



INTERNATIONAL ACADEMY OF ASTRONAUTICS

Missions to the outer solar system and beyond

FOURTH IAA SYMPOSIUM ON REALISTIC NEAR-TERM
ADVANCED SCIENTIFIC SPACE MISSIONS



Aosta, Italy
Hotel Europe
Piazza Narbonne

July 4-6, 2005

PROGRAM

July 3, 2000

18.00 **Pre-registration (at Hotel Europe)**
19.00 **Welcome party**

July 4, 2000

The morning sessions of July 4th will be held at the *Salone Ducale* of the *Hotel de Ville* of Aosta

8.00-10.00 **Registration**
9.00 **Welcome to the participants**
9.15 **The challenge of very deep space exploration: how far will the frontier be?**
G. Genta
Politecnico di Torino, Torino, Italy

Session I:

9.40 **Limits of Artificial Intelligence in Space Robotics**
F. Lerda
Università di Torino, Torino, Italy
10.05 **Nanobiomimetic Active Shape Control: Fluidic and Swarm-Intelligence Embodiments for Planetary Exploration**
S. Santoli
INT – International Nanobiological Testbed Ltd., Rome, Italy
10.30 **Coffee break**

Session II

11.00 **Cassini/Huygens: the Italian Contribution to a Successful Mission**
R. Somma
Alenia Spazio, Rome, Italy
11.25 **MAX-Microwave Acceleration Experiment with Cosmos-1**
J. Benford, G. Benford and T. Kuiper
Microwave Sciences, Inc.; University of California Irvine; Jet Propulsion Laboratory,
USA

- 11.50 **Innovative Explorer Mission to Interstellar Space**
M. Gruntman, R. L. McNutt *et al.*
University of Southern California; Johns Hopkins University A.P.L.; University of Michigan; University of Iowa; NASA Glenn Research Center., USA

12.15 **Lunch**

Session III

- 15.00 **Elastic, Electrostatic and Spin Deployment of Ultralight Sails**
J. Benford and G. Benford
Microwave Sciences, Inc.; University of California Irvine, USA
- 15.25 **Ion Propulsion: an Enabling Technology for Interstellar Precursor Missions**
D. G. Fearn.
EP Solutions, UK
- 15.50 **Relativistic Optimized Link by KLT**
C. Maccone
International Academy of Astronautics
- 16.15 **Coffee break**
- 16.45 **Discussion: The future of IAA symposiums on realistic near-term advanced scientific space missions**
- 20.00 **Banquet**

July 5, 2000

Session IV:

- 9.00 **Solar System Frontier: Exploring the Heliospheric Interface from 1 AU**
M. Gruntman
University of Southern California, Los Angeles, USA
- 9.25 **The Sailcraft Splitting Concept**
G. Vulpetti,
International Academy of Astronautics
- 9.50 **NASA's In-Space Propulsion Technology Program: A Step Toward Interstellar Exploration**
L. Johnson, B. James, R. Baggett, S. Montgomery
NASA Marshall Space Flight Center, Huntsville, USA
- 10.15 **Coffee break**

Session V:

- 10.45 **Power-Beaming Concepts For Future Deep Space Exploration**
G. Benford and J. Benford
Microwave Sciences, Inc.; University of California Irvine, USA
- 11.10 **Near-Term Interstellar Sailing**
G: L. Matloff; T. S. Taylor; T. C. Powell; T. Moton and D. Robinson
NYC College of Technology; BAE Systems; SAIC; Teledyne Brown Engineering, Inc, USA
- 11.35 **Reducing Sail Escape Times From Earth Orbit Using Beamed Energy**
G. Benford and P. Nissenon
University of California Irvine; Microwave Sciences, Inc., USA

- 12.00 **ECSCA, a New Form of International Cooperation**
C. Mazza
ECSCA, Italy

- 12.25 **Lunch**
15.00 **Sightseeing tour**

July 6, 2000

Session VI

- 9.00 **DADLE: A Cue to Human "Hibernation"?**
M. Biggioggera, P. Fabene, C. Zancanaro
Univeristà di Pavia; Università di Verona, Italy
- 9.25 **Human Hypometabolism for Long Duration Spaceflight: Possibilities and System-level Consequences**
M. Ayre
ESTEC, Noordwijk, Netherlands
- 9.50 **Good and Bad in the Hibernating Brain**
A. M. Strijkstra
University of Groningen, Haren, The Netherlands
- 10.15 **Coffee break**

Session VI

- 10.45 **Melatonin as a Protective Agent against Ischemia/Reperfusion Damage to the Liver after Hypothermic Preservation**
I. Freitas, A. Ferrigno *et. Al.*
Univeristà di Pavia, Italy; University of Texas, USA
- 11.10 **The Cell Nucleus in Physiological and Experimentally Induced Hypometabolism**
M. Malatesta
Università di Urbino, Urbino, Italy
- 11.35 **Sleep, Torpor and Memory Impairment**
S. Palchykova and I. Tobler
University of Zurich, Zurich, Switzerland
- 12.00 **The Human Adult: a Former or a Future Hibernator?**
D. Singer
University Hospital, Wuerzburg, Germany
- 12.25 **Lunch**

Session VI

- 14.30 **Panel discussion: Deep Space Robotic and Human Exploration**
16.00 **Closing ceremony**