Final Program

The 4th CSA-IAA Conference on Advanced Space Technology

“Advanced Space Technology benefits for Humanity”

September 5-8, 2011

Shanghai, China
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AIM OF THE CONFERENCE
The Chinese Society of Astronautics (CSA) and the International Academy of Aeronautics (IAA) are pleased to hold jointly the 4th CSA-IAA Conference on Advanced Space Technology from Sept. 5 to 8, 2011. The conference would provide a forum for the presentation and discussion of the following topics to explore the application and development of advanced space technology under the theme of "Advanced Space Technology benefits for Humanity".

CONFERENCE VENUE
The Conference will be held in Shanghai, At Grand Soluxe Zhongyou Hotel Shanghai.
Address: No.969 Dongfang Road, Pudong New Area, Shanghai
Tel: 86-21-68758888
www.hotelzhongyou.com

WORKING LANGUAGE
English will be the working language of the conference.

SESSION FACILITIES
LCD projectors and computer for Powerpoint presentation will be available in all meeting rooms. The electricity in China is supplied at 220V, 50Hz AC.

AUTHOR’S INFORMATION
Normally 25-minute presentation plus 5-minute Question and Answer for Plenary Session (keynote speech).
5-10 minute presentation plus 5-minute Question and Answer for Technical Sessions.

MAIN TOPICS
1. Applications of Communications Satellite
2. Applications of Remote Sensing Satellite
3. Applications of Navigation Satellite
4. Satellite and Launcher Technology
5. Space Policy and International Cooperation
6. Commercialization of Satellite Applications
CONFERENCE ORGANIZATION

Hosted by
Chinese Society of Astronautics (CSA)
International Academy of Astronautics (IAA)

Supported by
China National Space Administration (CNSA)
Chinese Academy of Sciences (CAS)
China Aerospace Science and Technology Corporation (CASC)
China Aerospace Science and Industry Corporation (CASIC)

Sponsored by
China Academy of Launch Vehicle Technology (CALT)
China Academy of Space Technology (CAST)
Shanghai Academy of Spaceflight Technology (SAST)
China Aerospace Science & Industry Academy of Information Technology
Defense Technology Academy of China Aerospace Science & Industry Corporation
Feihang Technology Research Academy of China Aerospace Science & Industry Corporation
China Center for Resources Satellite Data and Application (CRESDA)
China Satellite Communications Co. Ltd
Shanghai Society of Astronautics (SSA)

General Chairmen
Prof. MA Xingrui (President, CSA and CASC)
Dr. Jean-Michel CONTANT (Secretary General, IAA)

Local Organizing Committee
Chairman
YUAN Jie (Vice President, CSA and CASC)
Vice Chairmen
XIE Lianggui (Vice President of CSA and General Manager Assistant of CASIC)
ZHU Zhisong (President, SAST)
YANG Junhua (Vice President and General Secretary, CSA)
Members
FU Min (Deputy Division Director, President Office of CASC)
WANG Yan (Deputy Division Director, Research and Development of CASC)
GUO Jianping (Deputy Division Director, International and Cooperation of CASC)
WANG Xianyu (Deputy Division Director, President Office of CASIC)
WANG Guoqing (Vice President, CALT)
WANG Yanguang (General Engineer, CAST)
MENG Guang (Vice President, SAST)
LIU Weining (President, China Aerospace Science & Industry Academy of Information Technology)
LIU Zhuping (Vice President, Defense Technology Academy of China Aerospace Science & Industry Corporation)
WEI Yiyin (Vice President, Feihang Technology Research Academy of China Aerospace Science & Industry Corporation)
XU Wen (Director, CRESDA)
YAO Fahai (Vice President, China Satellite Communications Co. Ltd)
GONG Jinyu (Deputy General Secretary, CSA)

**International Program Committee**
Rainer SANDAU, IAA
CAI Guobiao, CSA
Yean Joo CHONG, IAA
CUI Pingyuan, CSA
Efim MALITIKOV, IAA
Filippo GRAZIANI, IAA
LI Ming, CSA
MENG Guang, CSA
WANG Guoqing, CSA
WANG Yanguang, CSA
CONFERENCE AGENDA
MONDAY, SEPTEMBER 5, 2011
14:00-20:00   Registration
at the lobby of the conference venue

