore	A	145	IAC-06-D1.4.07
Moore III	A	81	IAC-06-E3.2.06
Moors-Nitschmann	CA	86	IAC-06-A2.5.05
Moraes Jr.	A	75	IAC-06-C2.5.06

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Moraes Jr.	A	156	IAC-06-C2.P.2.04
Moraes Jr.	A	12	IAC-06-D2.1.08
Morales	CA	70	IAC-06-A3.5.03
Moreira	A	37	IAC-06-B1.3.05
Morelli	A	67	IAC-06-E6.3.10
Moreno	A	37	IAC-06-B1.3.04
Moreno Llacer	CA	63	IAC-06-E2.3.04
Moreno-Paz	CA	133	IAC-06-A3.P.3.08
Morfill	CA	56	IAC-06-B4.3.06
Morgenthaler	A	45	IAC-06-D3.2.09
Morgenthaler	CA	13	IAC-06-D3.1.08
Mori	CA	76	IAC-06-C3.3.01
Mori	CA	42	IAC-06-C3.1.04
Mori	CA	76	IAC-06-C3.3.08
Mori	CA	61	IAC-06-D1.2.05
Mori	CA	91	IAC-06-B5.5.06
Morioka	CA	34	IAC-06-A1.3.07
Moriyama	CA	15	IAC-06-E1.1.02
Moro	CA	52	IAC-06-A1.4.08
Morris	CA	29	IAC-06-D2.2.01
Morrow	A	99	IAC-06-E1.3.03
Morsillo	CA	16	IAC-06-E3.1.A.03
Morsillo	CA	16	IAC-06-E3.1.A.01
Morukov	CA	17	IAC-06-A1.2.06
Moskal'ov	A	143	IAC-06-C4.P.4.11
Mossavati	A	108	IAC-06-B1.P.1.10
Mostert	A	48	IAC-06-E2.2.04
Mostert	A	23	IAC-06-B5.1.03
Mostert	CA	73	IAC-06-B5.4.05
Moukhamedieva	CA	68	IAC-06-A1.5.08
Moulin	A	82	IAC-06-E4.2.06
Mueller	A	105	IAC-06-A3.P.1.03
Mueller	A	136	IAC-06-A5.1.01
Mueller	A	54	IAC-06-A5.2.09
Mueller	CA	89	IAC-06-B3.4.06
Mugellesi Dow	A	47	IAC-06-D5.1.03
Mukai	CA	34	IAC-06-A1.3.01
Mukai	CA	137	IAC-06-B3.5.09
Mukhija	A	67	IAC-06-E6.3.07
Müller	A	19	IAC-06-A3.2.04
Munoz Fernandez	A	137	IAC-06-B3.5.09
Munoz Rodriguez	A	67	IAC-06-E6.3.03
Münzenmayer	A	88	IAC-06-B1.6.10
Muraoka	A	94	IAC-06-C2.6.10
Murashko	CA	107	IAC-06-A5.P.09
Murata	CA	26	IAC-06-C2.2.10
Muravlev	CA	96	IAC-06-C4.4.08
Murchie	CA	133	IAC-06-A3.P.3.02
Murphy	CA	47	IAC-06-D5.1.01
Murray	A	46	IAC-06-D4.3.03
Murthy	A	66	IAC-06-E5.1.05
Murthy	A	71	IAC-06-B1.5.01
Musci	A	112	IAC-06-B6.P.1.04
Musci	CA	24	IAC-06-B6.1.04
Musci	CA	112	IAC-06-B6.P.1.09
Musinski	A	143	IAC-06-C4.P.4.03
Musso	A	20	IAC-06-A4.2.05
Muylaert	A	98	IAC-06-D2.6.07
Myhre	CA	2	IAC-06-A2.1.07

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Nadalini	A	104	IAC-06-A3.P.01
Nadalini	A	70	IAC-06-A3.5.07
Nadalini	A	107	IAC-06-A5.P.06
Nadalini	CA	106	IAC-06-A3.P.2.03
Naemura	CA	15	IAC-06-E1.1.02
Nagai	CA	76	IAC-06-C3.3.04

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Nagata	A	142	IAC-06-C4.P.3.10
Nagayama	CA	120	IAC-06-C4.P.1.02
Nagurka	CA	30	IAC-06-D4.2.06
Nagy	CA	56	IAC-06-B4.3.09
Nair	CA	168	IAC-06-E1.5.09
Nair	CA	119	IAC-06-C2.P.1.12
Naito	CA	34	IAC-06-A1.3.07
Naitong	CA	122	IAC-06-D1.P.1.10
Naja	CA	16	IAC-06-E3.1.A.01
Nakagawa	CA	26	IAC-06-C2.2.07
Nakahara	CA	26	IAC-06-C2.2.10
NAKAI	A	96	IAC-06-C4.4.10
Nakajima	A	24	IAC-06-B6.1.05
Nakamura	CA	120	IAC-06-C4.P.1.02
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Nakamura	A	93	IAC-06-C1.6.10
Nakamura	CA	76	IAC-06-C3.3.04
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Nakashima	A	153	IAC-06-B6.P.2.06
Nakasuka	A	76	IAC-06-C3.3.04
Nakasuka	CA	11	IAC-06-C4.1.07
Nakasuka	CA	93	IAC-06-C1.6.10
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Nakasuka	CA	162	IAC-06-B5.7.06
Nakasuka	CA	162	IAC-06-B5.7.07
Nakasuka	CA	76	IAC-06-C3.3.03
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Nakatani	CA	70	IAC-06-A3.5.01
Nakawatase	A	43	IAC-06-C4.5.09
Nakayasu	A	62	IAC-06-D2.4.07
Nall	CA	81	IAC-06-E3.2.08
Nambu	A	75	IAC-06-C2.5.08
Namura	CA	12	IAC-06-D2.1.03
Napior	A	27	IAC-06-C4.2.04
Narayanasetti	A	74	IAC-06-C1.5.06
Venkata			
Narayanasetti	A	93	IAC-06-C1.6.03
Venkata			
Narumi	A	39	IAC-06-B6.2.06
Naruo	CA	123	IAC-06-D2.P.1.07
Nasca	CA	2	IAC-06-A2.1.03
Nasser	CA	23	IAC-06-B5.1.05
Natsuka	CA	157	IAC-06-D1.P.2.04
Naumann	CA	45	IAC-06-D3.2.01
Naumann	CA	26	IAC-06-C2.2.03
Nazarenko	A	93	IAC-06-C1.6.08
Nazarenko	CA	74	IAC-06-C1.5.02
Nechitailo	A	132	IAC-06-A1.7.-A2.7.07
Nechitailo	A	99	IAC-06-E1.3.02
Neill	A	11	IAC-06-C4.1.01
Nemec	A	24	IAC-06-B6.1.06
Nenarokomov	CA	141	IAC-06-C2.7.09
Nerchenko	CA	18	IAC-06-A2.2.03
Nese	CA	91	IAC-06-B5.5.12
Neumann	A	169	IAC-06-E6.5.06
Neveu	CA	154	IAC-06-C1.P.7. 03
Neychev	CA	68	IAC-06-A1.5.09
Nicaise	CA	133	IAC-06-A3.P.3.06
Nicklasson	CA	25	IAC-06-C1.2.09
Nicolas	A	148	IAC-06-D5.2.01
Nicolas	A	150	IAC-06-E3.3.05
Nikhezina	CA	35	IAC-06-A2.3.04
Nikitin	CA	69	IAC-06-A2.4.06
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Nimelman	CA	28	IAC-06-D1.1.03

