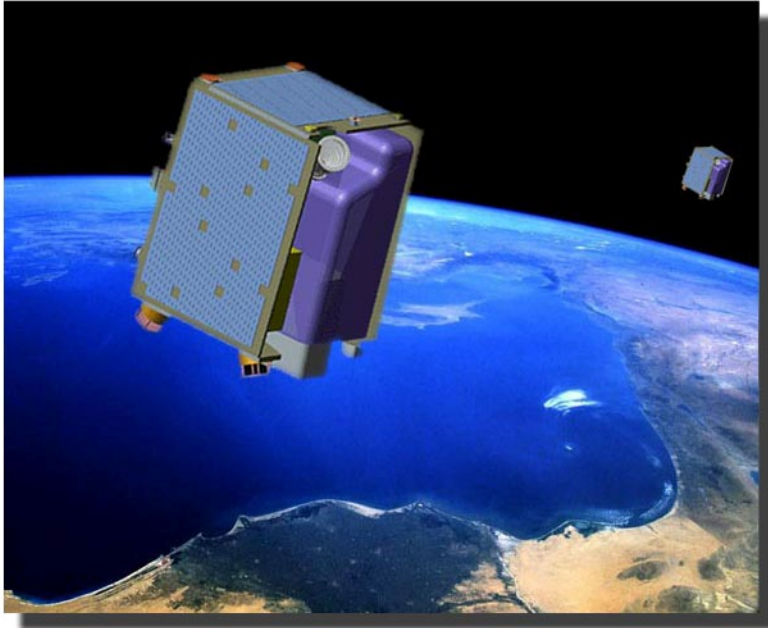


6th IAA SYMPOSIUM

Final Program

ON SMALL SATELLITES

FOR EARTH OBSERVATION



Composition photo: DLR

APRIL 23 – 26, 2007

BERLIN, GERMANY



*International
Academy of
Astronautics*

Hosted by



DLR

**Deutsches Zentrum
für Luft- und Raumfahrt e.V.**
in der Helmholtz-Gemeinschaft

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Co-ordinator, DLR, Berlin
Dietmar Hennig, Symposium Organizer, CMT
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Message of Greeting

from the Governing Mayor of Berlin, Klaus Wowereit, for the
6th Symposium on Small Satellites for Earth Observation of the
International Academy of Astronautics (IAA)
in Berlin, April 23 – 26, 2007



Klaus Wowereit

It is a great pleasure for Berlin to be able to welcome for the sixth time the participants in the international IAA Symposium on Small Satellites for Earth Observation.

I would like to extend my greetings to all those who have come to Berlin, a city which is proud of its scientific potential. My special thanks go to the International Academy of Astronautics (IAA) for choosing Berlin as the conference location again in 2007.

Berlin is continuing a long tradition in the field of aeronautics and space flight, the results of which are visible in the industry as well as in institutions of higher education and research institutions. One example illustrating this is the small satellite BIRD, which was designed to detect forest fires and other high temperature events from space and is still operating.

DLR and its site in Berlin-Adlershof, in cooperation with a large number of partners, have contributed to the growing acceptance - nationally and internationally - of small satellites. Berlin benefits now from the development of new small satellites in Berlin-Adlershof, the site of Europe's most modern Technology Park

The participation of a high number of experienced scientists, successful engineers, and promising students coming from about 25 countries not only reflects this growing interest in small satellites, but also expresses high regard for Berlin as an internationally recognized conference location.

In addition to your main tasks of exchanging scientific results, technical solutions, and programmatic visions, I hope you will find the time to discover Berlin as a metropolis of culture, history, architecture, and museums.

I wish all of you a successful symposium with new and interesting contacts, fruitful discussions, and a very pleasant stay here in Berlin.

A handwritten signature in black ink, which appears to read 'Klaus Wowereit'. The signature is written in a cursive, flowing style.

We wish to thank the following for their contribution to the success of this conference (in alphabetical order):



*European Office of Aerospace Research and Development,
Air Force Office of Scientific Research, United States Air Force Research Laboratory
<<http://www.london.af.mil>>*



AGENDA

Sunday, April 22, 2007

- 16:00-20:00 Registration, BBAW¹
19:00-20:00 Get-Together

Monday, April 23, 2007

- 08:00-09:00 Registration, BBAW
09:00-09:20 **Welcome:** H.-G. Husung,
Senate of Berlin
J.-M. Contant, IAA
L. Fröbel, DLR
09:20-10:00 **Keynote Address:**
Sir Martin Sweeting,
SSTL, UK
10:00-10:30 BREAK, PRESS CONFERENCE
10:30-12:10 **Session 01:**
PROGRAMMATICS
Chair: J.-M. Contant, IAA
Rapporteur: H.-P. Röser,
Univ. of Stuttgart
12:10-13:30 LUNCH
13:30-15:00 **Session 02:**
MISSIONS 1
Chair: A. Ginati, ESA
Rapporteur: K. Thyagarajan, ISRO,
India
15:00-15:20 BREAK
15:20-16:40 **Session 03:**
INSTRUMENTS
Chair: L. Alkalai,,
JPL, USA
Rapporteur: J.-S. Chern,
NSPO, Taiwan
16:40-17:40 **Panel Discussion:**
**DEVELOPMENT AND PROMOTION OF
INTEGRATED APPLICATIONS
(SPACE AND NON-SPACE)**
Chair: A. Ginati, ESA

Tuesday, April 24, 2007

- 09:00-10:30 **Session 04:**
CONSTELLATIONS
Chair: S. Neeck, NASA, USA
Rapporteur: S. Mostert, Univ. of
Stellenbosch, South
Africa
10:30-10:50 BREAK
10:50-12:10 **Session 05:**
SUBSYSTEMS 1
Chair: U. Renner, TU Berlin
Rapporteur: J. Torley, Univ,
of Colorado, USA
12:10-13:30 LUNCH
13:30-15:00 **Session 06: (Special)**
STUDENT CONFERENCE
Chair: L. Paxton,
JHU/APL, USA
Rapporteur: S. Nakasuka, Univ.
of Tokyo, Japan
15:00-15:20 BREAK
15:20-16:40 **Session 07:**
SPECIAL ASPECTS
Chair: A. da Silva Curiel,
SSTL, UK
Rapporteur: R. Hornstein,
NASA, USA
16:40-17:40 **POSTER SESSION**

¹ Berlin-Brandenburgische Akademie der Wissenschaften

AGENDA (cont'd)

Wednesday, April 25, 2007

09:00-10:30 **Session 08:**
MISSIONS 2
Chair: K. Thyagarajan, ISRO, India
Rapporteur: K. Brieß, TU Berlin

