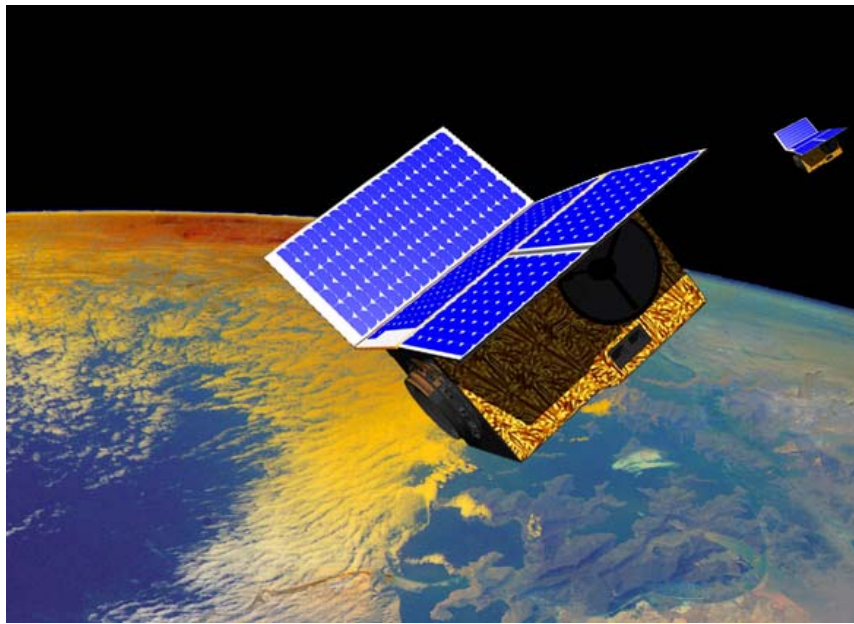


7th IAA SYMPOSIUM

ON SMALL SATELLITES

FOR EARTH OBSERVATION

Final Program



Composition picture: DLR

May 4 – 8, 2009

BBAW,
Gendarmenmarkt

BERLIN, GERMANY



*International
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LOCAL ARRANGEMENTS

Bernd Kirchner,

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DLR, Berlin

Henriette Urban/Dietmar Hennig,

Symposium Organizer CMT ConTour GmbH

Message of Greeting

from the Governing Mayor of Berlin, Klaus Wowereit, for the
7th Symposium on Small Satellites for Earth Observation of the
International Academy of Astronautics (IAA)
in Berlin, May 4 – 8, 2009



Klaus Wowereit

It is a great pleasure for Berlin to be able to welcome for the seventh 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 2009.

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.

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 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

7th IAA Symposium on Small Satellites for Earth Observation

Sunday, May 3, 2009

16:00-20:00 Registration, BBAW¹

19:00-21:00 Get-Together

Monday, May 4, 2009

08:00-09:00 Registration, BBAW

09:00-09:15 **Welcome:**

J.-M. Contant, IAA

J.-D. Wörner, DLR,

Germany

Honorary Chairman

09:15-09:30 **50 Years IAA**

J.-M. Contant, IAA

09:30-10:10 **Keynote Address:**

Sir Martin Sweeting,

SSTL, UK

“Small Satellites & Moore`s Law:
implications for Earth Observation”

10:10-10:40 BREAK, PRESS CONFERENCE

10:40-12:10 **Session 01:**

PROGRAMMATICS

Chair: J.-M. Contant, IAA

Rapporteur: H.-P. Röser,
Univ. of Stuttgart,
Germany

12:10-13:30 LUNCH

13:30-15:00 **Session 02:**
EARTH OBSERVATION MISSIONS 1

Chair: A. Ginati, ESA

Rapporteur: S. Mostert, SCS,
Stellenbosch,
South Africa

15:00-15:20 BREAK

15:20-16:40 **Session 03:**
INSTRUMENTS

Chair: L. Maresi, ESA/ESTEC

Rapporteur: L. Fröbel, DLR,
Germany

16:40-17:40 **Panel Discussion:**

**SMALL SATELLITES FOR EARTH
OBSERVATION – COMMERCIALI-
SATION POTENTIAL**

Chair: H. Stoewer, SAC,
Germany

Tuesday, May 5, 2009

09:00-10:30 **Session 04: (Special)**
**REGULATORY ASPECTS OF
SMALL SATELLITE MISSIONS**