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Nishiyama	CA	96	IAC-06-C4.4.10
Noelke	CA	133	IAC-06-A3.P.3.05
Noelke	CA	152	IAC-06-A1.P.2.08
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Norris	A	20	IAC-06-A4.2.08
Novichikhin	CA	5	IAC-06-B1.1.09
Novikov	A	65	IAC-06-E4.1.06
Novikov	CA	68	IAC-06-A1.5.01
Novikova	A	68	IAC-06-A1.5.06
Novikova	CA	152	IAC-06-A1.P.2.07
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Oei	A	38	IAC-06-B4.2.01
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Ohkawa	CA	96	IAC-06-C4.4.01
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Okada	CA	162	IAC-06-B5.7.06
Okada	CA	87	IAC-06-A3.6.02
Okai	CA	43	IAC-06-C4.5.02
Okawa	CA	139	IAC-06-B6.4.02
Okuizumi	CA	42	IAC-06-C3.1.06
Olds	CA	120	IAC-06-C4.P.1.10
Olds	CA	64	IAC-06-E3.4.01
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Olea	A	108	IAC-06-B1.P.1.13
Oliveira	CA	12	IAC-06-D2.1.08
Oliver	A	101	IAC-06-E5.3.01
olla	A	80	IAC-06-E1.2.04
Ollongren	A	4	IAC-06-A4.1.02
Olson	CA	1	IAC-06-A1.1.04
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Ono	CA	35	IAC-06-A2.3.06	Panitz	CA	85	IAC-06-A1.6.01
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Ori	CA	136	IAC-06-A5.1.04	Pardo	CA	57	IAC-06-B5.3.08
Orlandi	CA	96	IAC-06-C4.4.07	Parenteau	CA	59	IAC-06-C2.4.03
Ortega	CA	93	IAC-06-C1.6.02	Park	CA	108	IAC-06-B1.P.1.01
Ortega	CA	93	IAC-06-C1.6.01	Park	CA	122	IAC-06-D1.P.1.01
Ortega	CA	163	IAC-06-C1.8.08	Parkes	A	162	IAC-06-B5.7.03
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Osipov	CA	56	IAC-06-B4.3.02	Pashchenko	CA	68	IAC-06-A1.5.04
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Oswald	CA	24	IAC-06-B6.1.01	Pashin	CA	28	IAC-06-D1.1.03
Oswald	CA	39	IAC-06-B6.2.04	Pass	CA	101	IAC-06-E5.3.07
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Ovchinnikov	CA	149	IAC-06-E1.4.06	Pater	A	164	IAC-06-C2.8.01
Ovchinnikov	CA	73	IAC-06-B5.4.06	Patkos	CA	107	IAC-06-A5.P.01
Oyama	CA	133	IAC-06-A3.P.3.07	Patricio	CA	26	IAC-06-C2.2.09
Ozawa	A	89	IAC-06-B3.4.03	Patten	CA	38	IAC-06-B4.2.05
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Ozawa	CA	18	IAC-06-A2.2.09	Paula de Vasconce- los	CA	156	IAC-06-C2.P.2.02
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P.N.	CA	10	IAC-06-C2.1.05	Pearce	A	51	IAC-06-E6.2.A.05
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Paglione	CA	115	IAC-06-C1.P.3.03	Pechev	CA	138	IAC-06-B5.6.17
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Pakakis	CA	80	IAC-06-E1.2.06	Peeters	CA	168	IAC-06-E1.5.03
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Palaniappan	CA	28	IAC-06-D1.1.05	Pellis	CA	102	IAC-06-A1.P.1.10
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Palazov	CA	106	IAC-06-A3.P.2.10	Pellon-Bailon	CA	3	IAC-06-A3.1.04
Pallares	CA	18	IAC-06-A2.2.01	Penin	CA	93	IAC-06-C1.6.09
Pallaschke	CA	47	IAC-06-D5.1.03	Penin	CA	140	IAC-06-C1.7.06
Palmer	CA	9	IAC-06-C1.1.04	Penkov	CA	9	IAC-06-C1.1.06
Palmer	CA	57	IAC-06-B5.3.05	Penné	A	73	IAC-06-B5.4.03
Palmerini	A	28	IAC-06-D1.1.04	Penné	CA	37	IAC-06-B1.3.02
Palmerini	A	40	IAC-06-C1.3.04	Penson	CA	73	IAC-06-B5.4.10
Palmerini	A	74	IAC-06-C1.5.03	Penuela	CA	29	IAC-06-D2.2.09
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Pamadi	CA	167	IAC-06-D2.7.-A3.7.03	Perek	A	30	IAC-06-D4.2.04
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				Perrimon	CA	25	IAC-06-C1.2.10
				Perrot	CA	22	IAC-06-B3.2.04
				Persaud	CA	168	IAC-06-E1.5.04
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Raitt	CA	101	IAC-06-E5.3.06	Riha	A	122	IAC-06-D1.P.1.03	
Rajaleid	CA	34	IAC-06-A1.3.04	Risin	A	102	IAC-06-A1.P.1.10	
Rakibi	A	84	IAC-06-E6.4.13	Risin	CA	102	IAC-06-A1.P.1.10	
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Ramachandran	CA	18	IAC-06-A2.2.06	Ritsher	CA	1	IAC-06-A1.1.06	
Rambaux	CA	106	IAC-06-A3.P.2.04	Ritsher	CA	1	IAC-06-A1.1.02	
Ramesh Kumar	A	119	IAC-06-C2.P.1.12	Ritsher	CA	1	IAC-06-A1.1.04	
Ramesh Kumar	A	10	IAC-06-C2.1.05	Rittweger	A	41	IAC-06-C2.3.08	
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Ramírez-Piscina	CA	103	IAC-06-A2.P.01	Rivoldini	CA	106	IAC-06-A3.P.2.04	
Ramusat	CA	59	IAC-06-C2.4.02	Robert	CA	151	IAC-06-E4.3.03	
Ranchoux	CA	141	IAC-06-C2.7.07	Roberts	A	47	IAC-06-D5.1.06	
Rando	CA	3	IAC-06-A3.1.05	Roberts	A	75	IAC-06-C2.5.01	
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Rangsten	CA	91	IAC-06-B5.5.12	Robinson	A	7	IAC-06-B4.1.07	
Ranieri	A	116	IAC-06-C1.P.4.03	Robinson	A	1	IAC-06-A1.1.04	
Ranuzzi	CA	98	IAC-06-D2.6.08	Robinson	CA	98	IAC-06-D2.6.02	
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Ranzoli	A	88	IAC-06-B1.6.06	Rochus	A	164	IAC-06-C2.8.05	
Rapino	CA	6	IAC-06-B3.1.05	Rochus	A	26	IAC-06-C2.2.05	
Rather	CA	61	IAC-06-D1.2.09	Rodiek	CA	95	IAC-06-C3.4.-D3.4.02	
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Rawat	CA	1	IAC-06-A1.1.01	Rodriguez	Man- fredi	CA	133	IAC-06-A3.P.3.08
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Rebolo Gomez	CA	40	IAC-06-C1.3.09	Roeser	CA	18	IAC-06-A2.2.08	
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Rebordão	CA	106	IAC-06-A3.P.2.01	Rogata	CA	106	IAC-06-A3.P.2.01	
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Reinhard	CA	125	IAC-06-E1.P.1.01	Romanov	CA	18	IAC-06-A2.2.08	
Reissaus	CA	36	IAC-06-A3.3.08	Romanov	CA	52	IAC-06-A1.4.01	
Reissaus	CA	56	IAC-06-B4.3.06	Romashkin	CA	124	IAC-06-D2.P.2.06	
Reitz	A	132	IAC-06-A1.7.-A2.7.02	Romashkin	CA	98	IAC-06-D2.6.04	
Reitz	CA	85	IAC-06-A1.6.01	Romero	A	125	IAC-06-E1.P.1.03	
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Rémond	CA	26	IAC-06-C2.2.02	Roncioni	A	44	IAC-06-D2.3.09	
Ress	A	44	IAC-06-D2.3.06	Rong	CA	116	IAC-06-C1.P.4.02	
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Reuter	CA	167	IAC-06-D2.7.-A3.7.01	Rooney	CA	161	IAC-06-B3.6.05	
Reutzel	CA	18	IAC-06-A2.2.07	Roose	CA	26	IAC-06-C2.2.05	
Reyes	CA	44	IAC-06-D2.3.05	Rosado	CA	132	IAC-06-A1.7.-A2.7.06	
Reynolds	CA	1	IAC-06-A1.1.01	Rosenberg	A	60	IAC-06-C3.2.03	
Rhatigan	A	132	IAC-06-A1.7.-A2.7.09	Rosenqvist	CA	21	IAC-06-B1.2.07	
Ribbelink	A	50	IAC-06-E6.2.05	Roser	A	145	IAC-06-D1.4.05	
Riccio	CA	119	IAC-06-C2.P.1.13	Rosetti	A	161	IAC-06-B3.6.07	
Riccio	CA	10	IAC-06-C2.1.08	Rosmalen	CA	169	IAC-06-E6.5.13	
Richard	CA	87	IAC-06-A3.6.09	Rossini	CA	28	IAC-06-D1.1.05	
Richards	A	28	IAC-06-D1.1.03	Rothermel	CA	56	IAC-06-B4.3.06	
Richards	A	135	IAC-06-A3.P.6.02	Rothkaehl	CA	56	IAC-06-B4.3.09	
Richards	CA	36	IAC-06-A3.3.03	Rothmund	A	151	IAC-06-E4.3.04	
Richter	CA	107	IAC-06-A5.P.06					