10:30-10:50 BREAK

10:50-12:10 **Session 09:**
SPACECRAFT BUS
Chair: J. Esper, NASA/GSFC,
USA
Rapporteur: L. Fröbel,
DLR, Germany

12:10-13:30 LUNCH

13:30-15:00 **Session 10:**
LESSONS LEARNED
Chair: O. Marsal, CNES, France
Rapporteur: A. da Silva Curiel
SSTL, UK

15:00-15:20 BREAK

15:20-16:40 **Session 11:**
SUBSYSTEMS 2
Chair: C. Underwood,
University of Surrey,
UK
Rapporteur: H. Kayal, TU Berlin

16:40-17:40 **Symposium Summary:**
Chair: R. Sandau, DLR,
Germany

AWARDS

Thursday, April 26, 2007

08:00-20:00 **Day trip to:**

**“Historic-Technical Information
Centre”**, Peenemuende and
“Otto Lilienthal Museum”,
Anklam

08:00-08:30 Boarding the bus;

about 12:00 Light meal/snack
in Peenemuende

TECHNICAL PROGRAM

Session 1: Programmatics ***Monday, April 23, 2007, 10:30 - 12:10***

Chair: J.-M. Contant, IAA ***Rapporteur: H.-P. Röser, University of Stuttgart***

- NASA earth observation programs and small satellites** IAA-B6-0101
Neeck, S. P., Hammer, T. F.
- Small satellites in the CNES Earth observation programme** IAA-B6-0102
Marsal, O., Boissin, B., Clair, M.-A., de Leffe, A., Tarrieu, C.
- Small satellite mission programs** IAA-B6-0103
Thyagarajan, K., Murthy, D. V. A. R.
- Incubating domestic space-qualified manufacturers through ROCSAT programs** IAA-B6-0104
Chern, J.-S., Huang, A., Wu, L.
- Trends and visions for small satellite missions** IAA-B6-0105
Sandau, R., Paxton, L., Esper, J.
- Development of the MicroSat programme at INTA** IAA-B6-0106
Angulo, M., Mi, J. M., De Vicente, P., Prieto, M., Rodriguez, O., De la Fuente, E., Palau, J.

Session 2: Missions (1) ***Monday, April 23, 2007, 13:30 - 15:00***

Chair: A. Ginati, ESA ***Rapporteur: K. Thyagarajan, ISRO, India***

- Moving towards commercial Earth observation services with small satellite constellations** IAA-B6-0201
Baker, A. M., Davies, P., Boland, L.
- On orbit verification with an technology test carrier TET** IAA-B6-0202
Eckert, S., Ritzmann, S., Eckler, J., Bärwald, W.
- Beesat - a pico satellite for the in-orbit verification of miniaturised wheels** IAA-B6-0802
Kayal, H., Baumann, F., Brieß, K.
- PROBA spacecraft family - small mission solutions for emerging applications** IAA-B6-0204
Bermyn, J., Dorn, C.
- Small satellites and Earth observation systems for small countries and regions** IAA-B6-0711
Schoenmaker, A.

Session 3: Instruments ***Monday, April 23, 2007, 15:20 - 16:40***

Chair: L. Alkalai, JPL, USA ***Rapporteur: J.-S. Chern, NSPO, Taiwan***

- Development of High-Performance Optical System for Small Satellites** IAA-B6-0301
Choi, Y.-W., Yang, S.-U., Kang, M.-S., Kim, E.-E.
- The German Hyperspectral Satellite EnMAP - The Next Generation in Optical Remote Sensing** IAA-B6-0302
Stuffler, T., Kaufmann, H., Hofer, S., Förster, K.-P., Schreier, G., Müller, A., Eckardt, A., Penné, B., Haydn, R.

Comparison of Atmospheric Ozone between NASA's Total Ozone Mapping Spectrometer (TOMS) and Ozone Mapping Detector (OMAD) IAA-B6-0303
Fernandez-Saldivar, J. A., Underwood, C. I., Mackin, S.

Serious microsats need serious instruments, MIBS and the first results IAA-B6-0304
Leijtens, J., de Goeij, B., van der Meché, E., Court, A.

Panel Discussion:

Development and promotion of integrated applications (space and non-space)

Monday, April 23, 2007, 16:40-17:40

Chair: A. Ginati, ESA

Panelists:

Sir Martin Sweeting, SSTL
Claudie Haignere, ESA
Enrico Sapesse, ESOA
Walter Doellinger, Programme Director, DLR
Marco Fuchs, CEO, OHB

Session 4: Constellations Tuesday, April 24, 2007, 09:00 - 10:30

Chair: S. Neek, NASA, USA Rapporteur: S. Mostert, Univ. of Stellenbosch, South Africa

Feasibility of a constellation of miniature satellites for performing measurements of the magnetic field of the Earth IAA-B6-0401
Thomsen, M., Merayo, J. M. G., Brauer, P., Vennerstrøm, S., Olsen, N., Tøffner-Clausen, L.

Research on optimized guidance method for Formation Flight Missions IAA-B6-0402
Ji, S.

Preliminary Concepts and Analysis of Future Earth Observation Missions based on Distributed Radars IAA-B6-0403
D'Errico, M., Fasano, G.

The Swarm Magnetometry Package IAA-B6-0404
Merayo, J. M. G., Jørgensen, J. L., Friis-Christensen, E., Brauer, P., Primdahl, F., Jørgensen, P. S., Allin, T. H., Denver, T.

EO formation flying applications for small satellite missions IAA-B6-0407
Sephton, A. J., Wishart, A., Strauch, K., Teston, F.

Session 5: Subsystems (1) Tuesday, April 24, 2007, 10:50 - 12:10

Chair: U. Renner, TU Berlin Rapporteur: J. Torley, Univ. of Colorado, USA

GPS for Microsatellites - Status and Perspectives IAA-B6-0501
Montenbruck, O., Markgraf, M., Garcia-Fernandez, M., Helm, A.

On-the-fly merging of attitude solutions IAA-B6-0502
Jørgensen, P. S., Jørgensen, J. L., Denver, T., Allin, T. H.

Design and on-orbit evaluation of magnetic attitude control system for the "REIMEI" microsatellite IAA-B6-0503
Sakai, S., Fukushima, Y., Saito, H.

GPS & low cost sensors in navigation IAA-B6-0515
Bourghani Farahani, N., Pouryaie, N.