Chair: K.-U. Schrogl, ESPI

Rapporteur: R. Kawashima,
Axelspace Corp.,
Japan

10:30-10:50 BREAK

10:50-12:10 **Session 05:**
SPECIAL ASPECTS 1

Chair: J. Esper, NASA/GSFC,
USA

Rapporteur: H. Kayal, Univ. of
Würzburg,
Germany

12:10-13:30 LUNCH

13:30-15:00 **Session 06: (Special)**
STUDENT CONFERENCE

Chair: L. Paxton,
JHU/APL, USA

Rapporteur: H. Jahn, DLR,
Germany

15:00-15:20 BREAK

15:20-16:40 **Session 07:**
ATTITUDE CONTROL SYSTEMS

Chair: M. Ovchinnikov,
RAS, Russia

Rapporteur: A. da Silva Curiel,
SSTL, UK

16:40-17:40 **POSTER SESSION 1**

¹ Berlin-Brandenburgische Akademie der Wissenschaften

AGENDA (cont'd)

Wednesday, May 6, 2009

- | | | | |
|-------------|---|-------------|--|
| 09:00-10:30 | Session 08: (Special)
DISTRIBUTED MISSIONS
<i>Chair:</i> M. D'Errico, Univ. of
Naples, Italy
<i>Rapporteur:</i> J. Esper, NASA/GSFC,
USA | 10:50-12:10 | Session 13:
SPECIAL ASPECTS 2
<i>Chair:</i> P. Patterson, USU/SDL,
USA
<i>Rapporteur:</i> C. Underwood,
SSTL, UK |
| 10:30-10:50 | BREAK | 12:10-13:20 | LUNCH |
| 10:50-12:10 | Session 09:
SUBSYSTEMS
<i>Chair:</i> S. Mostert, SCS, Stellen-
bosch, South Africa
<i>Rapporteur:</i> K. Brieß, TU Berlin,
Germany | 13:20-15:00 | Session 14: (Special)
NAVIGATION
<i>Chair:</i> O. Montenbruck,
DLR/GSOC, Germany
<i>Rapporteur:</i> J. Torley, Univ. of
Colorado, USA |
| 12:10-13:30 | LUNCH | 15:00-15:20 | BREAK |
| 13:30-15:00 | Session 10: (Special)
OPERATIONALLY RESPONSIVE
SPACE
<i>Chair:</i> J. Esper, NASA/GSFC, USA
<i>Rapporteur:</i> R. Laufer, Univ. of
Stuttgart, Germany | 15:20-16:40 | Session 15:
MISSION EXPERIENCES/
LESSONS LEARNED
<i>Chair:</i> M. Angulo, INTA,
Spain
<i>Rapporteur:</i> A. da Silva Curiel,
SSTL, UK |
| 15:00-15:20 | BREAK | | |
| 15:20-16:40 | Session 11:
EARTH OBSERVATION MISSIONS 2
<i>Chair:</i> A. da Silva Curiel, SSTL,
UK
<i>Rapporteur:</i> J.-S. Chern, NSPO,
Taiwan, China | 16:40-17:40 | Symposium Summary:
<i>Chair:</i> R. Sandau, DLR,
Germany
<i>Chief Rapporteur :</i>
E. Gill, TU Delft,
The Netherlands |
| 16:40-17:40 | POSTER SESSION 2 | | AWARDS |

Thursday, May 7, 2009

- 09:00-10:30 **Session 12: (SPECIAL)**
**SMALL SPACECRAFT MISSIONS
FOR LUNAR SCIENCE AND
EXPLORATION**
Chair: L. Alkalai, NASA/JPL, USA
Rapporteur: R. Laufer, Univ. of
Stuttgart, Germany

10:30-10:50 BREAK

Friday, May 8, 2009

09:00-12:00 Visit to:

**Technische Universität Berlin (TU Berlin),
Aerospace Institute (ILR)**

or to:

**Berliner Elektronenspeicherring-Gesellschaft
für Synchrotronstrahlung (BESSY)
Berlin-Adlershof**

TECHNICAL PROGRAM

Session 1: Programmatics

Monday, May 4, 2009, 10:40 - 12:10

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

- The Integrated Application Promotion (IAP) – New ESA Program Initiative** IAA-B7-0101
Ginati, A., European Space Agency (ESA)
- Overview on CNES Myriade microsattellites : in flight, under development and next** IAA-B7-0102
Landiech, Ph., Rodrigues, P. and all micro satellite team, CNES
- In Orbit Demonstration Strategy based on Small Satellite Missions** IAA-B7-0103
Strauch, K., Teston, F., Tobias. A., ESA/ESTEC
- First satellite of Small Demonstration Satellite Program of JAXA** IAA-B7-0105
Hirako, K., Nakamura, Y., Hashimoto, H., JAXA, Japan