TUESDAY, SEPTEMBER 6, 2011
09:00-09:20  Opening Ceremony
Sunshine Hall, 5th floor
Chairperson: Prof. YANG Junhua
Opening Addresses from:
1.Prof. LIU Bo (Deputy Secretary General of Secretariat, CNSA)
2.Dr. Jean-Michel CONTANT (Secretary General, IAA)
3.Prof. YUAN Jie (Vice President, CSA and IAA)
4.Prof. XIE Lianggui (Vice President, CSA and Assistant General Manager of CASIC)

09:20-09:30  Certificate Ceremony of Newly Elected Chinese IAA
Academician 2011

09:30-12:00   Plenary Session
Sunshine Hall, 5th floor
Co-Chairmen:  Dr. Rainer SANDAU, Germany  Prof. WANG Yanguan, China
09:30-10:00  Keynote speech from CASC, Mr. LIU Qiang (Division Director,
Research and Development of CASC)
10:00-10:30  The New Orientations of the International Academy of
Astronautics after the 2010 Heads of Space Agency Summit (Dr.
Jean-Michel CONTANT, General Secretary of IAA)
10:30-11:00  Space Science Missions in the Next 5 Years and Medium Plan till
2020, Mr. WU Ji (Director, National Space Science Center, CAS)
11:00-11:30  Effectiveness of the Satellite Utilization for Disasters, regarding
to the Great East Japan Earthquake, Mr. Jun GOMI (Director of
Space Applications Promotion Center, JAXA)
11:30-12:00  Some Considerations and Suggestions on the Development of
Small Satellite and Its Application Systems, Mr. LU Weining
(President, China Aerospace Science & Industry Academy of
Information Technology)

Break
14:00-18:00  Plenary Session
Sunshine Hall, 5th floor
Co-chairmen: Dr. Jean- Michel CONTANT, France  Prof. MENG Guang, China

14:00-14:30  Chinese Meteorological Satellite Application in Disaster Prevention and Mitigation, Prof. MENG Guang (Vice President of SAST)
14:30-15:00  The IGMAS Project – New Approach to Natural and Man-made Disaster Management Issues, Prof. Valery A. MENSNIKOV (Vice Chair of IGMAS’ System Project)
15:00-15:30  Remote Sensing and Earth Observation with Micro Satellites - Status and prospects, Dr. Rainer SANDAU (Technical Director, IAA)
15:30-16:00  The China Land Observation satellites and related remote sensing application under the framework of spatial Information Infrastructure, Prof. XU Wen (Director, CRESDA)
16:00-16:30  China-Satcom is Moving Ahead, Prof. YAO Fahai (Vice President of China Satellite Communications Co. Ltd)
16:30-17:00  Present and Future of Chinese Long March Vehicles, Prof. Peng Xiaobo (Director, Research and Development Division of CALT)
17:00-17:30  Progress and Prospect of China Deep Space Exploration, Prof. LI Ming (Vice president of CAST)
17:30-18:00  Advanced Space Technologies of the 21st Century for the Ancient Cultures, Prof. Efim MALITIKOV (Interstate Committee of CIS on Knowledge Promotion and Adult Education, International Association "Znanie", President, Russia)

19:00-20:30  WELCOME RECEPTION
Sunshine Hall, 5th floor

WEDNESDAY, SEPTEMBER 7, 2011
Technical Sessions (3 parallel sessions with 6 topics)
08:30-12:00  Technical Sessions: Session 1, Session 2 and Session 3
14:00-18:00  Technical Sessions: Session 1 and Session 2

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<td><strong>Co-chairmen:</strong> Prof. Efim Maltikov, Russia</td>
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<th>A. Makarov</th>
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<td>Recent Progress of Terahertz Technologies and the Impetus to Terahertz Satellite Communications</td>
<td>DONG Shiwei</td>
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<td>S1-07</td>
<td>The application of domestic moderate resolution satellite data in China land use macroscopic monitoring</td>
<td>HUANG Shicun</td>
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<td>Theoretical Modeling for Polarimetric Scattering and Information Retrieval of SAR Remote Sensing/Progress of Active and Passive Microwave Remote Sensing for Lunar Exploration in FDU</td>
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<td>Study of Airborne Precise Navigation of Satellitic / Celestial /Inertial Combination</td>
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<td>The Research of Connection Admission Control in Satellite ATM Switching System</td>
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<td>A realization model of the satellite-based ATM multicast signaling system</td>
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<td>World university of a new type without language, national and cultural borders</td>
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<td>Yuri N RAZOUMNY</td>
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## Session 1- Satellite Space Applications