Session 6: Students Session Tuesday, April 24, 2007, 13:30 - 15:00

Chair: L. Paxton, JHU/APL, USA Rapporteur: S. Nakasuka, Univ. of Tokio, Japan

- GPS BAsed Attitude Determination for the Flying Laptop Satellite** IAA-B6-0601
Hauschild, A., Grillmayer, G., Montenbruck, O., Markgraf, M.
- Electromagnetic Formation Flight System Design** IAA-B6-0602
Kwon, D. W.
- Preliminary system simulation environment of the university micro-satellite Flying Laptop** IAA-B6-0603
Brandt, A., Kossev, I., Falke, A., Eickhoff, J., Röser, H.-P.
- A miniaturised UV imaging spectrometer for remote sensing of atmosphere: volcanic sulphur dioxide, ozone, and aerosols** IAA-B6-0604
Fernandez-Saldivar, J. A.
- Beesat attitude control system** IAA-B6-0605
Herfort, M., Berlin, M., Geile, H.-P., Yoon,, Z.
- The Tethered Satellite Ionospheric Explorer (Tsix): An approach to nano-spacecraft studying the ionosphere** IAA-B6-0606
Ramos, R., Li, Y.

Session 7: Special Aspects Tuesday, April 24, 2007, 15:20 - 16:40

Chair: A. da Silva Curiel, SSTL, UK Rapporteur: R. Hornstein, NASA, USA

- Initial SPHERES Operations Aboard the International Space Station** IAA-B6-0701
Saenz-Otero, A., Miller, D. W.
- BIRD Micro satellite Thermal Control System - 5 Years of Operation in Space** IAA-B6-0702
Lura, F., Biering, B., Lötze, H.-G., Studemund, H., Baturkin, V.
- Integration and Testing Challenges of Small, Multiple Satellite Missions: Experiences from the Space Technology 5 Project** IAA-B6-0703
Sauerwein, T. A., Gostomski, T.
- The "Mailbox Ground Station" - A procedure to improve the operational key requirements of Earth observation systems** IAA-B6-0704
Brand, B., Zehnbauer, T.
- The ROCKOT launch vehicle for upcoming ESA missions** IAA-B6-0705
Viertel, Y., Freeborn, P., Kinnersley, M.

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| Monitoring of geophysical fields in near-earth space with usage of calibrated reference microsattellites Belokonov, I. V. | IAA-B6-0206P |
| Feasibility of the red-edge for detecting stress in vegetation using a borne hyperspectral satellite-instrument in a small satellite Pacheco-Cabrera, E., Mackin, S., Sweeting, M., Underwood, C. | IAA-B6-0305P |
| Dobson Space Telescope - Introduction of the working lab prototype Segert, T., Danziger, B., Lieder, M., Gork, D. | IAA-B6-0306P |
| HF analyzer for the TARANIS satellite Hruska, F., Chum, J., Rauch, J.-L., Santolik, O. | IAA-B6-0307P |
| High precision vector field magnetometer for space applications Merayo, J. M. G., Brauer, P., Primdahl, F. | IAA-B6-0308P |
| Autonomous NEA detection system onboard the Flying Laptop Michelsen, R., Jørgensen, J. L., Denver, T., Jørgensen, P. S. | IAA-B6-0309P |
| Thermal plasma measurement unit for Proba II microsattelite Hruska, F., Base, J., Chum, J., Klas, J., Kolmasova, I., Smilauer, J., Truhlik, V. | IAA-B6-0310P |
| Optical formation flying sensor for PRISMA Jørgensen, P. S., Allin, T. H., Joergensen, J. L., Denver, T. | IAA-B6-0406P |
| Development and verification of miniaturized low-cost sun sensor systems for the implementation in picosatellites Griesselmann, J., Fröhlich, S., Ley, W., Scholz, A., Miao, J.-J., Juang, J.-C. | IAA-B6-0506P |
| Small sensors for small (and other) satellites Leijten, J., de Boom, K. | IAA-B6-0507P |
| Laboratory facility for attitude control system validation and testing Ovchinnikov, M. Yu., Karpenko, S. O., Serednitskiy, A. S., Tkachev, S. S., Kupriyanova, N. V. | IAA-B6-0508P |
| Thermo-mechanical and gravity attitude residuals - bias or error? Allin, T. H., Jørgensen, P. S., Jørgensen, J. L., Brauer, P., Hunt, H. J., Denver, T. | IAA-B6-0509P |
| Attitude control of rotating microsattelite ATEX for Earth observation with help of electromagnets Ostapchuk, S., Ivanova, G., Khoroshilov, V. | IAA-B6-0510P |
| COMPASS-1 picosatellite project Ley, W., Plescher, E., Scholz, A., Piepenbrock, J. | IAA-B6-0511P |
| Simulation-based testing on small satellite attitude control systems Schumann, H., Berres, A., Maibaum, O. | IAA-B6-0512P |
| Robustness of the LQG/LTR method for attitude control of a rigid-flexible satellite Gadelha DeSouza, L. C. | IAA-B6-0513P |
| High accuracy star tracking for agile or fast spinning spacecrafts Denver, T., Jørgensen, J. L., Jørgensen, P. S., Michelsen, R. | IAA-B6-0514P |
| Experiences with the BIRD ACS test facility and the resulting design of a state of the art mini- and micro-satellite ACS test facility Roemer, S., Terzibaschian, T., Wiener, A., Bärwald, W. | IAA-B6-0516P |

Session Posters (cont.)

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| RSI 01 - Momentum and reaction wheels 0.1 Nms with integrated wheel drive electronics Stanyak, S. | IAA-B6-0517P |
| The CALIPSO thermal control subsystem Gasbarre, J. F., Valentini, M., Thomas, J., Ousley, W., Dejoie, J. | IAA-B6-0706P |
| Heat pipe radiative cooling systems for space optical sensors Baturkin, V. | IAA-B6-0707P |
| Introducing RiBB - the network of the small satellite industry in Germany`s capital region Steinicke, W. H., Segert, T., Holstein, L. | IAA-B6-0709P |
| A ground station based test environment for telepresent small satellites Stoll, E., Letschnik, J., Walter, U., Clarke, S., Zaeh, M. F. | IAA-B6-0710P |
| Wireless or a different power supply scheme, that is the question Leijts, J., Hakkesteegt, H., Nieuwkoop, E. | IAA-B6-0712P |
| A software-defined radio approach for the implementation of ground station receivers Juang, J.-C., Tsai, C.-T., Miao, J.-J. | IAA-B6-0714P |
| Ground station control software Damerow, H., Richter, J., Berg, M., Schwarz, J. | IAA-B6-0716P |
| Orbital perturbations of artificial satellites due to resonances Vilhena de Moraes, R., Formiga, J. K. S., Lima Jr., P. H. C. N., Kuga, H. K. | IAA-B6-0717P |
| Errors due to the tropospheric and ionospheric effects on the geographic location of data collection platforms Yamaguti, W., Celestino, C. C., Sousa, C. T., Kuga, H. K. | IAA-B6-0719P |
| A space-based system for NEO detection Mottola, S., Börner, A., Hahn, G., Harris, A., Kührt, E., Leipold, M., Erdmann, M. | IAA-B6-0720P |
| Improving the passive Doppler geolocation system through extension of the data reception network Kuga, H. K., Tobler de Sousa, C., Vilhena de Moraes, R. | IAA-B6-0721P |
| Performance predictions of Lithium-ion small cell batteries for small satellite programmes Simmons, N., Thwaite, C., Chetwood, C. | IAA-B6-0722P |
| An estimation of the CCD's radiation hardness to charged particles' impact in space Voronkov, S. V. | IAA-B6-0723P |
| Universal micro-satellite platform conceptual design Mirshams, M., Vafa, A. R. | IAA-B6-0905P |
| Basic of a S/C architecture framework for small satellites using SysML Peukert, A. | IAA-B6-0906P |
| The software in satellite system engineering design tools "SSET" Makhmalbaf, R., Mirshams, M. | IAA-B6-0907P |
| Mechanical design of the mirco-satellite Flying Laptop Lengowski, M., Röser, H.-P., Haarmann, R., Beyermann, U., Gebel, G. | IAA-B6-0908P |

