# Final Program

## June 2, Monday

<table>
<thead>
<tr>
<th>Room</th>
<th>10:00-12:00</th>
<th>12:00-13:30</th>
<th>14:00-15:30</th>
<th>15:00-16:30</th>
<th>17:00-18:30</th>
<th>Other Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Opening Ceremony, Keynote Speech</td>
<td>National Space Program</td>
<td>IA&amp;A Aeronautical Lecture</td>
<td>Welcome Reception</td>
<td>Exhibition</td>
<td></td>
</tr>
</tbody>
</table>

## June 3, Tuesday

<table>
<thead>
<tr>
<th>Room</th>
<th>8:30-10:10(S)</th>
<th>10:20-12:00(S)</th>
<th>12:00-14:00</th>
<th>14:00-15:00(S)</th>
<th>15:00-16:30</th>
<th>16:30-17:30(S)</th>
<th>18:00</th>
<th>Other Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>c-2) 10:30-10:40</td>
<td>International Cooperation among Asian and Pacific Countries (1)</td>
<td>c-2) 11:00-11:10</td>
<td>Small Body Exploration (1)</td>
<td>c-2) 12:00-12:10</td>
<td>Space Weather</td>
<td>c-2) 14:00-14:10 SPACE EXPLORATION FOR WHAT?</td>
<td>Exhibition</td>
</tr>
<tr>
<td>B</td>
<td>c-3) 9:30-10:40</td>
<td>Solar Weather</td>
<td>c-3) 10:40-11:00</td>
<td>Solar Weather</td>
<td>c-3) 11:10-11:20</td>
<td>Solar Weather</td>
<td>c-3) 12:00-12:10</td>
<td>Space Weather</td>
</tr>
<tr>
<td>E</td>
<td>c-7) 9:30-10:00</td>
<td>Advance and Support</td>
<td>c-7) 10:00-10:20</td>
<td>Advance and Support</td>
<td>c-7) 10:20-10:40</td>
<td>Advance and Support</td>
<td>c-7) 10:40-10:50</td>
<td>Advance and Support</td>
</tr>
<tr>
<td>F</td>
<td>c-8) 9:30-10:10</td>
<td>Sun and Satellite</td>
<td>c-8) 10:10-10:30</td>
<td>Sun and Satellite</td>
<td>c-8) 10:30-10:50</td>
<td>Sun and Satellite</td>
<td>c-8) 10:50-11:00</td>
<td>Sun and Satellite</td>
</tr>
<tr>
<td>G</td>
<td>c-9) 9:30-10:10</td>
<td>Fluid Dynamics (1)</td>
<td>c-9) 10:10-10:30</td>
<td>Fluid Dynamics (1)</td>
<td>c-9) 10:30-10:50</td>
<td>Fluid Dynamics (1)</td>
<td>c-9) 10:50-11:00</td>
<td>Fluid Dynamics (1)</td>
</tr>
<tr>
<td>H</td>
<td>c-10) 9:30-10:10</td>
<td>Space Medicine and Physiology (1)</td>
<td>c-10) 10:10-10:30</td>
<td>Space Medicine and Physiology (1)</td>
<td>c-10) 10:30-10:50</td>
<td>Space Medicine and Physiology (1)</td>
<td>c-10) 10:50-11:00</td>
<td>Space Medicine and Physiology (1)</td>
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## June 4, Wednesday

<table>
<thead>
<tr>
<th>Room</th>
<th>8:30-10:10(S)</th>
<th>10:20-12:00(S)</th>
<th>12:00-14:00</th>
<th>14:00-15:00(S)</th>
<th>15:00-16:30</th>
<th>16:30-17:30(S)</th>
<th>18:00</th>
<th>Other Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>c-11) 9:30-10:10</td>
<td>GOES Watch Out for Global Warming (1)</td>
<td>c-11) 10:10-10:30</td>
<td>GOES Watch Out for Global Warming (2)</td>
<td>c-11) 10:30-10:50</td>
<td>GOES Watch Out for Global Warming (3)</td>
<td>c-11) 10:50-11:00</td>
<td>GOES Watch Out for Global Warming (4)</td>
</tr>
<tr>
<td>B</td>
<td>c-12) 8:30-10:30</td>
<td>Planetary Environment Exploration</td>
<td>c-12) 10:30-10:50</td>
<td>Planetary Environment Exploration</td>
<td>c-12) 10:50-11:00</td>
<td>Planetary Environment Exploration</td>
<td>c-12) 11:00-11:10</td>
<td>Planetary Environment Exploration</td>
</tr>
<tr>
<td>C</td>
<td>c-13) 9:30-10:10</td>
<td>Fluid Science (1)</td>
<td>c-13) 10:10-10:30</td>
<td>Fluid Science (2)</td>
<td>c-13) 10:30-10:50</td>
<td>Fluid Science (3)</td>
<td>c-13) 10:50-11:00</td>
<td>Fluid Science (4)</td>
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<tr>
<td>D</td>
<td>c-14) 9:30-10:10</td>
<td>Attitude and Orbit Control Methods</td>
<td>c-14) 10:10-10:30</td>
<td>Attitude and Orbit Control Methods</td>
<td>c-14) 10:30-10:50</td>
<td>Attitude and Orbit Control Methods</td>
<td>c-14) 10:50-11:00</td>
<td>Attitude and Orbit Control Methods</td>
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### June 5, Thursday

<table>
<thead>
<tr>
<th>Room</th>
<th>Time</th>
<th>Event Description</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>8:30-10:10</td>
<td>Space Flight and Demonstration</td>
</tr>
<tr>
<td>A</td>
<td>10:20-12:00</td>
<td>#3-11:10:00:10, Bahamas (III), Bahamas (IV)</td>
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<tr>
<td></td>
<td>12:00-13:00</td>
<td>#3-11:11:30:10, Bahamas (V)</td>
</tr>
<tr>
<td>B</td>
<td>13:00-14:20</td>
<td>#3-12:11:50:10, Bahamas (VI)</td>
</tr>
<tr>
<td></td>
<td>14:30-16:00</td>
<td>#3-12:12:00:10, Bahamas (VII)</td>
</tr>
<tr>
<td>C</td>
<td>16:10-17:40</td>
<td>#3-12:13:00:10, Bahamas (VIII)</td>
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### June 6, Friday

<table>
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<th>Room</th>
<th>Time</th>
<th>Event Description</th>
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<tbody>
<tr>
<td></td>
<td>8:30-10:10</td>
<td>Space Exploration and Outreach: Challenges for the Next Generation</td>
</tr>
<tr>
<td>A</td>
<td>10:20-12:00</td>
<td>#1-12:11:30:10, Space Education and Outreach: Practical Rocket Activities</td>
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<tr>
<td></td>
<td>12:00-13:00</td>
<td>Panel-1: 12:35:14:05, Space Education and Outreach: Practical Rocket Activities</td>
</tr>
<tr>
<td>B</td>
<td>13:00-14:20</td>
<td>#1-12:12:00:10, Ambitious Young Challenges in Space Technology (I)</td>
</tr>
<tr>
<td></td>
<td>14:30-16:00</td>
<td>#1-12:13:00:10, Ambitious Young Challenges in Space Technology (II)</td>
</tr>
<tr>
<td>C</td>
<td>16:10-17:40</td>
<td>Exhibition</td>
</tr>
<tr>
<td>D</td>
<td>18:30-20:59</td>
<td>Exhibition</td>
</tr>
<tr>
<td>E</td>
<td>19:00-20:30</td>
<td>Closing Ceremony (Humanities Motel, Motels)</td>
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June 5 (Thu)