Session 2: Earth Observation Missions 1 ***Monday, May 4, 2009, 13:30 - 15:00***

Chair: A. Ginati, ESA Rapporteur: S. Mostert, SCS, Stellenbosch, South Africa

- Small Earth Observing Satellites Flying with Large Satellites in the A-Train** IAA-B7-0201
Kelly, A. C., NASA/GSFC; Case, W. F., SGT Inc.; Quéruel, N., Maréchal, C., Barroso, T., CNES; Loverro, A., JPL
- IntaµSat-1 First Earth Observation Mission** IAA-B7-0202
Angulo, M., INTA, Spain
- SPRITE-SAT: a University Small Satellite for Observation of High-altitude Luminous events** IAA-B7-0203
Takahashi, Y., Yoshida, K. and SPRITE-SAT Development Team, Tohoku Univ. Japan
- VENµS (Vegetation and Environment monitoring on a New Micro Satellite)** IAA-B7-0204
Crebassol, P., Ferrier, P., Dedieu, G., Hagolle, O., Fougnie, B., Tinto, F., CNES; Yaniv, Y., IAI, Israel; Herscovitz, J., RAFAEL, Israel

Session 3: Instruments

Monday, May 4, 2009, 15:20 - 16:40

Chair: L. Maresi, ESA/ESTEC Rapporteur: L. Fröbel, DLR, Germany

- High Resolution Optical Imaging Small Satellite Systems** IAA-B7-0301
Tyc, G., Larson, W., Schulten, D., MDA, Canada; Butlin, T., Morris, N., Waltham, N., Tosh, I., RAL, UK
- Multi-Spectral Optical Scanners for Commercial Earth Observation Missions** IAA-B7-0302
Schröter, K., Engel, W., Hoffmann, R., Kolbe, E., Schöneich, J., Jena-Optronik, Germany
- The vegetation instrument for the PROBA V mission** IAA-B7-0303
De Vos, L., Moelans, W., Versluys, J., OIP, Belgium; Moreau, V., AMOS, Belgium; Jamoye, JF., Nanoshape, Belgium; Vermeiren, J., XenICS, Belgium; Maresi, L., Taccola, M., ESA/ESTEC
- Software defined LFM CW SAR receiver for microsattellites** IAA-B7-0304
Ahmed, N., Underwood, C. I., SSC, UK

Panel Discussion:

Small Satellites for Earth Observation – Commercialisation Potential

Monday, May 4, 2009, 16:40 - 17:40

Chair: Heinz Stoewer, SAC, Germany

Panelists:

Diane Evans, JPL, USA
Michael Oxfort, RapidEye, Germany
Patric Patterson, USU/SDL, USA
Sias Mostert, SCS, South Africa
Sir Martin Sweeting, SSTL, UK

Session 4: (Special) Regulatory Aspects of Small Satellites Missions

Tuesday, May 5, 2009, 09:00 - 10:30

Chair: K.-U. Schrogl, ESPI

Rapporteur: R. Kawashima, Axelspace Corp., Japan

Overview on regulatory aspects of small satellite missions Schrogl, K.-U., ESPI, Austria	IAA-B7-0401
National space legislation Schmidt-Tedd, B., DLR, Germany	IAA-B7-0402
Finding the balance - Optimum regulatory framework for space data in the information era Smith, L. J., Leuphana Univ. Lüneburg, Germany	IAA-B7-0403
Safeguarding the space environment Williamson, R. A., Lukaszczyk, A., Secure World Foundation, USA	IAA-B7-0404

Session 5: Special Aspects 1

Tuesday, May 5, 2009, 10:50 - 12:10

Chair: J. Esper, NASA/GSFC, USA

Rapporteur: H. Kayal, Univ. of Würzburg, Germany

Low cost earth observation flight operations systems Molina Cobos, M. A., GMV, Spain	IAA-B7-0501
SCALES - A System Level Tool for Conceptual Design of Nano- and Microsatellites Aas, C., Zandbergen, B. T. C., Hamann, R. J., Gill, E. K. A., TU Delft, The Netherlands	IAA-B7-0502
The First-MOVE Satellite – A pathfinder for future small satellites of the TU-München Czech, M., Walter, U., TU München, Germany	IAA-B7-0503
Design of a small educational satellite for the Italian high school students: The EduSAT project Graziani, F., Univ. of Roma, Italy; Pulcrano, G., ASI, Italy; Battagliere, M. L., Piergentili, F., Santoni, F., Univ. of Roma, Italy; Mascetti, G., ASI, Italy	IAA-B7-0504