Session Posters (cont.)

- HYPSTAT: a microsatellite for hyperspectral measure** IAA-B6-0909P
Ovchinnikov, A., Battagliere, M. L., Serednitskiy, A., Piergentili, F.
- Command-scripts for pico satellites** IAA-B6-1105P
Hänisch, R.
- Test of satellite control software with simulated faults** IAA-B6-1106P
Maibaum, O., Schumann, H., Berres, A.
- OBC for technological nanosatellite platform** IAA-B6-1107P
Khromov, O., Pantsyrnyi, O. A.
- Video compression of the Flying Laptop for low bandwidth satellite links** IAA-B6-1108P
Lachenmann, M., Walz, S., Röser, H.-P.
- Analysis of the power system from the earth observation satellite BIRD** IAA-B6-1109P
Eilers, J., Letschnik, J., Walter, U., Wüsten, H.

Session 8: Missions (2)

Wednesday, April 25, 2007, 09:00 - 10:30

Chair: K. Thyagarajan, ISRO, India Rapporteur: K. Brieß, TU Berlin

- Rubin - an evolutionary approach from testbed to MNT-enabled satellite** IAA-B6-0801
Ziegler, B., Penné, B., Kalnins, I., Bruhn, F., Stenmark, L., Brieß, K.
- Mission requirements and analysis of Indonesia's second generation satellite to support food security program** IAA-B6-0203
Hardhienata, S., Prabowo, G., Fitrianiingsih, F.
- ATEX microsatellite mission for Earth Van Allen Belts observations** IAA-B6-0803
Protsan, Y. V., Loyan, A. V., Tolmachev, V. V., Moskalev, S. I.
- A low-cost microsatellite platform for multispectral Earth observation** IAA-B6-0804
Graziani, A., Melega, N., Tortora, P.
- Nano-satellites for micro-technology pre-qualification: the Delfi program of Delft University of Technology** IAA-B6-0805
Hamann, R. J., Verhoeven, C. J. M., Vaartjes, A. A., Bonnema, A. R.

Session 9: Spacecraft Bus

Wednesday, April 25, 2007, 10:50 - 12:10

Chair: J. Esper, NASA/GSFC, USA Rapporteur: L. Fröbel, DLR

- Astrosat: a line of products for a wide range of Earth observation missions** IAA-B6-0901
Maliet, E., Lambert, H.
- Development of the method of the creation of micro-satellite (~ 50 kg) platforms for the fundamental and applied research of the earth and near-earth outer space** IAA-B6-0902
Klimov, S. I., Rodin, V. G., Zelenyi, L. M., Angarov, V. N.
- ENMAP satellite bus - a cost effective platform for advanced earth observation mission** IAA-B6-0903
Penné, B., Kassebohm, M., Mahal, S., Froehner, P., Greinacher, R., Hofer, S., Förster, K. P., Stuffer, T.
- Indigenous Mission of Satellite System Development Program in Taiwan** IAA-B6-0904
Weng, S.-L., Liu, A., Ling, J., Lin, C.-H.

Session 10: Lessons Learned Wednesday, April 25, 2007, 13:30 - 15:00

Chair: O. Marsal, CNES, France Rapporteur: A. da Silva Curiel, SSTL, UK

- | | |
|--|-------------|
| First year in orbit - results from the Beijing-1 operational high resolution small satellite da Silva Curiel, R. A., Gomes, L., Purl, D., Hodgson, D., Sweeting, M., | IAA-B6-1001 |
| An introduction to FORMOSAT-2's global effectiveness Chern, J.-S., Wu, A.-M., Liu, Y.-N., Wu, L. | IAA-B6-1002 |
| PROBA-1, from technology demonstrator to a valuable small Earth observation platform Teston, F., Gantois, K., Bermijn, J. | IAA-B6-1003 |
| Gurwin-Techsat microsatellite long-term mission Guelman, M., Ortenberg, F., Shiryaev, A., Waler, R. | IAA-B6-1004 |
| TopSat: lessons learned from a small satellite mission Baxter, E. J., Levett, W. A. | IAA-B6-1005 |
| First flight results with LAPAN-TUBSAT Renner, U., Buhl, M. | IAA-B6-1006 |

Session 11: Subsystems (2) Wednesday, April 25, 2007, 15:20 - 16:40

Chair: C. Underwood, SSTL, UK Rapporteur: H. Kayal, TU Berlin

- | | |
|---|-------------|
| High speed payload data handling with security for small Earth observation missions Penné, B., Tobehn, C., Rathje, R., Michalik, H. | IAA-B6-1101 |
| High data rate X-band transmitter for low Earth orbit satellites Sunay, H. K., Ismailoglu, N., Kirilmaz, T., Dudak, C., Sen, O. A. | IAA-B6-1102 |
| The ADPMS ready for flight an advanced data & power management system for small satellites and missions Puimege, K. | IAA-B6-1103 |
| Flowing Taks: scalable software dependability and performance Montenegro-Retana, S., Vitulli, R. | IAA-B6-1104 |

Symposium Summary Wednesday, April 25, 2007, 16:40-17:40

Chair: R. Sandau, DLR, Germany Chief Rapporteur: G. Fountain, JHU/APL, USA

AWARDS

Best Paper Presentation Award

Best Poster Presentation Award

STUDENT PRIZE PAPER COMPETITION

Final see Session 06 (Special)

The awards for the winners of the Student Prize Paper Competition will be presented during the IAA Dinner, Tuesday, April 24, 2007, 19:00 at The Regent Hotel.