Jun 6 (Fri)
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>11:10-11:30</td>
<td>Inter-satellite and inter-terrestrial communications</td>
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<tr>
<td>11:30-12:00</td>
<td>Mobile Satellite and Advanced Systems</td>
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<tr>
<td>12:00-12:30</td>
<td>arris Satellite Systems</td>
</tr>
<tr>
<td>12:30-13:00</td>
<td>Final Satellite [1]</td>
</tr>
<tr>
<td>13:00-13:30</td>
<td>Final Satellite [2]</td>
</tr>
<tr>
<td>13:30-14:00</td>
<td>Final Satellite [3]</td>
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<tr>
<td>14:00-14:30</td>
<td>Final Satellite [4]</td>
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<tr>
<td>14:30-15:00</td>
<td>Final Satellite [5]</td>
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<tr>
<td>15:00-15:30</td>
<td>Final Satellite [6]</td>
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<tr>
<td>15:30-16:00</td>
<td>Final Satellite [7]</td>
</tr>
<tr>
<td>16:00-16:30</td>
<td>Final Satellite [8]</td>
</tr>
<tr>
<td>16:30-17:00</td>
<td>Final Satellite [9]</td>
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<tr>
<td>17:00-17:30</td>
<td>Final Satellite [10]</td>
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<tr>
<td>17:30-18:00</td>
<td>Final Satellite [11]</td>
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</table>

**Notes:**

- The schedule is for the 26th ISTS Organizing Committee. All rights reserved.
**Invited Lecture**

### Keynote Speech

**Session Date**: 2008/6/2 10:00 – 12:00  
**Room**: Room A  
(Chairperson: Masanori Homma, JAXA, Japan)

**Students’ Challenges towards New Frontier – Enlarging Activities of UNISEC and Japanese Universities –**  
Shinichi Nakasuka  
*Aeronautics and Astronautics, The University of Tokyo*

(Chairperson: Makoto Kajii, JAXA, Japan)

**NASA’s Earth Observation Program**  
Michael Freilich  
*Earth Science Division Director, NASA, USA*

(Chairperson: Masanori Homma, JAXA, Japan)

**Looking to the Future of the International Space Station Program**  
Melanie Saunders  
*International Space Station Program, NASA, Johnson Space Center (JSC)*

(Chairperson: Takashi Hamazaki, JAXA, Japan)

**GOSAT and Carbon Cycle Research**  
Gen Inoue¹, Takashi Hamazaki², Tatsuya Yokota³  
¹Nagoya University, ²JAXA, ³NIES

### National Space Program (NSP)

**Session Date**: 2008/6/2 14:00 – 16:20  
**Room**: Room A  
**Chairperson**: Makoto Kajii (JAXA, Japan)

#### National Space Program (1)

- **Kaoru Mamiya**  
  *Vice President, Japan Aerospace Exploration Agency (JAXA), Japan*

- **Thongchai Charuppat**  
  *Director General, Geo-Informatics and Space Technology Development Agency (TGISTDA), Thailand*

- **Jeong Joo Rhiu**  
  *Vice President, Korea Aerospace Research Institute (KARI), Korea*

#### National Space Program (2)

- **Wang Keran**  
  *Deputy Director-General, Department of Foreign Affairs, China National Space Administration (CNSA), China*

- **Mustafa Din Subari**
Panel Discussions

Session Date : 2008/6/4 12:00 ~ 13:50
Room : Room A
Coordinator : Mr. Yoichi HASEGAWA (Chief Engineer, JAMSS)

Panel-1) Future of Space Tourism

Panelists:
Dr. Yoshifumi INATANI (Professor, JAXA/ISAS, Japan)
Mr. Chuck LAUER (Vice President, Rocketplane Global, USA)
Dr. Leroy CHIAO (Astronaut, Vice President, Excalibur Almaz, USA)
Mr. Mike GOLD (Bigelow, USA)

"Space" is not the final frontier anymore, but one of the selectable destinations for all people, not only for astronauts/cosmonauts. Before the end of International Space Station ages (~2015), private sectors will be expected to realize space tourism. After the success of ANSARI X-prize, everything had been changed in the space industry world. Governments/Agencies have to recognize powers of private sectors and their enthusiasm, and they will provide established technologies including materials, safety, analysis method and verification method. Different roles between agencies and private sectors have to be clarified. In this opportunity, front-runners will investigate the status and the circumstances of space tourism, such as, sub-orbital flight, orbital flight and space hotels. He/She who wishes to contribute this new wave can join today, to provide specific technology seeds, components, idea, money and only wish is possible if one can investigate it. This wave may contain technologies, culture, economy, and maybe policies.

Panel Discussions

Session Date : 2008/6/3 12:00 ~ 14:00
Room : Room A
Coordinator : Jun’ichiro Kawaguchi (Program Director/Professor, JAXA)

Panel-2) Space Exploration, for What?

Panelists:
Kiyoshi Higuchi (Executive Director, JAXA)
Bernard Foing (ESTEC/ESA)
Xu Yansong (CNSA)
Miriam Baltuck (CSIRO)
Jeremy Curtis (BNSC)
Korostelev Alexey (ROSCOSMOS)
Favier Jean-Jacques (CNES)
Micheline Tabache (ESA)
Michael Wargo (NASA)

The Moon and Planets have intrigued human interest for many centuries. The sphere of human activity has expanded to the Moon by Apollo and to the planets and even to the boundary of the solar system by Voyager spacecraft. The Moon has been revisited recently by European SMART-1, Japanese Kaguya as well as Chinese Chang’e-1, since Apollo era. This year we will have India’s Chandrayaan-1 and also NASA’s LRO there, and those four international orbiters will constitute an unprecedented international fleet that detail the surface and interior structure for science and utilization on the Moon. Mars and Near Earth Objects (NEO) are also conceived destinations where human direct exploration will soon reach. The human activity has been distilled through the International Space Station (ISS) program that this year also highlighted European Columbus and Japanese Kibo modules mated with the Station on orbit. The year 2008 is as such a special year in terms of both human activity and space exploration beyond Earth orbit. How space activity is sustained
will impact how humans will prosper in a sustained manner. Worldwide agencies are now preparing for the next step in the post ISS era by defining/discussing what the human activity will be, taking advantage of the experiences developed through the ISS.

The agencies gathered in Kyoto last year and concluded a unique document describing what space exploration is and how we should collaborate with each other. A group named the International Space Exploration Coordination Group (ISECG) issued an important milestone document 'Space Exploration – Framework Document’ last year. It initiated space exploration not only intensively but also extensively.

The panel discussion will focus on each agency’s views on exploration and its goals, with special emphasis on how agencies work together towards the goals and what kind of contributions may be exchanged for potential benefit. The panel session solicits the attendance of key personnel actively in charge of space exploration at the agencies. And the panel expects to acquire living practical models for exploration.

### Panel Discussions

**Panel-3) Space Education for Young Generation**

**Panelists:**
- B. R. Guruprasad
- Maurizio Fea
- Yasunori Matogawa
- Edmund Rosales

**<Background>**

From the dawn of the Space Age, advancements and developments in the use and exploration of outer space have been closely linked with efforts to enhance scientific and engineering education. In the past decade, in particular, an increasing number of international meetings have addressed “space education” and stressed its importance for young generations.

The interpretation of “space education” varies from one to another, as well as the focus of the efforts to enhance “space education”. However, there is no doubt that the combination of space activities and education presents a promising future for our young people, enabling them to benefit from the advances in space science and technology, to contribute to the enrichment of human knowledge and the expansion of civilizations, and to enrich their own lives, to be full of interest, imagination and inspirations.

**<Objectives>**

This panel presents various efforts made around the world to use this powerful combination of space activities and education to enrich the minds of young people and enhance the quality of their lives. Consisting of experts engaged in space education, the panel discusses how space education activities in their countries contribute to the human development of children and youth. Through the round-table discussion among the speakers and with the audience, the panel aims to identify the areas where international collaborations could further strengthen to create synergies among the efforts around the world to expand space education activities for young people.