Session 6: (Special) Student Conference Tuesday, May 5, 2009, 13:30 - 15:00

Chair: L. Paxton, JHU/APL, USA

Rapporteur: H. Jahn, DLR, Germany

Testing of Critical Pico-Satellite Systems on the Sounding Rocket Rexus-4 Olthoff, C., Purschke, R., Rackl, W., Winklmeier, R., Czech, M., TU München, Germany	IAA-B7-0601
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Onboard image quality assessment for a small low earth orbit satellite van Zyl Marais, I., Steyn, W. H., du Preez, J. A., Univ. of Stellenbosch, South Africa	IAA-B7-0602
Laboratory facility for simulation and verification of formation motion control algorithms Ivanov, D., Moscow State Univ., Russia; Ming, Z., Walter, T., Univ. of Bremen, Germany, Zaramenskikh, I., RAS, Russia	IAA-B7-0603
Asynchronous parallel reactive system for intelligent small satellite on-board computing systems Kuwahara, T., Ziemke, C., Fritz, M., Univ. of Stuttgart, Germany; Eickhoff, J., EADS Astrium, Germany; Roeser, H.-P., Univ. of Stuttgart, Germany	IAA-B7-0604
NanoSiGN - Nanosatellite for scientific interpretation of GNSS dual-frequency signals in the low Earth orbit Pacholke, F., Vu, H. Q., Brieff, K., Kornemann, G., TU Berlin, Germany	IAA-B7-0605
The COMPASS-1 Picosatellite in Space Piepenbrock, J, Univ. of Applied Sciences, Aachen, Germany	IAA-B7-0606

Session 7: Attitude Control Systems ***Tuesday, May 5, 2009, 15:20 - 16:40***

Chair: M. Ovchinnikov, RAS, Russia ***Rapporteur: A. da Silva Curiel, SSTL, UK***

Star Sensor development based on the TUBSAT Experience Buhl, M., Renner, U., TU Berlin, Germany	IAA-B7-0701
Small sensors big choices Leijtnens, J., de Boom, C. W., TNO science and Industry, Delft, The Netherlands	IAA-B7-0702
PACE - Taiwan's First Nanosatellite for Evaluation of Momentum-Biased Attitude Control Scholz, A., Miao, J.-J., Juang, J.-C., NCKU, Taiwan, China	IAA-B7-0703
Robust and fault tolerant AOCS of the TET satellite Terzibaschian, T., DLR, Germany; Yoon, Z., TU Berlin, Germany; Raschke, C., Astro- und Feinwerktechnik Adlershof, Germany; Maibaum, O., DLR, Germany	IAA-B7-0704

Poster Session 1 ***Tuesday, May 5, 2009, 16:40 - 17:40***

SwissCube: The first entirely-built Swiss student satellite carrying an Earth observation payload Borgeaud, M., Noca, M., Roethlisberger, G., Jordan, F., Choueiri, T., Steiner, N., Scheidegger, N., Space Center EPFL, Lausanne, Switzerland	IAA-B7-0205P
Space system "Radiomet" for GLONASS/GPS navigation signal radio occultation monitoring of lower atmosphere and ionosphere based on super-small satellites Vishnyakov, V., Romanov, A., Selivanov, A., Vinogradov, A., FSUE RISDE, Russia; Perykov, A., Pavelyev, A., Matyugov, S., Yakovlev, O., FIRE RAS, Russia	IAA-B7-0206P
Real-Time Earth Observation Scenarios for Quick Response Services Pietras, M, Fleischner, A., Wilde, M., Walter, U., TU München, Germany	IAA-B7-0207P
Advanced Satellite with New System Architecture for Observation (ASNARO) Ijichi, K., Mihara, S., Akiyama, M., Miyazaki, K., USEF, Japan; Ogawa, T., Narimatsu, Y., NEC Corp. Japan; Ito, O., NEDO, Japan	IAA-B7-0208P
European Space-Based AIS System Tobehn, C., te Hennepe, F., Wieser, M., OHB-System, Bremen, Germany; Hellenen, Ø., Olsen, Ø., FFI, Norway; Christiansen, S. E., Storesund, F., Kongsberg Seatex, Norway; Challamel, R., Thales Alenia Space, France	IAA-B7-0209P

Poster Session 1 (cont.)