A Special Thanks to the Students Paper Evaluation Committee:

Leon Alkalai, NASA/JPL, USA

Klaus Brieß, DLR, Germany

Jaime Esper, NASA/GSFC, USA

Einar-Arne Herland, ESA/ESTEC

Sias Mostert, SunSpace, University of Stellenbosch, South Africa

Shinichi Nakasuka, University of Tokyo, Japan

Michael Ovchinnikov, Keldysh Institute of Applied Mathematics, Russia

Rainer Sandau, DLR, Germany

K. Thyagarajan, ISRO, India

James Torley, University of Colorado at Colorado Springs, USA

Craig Underwood, SSTL, UK

INDEX OF AUTHORS AND CO-AUTHORS

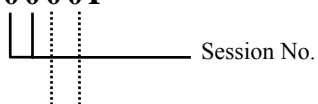
| <u><i>Name</i></u> | <u><i>Paper/Poster Reference*</i></u> | <u><i>Name</i></u> | <u><i>Paper/Poster Reference*</i></u> |
|------------------------|---------------------------------------|----------------------------|---------------------------------------|
| Allin, T. H. | IAA-B6-0404 | Chum, J. | IAA-B6-0310P |
| Allin, T. H. | IAA-B6-0406P | Clair, M.-A. | IAA-B6-0102 |
| Allin, T. H. | IAA-B6-0502 | Clarke, S. | IAA-B6-0710P |
| Allin, T. H. | IAA-B6-0509P | Court, A. | IAA-B6-0304 |
| Angarov, V. N. | IAA-B6-0902 | Cruz Neiva Lima Jr., P. H. | IAA-B6-0717P |
| Angulo, M. | IAA-B6-0106 | D'Errico, M. | IAA-B6-0403 |
| Baker, A. M. | IAA-B6-0201 | da Silva Curiel, R. A. | IAA-B6-1001 |
| Bärwald, W. | IAA-B6-0202 | Damerow, H. | IAA-B6-0716P |
| Bärwald, W. | IAA-B6-0516P | Danziger, B. | IAA-B6-0306P |
| Base, J. | IAA-B6-0310P | Davies, P. | IAA-B6-0201 |
| Battagliere, M. L. | IAA-B6-0909P | de Boom, K. | IAA-B6-0507P |
| Baturkin, V. | IAA-B6-0702 | de Goeij, B. | IAA-B6-0304 |
| Baturkin, V. | IAA-B6-0707P | De la Fuente, E. | IAA-B6-0106 |
| Baumann, F. | IAA-B6-0802 | de Leffe, A. | IAA-B6-0102 |
| Baxter, E. J. | IAA-B6-1005 | De Vicente, P. | IAA-B6-0106 |
| Berg, M. | IAA-B6-0716P | Dejoie, J. | IAA-B6-0706P |
| Berlin, M. | IAA-B6-0605 | Denver, T. | IAA-B6-0309P |
| Bermijn, J. | IAA-B6-1003 | Denver, T. | IAA-B6-0404 |
| Bermyn, J. | IAA-B6-0204 | Denver, T. | IAA-B6-0406P |
| Berres, A. | IAA-B6-0512P | Denver, T. | IAA-B6-0502 |
| Berres, A. | IAA-B6-1106P | Denver, T. | IAA-B6-0509P |
| Beyermann, U. | IAA-B6-0908P | Denver, T. | IAA-B6-0514P |
| Biering, B. | IAA-B6-0702 | Dorn, C. | IAA-B6-0204 |
| Boissin, B. | IAA-B6-0102 | Dudak, C. | IAA-B6-1102 |
| Boland, L. | IAA-B6-0201 | Eckardt, A. | IAA-B6-0302 |
| Bonnema, A. R. | IAA-B6-0805 | Eckert, S. | IAA-B6-0202 |
| Börner, A. | IAA-B6-0720P | Eckler, J. | IAA-B6-0202 |
| Bourghani Farahani, N. | IAA-B6-0515 | Eickhoff, J. | IAA-B6-0603 |
| Bourghani Farahani, N. | IAA-B6-0715P | Eilers, J. | IAA-B6-1109P |
| Brand, B. | IAA-B6-0704 | Erdmann, M. | IAA-B6-0720P |
| Brandt, A. | IAA-B6-0603 | Eschen, M. | IAA-B6-0304 |
| Brauer, P. | IAA-B6-0308P | Esper, J. | IAA-B6-0105 |
| Brauer, P. | IAA-B6-0401 | Falke, A. | IAA-B6-0603 |
| Brauer, P. | IAA-B6-0404 | Fasano, G. | IAA-B6-0403 |
| Brauer, P. | IAA-B6-0509P | Fernandez-Saldivar, J. A. | IAA-B6-0303 |
| Brieß, K. | IAA-B6-0801 | Fernandez-Saldivar, J. A. | IAA-B6-0604 |
| Brieß, K. | IAA-B6-0802 | Fitrianingsih, F. | IAA-B6-0203 |
| Bruhn, F. | IAA-B6-0801 | Förster, K.-P. | IAA-B6-0302 |
| Buhl, M. | IAA-B6-1006 | Förster, K. P. | IAA-B6-0903 |
| Celestino, C. C. | IAA-B6-0719P | Freeborn, P. | IAA-B6-0705 |
| Chern, J.-S. | IAA-B6-0104 | Friis-Christensen, E. | IAA-B6-0404 |
| Chern, J.-S. | IAA-B6-1002 | Froehner, P. | IAA-B6-0903 |
| Chetwood, C. | IAA-B6-0722P | Fukushima, Y. | IAA-B6-0503 |
| Choi, Y.-W. | IAA-B6-0301 | Gadella DeSouza, L. C. | IAA-B6-0513P |
| Chum, J. | IAA-B6-0307P | Gantois, K. | IAA-B6-1003 |