**Panel Discussions**

**Session Date**: 2008/6/4 18:00 – 19:00

**Room**: Exhibition Hall

**Coordinators**: Eiji Yamada (Organization for Hamamatsu Technopolis)

**Panel-4) Challenge to Space from Hamamatsu**

**Panelists:**
- Hirotoishi Harada (HARADASEIKI co, Ltd)
- Shoichiro Asada (Mitsubishi Heavy Industries, Ltd.)
- Keiichiro Eishima (Mitsubishi Electric Corp.)
- Toshitsugu Tanaka (The Society of Japanese Aerospace Companies)
- Makoto Miwada (JAXA)

In Hamamatsu, there are many industries with high level of non-space technology. Some of them organized a study group to search for the way to participate in the space development activities. To introduce such a situation, we set a chance for the ISTS participants to encounter local industries or non-space technologies. In this panel, we expect panelists from the major space system industries to give advises to the local non-
space industries, as well as a panelist from JAXA to show some promotion measures for new space business. Discussion in this panel will help vital space-interested business enter the space community as a new player. After this panel discussion, simple relish and beverage will be served for communication between participants.
[o-1-1]  Ambitious Young Challengers in Space Technology (1)

Session Date: 2008/6/6 14:20 – 16:00
Room: Room A
Chairpersons: Shinichi Nakasuka (The University of Tokyo, Japan), Atsushi Noda (JAXA, Japan)

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The Advanced Solid Rocket System
Moriyasu Fukuzoe
Office of Space Flight and Operations, JAXA/Advanced Solid Rocket Team, Japan

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Aerothermal Studies of Hypersonic Vehicles
Shashank Khurana¹, S.P. Mahulikar²
1Department of Aerospace Engineering, Indian Institute of Technology – Bombay, India,
2A. von Humboldt Fellow, Department of Aerospace Engineering, India

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Launching Experiment on Small Hybrid Rocket by Students
Akimasa Tsutsumi, Toshiyuki Ito, Kyoko Oribe, Kyosuke Iguchi, Chiharu Sasagawa, Fumio Tohyama, Masahisa Hanawa, Kyoichi Nakashino
Department of Aeronautics and Astronautics, Graduate School of Engineering, Tokai University, Japan

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Study on Touchdown Stability Boundaries for Soft Lunar Lander
Qiupeng He¹, He Zhang², Dengyun Yu²
1China Academy of Space Technology, China, 2Beijing Institute of Spacecraft System Engineering, China

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Decomposition of Waste in Space Using Alcohol-Free Enzyme Encapsulated Silica Maerogel
Nor Suriani Sani, Lee Siew Ling, Halimaton Hamdan
Department of Chemistry, Faculty of Science, Universiti Teknologi Malaysia, Malaysia

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[o-1-2]  Ambitious Young Challengers in Space Technology (2)

Session Date: 2008/6/6 16:10 – 17:50
Room: Room A
Chairpersons: Shinichi Nakasuka (The University of Tokyo, Japan), Atsushi Noda (JAXA, Japan)
[o-2-1] International Cooperation among Asian and Pacific-Rim Countries (1)

Session Date : 2008/6/3 8:50 – 10:20
Room : Room A
Chairpersons : Makoto Kajii (JAXA, Japan), Muneo Takaoki (JAXA, Japan)

( 8:50-9:00 )

Introduction from the Coordinator

Makoto Kajii
Associate Executive Director, Japan Aerospace Exploration Agency (JAXA), Japan

2008-o-2-01v ( 9:00-9:20 )

NASA Programs in the Asia-Pacific

Justin Tilman
NASA Representative in Tokyo

2008-o-2-02v ( 9:20-9:40 )
Highlights of Space Activities in Korea and its Regional Collaboration
Ok-Kyu Lee
Team Leader, Policy & International Relations Division, Korean Aerospace Research Institute (KARI), Korea

2008-o-2-03v (9:40-10:00)
Overview of the Asia-Pacific Regional Space Agency Forum (APRSAF)
Mika Ochiai
Administrator, Space Cooperation Office for Asia-Pacific Region, JAXA, Japan

2008-o-2-04v (10:00-10:20)
How the Utilization of ISS and its Japanese Experiment Module, “Kibo”, will Facilitate Technological Advances
Muneo Takaoki¹, Sayaka Umemura², Tetsuo Tanaka³
¹Senior Researcher, Space Environment Utilization Center (SEUC), HumanSpace Systems and Utilization Mission Directorate, JAXA, Japan, ²SEUC, JAXA, Japan, ³Director, SEUC, JAXA, Japan

[0-2-2] International Cooperation among Asian and Pacific-Rim Countries (2)

Session Date : 2008/6/3 10:30 – 11:30
Room : Room A
Chairpersons : Makoto Kajii (JAXA, Japan), Muneo Takaoki (JAXA, Japan)

2008-o-2-05v (10:30-10:50)
Thailand Space Activities and International Cooperation
Surachai Ratanasermpong
Deputy Director, Geo-Informatics and Space Technology Development Agency of Thailand (GISTDA), Thailand

2008-o-2-06v (10:50-11:10)
Regional Cooperation and Space Activities in Indonesia – A LAPAN View
Orbita Roswintiarti
Head of Natural Resources and Environmental Monitoring Division, National Institute of Aeronautics and Space (LAPAN), Indonesia

2008-o-2-07v (11:10-11:30)
Overview of Pacific International Space Center for Exploration Systems
Dan Bland, Robert R. Carlson
The Pacific International Space Center for Exploration Systems (PISCES), USA

[0-3-1] From the ISS to Exploration: Views from USA

Session Date : 2008/6/5 10:00 – 12:00
Room : Room A
Chairpersons : Yuichi Yamaura (JAXA, Japan), Naoki Sato (JAXA, Japan)
2008-o-3-01v (10:00–10:10)
Introduction from Coordinator
Yuichi Yamaura
Director, Program Office, Human Space Systems and Utilization Program Group, JAXA, Japan

2008-o-3-02v (10:10–10:20)
Introduction from Keynote Speaker
Melanie Saunders
Associate Program Manager, NASA/JSC, USA

2008-o-3-03v (10:30–11:00)
26th ISTS, Hamamatsu, Japan
Constellation Program Overview
Jeffrey Hanley
Manager, Constellation Program, NASA/JSC, USA

2008-o-3-04v (11:00–11:30)
ISS-Utilization and the Path to Exploration
Michael L. Raftery
Deputy, ISS Program Manager, Boeing Space Exploration Systems, USA

2008-o-3-05v (11:30–12:00)
To ISS and Beyond...
Kenneth S. Reightler
Vice President, NASA Program Integration, Lockheed Martin, Space Systems Company – Human Space Flight, USA

[o–3–2] From the ISS to Exploration: Views from Russia and Europe
Session Date : 2008/6/5 13:00 – 15:00
Room : Room A
Chairpersons : Yuichi Yamaura (JAXA, Japan), Naoki Sato (JAXA, Japan)

2008-o-3-06v (13:00–13:30)
Russian Human Space Transportation System Now and in the Future (Tentative)
Nikolay Bryukhanov
Deputy General Designer, Human Spacecraft Design Manager Spacecraft Development Office, S.P. Korolev Rocket and Space Corporation "Energia", Russia

2008-o-3-07v (13:30–14:00)
Japanese–Russian utilization of the International Space Station (Tentative)
Igor Sorokin
Deputy Head of Space Stations Utilization Center Spacecraft Development Office, S.P. Korolev Rocket and Space Corporation "Energia", Russia

2008-o-3-08v (14:00–14:30)
Europe’s Roadmap for Human Spaceflight – From ISS and Beyond
Robert Veldhuyzen, Valerie Zinck-Dasmien
Directorate of Human Spaceflight, Microgravity and Exploration Programmes, ESA / ESTEC, The Netherlands
2008-o-3-09v (14:30–15:00)
On the Way from ISS to Space Exploration – a European View
Stephan Walther
Director, Marketing Russia & USA, EADS Astrium Space Transportation, Germany