No.1 Multifunction Hall, 2nd floor

### Co-chairmen: Dr. Rainer SANDAU, Germany   Prof. WANG Yanguang, China

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<td>The Power Allocation and Efficiency of Carriers in Satellite Communication</td>
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<td>Design and implementation of CBOC receiver based on DE method</td>
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<td>1036-nm Single Photon Laser Ranging System with Active Quenching Si-APD</td>
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<td>A GIS-based Road Information System of Agartala City/ A GPS-based Real-time Road Traffic Monitoring System</td>
<td>Kamal Kumar TANTI</td>
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<td>A simple robust on-board calibration method for fully polarimetric microwave radiometer</td>
<td>WAN Guoyu</td>
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<td>S1-25</td>
<td>Primary Design of Millimeter and Sub-millimeter Wave Sounder for GEO Meteorological Satellite</td>
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<td>Tiny adjust method of contour gain of shaped reflector antenna</td>
<td>XIE Sulong</td>
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<td>Design and Application of Multifunction Terminal for Emergency Disaster Rescue Based on COMPASS</td>
<td>YU Nengjie</td>
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<td>S1-28</td>
<td>Research of Indoor/Outdoor seamless positioning method applying for public security</td>
<td>ZHAI Yujia</td>
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<td>Satellite remote sensing in environmental disaster monitoring and forecast application</td>
<td>ZHAO Qichang</td>
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<td>Daniel K ZHOU</td>
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08:30-12:00, September 7, 2011
Session 2 - Satellite and Launcher Technology
View Ballroom, 31st floor

Co-chairmen: Prof. CHEN Jie, China   Prof. Filippo GRAZIANI, Italy

S2-01 A University Platform for Biomedical Experiments on Space  Chantal CAPPELLETI
S2-02 The Key Technologies Study for Test of the Next Generation Telecommunication Satellite  CHEN Yue
S2-03 Research on the Technology of A Reusable Near-Space Hypersonic Vehicle  DU Xin
S2-04 Past and Future of Space Solar Power System  GAO Ji
S2-05 Study on Degradation in Triple-Junction GaAs Solar Cells by MEO Radiation Environment  GAO Xin
S2-06 Research on the novel non-pyrotechnic connection and separation device for micro-satellite  HU Xingzhi
S2-07 Performance research of coupled active thermal control systems of spacecrafts assembled with several modules  JIN Jian
S2-08 Progress of carbon/carbon-silicon carbide space mirrors technology  LI Jin
S2-09 The Preliminary Concept about Gasbag Impelled by Light Pressure  LI Yue
S2-10 Maritime Precision Evaluation Method Based on Differential GPS Technology for Space Tracking Ships  LI Xiaoyong
S2-11 Application Analysis of ATR Engine in Vehicles with Broad Flight Envelopes  LI Ping
S2-12 Attitude Dynamics and Control of the Satellite Considering Antenna Pointing  LIU Likun
S2-13 A Non-linear PID Control Method of Pure Gravity Orbit Spacecraft  LIU Shuai
S2-14 Integrated Adaptive Guidance and Control Design for BTT Vehicles  MENG Bin
S2-15 THE DESIGN OF A SUPERCONDUCTIVITY MAGNETORQUER  MENG Lifei
14:00-18:00
Session 2 – Satellite and Launcher Technology
View Ballroom, 31st floor

Co-chairmen: Prof. CHEN Jie, China  Prof. NI Maolin, China

S2-16  Autonomous Navigation Algorithm for Sun Pointing Slow-Spin Probe in Earth-Lunar Transfer Orbit Based on Ultraviolet Sensors  QIAO Guodong

S2-17  Simulation of High-Energy Proton Induced Internal Dielectrics Charging  QIN Xiaogang

S2-18  Application of High-Power and High efficiency Grid Connecting power Supply Technology to large-scale Spacecraft  REN Xiaoqiang