| <u>Name</u> | <u>Paper/Poster Reference*</u> | <u>Name</u> | <u>Paper/Poster Reference*</u> |
|----------------------|--------------------------------|---------------------------|--------------------------------|
| Garcia-Fernandez, M. | IAA-B6-0501 | Juang, J.-C. | IAA-B6-0714P |
| Gasbarre, J. F. | IAA-B6-0706P | Kalnins, I. | IAA-B6-0801 |
| Gebel, G. | IAA-B6-0908P | Kang, M.-S. | IAA-B6-0301 |
| Geile, H.-P. | IAA-B6-0605 | Karpenko, S. O. | IAA-B6-0508P |
| Gomes, L. | IAA-B6-1001 | Kassebom, M. | IAA-B6-0903 |
| Gork, D. | IAA-B6-0306P | Kaufmann, H. | IAA-B6-0302 |
| Gostomski, T. | IAA-B6-0703 | Kayal, H. | IAA-B6-0802 |
| Graziani, A. | IAA-B6-0804 | Kennety Silva Formiga, J. | IAA-B6-0717P |
| Greinacher, R. | IAA-B6-0903 | Khoroshilov, V. | IAA-B6-0510P |
| Griesselmann, J. | IAA-B6-0506P | Khromov, O. | IAA-B6-1107P |
| Grillmayer, G. | IAA-B6-0601 | Kim, E.-E. | IAA-B6-0301 |
| Haarmann, R. | IAA-B6-0908P | Kinnersley, M. | IAA-B6-0705 |
| Hahn, G. | IAA-B6-0720P | Kırılmaz, T. | IAA-B6-1102 |
| Hakkesteegt, H. | IAA-B6-0712P | Klas, J. | IAA-B6-0310P |
| Hamann, R. J. | IAA-B6-0805 | Klimov, S. I. | IAA-B6-0902 |
| Hammer, T. F. | IAA-B6-0101 | Kolmasova, I. | IAA-B6-0310P |
| Hänisch, R. | IAA-B6-1105P | Kossev, I. | IAA-B6-0603 |
| Hardhienata, S. | IAA-B6-0203 | Kuga, H. K. | IAA-B6-0717P |
| Harris, A. | IAA-B6-0720P | Kuga, H. K. | IAA-B6-0719P |
| Hauschild, A. | IAA-B6-0601 | Kuga, H. K. | IAA-B6-0721P |
| Haydn, R. | IAA-B6-0302 | Kührt, E. | IAA-B6-0720P |
| Helm, A. | IAA-B6-0501 | Kupriyanova, N. V. | IAA-B6-0508P |
| Herfort, M. | IAA-B6-0605 | Kwon, D. W. | IAA-B6-0602 |
| Hodgson, D. | IAA-B6-1001 | Lachenmann, M. | IAA-B6-1108P |
| Hofer, S. | IAA-B6-0302 | Lambert, H. | IAA-B6-0901 |
| Hofer, S. | IAA-B6-0903 | Leijtens, J. | IAA-B6-0304 |
| Holstein, L. | IAA-B6-0709P | Leijtens, J. | IAA-B6-0507P |
| Hruska, F. | IAA-B6-0307P | Leijtens, J. | IAA-B6-0712P |
| Hruska, F. | IAA-B6-0310P | Leipold, M. | IAA-B6-0720P |
| Huang, A. | IAA-B6-0104 | Lengowski, M. | IAA-B6-0908P |
| Hunt, H. J. | IAA-B6-0509P | Letschnik, J. | IAA-B6-0710P |
| İsmailoglu, N. | IAA-B6-1102 | Letschnik, J. | IAA-B6-1109P |
| Ivanova, G. | IAA-B6-0510P | Levett, W. A. | IAA-B6-1005 |
| Ji, S. | IAA-B6-0402 | Ley, W. | IAA-B6-0506P |
| Jørgensen, J. L. | IAA-B6-0309P | Ley, W. | IAA-B6-0511P |
| Jørgensen, J. L. | IAA-B6-0404 | Li, Y. | IAA-B6-0606 |
| Joergensen, J. L. | IAA-B6-0406P | Liebezeit, T. | IAA-B6-0512P |
| Jørgensen, J. L. | IAA-B6-0502 | Lieder, M. | IAA-B6-0306P |
| Jørgensen, J. L. | IAA-B6-0509P | Lin, C.-H. | IAA-B6-0904 |
| Jørgensen, J. L. | IAA-B6-0514P | Ling, J. | IAA-B6-0904 |
| Jørgensen, P. S. | IAA-B6-0309P | Liu, A. | IAA-B6-0904 |
| Jørgensen, P. S. | IAA-B6-0404 | Liu, Y.-N. | IAA-B6-1002 |
| Jørgensen, P. S. | IAA-B6-0406P | Lötzke, H.-G. | IAA-B6-0702 |
| Jørgensen, P. S. | IAA-B6-0502 | Loyan, A. V. | IAA-B6-0803 |
| Jørgensen, P. S. | IAA-B6-0509P | Lura, F. | IAA-B6-0702 |
| Jørgensen, P. S. | IAA-B6-0514P | Mackin, S. | IAA-B6-0303 |
| | | Mackin, S. | IAA-B6-0305P |