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Rotteveel	A	138	IAC-06-B5.6.07	Salado	A	94	IAC-06-C2.6.05
Rousar	CA	11	IAC-06-C4.1.01	Sallaberger	CA	36	IAC-06-A3.3.03
Roux	CA	37	IAC-06-B1.3.03	Sallaberger	CA	54	IAC-06-A5.2.03
Rover	CA	122	IAC-06-D1.P.1.03	Sallaberger	CA	36	IAC-06-A3.3.07
Rubin	CA	52	IAC-06-A1.4.09	Sallaberger	CA	135	IAC-06-A3.P.6.02
Rubin	A	72	IAC-06-B3.3.03	Salmon	CA	75	IAC-06-C2.5.03
Ruffini	CA	37	IAC-06-B1.3.06	Salnitskiy	CA	1	IAC-06-A1.1.03
Ruffini	CA	55	IAC-06-B1.4.04	Salotti	A	168	IAC-06-E1.5.06
Ruffini	CA	83	IAC-06-E5.2.07	Salvador Edo	A	61	IAC-06-D1.2.06
Rufino	A	114	IAC-06-C1.P.2.01	Salvatore	A	94	IAC-06-C2.6.06
Rufolo	CA	59	IAC-06-C2.4.05	Sams	CA	17	IAC-06-A1.2.04
Rufolo	CA	44	IAC-06-D2.3.09	Samsonov	CA	68	IAC-06-A1.5.01
Rugescu	CA	102	IAC-06-A1.P.1.07	Sanchez Cuartielles	CA	70	IAC-06-A3.5.08
Rugescu	A	91	IAC-06-B5.5.11	Sanchez Perez	A	163	IAC-06-C1.8.09
Rugescu	A	151	IAC-06-E4.3.05	Sanchez-	CA	49	IAC-06-E4.4.01
Rugescu	A	30	IAC-06-D4.2.07	Muniosguren			
Rugescu	A	102	IAC-06-A1.P.1.07	Sánchez-Ortiz	A	24	IAC-06-B6.1.09
Rugescu	A	46	IAC-06-D4.3.09	Sánchez-Ortiz	A	106	IAC-06-A3.P.2.05
Ruhl	CA	119	IAC-06-C2.P.1.03	Sánchez-Ortiz	A	117	IAC-06-C1.P.5.01
Ruiz	A	24	IAC-06-B6.1.07	Sanchis Muñoz	CA	63	IAC-06-E2.3.04
Ruiz	A	18	IAC-06-A2.2.01	Sandau	A	73	IAC-06-B5.4.04
Ruiz	A	103	IAC-06-A2.P.08	Sanders	CA	91	IAC-06-B5.5.13
Ruiz	CA	103	IAC-06-A2.P.02	Sandri Tussiwand	A	142	IAC-06-C4.P.3.04
Ruiz	CA	103	IAC-06-A2.P.01	Sanin	CA	18	IAC-06-A2.2.08
Ruiz Laso	CA	22	IAC-06-B3.2.06	Sanjurjo	CA	139	IAC-06-B6.4.03
Ruizhen	A	59	IAC-06-C2.4.06	Santana Jr.	CA	12	IAC-06-D2.1.08
Rum	CA	5	IAC-06-B1.1.03	Santoni	A	9	IAC-06-C1.1.05
Rummel	A	85	IAC-06-A1.6.08	Santoni	A	95	IAC-06-C3.4.-D3.4.04
Rummel	A	68	IAC-06-A1.5.02	Santoni	A	15	IAC-06-E1.1.10
Rummel	A	36	IAC-06-A3.3.09	Santoni	CA	73	IAC-06-B5.4.06
Rumyantsev	A	24	IAC-06-B6.1.10	Santovincenzo	CA	3	IAC-06-A3.1.04
Rumyantsev	CA	112	IAC-06-B6.P.1.01	Sanz-Andres	A	49	IAC-06-E4.4.03
Running	A	138	IAC-06-B5.6.03	Sanz-Aranguéz	A	49	IAC-06-E4.4.05
Russomano	A	103	IAC-06-A2.P.07	Sapunova	CA	68	IAC-06-A1.5.09
Russu	A	63	IAC-06-E2.3.04	Sapunova	CA	103	IAC-06-A2.P.06
Ryan	A	92	IAC-06-B6.3.02	Sasada	A	157	IAC-06-D1.P.2.06
Ryan	CA	92	IAC-06-B6.3.11	Sasaki	CA	76	IAC-06-C3.3.04
Rygalov	CA	102	IAC-06-A1.P.1.01	Sasaki	CA	133	IAC-06-A3.P.3.13
Ryzenko	A	16	IAC-06-E3.1.A.07	Sasaki	A	42	IAC-06-C3.1.06
Ryzenko	CA	150	IAC-06-E3.3.07	Sasaki	CA	60	IAC-06-C3.2.01
				Sasikumar	A	33	IAC-06-E6.1.05
				Sato	CA	27	IAC-06-C4.2.09
				Sato	A	43	IAC-06-C4.5.02
				Satorre	CA	85	IAC-06-A1.6.05
				Sau	A	131	IAC-06-E5.P.01
				Sauer	A	141	IAC-06-C2.7.04
				Savadkin	CA	122	IAC-06-D1.P.1.05
				Savino	A	35	IAC-06-A2.3.03
				Savino	CA	123	IAC-06-D2.P.1.08
				Savino	CA	59	IAC-06-C2.4.04
				Sayenko	A	34	IAC-06-A1.3.06
				Saylor	CA	1	IAC-06-A1.1.06
				Saylor	CA	1	IAC-06-A1.1.02
				Saylor	CA	1	IAC-06-A1.1.03
				Sbytov	CA	112	IAC-06-B6.P.1.08
				Scala	CA	68	IAC-06-A1.5.07
				Scatteia	A	59	IAC-06-C2.4.04
				Scatteia	A	64	IAC-06-E3.4.09
				Scatteia	A	59	IAC-06-C2.4.05
				Schaefer	A	92	IAC-06-B6.3.11
				Schaefer	CA	92	IAC-06-B6.3.02
				Schartner	CA	96	IAC-06-C4.4.04
				Schartner	CA	106	IAC-06-A3.P.2.06
				Scheeres	CA	74	IAC-06-C1.5.05
				Schenkel	CA	83	IAC-06-E5.2.05
				Schettino	CA	98	IAC-06-D2.6.08
				Schildknecht	A	24	IAC-06-B6.1.04
				Schildknecht	CA	24	IAC-06-B6.1.01
				Schildknecht	CA	112	IAC-06-B6.P.1.04
				Schildknecht	CA	112	IAC-06-B6.P.1.09

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Saavedra	CA	40	IAC-06-C1.3.09
Sabatini	CA	28	IAC-06-D1.1.04
Sabatini	CA	74	IAC-06-C1.5.03
Sabol	CA	24	IAC-06-B6.1.08
Saccani	A	38	IAC-06-B4.2.06
Sachdev	A	7	IAC-06-B4.1.03
Sacotte	A	7	IAC-06-B4.1.02
Sacotte	CA	16	IAC-06-E3.1.A.03
Safari	CA	41	IAC-06-C2.3.09
Safronov	CA	41	IAC-06-C2.3.11
Saganti	A	133	IAC-06-A3.P.3.14
Saganti	CA	168	IAC-06-E1.5.02
Saghir	CA	18	IAC-06-A2.2.02
Saghir	CA	69	IAC-06-A2.4.09
Sahara	A	11	IAC-06-C4.1.07
Sahara	CA	76	IAC-06-C3.3.04
Saile	A	63	IAC-06-E2.3.02
Saile	CA	138	IAC-06-B5.6.18
Saile	CA	157	IAC-06-D1.P.2.07
Saile	CA	114	IAC-06-C1.P.2.04
Saito	CA	56	IAC-06-B4.3.08
Saito	CA	76	IAC-06-C3.3.02
Saito	CA	43	IAC-06-C4.5.04
Saito	A	42	IAC-06-C3.1.04
Saito	CA	76	IAC-06-C3.3.08