From the ISS to Exploration: Views from Asia
Session Date : 2008/6/5 15:10 – 16:40
Room : Room A
Chairpersons : Tai Nakamura (JAXA, Japan), Takane Imada (JAXA, Japan)
2008-o-3-10v (15:10–15:40)
The Status of Korean Space Science Related ISS
Gi-Hyuk Choi
Director, Astronaut Development Program Office, Space Application Center, Korea Aerospace Research Institute (KARI), Korea
2008-o-3-11v (15:40–16:10)
Japanese Human Space Activities – From the ISS to Space Exploration
Yuichi Yamaura
Director, Program Management and Integration Department, Human Space Systems and Utilization Program Directorate, Japan Aerospace Exploration Agency (JAXA), Japan
2008-o-3-12v (16:10–16:40)
Evolution of Future Manned Systems from KIBO Development
Nobuhiko Fukuda
Deputy Director, Space Systems Engineering & Launch Services Department, Nagoya Aerospace Systems, MHI, Ltd., Japan

GOSAT: Watch Out for Global Warming (1)
Session Date : 2008/6/4 8:50 – 12:00
Room : Room A
Chairpersons : Takashi Hamazaki (JAXA, Japan), Kei Shiomi (JAXA, Japan)
2008-o-4-01v (8:50–9:20)
Greenhouse Gases Observing Satellite (GOSAT) Program Overview and Its Development Status
Masahiro Kasuya, Takashi Hamazaki
GOSAT project team, JAXA, Japan
2008-o-4-02v (9:20–9:50)
Thermal and Near Infrared Sensor for Carbon Observation (TANSO-FTS)
Masakatsu Nakajima, Takashi Hamazaki
JAXA, Japan

2008-o-4-03v (9:50-10:20)

GOSAT Proto Flight Model Development
Tadaaki Itahizu¹, Hikaru Hasegawa¹, Hiroaki Miyazaki¹, Masahiro Kasuya²
¹Mitsubishi Electric Corporation Kamakura Works, Japan, ²JAXA, Japan

2008-o-4-04v (10:30-11:00)

TANSO Proto Flight Model Development
Juro Ishida¹, Masakatsu Nakajima²
¹NTS, Japan, ²JAXA, Japan

2008-o-4-05v (11:00-11:30)

TOKYO and TSUKUBA Model – TANSO Precursor Experiments –
Akihiko Kuze, Hiroshi Suto
GOSAT Project Team, JAXA, Japan

2008-o-4-06v (11:30-12:00)

History of Fourier Transform Spectrometer Technology Development
Henry Buijs
ABB-BOMEM, Canada

[o−4−2] GOSAT: Watch Out for Global Warming (2)

Session Date : 2008/6/4 13:50 – 15:50
Room : Room A
Chairpersons : Takashi Hamazaki (JAXA, Japan), Masahiro Kasuya (JAXA, Japan)

2008-o-4-07v (13:50–14:20)

GOSAT Data Utilization Plan
Tatsuya Yokota
CGER, NIES, Japan

2008-o-4-08v (14:20–14:50)

TANSO On-Orbit and Vicarious Calibration Plan
Kei Shiomi
JAXA, Japan

2008-o-4-09v (14:50–15:20)

Opportunities for Coordinate Observations of CO2 with the Orbiting Carbon Observatory (OCO) and Greenhouse Gases Observing Satellite (GOSAT)
David Crisp, The OCO Team
Earth and Space Sciences Division, JPL/NASA USA, USA

2008-o-4-10v (15:20–15:50)
Legal and Policy Implications of GOSAT to Treaty Monitoring

Masami Onoda
Kyoto University, Japan

[a-1] Liquid Rocket (1) (LOX/LH2)

Session Date: 2008/6/4 10:20 – 12:00
Room: Room E
Chairpersons: William Sack (Pratt & Whitney Rocketdyne, USA), Shunsuke Hori (JAXA, Japan)

2008-a-01 (10:20-10:40)
CNES Launchers Directorate Capabilities in Rocket Engines Transients Simulation
Elisa Cliquet1, Gerard Albano1, Gerard Ordonneau2, John Masse3
1Department of Space Transportation Technologies, CNES Directorate of Launchers, France, 2Department of Fundamental and Applied Energetics, ONERA, France, 3Appedge, France

2008-a-02 (10:40-11:00)
LE-X, Japan’s Next Generation Booster Engine
Akihide Kurosu1, Akira Ogawara2, Nobuhiro Yamanishi3, Tadaoki Onga4, Akinaga Kumakawa1, Miki Nishimoto3, Hiroyasu Manako2, Koichi Okita1
1Space Transportation Propulsion Research and Development Center, Japan Aerospace Exploration Agency, Japan, 2MHI, Nagoya Guidance & Propulsion System Works, Japan, 3JAXA, Japan

2008-a-03 (11:00-11:20)
Excellence of the Japanese Expander–Bleed Cycle Rocket Engine and Enhancements for Future Engine Applications
William Sack1, Koichi Okita2, Akihide Kurosu2, Akira Ogawara3, Kimito Yoshikawa3, Masahiro Atsumi3, Kenji Kishimoto2, Kevin Lunde1
1Pratt & Whitney Rocketdyne, USA, 2Japan Aerospace Exploration Agency, Japan, 3Mitsubishi Heavy Industries, Japan

2008-a-04 (11:20-11:40)
Automatic Control of Thrust and Mixture ratio -LE-X valve system-
Hideo Sunakawa1, Wataru Sakai2, Sadahiro Maeda2, Akira Ogawara1, Akihide Kurosu1, Koichi Okita1
1Office of Space Flight and Operations, Japan Aerospace Exploration Agency, Japan, 2Mitsubishi Heavy Industry

2008-a-05 (11:40-12:00)
Experimental Investigation of Film Cooling with Tangential Slot Injection in a LOX/CH4 - Subscale Rocket Combustion Chamber
Oskar Haidn, Richard Arnold, Dmitry Suslov
German Aerospace Center (DLR), Institute of Space Propulsion, Germany

[a-2] Liquid Rocket (2) (New Propellant)

Session Date: 2008/6/4 13:30 – 14:50
Room: Room E

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### 2008-a-06 (13:30–13:50)

**Conceptual Study for LOX/methane Engines**

Nobuyuki Azuma¹, Koichi Okita¹, Kenji Aoki¹, Hideto Kawashima¹, Nobuhiro Yamanishi², Hideyo Negishi³, Hiroyasu Manako³, Takao Kaneko³, Masanori Tsuboi³, Hiroshi Kawato³  
¹Space Transportation Mission Directorate, JAXA, Japan, ²JAXA’s Engineering Digital Innovation Center, JAXA, Japan, ³Mitsubishi Heavy Industry (MHI), Japan

### 2008-a-07 (13:50–14:10)

**Dual Hydrogen/Methane Propellant Capability of the Expander–Bleed Cycle Engine**

William Sack¹, Akira Ogawara², Kimito Yoshikawa², Masahiro Atsumi², Kenji Kishimoto¹  
¹Pratt & Whitney Rocketdyne, USA, ²Mitsubishi Heavy Industries, Japan

### 2008-a-08 (14:10–14:30)

**Combustion and Regenerative Cooling Characteristics of LOX/Methane Rocket Engine**

Hideto Kawashima¹, Koichi Okita¹, Kenji Aoki¹, Nobuyuki Azuma¹, Kumakawa Akinaga¹, Takuo Onodera¹, Seiji Yoshida², Hideyo Negishi³, Hiroyasu Manako³, Takashi Koganezawa⁴  
¹Office of Space Flight and Operations, JAXA, Japan, ²Institute of Aerospace Technology, JAXA, Japan, ³JAXA’s Engineering Digital Innovation Center, JAXA, Japan, ⁴Mitsubishi Heavy Industry (MHI), Japan

### 2008-a-10 (14:30–14:50)

**Silanes as Fuel for Aerospace Propulsion**

Domenico Simone¹, Claudio Bruno¹, Bernhard Hidding²  
¹Department of Mechanics and Aeronautics (DMA), University of Rome “La Sapienza”, Italy, ²Institut fur Laser- und Plasmaphysik, Heinrich-Heine-Universitaet Duesseldorf, Germany