| <u>Name</u> | <u>Paper/Poster Reference*</u> | <u>Name</u> | <u>Paper/Poster Reference*</u> |
|-----------------------|--------------------------------|---------------------|--------------------------------|
| Mahal, S. | IAA-B6-0903 | Pouryaie, N. | IAA-B6-0715P |
| Maibaum, O. | IAA-B6-0512P | Prabowo, G. | IAA-B6-0203 |
| Maibaum, O. | IAA-B6-1106P | Prieto, M. | IAA-B6-0106 |
| Makhmalbaf, R. | IAA-B6-0907P | Primdahl, F. | IAA-B6-0308P |
| Maliet, E. | IAA-B6-0901 | Primdahl, F. | IAA-B6-0404 |
| Markgraf, M. | IAA-B6-0501 | Protsan, Y. V. | IAA-B6-0803 |
| Markgraf, M. | IAA-B6-0601 | Puimege, K. | IAA-B6-1103 |
| Marsal, O. | IAA-B6-0102 | Purl, D. | IAA-B6-1001 |
| Melega, N. | IAA-B6-0804 | Ramos, R. | IAA-B6-0606 |
| Merayo, J. M. G. | IAA-B6-0308P | Rathje, R. | IAA-B6-1101 |
| Merayo, J. M. G. | IAA-B6-0401 | Rauch, J.-L. | IAA-B6-0307P |
| Merayo, J. M. G. | IAA-B6-0404 | Renner, U. | IAA-B6-1006 |
| Mi, J. M. | IAA-B6-0106 | Richter, J. | IAA-B6-0716P |
| Miau, J.-J. | IAA-B6-0714P | Ritzmann, S. | IAA-B6-0202 |
| Michalik, H. | IAA-B6-1101 | Rodin, V. G. | IAA-B6-0902 |
| Michelsen, R. | IAA-B6-0309P | Rodriguez, O. | IAA-B6-0106 |
| Michelsen, R. | IAA-B6-0514P | Roemer, S. | IAA-B6-0516P |
| Miller, D. W. | IAA-B6-0701 | Röser, H.-P. | IAA-B6-0603 |
| Mirshams, M. | IAA-B6-0905P | Röser, H.-P. | IAA-B6-0908P |
| Mirshams, M. | IAA-B6-0907P | Röser, H.-P. | IAA-B6-1108P |
| Montenbruck, O. | IAA-B6-0501 | Saenz-Otero, A. | IAA-B6-0701 |
| Montenbruck, O. | IAA-B6-0601 | Saito, H. | IAA-B6-0503 |
| Montenegro-Retana, S. | IAA-B6-1104 | Sakai, S. | IAA-B6-0503 |
| Moskalev, S. I. | IAA-B6-0803 | Sandau, R. | IAA-B6-0105 |
| Mottola, S. | IAA-B6-0720P | Santolik, O. | IAA-B6-0307P |
| Müller, A. | IAA-B6-0302 | Sauerwein, T. A. | IAA-B6-0703 |
| Murthy, D. V. A. R. | IAA-B6-0103 | Schab, J. | IAA-B6-0511P |
| Neeck, S. P. | IAA-B6-0101 | Schoenmaker, A. | IAA-B6-0711 |
| Nieuwkoop, E. | IAA-B6-0712P | Scholz, A. | IAA-B6-0506P |
| Olsen, N. | IAA-B6-0401 | Scholz, A. | IAA-B6-0511P |
| Ostapchuk, S. | IAA-B6-0510P | Schreier, G. | IAA-B6-0302 |
| Ousley, W. | IAA-B6-0706P | Schumann, H. | IAA-B6-0512P |
| Ovchinnikov, M. Yu. | IAA-B6-0508P | Schumann, H. | IAA-B6-1106P |
| Ovchinnikov, A. | IAA-B6-0909P | Schwarz, J. | IAA-B6-0716P |
| Pacheco-Cabrera, E. | IAA-B6-0305P | Segert, T. | IAA-B6-0306P |
| Palau, J. | IAA-B6-0106 | Segert, T. | IAA-B6-0709P |
| Pantsyrnyi, O. A. | IAA-B6-1107P | Sen, O. A. | IAA-B6-1102 |
| Paxton, L. | IAA-B6-0105 | Serednitskiy, A. S. | IAA-B6-0508P |
| Penné, B. | IAA-B6-0302 | Serednitskiy, A. S. | IAA-B6-0909P |
| Penné, B. | IAA-B6-0801 | Simmons, N. | IAA-B6-0722P |
| Penné, B. | IAA-B6-0903 | Smilauer, J. | IAA-B6-0310P |
| Penné, B. | IAA-B6-1101 | Sousa, C. T. | IAA-B6-0719P |
| Peukert, A. | IAA-B6-0906P | Stanyak, S. | IAA-B6-0517P |
| Piergentili, F. | IAA-B6-0909P | Steinicke, W. H. | IAA-B6-0709P |
| Plescher, E. | IAA-B6-0506P | Stenmark, L. | IAA-B6-0801 |
| Plescher, E. | IAA-B6-0511P | Stoll, E. | IAA-B6-0710P |
| Pouryaie, N. | IAA-B6-0515 | Studemund, H. | IAA-B6-0702 |

| <u>Name</u> | <u>Paper/Poster Reference*</u> | <u>Name</u> | <u>Paper/Poster Reference*</u> |
|---------------------|--------------------------------|-----------------------|--------------------------------|
| Stuffer, T. | IAA-B6-0302 | van der Meché, E. | IAA-B6-0304 |
| Stuffer, T. | IAA-B6-0903 | Vennerstrøm, S. | IAA-B6-0401 |
| Sunay, H. K. | IAA-B6-1102 | Verhoeven, C. J. M. | IAA-B6-0805 |
| Sweeting, M. | IAA-B6-0305P | Viertel, Y. | IAA-B6-0705 |
| Sweeting, M. | IAA-B6-1001 | Vilhena de Moraes, R. | IAA-B6-0717P |
| Tarrieu, C. | IAA-B6-0102 | Vilhena de Moraes, R. | IAA-B6-0721P |
| Terzibaschian, T. | IAA-B6-0516P | Vitulli, R. | IAA-B6-1104 |
| Teston, F. | IAA-B6-1003 | Voronkov, S. V. | IAA-B6-0723P |
| Thomas, J. | IAA-B6-0706P | Walter, U. | IAA-B6-0710P |
| Thomsen, M. | IAA-B6-0401 | Walter, U. | IAA-B6-1109P |
| Thwaite, C. | IAA-B6-0722P | Walz, S. | IAA-B6-1108P |
| Thyagarajan, K. | IAA-B6-0103 | Weng, S.-L. | IAA-B6-0904 |
| Tkachev, S. S. | IAA-B6-0508P | Wiener, A. | IAA-B6-0516P |
| Tobehn, C. | IAA-B6-1101 | Wu, L. | IAA-B6-0104 |
| Tobler de Sousa, C. | IAA-B6-0719P | Wu, L. | IAA-B6-1002 |
| Tobler de Sousa, C. | IAA-B6-0721P | Wu, A.-M. | IAA-B6-1002 |
| Tøffner-Clausen, L. | IAA-B6-0401 | Wüsten, H. | IAA-B6-1109P |
| Tolmachev, V. V. | IAA-B6-0803 | Yamaguti, W. | IAA-B6-0719P |
| Tortora, P. | IAA-B6-0804 | Yang, S.-U. | IAA-B6-0301 |
| Truhlik, V. | IAA-B6-0310P | Yoon, Y. | IAA-B6-0605 |
| Tsai, C.-T. | IAA-B6-0714P | Zaeh, M. F. | IAA-B6-0710P |
| Underwood, C. I. | IAA-B6-0303 | Zehrtbauer, T. | IAA-B6-0704 |
| Underwood, C. I. | IAA-B6-0305P | Zelenyi, L. M. | IAA-B6-0902 |
| Vaartjes, A. A. | IAA-B6-0805 | Ziegler, B. | IAA-B6-0801 |
| Vafa, A. R. | IAA-B6-0905P | | |
| Valentini, M. | IAA-B6-0706P | | |

*** IAA - B6 - 0000P**



Sequential numbering, P indicating interactive presentation during Poster Session

GENERAL INFORMATION

Symposium Venue

The symposium will take place in the Berlin-Brandenburgische Akademie der Wissenschaften (BBAW), Jägerstraße 22/23, 10117 Berlin (mail address), entrance from Markgrafenstraße 38 (Gendarmenmarkt), Phone +49-30-20370-0, Fax +49-30-20370-600.

Underground station: Stadtmitte (U2, U6).