S2-19  The Development of the SpaceLiner Concept and its Latest Progress  Tobias SCHWANEKAMP

S2-20  Image Navigation and Registration Scheme of the Second Generation Geostationary Meteorological Satellite of China  SHEN Yili

S2-21  The Current Situation and Development of Inflatable Array Antennas  SHENG Dongdong

S2-22  Power Supply System for Next Generation Remote-sensing Satellite  SHI Jiahao

S2-23  Development of Oxygen-Kerosene LRE Family Based on Proven Technologies  V.N. SHNYAKIN

S2-24  the Performance of Inflatable Aerodynamic Decelerators and the Influence of Structural Parameters and Angle-of-Attack on its Capability  WANG Yang

S2-25  Impact Area Delineation for Carrier Rocket’s First Debris Based on Separation Point States  WANG Hui

S2-26  Effects of ion beam discharge voltage on microstructures and optical properties of Al2O3 thin films by oxygen ion beam assisted pulse reactive magnetron sputtering  WANG Jinxiao

S2-27  Studies on the Space Application of Water Based Rocket Propulsion System  WANG Changhui

S2-28  Low-Cost, Rapid University Micro-Satellite Platform for Space Experiment  WANG Xinsheng

S2-29  A Simple Least-Squares Algorithm for Three-axis Gyroscope Calibration with Single Vector Measurements  WEI Yi
S2-30 Research for AIT Technology for Multi-function Orbital Service Vehicle Based on the Modularized Design  
XIONG Xiaoying

S2-31 Computational Mission Analysis and Conceptual System Design for Super Low Altitude Satellite  
XU Ming

S2-32 spacewire enabled spacecraft platform/payload built around spw-rtc – spacewire remote terminal controller  
YU Guoxia

S2-33 Research on a new method of deployment latch-up impact loads analysis for solar arrays  
ZHANG Zhijuan

S2-34 Study on Vacuum Outgassing Characteristics of Thermal Conductive Silicon Grease  
ZHANG Yanjing

S2-35 Research on Algorithm of One changed Singularity and Robust Pseudo-inverse Steering Law for SGCMGs  
ZHANG Shuyu

S2-36 A conception of the Ionospheric Weather Monitoring Small Satellite System  
ZHOU Yu

08:30-12:00, September 7, 2011  
Session 3- International Cooperation, Commercialization  
No.3 Multifunction Hall, 2nd floor

Co-chairmen: Prof. Yean Joo CHONG, Singapore  Prof. GAO Xiaoyang, China

S3-01 The Utilization of Satellites to Collect Solar Radiation and Transmitting Electricity to Earth  
Yean Joo CHONG

S2-02 Satellite Spectrum Resources and Application Procedures  
GAO Xiaoyang

S3-03 International Collaboration Strategy of Space Station  
LI Jingtao

S3-04 An international policy for sustainable space exploration  
Tanay SHARMA(4.6)

S3-05 International collaboration - A cornerstone for future space exploration  
Tanay SHARMA

S3-06 Satellite communication development and application in China  
TANG Zuoxiang

S3-07 Development and Application of Concurrent Satellite Design in the Frame of an International Cooperation  
WU Ruilan

S3-08 Social Practice Promoting Astronautical Technology Innovation Development Based on the Opportunity of Shanghai EXPO  
ZHAO Jincai
THURSDAY, SEPTEMBER 8, 2011

08:00-12:00  Technical Visit to SAST
A half-day technical visit to Shanghai Academy of Spaceflight Technology (SAST) including Shanghai Aerospace Equipment Manufacturer, Shanghai Institute of Satellite Engineering and Shanghai Solar Energy Research Center will be organized in the morning from 08:00 to 12:00 of Sept. 8, 2011. Transportation will depart from the conference hotel at 08:00. Please participant who has registered the technical visit in advance gather at the lobby at 07:30. Please foreign participants bring your passport for the technical visit. The transportation will return back the conference hotel after the technical visit. Meeting adjourned.

NOTES
1. Please wear the name badges all the time during the Conference in order to be admitted to the opening ceremony, reception, plenary session, technical sessions and technical visit. Tea break will be provided outside the conference room.
2. The simultaneous interpretation facility is provided for the Opening ceremony and Plenary Session on September 6, 2011, please kindly remain the earphone on the table after use.