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Schildknecht	CA	112	IAC-06-B6.P.1.03	Seydel	A	169	IAC-06-E6.5.13
Schildknecht	CA	24	IAC-06-B6.1.12	Sghedoni	CA	40	IAC-06-C1.3.07
Schiller	CA	52	IAC-06-A1.4.08	Sgubini	CA	73	IAC-06-B5.4.06
Schilling	CA	57	IAC-06-B5.3.07	Sgubini	CA	28	IAC-06-D1.1.04
Schilling	CA	8	IAC-06-B5.2.05	Shagayda	A	96	IAC-06-C4.4.08
Schingler	CA	6	IAC-06-B3.1.04	Shahryari	A	122	IAC-06-D1.P.1.09
Schingler	CA	136	IAC-06-A5.1.02	Shalimov	CA	35	IAC-06-A2.3.04
Schingler	CA	127	IAC-06-E3.P.1.02	Shanbao	A	22	IAC-06-B3.2.10
Schirmann	A	19	IAC-06-A3.2.02	Shang	A	106	IAC-06-A3.P.2.07
Schlacht	A	102	IAC-06-A1.P.1.06	Shankar Kumar	A	117	IAC-06-C1.P.5.04
Schmidt	A	31	IAC-06-E2.1.10	Shanygin	CA	26	IAC-06-C2.2.08
Schmidt	CA	8	IAC-06-B5.2.05	Shashkovskiy	CA	152	IAC-06-A1.P.2.07
Schmidt	CA	3	IAC-06-A3.1.03	Shaw	A	143	IAC-06-C4.P.4.04
Schneider	A	86	IAC-06-A2.5.08	Shea	CA	53	IAC-06-A3.4.02
Schnitzer	CA	60	IAC-06-C3.2.03	Sheeparamatti	CA	131	IAC-06-E5.P.02
Schoeller	CA	17	IAC-06-A1.2.08	Sheptun	A	6	IAC-06-B3.1.07
Schoenmaekers	CA	87	IAC-06-A3.6.06	Sherwood	A	16	IAC-06-E3.1.A.06
Scholl	A	5	IAC-06-B1.1.10	Shevtsova	A	69	IAC-06-A2.4.05
Scholl	A	99	IAC-06-E1.3.07	Shi	CA	60	IAC-06-C3.2.04
Schonenborg	CA	52	IAC-06-A1.4.08	Shida	CA	91	IAC-06-B5.5.06
Schoppe	A	83	IAC-06-E5.2.01	Shijie	A	53	IAC-06-A3.4.03
Schreier	A	12	IAC-06-D2.1.07	Shijie	CA	53	IAC-06-A3.4.06
Schreier	CA	5	IAC-06-B1.1.03	Shikui	A	75	IAC-06-C2.5.11
Schrögl	A	33	IAC-06-E6.1.03	Shimada	A	77	IAC-06-C4.3.02
Schrögl	A	100	IAC-06-E3.5.	Shimada	CA	120	IAC-06-C4.P.1.02
Schuch	CA	119	IAC-06-C2.P.1.06	Shiming	A	108	IAC-06-B1.P.1.15
Schuch	CA	108	IAC-06-B1.P.1.04	Shimoda	CA	15	IAC-06-E1.1.02
Schuerger	CA	133	IAC-06-A3.P.3.16	Shimoyama	A	133	IAC-06-A3.P.3.07
Schuessler	A	94	IAC-06-C2.6.09	Shinohara	CA	42	IAC-06-C3.1.06
Schulte	CA	36	IAC-06-A3.3.08	Shiraki	A	7	IAC-06-B4.1.04
Schumacher	CA	166	IAC-06-D1.5.01	Shkiro	CA	18	IAC-06-A2.2.08
Schumann	CA	37	IAC-06-B1.3.03	Shmeld	CA	112	IAC-06-B6.P.1.03
Schuon	A	108	IAC-06-B1.P.1.11	Shnyakin	A	11	IAC-06-C4.1.04
Schwartze	CA	86	IAC-06-A2.5.08	Short	CA	3	IAC-06-A3.1.04
Schwingel	A	59	IAC-06-C2.4.10	Shostak	A	4	IAC-06-A4.1.04
Schwingshackl	A	75	IAC-06-C2.5.02	Shotwell	CA	124	IAC-06-D2.P.2.01
Scott	CA	8	IAC-06-B5.2.03	Shotwell	CA	91	IAC-06-B5.5.01
Sdunnus	CA	119	IAC-06-C2.P.1.04	Shotwell	A	36	IAC-06-A3.3.02
Seabra	CA	115	IAC-06-C1.P.3.03	Shuch	A	4	IAC-06-A4.1.01
Seaford	CA	167	IAC-06-D2.7.-A3.7.03	Shuhua	A	59	IAC-06-C2.4.08
Seagram	CA	38	IAC-06-B4.2.08	Shuhua	CA	164	IAC-06-C2.8.06
Sebastian	A	74	IAC-06-C1.5.04	Shull	A	79	IAC-06-D3.3.01
Sebastian	CA	163	IAC-06-C1.8.08	Shutko	CA	5	IAC-06-B1.1.09
Sebastian Martinez	CA	133	IAC-06-A3.P.3.08	Sicard	A	148	IAC-06-D5.2.04
Seboldt	A	106	IAC-06-A3.P.2.06	Sickinger	CA	53	IAC-06-A3.4.07
Seboldt	CA	96	IAC-06-C4.4.04	Siddiqi	A	145	IAC-06-D1.4.03
Seeliger	CA	59	IAC-06-C2.4.10	Sigmund	CA	59	IAC-06-C2.4.07
Segura	CA	164	IAC-06-C2.8.10	Signoriello	CA	142	IAC-06-C4.P.3.02
Seitzer	CA	24	IAC-06-B6.1.02	Silva	A	166	IAC-06-D1.5.06
Selart	CA	34	IAC-06-A1.3.04	Simchi-Levi	CA	97	IAC-06-D1.3.08
Selch	A	52	IAC-06-A1.4.05	Simmons	A	97	IAC-06-D1.3.07
Seleznirov	CA	77	IAC-06-C4.3.07	Simon	A	91	IAC-06-B5.5.07
Selivanov	CA	9	IAC-06-C1.1.06	Simon	CA	49	IAC-06-E4.4.05
Semenov	A	11	IAC-06-C4.1.09	Simon	A	29	IAC-06-D2.2.09
Senba	A	75	IAC-06-C2.5.10	Simpson	A	133	IAC-06-A3.P.3.04
Senchenkov	A	35	IAC-06-A2.3.04	Sinditskii	CA	142	IAC-06-C4.P.3.02
Senent	CA	58	IAC-06-C1.4.04	Singamsetty	A	67	IAC-06-E6.3.05
Sensi	CA	6	IAC-06-B3.1.05	Singh	CA	167	IAC-06-D2.7.-A3.7.10
Sepulveda	CA	28	IAC-06-D1.1.05	Singh	A	55	IAC-06-B1.4.09
Sequeira	CA	25	IAC-06-C1.2.05	Singleterry	CA	168	IAC-06-E1.5.02
Sergienko	CA	120	IAC-06-C4.P.1.09	Sinjak	CA	68	IAC-06-A1.5.01
Sergo	CA	119	IAC-06-C2.P.1.09	Sip	CA	133	IAC-06-A3.P.3.10
Serra	CA	151	IAC-06-E4.3.03	Sirko	A	44	IAC-06-D2.3.05
Seurig	A	56	IAC-06-B4.3.06	Sirmain	CA	2	IAC-06-A2.1.03
Sevastiyarov	A	90	IAC-06-B4.4.04	Sivac	CA	19	IAC-06-A3.2.02
Sevastiyarov	A	7	IAC-06-B4.1.06	Sjöberg	A	21	IAC-06-B1.2.07
Sevastiyanova	A	72	IAC-06-B3.3.02	Skocki	A	104	IAC-06-A3.P.03
Severini	CA	77	IAC-06-C4.3.03	Skocki	CA	108	IAC-06-B1.P.1.16
Seward	CA	3	IAC-06-A3.1.07	Skoog	A	151	IAC-06-E4.3.02
Sexton	CA	167	IAC-06-D2.7.-A3.7.01	Skryabin	CA	44	IAC-06-D2.3.10