- SSTL's on-going programme for high resolution imaging from small satellites** IAA-B7-0211P
Cawthorne, A., Gomes, L., Sweeting, M., SSTL, UK
- A Bi/Multi-Static Micro-Satellite Synthetic Aperture Radar (SAR) Constellation** IAA-B7-0212P
Wanwiwake, T., STDA, Bangkok, Thailand; Underwood, C. I., SSC, UK
- The Study of Electromagnetic Parameters of Space Weather, Microsatellite "CHIBIS-M"** IAA-B7-0213P
Klimov, S. I., IKI, RAS, Russia; Korepanov, V. E., ISR, Lviv, Ukraine; Novikov, D. I., IKI, RAS, Russia; Ferencz, Cs., Lichtenberger, J., Eötvös Univ., Budapest, Hungary; Marusenkov, A., ISR, Lviv, Ukraine; Bodnar, L., BL Electronics, Hungary
- Investigation of new physical phenomena in the atmospheric lightning discharges: Micro-satellite "CHIBIS-M"** IAA-B7-0214P
Angarov, V. N., IKI, RAS, Russia; Garipov, G. K., SINP, Moscow State Univ., Russia; Gotlib, V. M., IKI, RAS, Russia; Gurevich, A. V., FIAN, RAS, Russia; Klimov, S. I., Rodin, V. G., IKI, RAS, Russia; Svertilov, S. I., SINP, Moscow State Univ., Russia; Zelenyi, L. M., IKI, RAS, Russia;
- Ground segment of low budget satellite "Chibis"** IAA-B7-0215P
Angarov, V., Eismont, N., Gotlib, V., Nazarov, V., Nazirov, R., Rodin, V., IKI, RAS, Russia;
- Mission Analysis for the PRISMA Earth Observation Satellite** IAA-B7-0216P
Razzano, E., Morea, G. D., Cipolla, S., Carlo Gavazzi Space S.p.A., Italy; Galeazzi, C., Varacalli, G. N., ASI, Italy
- Space remote sensing satellite system for disaster management with geographical limitation** IAA-B7-0217P
Mirshams, M., Vafa, A. R., K. N. Toosi University of Technology, Tehran, Iran
- Venus micro satellite: Mission programming, data processing & data distribution, in the frame work of international cooperation and low cost management – concept and implementation** IAA-B7-0219P
Poncet, M., Vadon, H., CNES, France
- Mission Design of the Dutch-Chinese FAST Micro-Satellite Mission** IAA-B7-0220P
Maessen, D., Gill, E., Guo, J., Delft Univ., The Netherlands; Laan, E., TNO, The Netherlands; Moon, S., Cosine Res., The Netherlands; Zheng, G. T., Tsinghua Univ., Beijing, China
- The ROSA Mission** IAA-B7-0221P
De Cosmo, V., Ananasso, C., Catalano, V., Garramone, L., Vespe, F., ASI, Italy
- The "Ulingo" Mid-Low Latitudes Observation (MILO) Mission** IAA-B7-0222P
Ulivieri, C., Laneve, G., CRPSM, Univ. of Rome, Italy; Ortore, E., SAE, Univ. of Rome, Italy
- Integrated Design Based Plug-and-Play small SAR satellite project** IAA-B7-0223P
Zhang, J., Shi, X., HIT, Harbin, China; Mu, D., NIET, Nanjing, China; Cao, X., Lan, S., HIT, Harbin, China
- The thermal determinator nano satellite concept** IAA-B7-0224P
Rievers, B., Bindel, D., ZARM, Bremen, Germany; Dachwald, B., Plescher, E., Univ. of Aachen, Germany; Dittus, H., DLR, Germany
- Ground Station and Payload Data Center for TET-1** IAA-B7-0225P
Richter, J., Schwarz, J., Damerow, H., Tegler, M., DLR/DFD, Germany
- SAR and Optical Earth Observation Missions for Fast Emergency Response** IAA-B7-0226P
Ziegler, B., Tobehn, C., OHB-System, Germany; Mosebach, H., Staton, G., KT, Germany; Allan, P., Caves, R., MDA, Canada; Hartmann, R., Pillukat, A., Jena-Optronik; Germany

Poster Session 1 (cont.)