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**[a-3] Liquid Rocket (3) (Reusable Rocket)**

Session Date : 2008/6/4 15:20 – 16:40  
Room : Room E  
Chairpersons : Oskar J. Haidn (German Aerospace Center, Germany), Hideo Sunakawa (JAXA, Japan)

### 2008-a-11 (15:20–15:40)

**Development Status of Reusable Rocket Engine**

Makoto Yoshida¹, Satoshi Takada¹, Yoshihiro Naruo², Kenichi Niu³  
¹Space Transportation Propulsion Research and Development Center, Japan Aerospace Exploration Agency, Japan, ²Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ³Mitsubishi Heavy Industries, Ltd. Japan

### 2008-a-12 (15:40–16:00)

**Recent Advances in LOX / LH2 Propulsion System for Reusable Vehicle Testing**

Shinichiro Tokudome¹, Naroo Yoshihiro¹, Tsuyoshi Yagishita¹, Satoshi Nonaka¹, Maki Shida¹, Hatsuo Mori²  
¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²HI Corporation
### [a-4] Liquid Rocket (4) (Component Technology)

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<td>Claudio Bruno (University of Rome &quot;La Sapienza&quot;, Italy), Makoto Yoshida (JAXA, Japan)</td>
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#### 2008-a-15 (16:50-17:10)

Critical Performance of Turbopump Mechanical Elements for Rocket Engine

Satoshi Takada¹, Masataka Kikuchi², Takayuki Sudo², Fumiya Iwasaki², Yoshiaki Watanabe², Makoto Yoshida²

¹Space Transportation Propulsion Research and Development Center, Japan Aerospace Exploration Agency, Japan, ²Japan Aerospace Exploration Agency, Japan

#### 2008-a-16 (17:10-17:30)

Feasibility Study on Neutron Diffraction Method for Evaluation of Residual Strain Distribution of Regenerative Cooled Combustion Chamber

Tadashi Masuoka¹, Shin-ichi Moriya¹, Masaki Sato¹, Makoto Yoshida¹, Yoshinori Tsuchiya², Hiroshi Suzuki²

¹JAXA, Japan, ²JAEA, Japan

#### 2008-a-17 (17:30-17:50)

Improving Upper Stage Liquid Rocket Engine Performance thanks to Thermostructural Composite Nozzle Extension

Marc Lacoste, Thierry Pichon, Herve Coperet, Francois Charleux

Thermostructural Composites Business Unit, Snecma Propulsion Solide, France

#### 2008-a-18 (17:50-18:10)

Numerical Investigations of the Film Cooling Effect on Rocket Engine Nozzle Performance

Takashi Ito¹, Nobuyuki Tsuboi², Hiroshi Miyajima²

¹Office of Space Flight and Operations, Japan Aerospace Exploration Agency, Japan, ²Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan

### [a-5] Combustion

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Combustion Chamber Acoustics and its Interaction with LOX/H₂- and LOX/CH₄-Spray Flames

Michael Oschwald, Bernhard Knapp, Mark Sliphorst, Mark Marpert
Institute of Space Propulsion, German Aerospace Center, Germany

Fundamental Study on Performance and Combustion Stability of LOX/GH₂ Pintle Injector
Shinichi Moriya, Makoto Tadano, Masahiro Sato, Masaki Sato, Tadashi Masuoka, Makoto Yoshida
Japan Aerospace Exploration Agency, Japan

Turbulent Combustion Modeling in Supersonic Flows for Application to future RBCC vehicles
Antonella Ingenito, Claudio Bruno
Mechanics and Aeronautics, University of Rome “La Sapienza”, Italy

COMBUSTION MECHANISM OF TETRA-OL GAP AND ITS APPLICATION TO HYBRID ROCKET
Yutaka Wada¹, Akimasa Tsutsui², Yoshio Seike³, Makihiro Nishioka⁴, Toru Shimada⁵, Katsuya Hasegawa⁵, Kiyokazu Kobayashi⁵, Koichi Hayashi¹, Esuke Yamada¹
¹Department of Space and Astronautical Science, Grad.Univ.Advanced Studies, Japan, ²Department of Aeronautics and Astronautics, Tokai University, Japan, ³NOF Corporation, Japan, ⁴University of Tsukuba, Japan, ⁵ISAS/JAXA, Japan

Fuel Regression Rate Behaviour of CAMUI Hybrid Rocket
Yudai Kaneko¹, Mitsunori Itho¹, Akihito Kakikura¹, Kazuhiro Mori¹, Kenta Uejima¹, Takuji Nakashima², Masashi Wakisaka³, Tatsuya Totani¹, Nobuyuki Oshima¹, Harunori Nagata¹
¹Division of Mechanical and Space Engineering, Hokkaido University, Japan, ²Department of Social and Environmental Engineering, Hiroshima University, Japan, ³Department of Mechanical Engineering, Kyusyu Institute of Technology, Japan
Direct Numerical Simulation of Aluminum Agglomeration in Metallized Propellant Combustion

Sergey Rashkovskiy
Russian Academy of Sciences, Institute for Problems in Mechanics, Russia

2008-a-26 (11:30–11:50)

Observation and Evaluation of Al Droplets from Propellant

Tomoyuki Inamoto, Shigefumi Miyazaki, Shin Matuura, Apollo Fukuchi
Technology Development Department, IHI Aerospace Co., Ltd., Japan

[a-7] Solid and Hybrid Rocket (2)

Session Date : 2008/6/5 13:00 – 14:00
Room : Room E
Chairpersons : Sergey Rashkovskiy (Institute for Problems in Mechanics, Russia), Apollo Fukuchi (IHI Aerospace Co., Ltd, Japan)

2008-a-27 (13:00–13:20)

A Study of New Composite Thermoplastic Propellant

Keiichi Hori1, Takehiro Kasahara2, Hiroshi Hasagawa3, Kazushige Katoh3, Shigehumi Miyazaki4, Haruki Maurozumi4, Yasuhiro Morita1, Ryuziro Akiha5
1ISAS, JAXA, Japan, 2The University of Tokyo, Japan, 3NOF Corporation, 4IHI Aerospace, 5USEF


Application of the Self-Propagating High-Temperature Synthesis Processes for Advanced Solid Propulsion Technologies

Alexander Lukin
Southern Branch of the Russian State Hydro-Meteorological University of Saint-Petersburg, Russia

2008-a-31 (13:40–14:00)

THE AUTONOMOUS CHECK-OUT SYSTEM CONCEPT DESIGN FOR THE ADVANCED SOLID ROCKET

Koichiro Kato1, Masaru Nohara1, Hirohito Ohtsuka1, Takayuki Imoto2, Kazuyuki Miho2, Satoshi Arakawa2
1IHI Aerospace CO., LTD., Japan, 2Japan Aerospace Exploration Agency, Japan

[a-8] Thruster

Session Date : 2008/6/5 14:50 – 16:30
Room : Room E
Chairpersons : Keiichi Hori (JAXA, Japan), Katsuyoshi Fukuba (JAXA, Japan)

2008-a-32 (14:50–15:10)

Generalized Propulsion System for Panel ExTension SATellite Based on Hydrogen Peroxide

Hironori Sahara1, Shinichi Nakasuka2, Chisato Kobayashi3
1Department of Aeronautics and Astronautics, University of Tokyo, Japan, 2University of Tokyo, Japan, 3Space Oriented Higashiosaka Leading Association, Japan
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<td>Masahiro Takahashi1, Tomoyuki</td>
<td>at Hypervelocity Condition over Mach 10 Flight</td>
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Evaluation of Vitiation Effects in Scramjet Engines
Sadatake Tomioka¹, Tetsuo Hiraïwa¹, T. Kishida¹, H. Yamasaki²
¹JAXA Kakuda Space Center, Japan, ²Dept. Energy Sciences, Tokyo Institute of Technology, Japan

2008-a-40 (9:50-10:10)
Ramjet-mode Operation in a Combined Cycle Engine Combustor
Kanenori Kato, Kenji Kudo, Atsuo Murakami, Kouichiro Tani, Takeshi Kanda
Japan Aerospace Exploration Agency, Japan