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Skuratov	CA	68	IAC-06-A1.5.01	Srivastava	CA	71	IAC-06-B1.5.05
Slack	CA	1	IAC-06-A1.1.04	Srivastava	CA	5	IAC-06-B1.1.08
Slazer	CA	90	IAC-06-B4.4.06	Srivastava	CA	71	IAC-06-B1.5.08
Slenzka	CA	68	IAC-06-A1.5.05	Stabroth	A	39	IAC-06-B6.2.04
Sleptsova	CA	35	IAC-06-A2.3.04	Stabroth	CA	39	IAC-06-B6.2.01
Sliski	CA	4	IAC-06-A4.1.11	Stabroth	CA	39	IAC-06-B6.2.07
Sliski	CA	4	IAC-06-A4.1.10	Stacey	CA	90	IAC-06-B4.4.03
Slyunyaev	A	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.09	Stagnaro	CA	57	IAC-06-B5.3.08
Slyvyns'kyy	CA	119	IAC-06-C2.P.1.11	Stancato	A	125	IAC-06-E1.P.1.02
Slyvynska	CA	119	IAC-06-C2.P.1.11	Stanciu	CA	144	IAC-06-C4.P.5.01
Slyvyns'kyy	A	119	IAC-06-C2.P.1.11	Stanev	CA	56	IAC-06-B4.3.09
Smalley	A	31	IAC-06-E2.1.08	Stansbery	CA	92	IAC-06-B6.3.10
Smirnov	CA	9	IAC-06-C1.1.08	Stapleton	CA	132	IAC-06-A1.7.-A2.7.06
Smirnov	CA	115	IAC-06-C1.P.3.03	Starke	CA	44	IAC-06-D2.3.01
Smirnov	A	18	IAC-06-A2.2.03	Starnes	CA	54	IAC-06-A5.2.07
Smirnov	A	69	IAC-06-A2.4.06	Starnone	A	122	IAC-06-D1.P.1.04
Smirnov	CA	2	IAC-06-A2.1.05	Stasiewicz	CA	56	IAC-06-B4.3.09
Smirnova	CA	17	IAC-06-A1.2.06	Stasolla	A	71	IAC-06-B1.5.06
Smith	A	96	IAC-06-C4.4.09	Stearns	A	71	IAC-06-B1.5.07
Smith	A	38	IAC-06-B4.2.08	Steckling	CA	19	IAC-06-A3.2.07
Smith	CA	18	IAC-06-A2.2.10	Steelant	A	43	IAC-06-C4.5.01
Smith	CA	86	IAC-06-A2.5.01	Steelant	CA	141	IAC-06-C2.7.06
Smith	A	67	IAC-06-E6.3.08	Stein	A	17	IAC-06-A1.2.09
Smith	CA	82	IAC-06-E4.2.07	Steinberg	CA	99	IAC-06-E1.3.03
Smith	A	17	IAC-06-A1.2.01	Steinberg	CA	80	IAC-06-E1.2.01
Smith	CA	17	IAC-06-A1.2.04	Steindl	CA	30	IAC-06-D4.2.05
Smitherman	A	30	IAC-06-D4.2.02	Stella	CA	141	IAC-06-C2.7.11
Smoczarski	A	33	IAC-06-E6.1.07	Stenmark	CA	138	IAC-06-B5.6.14
Snead	CA	2	IAC-06-A2.1.07	Stenmark	CA	108	IAC-06-B1.P.1.06
Snoddy	A	167	IAC-06-D2.7.-A3.7.05	Stenmark	CA	138	IAC-06-B5.6.04
Sobue	A	47	IAC-06-D5.1.04	Stepanyants	CA	112	IAC-06-B6.P.1.08
Sochilina	CA	112	IAC-06-B6.P.1.03	Stephens	A	118	IAC-06-C1.P.6.01
Soh	A	114	IAC-06-C1.P.2.02	Sterken	A	65	IAC-06-E4.1.05
Sohl	CA	107	IAC-06-A5.P.06	Sterns	CA	169	IAC-06-E6.5.04
Sokolov	CA	92	IAC-06-B6.3.04	Stockman	CA	26	IAC-06-C2.2.05
Solana	CA	108	IAC-06-B1.P.1.13	Stojak	A	150	IAC-06-E3.3.08
Solans	CA	99	IAC-06-E1.3.08	Stoker	CA	107	IAC-06-A5.P.05
Soller	A	77	IAC-06-C4.3.05	Stone	A	81	IAC-06-E3.2.01
Soller	A	11	IAC-06-C4.1.05	Stone	A	160	IAC-06-E1.P.5.03
Som	A	85	IAC-06-A1.6.06	Stöveken	CA	24	IAC-06-B6.1.01
Som	A	104	IAC-06-A3.P.06	Stöveken	CA	112	IAC-06-B6.P.1.09
Sommer	A	13	IAC-06-D3.1.07	Stoyanov	CA	106	IAC-06-A3.P.2.10
Soni	CA	74	IAC-06-C1.5.06	Strahler	CA	21	IAC-06-B1.2.02
Soni	CA	93	IAC-06-C1.6.03	Strange	A	106	IAC-06-A3.P.2.08
Sonney	CA	74	IAC-06-C1.5.06	Strange	CA	93	IAC-06-C1.6.05
Sonney	CA	93	IAC-06-C1.6.03	Stratilatov	CA	103	IAC-06-A2.P.03
Soper	A	107	IAC-06-A5.P.03	Stratton	CA	166	IAC-06-D1.5.03
Sorensen	CA	119	IAC-06-C2.P.1.04	Strauss	CA	164	IAC-06-C2.8.12
Sorice	CA	94	IAC-06-C2.6.10	Streppel	CA	96	IAC-06-C4.4.04
Sorokin	A	56	IAC-06-B4.3.05	Streppel	CA	106	IAC-06-A3.P.2.06
Soula	CA	37	IAC-06-B1.3.03	Strikwerda	CA	61	IAC-06-D1.2.01
Soulat	A	55	IAC-06-B1.4.04	Strippoli	CA	93	IAC-06-C1.6.02
Soulat	CA	37	IAC-06-B1.3.06	Strömsholm	A	101	IAC-06-E5.3.02
Southwood	A	16	IAC-06-E3.1.A.03	Stube	A	94	IAC-06-C2.6.04
Souverein	A	144	IAC-06-C4.P.5.05	Studor	A	92	IAC-06-B6.3.06
Souza	CA	8	IAC-06-B5.2.03	Stuffer	A	37	IAC-06-B1.3.02
Soyris	CA	59	IAC-06-C2.4.03	Sturm II	CA	54	IAC-06-A5.2.06
Spencer	CA	92	IAC-06-B6.3.02	Sudars	CA	149	IAC-06-E1.4.06
Spencer	CA	92	IAC-06-B6.3.11	Suedfeld	A	1	IAC-06-A1.1.05
Spivey	CA	18	IAC-06-A2.2.10	Suenaga	A	72	IAC-06-B3.3.05
Spivey	CA	86	IAC-06-A2.5.01	Sugawara	A	162	IAC-06-B5.7.08
Spohn	CA	107	IAC-06-A5.P.06	Sugawara	CA	76	IAC-06-C3.3.04
Spores	CA	95	IAC-06-C3.4.-D3.4.02	Sugawara	CA	131	IAC-06-E5.P.06
Spray	CA	87	IAC-06-A3.6.09	sugimura	CA	142	IAC-06-C4.P.3.10
Springer	A	151	IAC-06-E4.3.06	Sugita	CA	57	IAC-06-B5.3.02
Springer	CA	151	IAC-06-E4.3.06	Sugiura	CA	34	IAC-06-A1.3.07
Sreetharan	CA	4	IAC-06-A4.1.11	Sukhanov	CA	23	IAC-06-B5.1.06
Sreetharan	CA	4	IAC-06-A4.1.10	Sumin	A	124	IAC-06-D2.P.2.09
Sridhara Murthi	CA	71	IAC-06-B1.5.01	Sumin	A	59	IAC-06-C2.4.09
				Sumin	CA	29	IAC-06-D2.2.03