More information www.bbaw.de

On-site Registration

The Registration Desk will be set up in the symposium room foyer of the BBAW.

It will be open:

| | |
|--|-------------|
| April 22, Sunday | 16:00-20:00 |
| April 23, Monday - April 25, Wednesday | 08:00-19:00 |

Name Badges

Name badges must be worn at all times in order to be admitted to the sessions and the social events.

The following colors have been assigned:

| | |
|----------------------|--------|
| Participants | White |
| Students | White |
| Press | Yellow |
| Accompanying persons | Blue |
| Organization | Green |

Language

The official language of the symposium is English.

Offices

- The Symposium Office will be co-located with the Registration Desk in the Symposium room foyer of the BBAW
Phone +49 (0)30 20370422 Fax +49 (0)30 20370423
- Chairpersons' and Rapporteurs' meeting room: either room 1, 2 or 3
Meeting of Session Chairpersons and Rapporteurs at 08:30 each day for introduction to their duties and latest changes.
- Authors are requested to arrive at the session room 10 minutes before the start of the session in order to meet the session chairperson for final preparations. Please bring your short biographies.

Publication of Papers

A proceedings CD-ROM will be dispatched after the symposium (including all submitted 8-page Final Papers).

A selection of contributed papers will appear in the book of selected proceedings.

Messages

A message center will be located in the registration area at the BBAW. There will be an internet terminal available for you to access your web-based e-mail accounts.

The lecture room will be equipped with wireless internet access (hot spot).

Lunch, Coffee Breaks

The registration fee of the participants covers the coffee breaks and the lunch buffet. Accompanying persons who want to take part in the lunch buffet may purchase a voucher at the registration desk (€ 15.00/day).

Social Events

| Date/Time | Event | Venue |
|---|--|---|
| April 22, Sunday 19:00 – 20:00 | Get-Together (included in the registration fee) | Berlin-Brandenburgische Akademie der Wissenschaften (BBAW) |
| April 23, Monday 19:30 – 22:00 | Reception (included in the registration fee) | Deutsches Technikmuseum Berlin (Trebbiner Str. 9, 10963 Berlin; to get there take the underground line U2 from station “Stadtmitte” in direction “Ruhleben”, get out at station “Gleisdreieck”. The museum is a big modern building with an airplane mounted to its front wall.) |
| April 24, Tuesday 19:00 – 23:00 | IAA-Dinner € 50/person | The Regent Hotel (Charlottenstr. 49, 10117 Berlin) |
| April 25, Wednesday | Concert: tbd | Konzerthaus Berlin |

Excursion

08:00-20:00 Day trip to “Historic-Technical Information Centre”, Peenemuende, and “Otto Lilienthal Museum”, Anklam

08:00-08:30 Boarding the bus in front of BBAW;

time of return can vary depending on the traffic conditions;

about 12:00 a light meal/snack at a snack bar in Peenemuende will be provided

Sightseeing and Tours

During the symposium local sightseeing tours and tours to Potsdam and Dresden with an English-speaking guide will be arranged on demand by CMT ConTour GmbH for accompanying persons. Please fill in the Supporting Program Form and send it together with your Registration Form and Hotel Reservation Form to CMT ConTour GmbH.

Daily

Sightseeing Tour in Berlin (by bus)

Duration: 3 hours

A sightseeing trip through the most famous historical parts of Berlin; as well as the new sites of the growing German capital, including Potsdamer Platz and “Deutscher Bundestag”.

Meeting place: Main entrance of Hilton Hotel (Gendarmenmarkt), Departure: 09:20 and 13:20

Price: € 21.50/person

City Circle Tour (by bus)

Every 30 minutes - starting from 10:45 up to 15:45 - a sightseeing tour bus will pick you up at the Main Entrance of the Hilton Hotel close to the Berlin-Brandenburgische Akademie der Wissenschaften. There are 14 bus stops at the most beautiful places in the town, where you can leave the bus and discover the town by your own as long as you want. The next bus will take you off and bring you to the next stop and at last home. Information in many languages is available at the sightseeing busses by headsets.

Meeting place: Main Entrance of Hilton Hotel (Gendarmenmarkt),

Departure: 10:45-15:45, every 15 minutes

Price: € 20/person

On demand

The Video bus tour - Our Highlights Tour

The German Emperor waves from the balcony of the Berlin City Palace, the masses cheer for Hitler at the new Reich Chancellery, Russian tanks fight East German demonstrators on June 17, 1953, the Wall is built and falls, new city districts are created...Berlin's history in the twentieth century is world history and an emotional, dramatic one at that. We deliver you to the sites of these events, and the events unfold on the video monitors during the tour. In addition to serving Berliners and tourists who are interested in history, the video bus tour also caters to specific audiences. (Length: 2 hours).

More information: www.videobustour.de Price: approx. 30 €

A sightseeing tour by ship

A guided sightseeing tour on Berlin's waterways. You can experience the variety of architectural styles from another point of view and discover that Berlin has more bridges than Venice.

Meeting place: Jannowitzbrücke Departure: 11:30

Price: € 15/person Arrival: 15:30

| | MONDAY April 23, 2007 | TUESDAY April 24, 2007 | WEDNESDAY April 25, 2007 | THURSDAY April 26, 2007 |
|---------------------------------|--|--|--------------------------------------|---|
| 09:00-10:30 | 09:00-09:20 Welcome & Greetings | Session 04 Constellations | Session 08 Missions II | 08:00-20:00 Day trip to “Historic-Technical Information Centre”, Peenemuende, and “Otto Lilienthal Museum”, Anklam 08:00-08:30 Boarding the bus in front of BBAW |
| | 09:20-10:00 Keynote | | | |
| 10:30-10:50 Coffee Break | 10:00-10:30 Break and Press Conference | Session 05 Subsystems I | Session 09 Spacecraft Bus | |
| 10:50-12:10 | | | | |
| 12:10-13:30 Lunch Break | 12:10-13:30 Lunch | | | |
| 13:30-15:00 | Session 02 Missions I | Session 06 Student Conference (Special Session) | Session 10 Lessons Learned | |
| 15:00-15:20 Coffee Break | | | | |
| 15:20-16:40 | Session 03 Instruments | Session 07 Special Aspects | Session 11 Subsystems II | |
| 16:40-17:40 | Panel 1 Development and promotion of integrated applications (space and non-space) | Session Poster | Symposium Summary Awards | |
| 19:00 Social Event | Reception (19:30-22:00) Deutsches Technikmuseum Berlin | IAA-Dinner (19:00-23:00) The Regent Hotel | Concert Konzerthaus Berlin | |

Timetable