2008-a-41 (10:10-10:30)
Aerodynamic Experiments of Small Scale Combined Cycle Engine in Various Mach Numbers
Kouichiro Tani¹, Toshinori Kouchi², Kanenori Kato¹, Noboru Sakuranaka¹, Syuuichi Watanabo³
¹Office of Space Flight and Operation, Japan Aerospace Exploration Agency, Japan, ²Tohoku University, Japan, ³Foundation for Promotion of Japanese Aerospace Technology

[a-10] Turbine Based Combined Cycle Engine (TBCC)
Session Date : 2008/6/6 10:40 – 11:40
Room : Room E
Chairpersons : Takeshi Kanda (JAXA, Japan), Takehiro Himeno (The University of Tokyo, Japan)

2008-a-42 (10:40-11:00)
Development Status and Flight Plan of A Precooled Turbojet Engine
Tetsuya Sato¹, Hideyuki Taguchi², Hiroaki Kobayashi², Takayuki Kojima², Katsuyoshi Fukiba², Daisaku Masaki², Keiichi Okai², Kazuhisa Fujita², Motoyuki Hongoh², Shujiro Sawai²
¹Department of Applied Mechanics and Aerospace Engineering, Waseda University, Japan, ²JAXA, Japan

2008-a-43 (11:00-11:20)
Conceptual Study on Hypersonic Turbojet Experimental Vehicle (HYTEX)
Hideyuki Taguchi¹, Akira Murakami¹, Tetsuya Sato², Takeshi Tsuchiya³
¹Aviation Program Group, Japan Aerospace Exploration Agency, Japan, ²Waseda University, Japan, ³University of Tokyo, Japan

2008-a-44 (11:20-11:40)
Feasibility Study on a Precooled Turbojet Engine with Defrosting Device Using High Speed Jet
Katsuyoshi Fukiba¹, Tetsuya Sato², Hidetoshi Ohkubo³, Hiroaki Kobayashi¹
¹Aeroengine Technology Center, Institute of Space Technology and Aeronautics, JAXA, Japan, ²Department of Applied Mechanics and Aerospace Engineering, Waseda University, Japan, ³Department of Mechanical Systems, Tamagawa University, Japan

[b-1] International Overviews on Electric Propulsion R&D (Invited Special Session)
### Advanced Propulsion (1)

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<td>Yanming Wei¹, Yan Shen¹, Juan Yang²</td>
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<tr>
<td>¹Department of Propulsion, Beijing Institute of Control Engineer, China; ²College of Astronautics, Northwestern Polytechnic University, China</td>
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<tr>
<td>¹Physics Department, Korea Advanced Institute of Science and Technology, Korea; ²R&amp;D Center, Satrec Initiative, Korea; ³Pusan National University, Korea</td>
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<td>Chairpersons</td>
<td>Masakatsu Nakano (Tokyo Metropolitan College of Industrial Technology, Japan), Kimiya Komurasaki (The University of Tokyo, Japan)</td>
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<tr>
<th>2008-b-05 (8:30–8:50)</th>
<th>Thrust Measurement of Pure Magnetic Sail</th>
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<tr>
<td>Kazuma Ueno¹, Toshiyuki Kimura¹, Tomohiro Ayabe¹, Ikoh Funaki², Hiroshi Yamakawa³, Hideyuki Horisawa¹</td>
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<tr>
<td>¹Department of Aeronautics and Astronautics, Tokai University, Japan; ²ISAS, JAXA, Japan; ³Research Institute for Sustainable Humanosphere (RISH), Kyoto University, Japan</td>
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<th>2008-b-06 (8:50–9:10)</th>
<th>Plasma Interaction between Space Plasma and Bare Tether: Anomalous Current Collection and Arcing</th>
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<tr>
<td>Koki Kashihara¹, Mengu Cho¹, Satomi Kawamoto²</td>
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<tr>
<td>¹Department of Electrical Engineering, Kyushu Institute of Technology, Japan; ²Japan Aerospace Exploration Agency (JAXA), Japan</td>
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</table>
## Session Date: 2008/6/5 10:20 - 12:00
### Room: Room C
### Chairpersons:
- Georg Herdrich (Space Transportation, IRS, Germany)
- Kyoichiro Toki (Tokyo University of Agriculture and Technology, Japan)

### Agenda

**2008-b-07 (9:10-9:30)**

**Preliminary Microwave Energy Transmission Tests for Mars Exploration Flight System**

Koichi Yonemoto\(^1\), Motoki Hoshino\(^2\), Yusuke Oshikata\(^3\)

\(^1\)Mechanical and Control Engineering, Kyushu Institute of Technology, Japan, \(^2\)GS Yuasa Corporation, Japan, \(^3\)Department of Mechanical and Control Engineering, Kyushu Institute of Technology, Japan

**2008-b-08 (9:30-9:50)**

**Proposal of Nuclear Electric Propulsion System: Twin Star**

Hidetaka Nagata, Makoto Miyoshi, Yusuke Kotani, Naoji Yamamoto, Yoshihiro Kajimura, Hideki Nakashima

*Department of Advanced Energy Engineering Science, Kyushu University, Japan*

**2008-b-09 (9:50-10:10)**

**Comparative Investigation of Fusion Reactions for Space Propulsion Applications**

Georg Herdrich, Dejan Petkow, Hans-Peter Roeser, Rene Laufer, Oliver Zeile

*Space Transportation, IRS, Germany*

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### Advanced Propulsion (2)

**Session Date:** 2008/6/5 10:20 – 12:00

**Room:** Room C

**Chairpersons:** Georg Herdrich (Space Transportation, IRS, Germany), Kyoichiro Toki (Tokyo University of Agriculture and Technology, Japan)

**2008-b-10 (10:20-10:40)**

**New Thruster System for Small Satellite: Gas–Liquid Equilibrium Thruster**

Takayuki Yamamoto, Osamu Mori, Jun’ichiro Kawaguchi

*Japan Aerospace Exploration Agency, Japan*

**2008-b-11 (10:40-11:00)**

**The Thermal Design of the Solar Thermal Thrusters for Piggyback Satellites**

Yuuki Iwaki, Tsuyoshi Totani, Harunori Nagata

*Division of Mechanical and Space Engineering, Hokkaido University, Japan*

**2008-b-12 (11:00-11:20)**

**Energy Direct Conversion to Thrust by Photon Pressure Propulsion**

Kyoichiro Toki, Norihiro Asakura

*Mechanical Systems Engineering, Tokyo University of Agriculture and Technology, Japan*

**2008-b-13 (11:20-11:40)**

**Radiation Resistance and Reliability of the Stretched Lens Array (SLA) in Solar Electric Propulsion (SEP) Missions**

Henry Brandhorst\(^1\), Julie Rodiek\(^1\), Mark O’Neill\(^2\)

\(^1\)Space Research Institute, Auburn University, USA, \(^2\)ENTECH, Inc.