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Summerer	A	95	IAC-06-C3.4.-D3.4.01	Tamagno	CA	143	IAC-06-C4.P.4.10
Summerer	A	76	IAC-06-C3.3.05	Tamir	A	155	IAC-06-C1.P.8.02
Summerer	A	42	IAC-06-C3.1.02	Tanaka	A	60	IAC-06-C3.2.01
Summerer	CA	76	IAC-06-C3.3.03	Tanaka	CA	42	IAC-06-C3.1.06
Summerer	CA	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.04	Tanaka	CA	76	IAC-06-C3.3.03
Summerer	CA	146	IAC-06-D2.8.-C3.5.-D3.5.-C4.7.08	Tanaka	CA	26	IAC-06-C2.2.07
Sumrall	CA	62	IAC-06-D2.4.04	Tang	CA	74	IAC-06-C1.5.01
Sun	CA	156	IAC-06-C2.P.2.06	Tang	CA	113	IAC-06-C1.P.1.01
Sun	CA	23	IAC-06-B5.1.02	Tang	A	110	IAC-06-B3.P.4.01
Sundahl	A	84	IAC-06-E6.4.12	Tang	A	137	IAC-06-B3.5.03
Sundaesan	A	52	IAC-06-A1.4.07	Tang	A	124	IAC-06-D2.P.2.08
Suowen	CA	94	IAC-06-C2.6.11	Tani	CA	27	IAC-06-C4.2.09
Surdal	A	108	IAC-06-B1.P.1.09	Tani	CA	78	IAC-06-D2.5.01
Sutherland	CA	96	IAC-06-C4.4.07	Tani	CA	43	IAC-06-C4.5.06
Suzuki	A	16	IAC-06-E3.1.A.05	Tani	CA	123	IAC-06-D2.P.1.03
Suzuki	CA	56	IAC-06-B4.3.08	Tani	CA	43	IAC-06-C4.5.09
Suzuki	A	6	IAC-06-B3.1.09	Tank	A	68	IAC-06-A1.5.04
Suzuki	CA	137	IAC-06-B3.5.01	Tanner	A	28	IAC-06-D1.1.01
Suzuki	CA	22	IAC-06-B3.2.07	Tanner	CA	28	IAC-06-D1.1.07
Svistunova	A	152	IAC-06-A1.P.2.06	Tanzman	A	119	IAC-06-C2.P.1.07
Svotina	CA	107	IAC-06-A5.P.08	Tappero	A	137	IAC-06-B3.5.07
Swan	A	30	IAC-06-D4.2.01	Tarabini	A	93	IAC-06-C1.6.01
Swanson	CA	79	IAC-06-D3.3.06	Tarabini	CA	58	IAC-06-C1.4.01
Sweeting	CA	161	IAC-06-B3.6.05	Tarabini	CA	163	IAC-06-C1.8.08
Sweeting	CA	73	IAC-06-B5.4.10	Tarter	CA	4	IAC-06-A4.1.04
Sweeting	CA	57	IAC-06-B5.3.01	Tateshita	CA	47	IAC-06-D5.1.04
Sweeting	CA	91	IAC-06-B5.5.04	Tato	CA	49	IAC-06-E4.4.06
Sweeting	CA	54	IAC-06-A5.2.08	Tatry	A	23	IAC-06-B5.1.01
Sweeting	CA	21	IAC-06-B1.2.06	Taubmann	A	75	IAC-06-C2.5.05
Sydney	CA	24	IAC-06-B6.1.08	Taylor	A	97	IAC-06-D1.3.08
Sytshev	A	18	IAC-06-A2.2.08	Taylor	A	167	IAC-06-D2.7.-A3.7.01
Szalai	A	122	IAC-06-D1.P.1.11	Taylor	A	43	IAC-06-C4.5.07
Szalai	CA	56	IAC-06-B4.3.09	Taylor	A	132	IAC-06-A1.7.-A2.7.06
Szewczyk	CA	52	IAC-06-A1.4.05	Taylor	CA	167	IAC-06-D2.7.-A3.7.03

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T. Soltani	A	31	IAC-06-E2.1.04	Taylor	CA	167	IAC-06-D2.7.-A3.7.03
Tabata	CA	26	IAC-06-C2.2.07	Tecchio	CA	28	IAC-06-D1.1.05
Tache	A	164	IAC-06-C2.8.04	Telaar	A	55	IAC-06-B1.4.06
Tachihara	CA	148	IAC-06-D5.2.03	Telekh	CA	165	IAC-06-C4.6.03
Tadakuma	A	78	IAC-06-D2.5.01	Tell	CA	52	IAC-06-A1.4.08
Tadakuma	CA	123	IAC-06-D2.P.1.03	Telljohann	CA	3	IAC-06-A3.1.04
Tafazoli	CA	8	IAC-06-B5.2.03	Temple	A	151	IAC-06-E4.3.01
Taguchi	CA	43	IAC-06-C4.5.02	Temple	A	65	IAC-06-E4.1.04
Takadama	CA	26	IAC-06-C2.2.10	Tennen	A	169	IAC-06-E6.5.04
Takahashi	A	168	IAC-06-E1.5.07	Teofilatto	CA	25	IAC-06-C1.2.07
Takahashi	CA	158	IAC-06-E1.P.3.02	Terui	CA	139	IAC-06-B6.4.02
Takahashi	CA	144	IAC-06-C4.P.5.06	Tescione	CA	119	IAC-06-C2.P.1.13
Takano	A	60	IAC-06-C3.2.05	Tescione	CA	10	IAC-06-C2.1.08
Takanori	A	162	IAC-06-B5.7.07	Thakore	A	19	IAC-06-A3.2.05
Takaya-Umehara	A	84	IAC-06-E6.4.02	Thakore	A	135	IAC-06-A3.P.6.03
Takegahara	CA	120	IAC-06-C4.P.1.01	Thakore	A	14	IAC-06-D4.1.05
Takegahara	CA	143	IAC-06-C4.P.4.14	Thakore	A	53	IAC-06-A3.4.04
Takegoshi	CA	43	IAC-06-C4.5.04	Theil	A	149	IAC-06-E1.4.06
Takenaga	A	18	IAC-06-A2.2.09	Theil	CA	157	IAC-06-D1.P.2.01
Takeuchi	A	120	IAC-06-C4.P.1.02	Theil	CA	168	IAC-06-E1.5.08
Talalaev	CA	11	IAC-06-C4.1.09	Theil	CA	25	IAC-06-C1.2.06
Talbot	CA	29	IAC-06-D2.2.03	Theisinger	CA	28	IAC-06-D1.1.07
Talbot	CA	167	IAC-06-D2.7.-A3.7.07	Theron	CA	77	IAC-06-C4.3.07
Talbot	CA	44	IAC-06-D2.3.03	Thiele	CA	140	IAC-06-C1.7.05
Talbot	CA	62	IAC-06-D2.4.06	Thiele	CA	36	IAC-06-A3.3.08
Talbot	CA	27	IAC-06-C4.2.03	Thiercellin	CA	69	IAC-06-A2.4.06
Talebzadeh	CA	101	IAC-06-E5.3.08	Thirsk	CA	99	IAC-06-E1.3.03
Talish	CA	52	IAC-06-A1.4.09	Thizy	CA	26	IAC-06-C2.2.05
Tamagno	CA	144	IAC-06-C4.P.5.02	Thoma	CA	56	IAC-06-B4.3.06
				Thomas	CA	7	IAC-06-B4.1.07
				Thomas	CA	56	IAC-06-B4.3.06
				Thomas	A	166	IAC-06-D1.5.02
				Thomas	CA	140	IAC-06-C1.7.09
				Thomas	CA	62	IAC-06-D2.4.02
				Thomin	A	2	IAC-06-A2.1.04
				Thompson	A	160	IAC-06-E1.P.5.04
				Thompson	CA	149	IAC-06-E1.4.09