- The Italian MIOSAT project for Earth Observation: phase A\B Mission Analysis challenges and results** IAA-B7-0227P
Lavagna, M. Armellini, R., Politecnico di Milano, Italy; Agostara, C., Dionisio, C., Di Salvo, A., Rheinmetall Italia S.p.A., Italy
- German Russian Education Satellite - Mission outline and objectives** IAA-B7-0228P
Bindel, D., ZARM, Bremen, Germany; Khromov, O., KIAM, RAS, Russia; Ovchinnikov, M., RISDE, Russia; Rievers, B., Rodrigues Navarro, J., ZARM, Bremen, Germany; Selivanov, A., KIAM, RAS, Russia;
- Collaborative Small Satellites Design Approach, a Model for Technology Cooperation between Developed and Developing Countries in Space Based Programs** IAA-B7-0230P
Entezari, M. H., IROST, Iran
- OHB Satellites and Systems for Earth Observation Missions** IAA-B7-0231P
Tobehn, C., Penné, B., Kassebom, M., Ziegler, B., Mahal, S., Greinacher, R., te Hennepe, F., OHB-System, Bremen, Germany
- University Microsatellites Equipped with an Optical System for Space Debris Monitoring** IAA-B7-0234P
Cappelletti, C., Paolillo, F., Sapienza Univ. of Rome, Italy
- SEPSAT - A nanosatellite to observe parameters of space weather** IAA-B7-0236P
Riebelmann, J., Arlt, F., Brieß, K., Köhler, K., Weise, J., ILR, TU Berlin, Germany
- Atmospheric monitoring with a constellation of small satellites** IAA-B7-0237P
Stanley, C., Univ. of Surrey, UK
- Satellite Constellation Analysis and Design for Earth Observation Mission with Electro-Optical Sensors** IAA-B7-0238P
Graziano, M. D., Second Univ. of Naples, Italy
- Application of microsatellites for remote sensing of woods of Siberia** IAA-B7-0239P
Kosenko, V., Yakovlev, A., Popov, V., JSC ISS, Russia; Yurikova, E., Okhotkin, K., Kartzan, I., SibSAU, Russia; Sukhinin, A., KCS SB RAS, Russia
- The ALISEO payload for the small technological mission MIOSAT** IAA-B7-0305P
Barducci, A., Castagnoli, F., Castellini, G., Guzzi, D., Lastri, C., Marcoionni, P., Pippi, I., Viani, M., CNR-IFAC, Italy; Dionisio, C., Sgroi, G., Rheinmetall Italia, Italy
- PhytoMapper - Compact Hyperspectral Wide Field of View Instrument** IAA-B7-0306P
Maresi, L., Taccola, M., Kohling, M., ESA, Noordwijk, The Netherlands; Lievens, S., VITA, Belgium
- Development of Spaceborne Small Hyperspectral sensor HSC-III for Micro Satellite** IAA-B7-0307P
Aoyanagi, Y., Satori, S., HIT, Japan; Totani, T., Hokkaido Univ., Japan; Yasunaka, T., Uematsu Electric Co., Japan; Nakamura, A., AID MA Inc., Japan; Takeuchi, Y., Hokkaido Sat Inc., Japan
- New instrument for wave activity study** IAA-B7-0308P
Korepanov, V., Dudkin, F., LCISP, Lviv, Ukraine; Lizunov, G., ISR, Kyiv, Ukraine
- Technical Development of Spectral Filters for SENTINEL-2** IAA-B7-0309P
Schröter, K., Jena-Optronik, Jena, Germany; Schallenberg, U., MSO, Jena, Germany; Mohaupt, M., FIAOF, Jena, Germany
- Towards a Miniaturized Photon Counting Laser Altimeter and Stereoscopic Camera Instrument Suite for Microsatellites** IAA-B7-0310P
Moon, S., Hannemann, S., Collon, M., Cosine Res., The Netherlands; Wielinga, K., Kroesbergen, E., Mecon Engin., The Netherlands; Harris, J., Swiss Space Techn., Switzerland
- A Plan of Distributed ISAR Satellite Imaging System aiming at space objects** IAA-B7-0311P
Cao, X., Xing, L., Xu, G., HIT, Harbin, China

Session 8: (Special) Distributed Missions

Wednesday, May 6, 2009, 09:00 - 10:30

Chair: M. D'Errico, Univ. of Naples, Italy Rapporteur: J. Esper, NASA/GSFC, USA

- Earth Observation with SAR Satellite Formations: New Techniques and Innovative Products** IAA-B7-0801
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- The 7-day solution: how ORS will answer the rapid call-up challenge** IAA-B7-1002
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Session 12: (Special)

Small Spacecraft Missions for Lunar Science and Exploration

Thursday, May 7, 2009, 09:00 - 10:30

Chair: L. Alkalai, NASA/JPL, USA Rapporteur: R. Laufer, Univ. of Stuttgart, Germany

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Session 13: Special Aspects 2

Thursday, May 7, 2009, 10:50 - 12:10

Chair: P. Patterson, USU/SDL, USA

Rapporteur: C. Underwood, SSTL, UK

- The Rocket Balloon (Rocketball): Applications to Science, Technology, and Education** IAA-B7-1301
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- Low-cost launch services for micro satellites by means of utilization of Soyuz orbital stage** IAA-B7-1302
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Germany; Bärwald, W., DLR, Germany
- Intersatellite Range Determination Using Multi-detectors Observation of Pulsars** IAA-B7-1304
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Session 14: (Special) Navigation

Thursday, May 7, 2009, 13:20 - 15:00

Chair: O. Montenbruck, DLR/GSOC, Germany

Rapporteur: J. Torley, Univ. of Colorado, USA

- Navigation needs for ESA's Earth Observation missions** IAA-B7-1401
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- Benefits of Galileo for future satellite missions** IAA-B7-1402
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- Differential GPS: an enabling technology for formation flying satellites** IAA-B7-1403
D'Amico, S., Montenbruck, O., DLR/GSOC, Germany
- Near-Real-Time Orbit Determination of LEO Satellites** IAA-B7-1404
Hauschild, A., DLR/GSOC, Germany
- The scientific use of GNSS signals in space** IAA-B7-1405
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Session 15: Mission Experiences/Lessons Learned

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Chair: M. Angulo, INTA, Spain

Rapporteur: A. da Silva Curiel, SSTL, UK

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Chair: R. Sandau, DLR, Germany

Chief Rapporteur: E. Gill, TU Delft, The Netherlands

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, May 5, 2009, 19:00 at Käfer Berlin, Restaurant im Reichstag.