**2008-b-14 (11:40-12:00)**
### Electrothermal Thrusters

**Session Date:** 2008/6/5 13:00 – 15:00  
**Room:** Room C  
**Chairpersons:** Wonho Choe (Korea Advanced Institute of Science and Technology, Korea), Naoji Yamamoto (Kyushu University, Japan)

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<tr>
<td><strong>Shen Yan</strong>¹, <strong>Yanming Wei</strong>², <strong>Jun Chen</strong>², <strong>Wei Guan</strong>²</td>
<td>¹Research Center of Space Propulsion System, Beijing Institute of Control Engineer, China, ²Department of Propulsion, Beijing Institute of Control Engineer, China</td>
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<td><strong>Fujimi Sawada</strong>¹, <strong>Atushi Kosiyama</strong>¹, <strong>Shuji Hagiwara</strong>¹, <strong>Hideyuki Horisawa</strong>¹, <strong>Ikkoh Funaki</strong>²</td>
<td>¹Department of Aeronautics and Astronautics, University of Tokai, Japan, ²Japan Aerospace Exploration Agency, Japan</td>
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<th>Numerical Simulation of a Microwave-Excited Microplasma Thruster</th>
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<td>Department of Aeronautics and Astronautics, Kyoto University, Japan</td>
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<td>College of Astronautics, Northwestern Polytechnic University, China</td>
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<td>¹Department of Aeronautics and Astronautics, University of Tokai, Japan, ²Japan Aerospace Exploration Agency, Japan</td>
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<th>2008-b-20 (14:40–15:00)</th>
<th>Analysis of Microwave-excited Plasma Thrusters with Hydrogen Propellant</th>
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<td><strong>Yugo Ichida</strong>, <strong>Takeshi Takahashi</strong>, <strong>Yoshinori Takao</strong>, <strong>Koji Eriguchi</strong>, <strong>Kouichi Ono</strong></td>
<td>Department of Aeronautics and Astronautics, Kyoto University, Japan</td>
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### Hall Thrusters
2008-b-21 (15:10–15:30)

Development of Real-time Boron Nitride Erosion monitoring system for Hall Thrusters by Cavity Ring-Down Spectroscopy

Naoji Yamamoto1, Azer Yalin2, Lei Tao2, Timothy Smith3, Alec Gallimore4, Yoshihiro Arakawa4, Hideki Nakashima5

1Department of Advanced Energy Engineering Science, Kyushu University, Japan, 2Colorado State University, 3University of Michigan, 4The University of Tokyo, Japan, 5Kyushu University, Japan

2008-b-22 (15:30–15:50)

Diagnostics of Xe Ion in an Anode-layer Type Hall Thruster Using Laser Induced Fluorescence

Shigeru Yokota1, Lempke Markus2, Kentaro Hara1, Makoto Matsui1, Kimiya Komurasaki3, Yoshihiro Arakawa1

1Department of Aeronautics and Astronautics, The University of Tokyo, Japan, 2University Stuttgart, Germany, 3Department of Advanced Energy, The University of Tokyo, Japan

2008-b-23 (15:50–16:10)

A New Model on the Control of the Ion Current Oscillation and its Influence to the Thrust Efficiency of Hall Thrusters

Yuki Yamamura1, Hiroyuki Nakamoto1, Yasunori Nejoh2

1Graduate School of Engineering, Hachinohe Institute of Technology, Japan, 2Hachinohe Institute of Technology, Japan

2008-b-24 (16:10–16:30)

Oscillation-free Operation of Hall Thruster by the Synchronous Control of Power Conditioners

Taichiro Tamida1, Hiroyuki Osuga2, Takafumi Nakagawa2, Toshiyuki Ozaki2, Ikuro Suga1, Katsuaki Matsui3

1Advanced Technology R&D Center, Mitsubishi Electric Corporation, Japan, 2Kamakura Works, Mitsubishi Electric Corporation, Japan, 3Institute for Unmanned Space Experiment Free Flyer, Japan

2008-b-25 (16:30–16:50)

Investigation of Acceleration Channel Process in Hall Thrusters by Particle Simulations

Takeshi Miyasaka, Yuuki Shibata, Katuo Asato, Kazuhide Segawa

Human and Information Systems, Gifu University, Japan

2008-b-26 (16:50–17:10)

Direction Detection of Swirling Ion Flows from Hall Effect Thrusters using End Effects on Cylindrical Langmuir Probes

Akira Ohno1, Hiroyuki Koizumi2, Hitoshi Kuninaka2

1Department of Aeronautics and Astronautics, The University of Tokyo, Japan, 2ISAS, JAXA, Japan

2008-b-27 (17:10–17:30)

Thrust Measurement Using a Simple Set-up with a He-Ne Laser and a Position Sensitive
[b-6] Ion Thrusters (1)

Session Date: 2008/6/6 8:30 – 10:10
Room: Room C
Chairpersons: Yoshiyuki Takao (Nishinippon Institute of Technology, Japan), Yasushi Ohkawa (JAXA, Japan)

2008-b-28 (8:30-8:50)
Development of a Microwave Discharge Ion Thruster using Argon
Naoji Yamamoto¹, Makoto Miyoshi¹, Hideki Nakashima¹, Yoshiyuki Takao²
¹Department of Advanced Energy Engineering Science, Kyushu University, Japan, ²Oita National College of Technology, Japan

2008-b-29 (8:50-9:10)
Antenna Design Method and Performance Improvement of a Micro-Ion Engine Using Microwave Discharge
Hiroyuki Koizumi, Hitoshi Kuninaka
Institute of Space and Astronautical Science / Japan Aerospace Exploration Agency, Japan

2008-b-30 (9:10-9:30)
Extended Operation and Modification of 20mN Class Xenon Ion Engine
Toshiyuki Ozaki¹, Hiroyuki Osuga¹, Hiroshi Nagano², Takashi Itoh², Kenichi Kajiwara²
¹Space Systems Department, Mitsubishi Electric Corporation, Japan, ²JAXA, Japan

2008-b-31 (9:30-9:50)
Feasibility Study on Performance Enhancement Options for the ECR Ion Thruster mu10
Kazutaka Nishiyama¹, Satoshi Hosoda¹, Miyuki Usui², Hiroshi Hayashi¹, Yukio Shimizu¹, Hitoshi Kuninaka¹
¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²The University of Tokyo, Japan

2008-b-32 (9:50-10:10)
Experimental Demonstration of Microwave Discharge Ion Engine with 10,000 sec Isp (the 2nd Report)
Hitoshi Kuninaka¹, Kazutaka Nishiyama¹, Yukio Shimizu¹, Yoshinori Nakayama², Hiroshi Hayashi¹, Miyuki Usui³
¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²National Defense Academy, Japan, ³Department of Aerospace Engineering, University of Tokyo, Japan
### Laser Thrusters

**Session Date**: 2008/6/6 13:30 – 14:30  
**Room**: Room C  
**Chairpersons**: Hideki Nakashima (Kyushu University, Japan), Takeshi Miyasaka (Gifu University, Japan)

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| 2008-b-39 | Numerical Analysis on Thermal Non-equilibrium and Multidimensional Laser-Supported Detonation Wave Propagating Through a Diatomic Gas | Hiroyuki Shiraishi  
Daido Institute of Technology, Japan |
| 2008-b-40 | A Laser Ignition Microthruster for Microspacecraft Propulsion         | Masakatsu Nakano\(^1\), Hiroyuki Koizumi\(^2\), Masashi Watanabe\(^3\), Yoshihiro Arakawa\(^4\)  
\(^1\)Tokyo Metropolitan College of Industrial Technology, Japan, \(^2\)JAXA, Japan, \(^3\)Nichiyu Giken Kogyo Co., LTD., \(^4\)University of Tokyo, Japan |
Experimental Investigation of micro-N-class Laser Ablation Thruster
Sota Sumida¹, Satoshi Yokoyama¹, Hideyuki Horisawa¹, Ikkoh Funaki²
¹Toaiki University, Japan, ²ISAS/JAXA, Japan

2008-b-42 (14:40-15:00)
Extraction of Magnetoplasmadynamic Thruster Design Guidelines through Optimization
Masakatsu Nakane¹, Takuya Hayashi¹, Yoshio Ishikawa¹, Ikkoh Funaki³, Kyoichiro Toki³
¹Department of Aerospace Engineering, Nihon University, Japan, ²ISAS/JAXA, Japan, ³Institute of Symbiotic Science and Technology, Tokyo University of Agriculture and Technology, Japan

2008-b-43 (15:00-15:20)
Total Electrode Fall Measurement in an Parallel-Plate MagnetoPlasmaDynamic Thruster
Daisuke Nakata¹, Kyoichiro Toki², Yukio Shimizu³, Ikkoh Funaki³, Hitoshi Kuninaka³, Yoshihiro Arakawa¹
¹Department of Aeronautics and Astronautics, University of Tokyo, Japan, ²Department of Mechanical Systems Engineering, Tokyo University of Agriculture and Technology, Japan, ³Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan