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Thompson	CA	101	IAC-06-E5.3.06
Thompson	CA	99	IAC-06-E1.3.01
Thompson	CA	80	IAC-06-E1.2.06
Thompson	CA	101	IAC-06-E5.3.03
Thompson	CA	22	IAC-06-B3.2.05
Thornell	CA	31	IAC-06-E2.1.02
Thorstenson	A	86	IAC-06-A2.5.06
Thorstenson	CA	86	IAC-06-A2.5.07
Tian	A	112	IAC-06-B6.P.1.07
Tian	A	163	IAC-06-C1.8.10
Tian	CA	134	IAC-06-A3.P.5.01
Tietz	A	43	IAC-06-C4.5.05
Tishchenko	CA	5	IAC-06-B1.1.09
Titenko	CA	112	IAC-06-B6.P.1.09
Titenko	CA	24	IAC-06-B6.1.12
Titomanlio	CA	86	IAC-06-A2.5.06
Titov	CA	141	IAC-06-C2.7.09
Tobehn	CA	73	IAC-06-B5.4.03
Toglia	CA	40	IAC-06-C1.3.04
Tomas Damgaard	CA	77	IAC-06-C4.3.08
Tomasi	CA	142	IAC-06-C4.P.3.02
Tomassini	CA	78	IAC-06-D2.5.07
Tomatis	A	29	IAC-06-D2.2.07
Tombini	CA	28	IAC-06-D1.1.05
Tomei	CA	62	IAC-06-D2.4.10
Tomioka	CA	27	IAC-06-C4.2.09
Tonet	CA	28	IAC-06-D1.1.05
Tong	A	94	IAC-06-C2.6.07
Tores	A	83	IAC-06-E5.2.04
Toribio	CA	111	IAC-06-B3.P.6.01
Törnqvist	CA	86	IAC-06-A2.5.07
Torre	A	6	IAC-06-B3.1.08
Torres	A	49	IAC-06-E4.4.06
Torres	CA	74	IAC-06-C1.5.04
Tortora	A	114	IAC-06-C1.P.2.03
Tortora	CA	138	IAC-06-B5.6.09
Tortora	CA	93	IAC-06-C1.6.04
Tortora	CA	6	IAC-06-B3.1.05
Tortora	CA	117	IAC-06-C1.P.5.01
Touboul	CA	2	IAC-06-A2.1.02
Touboul	CA	2	IAC-06-A2.1.01
Tough	A	20	IAC-06-A4.2.03
Toyoda	A	60	IAC-06-C3.2.02
Toyoda	CA	89	IAC-06-B3.4.04
Toyoshima	A	89	IAC-06-B3.4.04
Traub	CA	3	IAC-06-A3.1.01
Traub	CA	105	IAC-06-A3.P.1.04
Trenchard	CA	1	IAC-06-A1.1.04
Tresaco	CA	24	IAC-06-B6.1.09
Tribess	CA	125	IAC-06-E1.P.1.02
Trigwell	CA	133	IAC-06-A3.P.3.16
Tripp	CA	36	IAC-06-A3.3.03
Tripp	CA	28	IAC-06-D1.1.03
Tripp	CA	135	IAC-06-A3.P.6.02
Trivailo	A	41	IAC-06-C2.3.07
Troger	A	30	IAC-06-D4.2.05
Troiani	A	138	IAC-06-B5.6.09
trollheden	A	77	IAC-06-C4.3.04
Tronick	CA	85	IAC-06-A1.6.03
Troznai	CA	122	IAC-06-D1.P.1.11
Trujillo San Martin	A	102	IAC-06-A1.P.1.02
Trur Nicli	A	127	IAC-06-E3.P.1.04
Tseng	A	138	IAC-06-B5.6.11
Tsotra	CA	164	IAC-06-C2.8.03
Tsuda	CA	138	IAC-06-B5.6.10
Tsuji	CA	7	IAC-06-B4.1.04
Tsunoda	CA	119	IAC-06-C2.P.1.10
Tsuruda	A	92	IAC-06-B6.3.08
Tu	A	58	IAC-06-C1.4.06
Tuccari	CA	112	IAC-06-B6.P.1.03

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Tuma	CA	98	IAC-06-D2.6.02
Tumino	CA	98	IAC-06-D2.6.05
Tumino	CA	98	IAC-06-D2.6.03
Turci	CA	60	IAC-06-C3.2.09
Turkin	A	41	IAC-06-C2.3.11
Turner	CA	86	IAC-06-A2.5.07
Turner	CA	17	IAC-06-A1.2.07
Tymoshenko	A	43	IAC-06-C4.5.10
Tzvetkova	CA	103	IAC-06-A2.P.06

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Udrea	CA	140	IAC-06-C1.7.05
Ueba	CA	22	IAC-06-B3.2.07
ueda	A	43	IAC-06-C4.5.04
ueda	CA	27	IAC-06-C4.2.09
Uesugi	CA	70	IAC-06-A3.5.02
Ugaz	CA	152	IAC-06-A1.P.2.02
Ulivieri	CA	55	IAC-06-B1.4.01
Ulrich	A	42	IAC-06-C3.1.07
Ulrich	CA	125	IAC-06-E1.P.1.04
Ulybyshev	A	155	IAC-06-C1.P.8.03
Underwood	CA	149	IAC-06-E1.4.04
Underwood	CA	23	IAC-06-B5.1.02
Unwin	CA	161	IAC-06-B3.6.05
Unwin	CA	3	IAC-06-A3.1.01
Unwin	CA	105	IAC-06-A3.P.1.04
Uo	CA	140	IAC-06-C1.7.04
Urech	A	49	IAC-06-E4.4.04
Urgoiti	A	13	IAC-06-D3.1.06
Uri	A	56	IAC-06-B4.3.03
Urmston	CA	40	IAC-06-C1.3.01
Usachev	CA	56	IAC-06-B4.3.06
Uspensky	CA	157	IAC-06-D1.P.2.05
Ustinov	CA	92	IAC-06-B6.3.07
Usuda	CA	57	IAC-06-B5.3.02

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Vadchenko	CA	18	IAC-06-A2.2.08
Vain	CA	34	IAC-06-A1.3.04
Vakhnichenko	CA	124	IAC-06-D2.P.2.06
Vakoch	A	4	IAC-06-A4.1.03
Vakoch	A	20	IAC-06-A4.2.07
Valabrega	CA	88	IAC-06-B1.6.02
Valabrega	CA	67	IAC-06-E6.3.02
Valcarce	A	55	IAC-06-B1.4.03
Valenzano	CA	61	IAC-06-D1.2.04
Valenzano	CA	38	IAC-06-B4.2.09
Vallado	CA	117	IAC-06-C1.P.5.03
Vallejo	A	104	IAC-06-A3.P.04
Vallerani	A	168	IAC-06-E1.5.08
Vallerani	A	13	IAC-06-D3.1.02
Vallerani	A	87	IAC-06-A3.6.08
Vallerani	A	136	IAC-06-A5.1.04
Valpiani	A	9	IAC-06-C1.1.04
van Breukelen	A	166	IAC-06-D1.5.07
van den Oord	CA	37	IAC-06-B1.3.07
Van der Heide	A	44	IAC-06-D2.3.03
Van der Heide	CA	119	IAC-06-C2.P.1.08
van der Linde	CA	86	IAC-06-A2.5.04
van der Meulen	CA	161	IAC-06-B3.6.10
van der Meulen	CA	89	IAC-06-B3.4.06
Van der Wal	A	83	IAC-06-E5.2.06
Van Elsen	CA	164	IAC-06-C2.8.05
Van Hoolst	CA	106	IAC-06-A3.P.2.04