Special thanks go to the Student Paper Evaluation Committee:

Leon Alkalai, NASA/JPL, USA

Klaus Brieß, TU Berlin, Germany

Jaime Esper, NASA/GSFC, USA

Einar-Arne Herland, ESA/ESTEC

Sias Mostert, Space Commercial Services, 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

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Grafmueller, B.	IAA-B7-0803
Grassi, M.	IAA-B7-0806P
Graziani, F.	IAA-B7-0504
Graziano, M. D.	IAA-B7-0238P
Greinacher, R.	IAA-B7-0231P
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Miau, J.-J.	IAA-B7-0703
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Mihara, S.	IAA-B7-0208P
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Moelans, W.	IAA-B7-0303
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Neukum, G.	IAA-B7-1203
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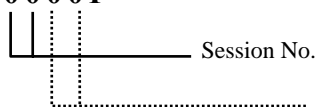
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Popov, V.	IAA-B7-0239P
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Rodin, V.	IAA-B7-0215P
Rodrigues Navarro, J.	IAA-B7-0228P
Rodrigues, P.	IAA-B7-0102

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Roselló Guasch, J.	IAA-B7-1401	Strauch, K.	IAA-B7-0803
Rothacher, M.	IAA-B7-1405	Strauch, K.	IAA-B7-0103
Rott, H.	IAA-B7-0803	Sukhinin, A.	IAA-B7-0239P
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Sechi, G.	IAA-B7-0802	Tinto, F.	IAA-B7-0204
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Sgroi, G.	IAA-B7-0305P	Tobias, A.	IAA-B7-0103
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Smith, L. J.	IAA-B7-0403	Vafa, A. R.	IAA-B7-0217P
Sohl, F.	IAA-B7-1203	van Gasselt, S.	IAA-B7-1203
Spear, T.	IAA-B7-1204	van Mierlo, M.	IAA-B7-1101
Spohn, T.	IAA-B7-1203	van Zyl Marais, I.	IAA-B7-0602
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Srama, R.	IAA-B7-1203	Vermeiren, J.	IAA-B7-0303

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Zhao, D.	IAA-B7-1304
Zhao Deyong	IAA-B7-0519P
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Zhou Haiyin	IAA-B7-0519P
Ziegler, B.	IAA-B7-0226P
Ziegler, B.	IAA-B7-0231P
Ziemke, C.	IAA-B7-0604

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Sequential numbering, P indicating interactive presentation during Poster Session

Symposium Venue

The symposium will take place in the Berlin-Brandenburgische Akademie der Wissenschaften (BBAW), Jägerstraße 22/23, 10117 Berlin (mail address), **entrance from Markgrafstraße 38 (Gendarmenmarkt)**.

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:

May 3, Sunday	16:00-20:00
May 4, Monday – May 7, Thursday	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: room 1,
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
May 3, Sunday 19:00 – 21:00	Get-Together (included in the registration fee)	Berlin-Brandenburgische Akademie der Wissenschaften (BBAW) www.bbaw.de
May 4, Monday 19:00 – 23:00 (meeting point BBAW)	Reception (included in the registration fee)	Zeiss Großplanetarium Berlin (Prenzlauer Allee 80, 10405 Berlin; after a short bus trip through the city of Berlin, you will reach the Planetarium)
May 5, Tuesday 19:00 – 23:00 (meeting point BBAW)	IAA-Dinner €90/person	Käfer Berlin, Restaurant im Reichstag Platz der Republik 1, 11011 Berlin
May 6, Wednesday	Concert: tbd	Konzerthaus Berlin Gendarmenmarkt 2, 10117 Berlin
May 7, Thursday	Film presentation (included in the registration fee)	CineStar Imax 3D im Sony Center Potsdamer Str. 4, 10785 Berlin

Excursion on Friday, May 8 (included in the registration fee)

09:00-12:00 Visit to

Technische Universität Berlin (TU Berlin), Aerospace institute (ILR)

The excursion will give an insight to the developments of space technology at TU Berlin. During the visit past, present and future missions will be explained. The tour will include presentation of the BeeSat labs and TU Berlin mission control center. Special highlight is the participation in a live pass of LAPAN TUBSAT the latest of the TUBSAT satellites.

Departure: 9:00 – 9:30 Boarding the bus in front of BBAW

09:00-12:00 Visit to

Berliner Elektronenspeicherring-Gesellschaft für Synchrotronstrahlung (BESSY).

The Berliner Elektronenspeicherring-Gesellschaft für Synchrotronstrahlung (BESSY) operates the only German 3rd generation synchrotron radiation facility. The storage ring BESSY II provides ultrabright photon beams from the long wavelength Terahertz region to hard X-rays with complete control of the polarization of the radiation and energy range. 46 beamlines offer a multi-faceted mixture of experimental opportunities at undulator, wiggler and dipole sources with excellent energy resolutions. The combination of brightness and time resolution makes BESSY the ultimate microscope for space and time, since both femtosecond time and picometer spatial resolutions are available.