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van Leeuwen	CA	38	IAC-06-B4.2.03
Van Susante	CA	79	IAC-06-D3.3.05
van Vliet	CA	91	IAC-06-B5.5.13
Vance	CA	104	IAC-06-A3.P.06
Vanwijck	A	93	IAC-06-C1.6.07
Varotto	A	5	IAC-06-B1.1.01
Vascotto	CA	52	IAC-06-A1.4.08
Vasile	A	58	IAC-06-C1.4.05
Vasile	CA	70	IAC-06-A3.5.08
Vasile	CA	107	IAC-06-A5.P.02
Vasile	CA	45	IAC-06-D3.2.06
Vasiliev	CA	107	IAC-06-A5.P.08
Vavilova	CA	65	IAC-06-E4.1.01
Vavouliotis	A	119	IAC-06-C2.P.1.08
Vavouliotis	A	164	IAC-06-C2.8.03
Vavouliotis	A	26	IAC-06-C2.2.09
Vazquez	A	168	IAC-06-E1.5.09
Vazquez	CA	104	IAC-06-A3.P.04
Vecchionacci	CA	59	IAC-06-C2.4.10
Veefkind	CA	37	IAC-06-B1.3.07
Veith	CA	11	IAC-06-C4.1.01
Velasco	A	16	IAC-06-E3.1.A.08
Velasco	CA	169	IAC-06-E6.5.12
Velasco	CA	22	IAC-06-B3.2.06
Vellvehí	CA	164	IAC-06-C2.8.07
Velthoven	CA	37	IAC-06-B1.3.03
Venancio	CA	3	IAC-06-A3.1.04
Ventskovsky	A	65	IAC-06-E4.1.01
Ventskovsky	A	12	IAC-06-D2.1.04
Ventskovsky	CA	6	IAC-06-B3.1.07
Venturelli	A	144	IAC-06-C4.P.5.06
Verga	A	35	IAC-06-A2.3.01
Verga	CA	86	IAC-06-A2.5.05
Verheyden	CA	132	IAC-06-A1.7.-A2.7.04
Verhoturov	A	5	IAC-06-B1.1.05
Vernon	CA	166	IAC-06-D1.5.03
Vernon	CA	12	IAC-06-D2.1.07
Versteeg	CA	90	IAC-06-B4.4.05
Versteeg	CA	141	IAC-06-C2.7.03
Versteeg	CA	152	IAC-06-A1.P.2.04
Vez	CA	93	IAC-06-C1.6.02
Vez	CA	37	IAC-06-B1.3.09
Vicente	A	138	IAC-06-B5.6.16
Victor	A	29	IAC-06-D2.2.08
Vieira	CA	140	IAC-06-C1.7.06
Viir	A	34	IAC-06-A1.3.04
Vilaplana	CA	85	IAC-06-A1.6.05
Villa Navarro	CA	40	IAC-06-C1.3.01
Villanti	CA	45	IAC-06-D3.2.06
Villas Boas	CA	12	IAC-06-D2.1.08
Vilnrotter	CA	137	IAC-06-B3.5.09
Vincent	CA	75	IAC-06-C2.5.09
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Visentin	CA	145	IAC-06-D1.4.04
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Volosin	A	87	IAC-06-A3.6.01
Von der Dunk	A	33	IAC-06-E6.1.06
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Wang	CA	135	IAC-06-A3.P.6.05
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Wang	A	137	IAC-06-B3.5.08
Wang	CA	111	IAC-06-B3.P.6.05
Wang	A	89	IAC-06-B3.4.08
Wang	A	58	IAC-06-C1.4.07
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Wang	A	135	IAC-06-A3.P.6.08
Wang	A	22	IAC-06-B3.2.09
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Wei	A	119	IAC-06-C2.P.1.15
Wei	A	26	IAC-06-C2.2.06
Wei	A	121	IAC-06-C4.P.2.05
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Weigel	A	32	IAC-06-E3.1.B.04
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Wholley	A	33	IAC-06-E6.1.01
Wicklein	CA	92	IAC-06-B6.3.11
Widani	CA	53	IAC-06-A3.4.07
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Wiedemann	CA	39	IAC-06-B6.2.01
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Wolter	CA	63	IAC-06-E2.3.02
Wolter	CA	114	IAC-06-C1.P.2.04
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Wong	A	3	IAC-06-A3.1.09
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Wu	CA	57	IAC-06-B5.3.04
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Wu	CA	138	IAC-06-B5.6.11
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Xiao-Jing	A	121	IAC-06-C4.P.2.04
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Xiaoli	A	164	IAC-06-C2.8.08
Xiaosha	CA	11	IAC-06-C4.1.06
Xie	A	18	IAC-06-A2.2.04
Xing	A	74	IAC-06-C1.5.01
Xiyun	CA	117	IAC-06-C1.P.5.05
Xu	A	120	IAC-06-C4.P.1.06
Xu	A	135	IAC-06-A3.P.6.06
Xu	CA	144	IAC-06-C4.P.5.04
Xu	A	39	IAC-06-B6.2.03
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Yamanaka	CA	10	IAC-06-C2.1.09
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Yan	CA	69	IAC-06-A2.4.02
Yan	CA	35	IAC-06-A2.3.07
Yan	A	18	IAC-06-A2.2.02
Yan	A	137	IAC-06-B3.5.02
Yang	A	52	IAC-06-A1.4.03
Yang	A	121	IAC-06-C4.P.2.02
Yang	A	121	IAC-06-C4.P.2.03
Yang	A	62	IAC-06-D2.4.03
Yanova	CA	64	IAC-06-E3.4.03
Yanwei	CA	140	IAC-06-C1.7.08
Yao	A	156	IAC-06-C2.P.2.03
Yasaka	CA	80	IAC-06-E1.2.07
Yates	A	33	IAC-06-E6.1.11
Yatskiv	CA	65	IAC-06-E4.1.01
Yazdanpanah	CA	139	IAC-06-B6.4.06
Yazdi	A	70	IAC-06-A3.5.06
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Yew	CA	166	IAC-06-D1.5.01
Ying	A	164	IAC-06-C2.8.06
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ying	A	22	IAC-06-B3.2.08
Yoneyama	CA	60	IAC-06-C3.2.09
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Yoshida	CA	44	IAC-06-D2.3.05
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Yoshikawa	CA	74	IAC-06-C1.5.09
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You	A	25	IAC-06-C1.2.01
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Younis	CA	37	IAC-06-B1.3.05
Yu	CA	3	IAC-06-A3.1.01
Yu	A	142	IAC-06-C4.P.3.07
Yuan	A	58	IAC-06-C1.4.08
Yudin	CA	141	IAC-06-C2.7.09
Yue	A	113	IAC-06-C1.P.1.02
Yufeng	CA	43	IAC-06-C4.5.08
Yukhvid	CA	18	IAC-06-A2.2.08
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Zajac	CA	4	IAC-06-A4.1.11
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Zajac	CA	133	IAC-06-A3.P.3.05
Zakirov	A	27	IAC-06-C4.2.02
Zaleski	CA	29	IAC-06-D2.2.09
Zandbergen	CA	48	IAC-06-E2.2.04
Zappoli	CA	86	IAC-06-A2.5.02
Zaslavsky	CA	107	IAC-06-A5.P.08
Zee	CA	8	IAC-06-B5.2.07
Zeiger	A	8	IAC-06-B5.2.05
Zeiger	CA	31	IAC-06-E2.1.10
Zell	A	56	IAC-06-B4.3.01
Zelli	CA	9	IAC-06-C1.1.05
Zemskov	CA	35	IAC-06-A2.3.04
Zenger	CA	90	IAC-06-B4.4.05
Zenger	CA	141	IAC-06-C2.7.03
Zenger	CA	152	IAC-06-A1.P.2.04
Zexu	A	134	IAC-06-A3.P.5.01
Zhang	CA	89	IAC-06-B3.4.07
Zhang	CA	142	IAC-06-C4.P.3.06
Zhang	CA	137	IAC-06-B3.5.04
Zhang	A	27	IAC-06-C4.2.10
Zhang	CA	27	IAC-06-C4.2.02
Zhang	CA	122	IAC-06-D1.P.1.07
Zhang	CA	25	IAC-06-C1.2.04
Zhang	CA	142	IAC-06-C4.P.3.05
Zhang	CA	18	IAC-06-A2.2.04
Zhang	CA	27	IAC-06-C4.2.06
Zhang	A	9	IAC-06-C1.1.09
Zhang	CA	122	IAC-06-D1.P.1.07
Zhang	CA	153	IAC-06-B6.P.2.03
Zhang Xiaomin	CA	138	IAC-06-B5.6.13
Zhang Xiaomin	CA	163	IAC-06-C1.8.10
Zhao	A	169	IAC-06-E6.5.09
Zhao	CA	22	IAC-06-B3.2.08
Zhao	A	35	IAC-06-A2.3.07
Zhao	A	26	IAC-06-C2.2.11
Zhao	CA	40	IAC-06-C1.3.10
Zhao	CA	119	IAC-06-C2.P.1.14
Zhao	A	51	IAC-06-E6.2.A.06
Zhaohua	CA	111	IAC-06-B3.P.6.04
Zhechev	CA	6	IAC-06-B3.1.07
Zhekov	A	106	IAC-06-A3.P.2.10
Zheng	A	156	IAC-06-C2.P.2.06
Zheng	CA	156	IAC-06-C2.P.2.05
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ZhenWei	A	162	IAC-06-B5.7.09
Zhihao	CA	153	IAC-06-B6.P.2.05
Zhong	CA	108	IAC-06-B1.P.1.15
Zhong	CA	134	IAC-06-A3.P.5.01
Zhongqi	A	111	IAC-06-B3.P.6.05
Zhongqi	CA	137	IAC-06-B3.5.08
Zhou	CA	112	IAC-06-B6.P.1.06
Zhou	A	94	IAC-06-C2.6.08
Zhou	A	113	IAC-06-C1.P.1.01
Zhou	CA	122	IAC-06-D1.P.1.07
Zhou	CA	89	IAC-06-B3.4.08
Zhou	CA	89	IAC-06-B3.4.07
Zhou	CA	108	IAC-06-B1.P.1.15
Zhu	CA	69	IAC-06-A2.4.02
Zhukov	A	84	IAC-06-E6.4.11
Ziegler	A	138	IAC-06-B5.6.14
Ziegler	CA	108	IAC-06-B1.P.1.06
Ziegler	CA	73	IAC-06-B5.4.03
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Zong Peng	A	7	IAC-06-B4.1.05
Zoni	CA	4	IAC-06-A4.1.07
Zoni	CA	4	IAC-06-A4.1.08
Zorina	A	123	IAC-06-D2.P.1.05
Zuev	CA	69	IAC-06-A2.4.03
Zwart	A	17	IAC-06-A1.2.04
Zwart	CA	17	IAC-06-A1.2.01