Departure: 9:00 – 9:30 Boarding the bus in front of BBAW

Sightseeing and Tours

During the symposium local sightseeing tours and tours to Potsdam with an English-speaking guide will be arranged on demand by CMT ConTour GmbH for accompanying persons. If you wish to order tickets for other events, concerts or theatres, please contact the concierge of the Hilton Hotel.

Sightseeing Tour in Berlin (by bus) - daily

Duration: 3 hours, German- and English-speaking guided

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: 9:20 and 13:20

Fee: €22.00/person

City Circle Tour (by bus) – daily

Every 15 minutes - starting from 10:45 up to 15:45 - a sightseeing tour bus will pick you up at Gendarmenmarkt 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 pick you up and bring you to the next stop and at last home. Informations in many languages are available at the sightseeing busses by headsets.

Meeting place: Gendarmenmarkt (for the clearly defined place please ask the hostesses at the Symposium counter or the Concierge in the Hilton Hotel)

Departure: 10:45 – 15:45

Fee: €18.00/person

River Cruise on Landwehrkanal and Spree: a Sightseeing Tour by Ship - daily

Duration: 3.5 – 4 hours, German- and English-speaking guided (on demand)

Experience the variety of architectural styles on our city cruise and discover that Berlin has more bridges than Venice. You will see the Oberbaum Bridge, Oberschleuse, Technikmuseum (Science Museum), Palace Charlottenburg, Spreebogen, Bellevue Palace, Haus der Kulturen der Welt, Government Quarter, Reichstag (Seat of German Government), Charité, Museum Island, Berlin Cathedral, Nikolai Quarter.

Departure: shipping pier Friedrichstraße/Reichstagufer
between 10:00 and 14:00 every 50 minutes

Fee: €17.50/person

Tour to Potsdam (by bus) – daily except Monday

Duration: approx. 4 hours, German- and English-speaking guided

The rococo Palace of Sanssouci became the favourite refuge of Prussia's greatest King, Friedrich II. Here, the Philosopher of Sanssouci entertained some of the most educated men of his time, among them the French poet Voltaire who was a frequent guest over many years. Our excursion takes you on a tour of the famous Sanssouci Palaces and the magnificent gardens.

Meeting place: Berlin Hilton

Departure: 9:20 and 13:20 (last departure only Saturday and Sunday)

Fee: €37.00/person

7th IAA Symposium on Small Satellites for Earth Observation	MONDAY May 4, 2009	TUESDAY May 5, 2009	WEDNESDAY May 6, 2009	THURSDAY May 7, 2009	FRIDAY May 8, 2009
09.00 - 10.30 <i>Papers</i>	09.00 - 09.30 Welcome and Greetings 09.30 - 10.10 Keynote	Session 04 (Special) Regulatory Aspects of Small Satellite Missions	Session 08 (Special) Distributed Missions	Session 12 (Special) Small Spacecraft Missions for Lunar Science and Exploration	Visit of: 09.00 - 12.00 Technische Universität Berlin (TU Berlin) Aerospace Institute (ILR) 09.00 - 12.00 Berliner Elektronen- speicherring-Gesell- schaft für Synchro- tronstrahlung (BESSY) Berlin-Adlershof
10.30 - 10.50 Coffee Break	10.10 - 10.40 Break and Press Conference	Session 05 Special Aspects 1	Session 09 Subsystems	Session 13 Special Aspects 2	
10.50 - 12.10 <i>Papers</i>	10.40 - 12.10 Session 01 Programmatics				
12.10 - 13.30 Lunch Break				12:10 - 13:20 Lunch	
13.30 - 15.00 <i>Papers</i>	Session 02 Earth Observation Missions 1	Session 06 (Special) Student Conference	Session 10 (Special) Operationally Responsive Space	13:20 - 15:00 Session 14 (Special) Navigation	
15.00 - 15.20 Coffee Break					
15.20 - 16.40 <i>Papers</i>	Session 03 Instruments	Session 07 Attitude Control Systems	Session 11 Earth Observation Missions 2	Session 15 Mission Experiences/ Lessons Learned	
16.40 - 17.40 <i>Panel/Poster</i>	Panel Discussion Small Satellites for Earth Observation - Commercialisation Potential (H. Stoewer)	Session Poster 1	Session Poster 2	Symposium Summary Awards	
Sunday, May 3, 2009 19.00 - Social Event (Get-Together) 21.00 BBAW	Reception (19.00-23.00) Zeiss Großplanetar.	IAA-Dinner (19.00-23.00) Käfer Rest. Reichstag	Concerts	Film Presentation CineStar IMAX	