2008-b-44 (15:20-15:40)
Numerical Simulations and Accompanying Experimental Investigations of Magnetoplasmadynamic Thrusters with Coaxial Applied Magnetic Field
Daniel Haag¹, Monika Auweter-Kurtz², Markus Fertig¹, Georg Herdrich¹, Michael Winter¹
¹Institute of Space Systems, Universitaet Stuttgart, Germany, ²Praesidentin, Universitaet Hamburg, Germany

2008-b-45 (15:40-16:00)
Numerical Investigation of the Effect of Applied Magnetic Field on MPD Thruster Flowfields
Kenichi Kubota¹, Ikkoh Funaki², Yoshihiro Okuno¹
¹Department of Energy Sciences, Tokyo Institute of Technology, Japan, ²ISAS/JAXA, Japan

2008-b-46 (16:10-16:30)
Research and Development on Coaxial Pulsed Plasma Thruster with Propellant Feed
Kouhei Shintani, Masayuki Mukai, Yukiya Kamishima, Tsubasa Sasaki, Junichiro Aoyagi, Haruki Takegahara, Takashi Wakizono, Mitsuteru Sugiki

1Tokyo Metropolitan University, Japan, 2Hi-SERVE Corporation, Japan, 3Astro Research Corporation, Japan

2008-b-47 (16:30-16:50)

Thrust Efficiency Optimization of SIMPLEX

Anuscheh Nawaz, Monika Auweter-Kurtz, Georg Herdrich

1Institute of Space Systems, Universitaet Stuttgart, Germany, 2Universitaet Hamburg, Germany

2008-b-48 (16:50-17:10)

Plasma Acceleration by RF Antennae with Small Helicon Source

Yoshikazu Tanaka, Kyoichiro Toki, Shunjiro Shinohara, Takao Tanikawa, Tohru Hada, Ikkoh Funaki, Konstantin Shamrai

1Tokyo University of Agriculture and Technology, Japan, 2Kyushu University, Japan, 3Tokai University, Japan, 4Japan Aerospace Exploration Agency, Japan, 5Institute for Nuclear Research, Ukraine

2008-b-49 (17:10-17:30)

High Power Ion Heating in Helium and Hydrogen Plasmas for Advanced Plasma Thrusters

Akira Ando, Tatsuya Hagiwara, Masakazu Domon, Takahiro Taguchi

Dept. of Electrical Engineering, Tohoku University, Japan

[c-1] Dynamics of Satellite

Session Date: 2008/6/3 8:30 – 10:10
Room: Room F
Chairpersons: M.C. Natori (Waseda University, Japan), Yasuyuki Miyazaki (Nihon University, Japan)

2008-c-01 (8:30-8:50)

Vibration Analysis of Nanosatellite PRISM Extendable Boom

Casey Lambert, Yuuki Sato, Il-Yun Yu, Takaya Inamori, Shinichi Nakasuka

Department of Aeronautics and Astronautics, University of Tokyo, Japan

2008-c-02 (8:50-9:10)

Experimental Study of Vibration Control of Flexible Space Structure by Using Micro Tension Actuator

Yukitaka Kojima, Hironori Fujii, Takeo Watanabe, Tairo Kusagaya

Department of Aerospace Engineering, Tokyo Metropolitan University, Japan

2008-c-03 (9:10-9:30)

Experiments of Semi-Active Vibration Suppression with Piezoelectric Transducers for Actual Satellite Structural Test Model

Shigeru Shimose, Kenji Minesugi, Junjiro Onoda, Takuya Yabu

ISAS, JAXA, Japan

2008-c-04 (9:30-9:50)

Optimal Self-identification of Adaptive Structures with Variable Geometric Parameters
Using Particle Swarm Optimization Method
Atsuhiko Senba¹, Hiroshi Furuya², Morio Takahama¹
¹Department of Information Engineering, Nagoya University, Japan, ²Department of Built Environment, Tokyo Institute of Technology, Japan

2008-c-05 (9:50-10:10)

Basic Geometrical Consideration on Deployable and Adaptive Structures for Efficient Spacecraft Systems
M.C. Natori¹, Naoko Kishimoto², Ken Higuchi², Horoshi Yamakawa³
¹Advanced Research Institute for Science and Engineering, Waseda University, Japan, ²ISAS/JAXA, Japan, ³School of Creative Science and Engineering, Waseda University, Japan

[c-2] Inflatable Structures and Satellite Ejection System

Session Date: 2008/6/3 10:20 – 12:00
Room: Room F
Chairpersons: Takahira Aoki (The University of Tokyo, Japan), Kenji Minesugi (JAXA, Japan)

2008-c-06 (10:20–10:40)

Fundamental Characteristics of Inflatable Structure Composed of Sealed Multi-Cells
Kosei Ishimura¹, Ken Higuchi²
¹Graduate School of Information Science and Technology, Hokkaido University, Japan, ²Institute of Space and Astronautical Science / Japan Aerospace Exploration Agency (ISAS/JAXA), Japan

2008-c-07 (10:40–11:00)

On-Orbit Verification of Space Inflatable Structures
Takahira Aoki¹, Hiroshi Furuya², Kosei Ishimura³, Yasuyuki Miyazaki⁴, Kei Senda⁵, Hiroaki Tsunoda⁶, Ken Higuchi⁷, Junichiro Ishizawa⁸, Naoko Kishimoto⁹, Ryoji Sakai⁹, Kazuki Watanabe⁹
¹Department of Aeronautics and Astronautics, University of Tokyo, Japan, ²Tokyo Institute of Technology, Japan, ³Hokkaido University, Japan, ⁴Nihon University, Japan, ⁵Tokai University, Japan, ⁶Tokyo University, Japan, ⁷JAXA, Japan, ⁸Sakae Adtech, Co., Ltd., Japan, ⁹WEL Research, Co., Ltd., Japan

2008-c-08 (11:00–11:20)

Verification of Practical Use of an Inflatable Structure in Space
Ken Higuchi¹, Yoshiro Og², Kazuki Watanabe³, Akihito Watanabe⁴
¹ISAS/JAXA, Japan, ²The Graduate University for Advanced Studies (Soukendai), Japan, ³WEL Research, Co., Ltd., Japan, ⁴Sakae Adtech, Co., Ltd., Japan

2008-c-09 (11:20–11:40)

Development of Spin Ejection Device for Mercury Magnetospheric Orbiter
Kenji Minesugi¹, Kazuhiro Abe², Naohiro Inagaki², Keiji Komatsu¹
¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²NIPPI Corporation

2008-c-10 (11:40–12:00)

The Development of a Satellite Ejection System of PRISM
Yasuhiro Kusakawa, Shinya Chikura, Kensuke Shimizu, Mitsuhito Komatsu, Shinichi
[c-3] Membrane Structures

Session Date: 2008/6/3 13:30 - 14:50
Room: Room F
Chairpersons: Ken Higuchi (ISAS/JAXA, Japan), Kosei Ishimura (Hokkaido University, Japan)

2008-c-11 (13:30-13:50)
Retractability of Two-dimensional Deployable Membrane for Spinning Solar Sail
Yasutaka Satou, Hiroshi Furuya
Department of Built Environment, Tokyo Institute of Technology, Japan

2008-c-12 (13:50-14:10)
Geometrically Nonlinear Analyses of Wave Propagation in Non-Uniformly Pre-Tensioned Membranes
Hiraku Sakamoto
Department of Mechanical and Aerospace Engineering, Tokyo Institute of Technology, Japan

2008-c-13 (14:10-14:30)
Evaluation of the Numerical Analysis Model for Thin-Membrane
Kosuke Arita, Yasuyuki Miyazaki, Yoshitaka Nakamura
Nihon University, Japan

2008-c-14 (14:30-14:50)
Effect of Folded Creases and Friction Force on the Deploying Tape Tether on the Sounding Rocket Experiment
Tomoya Mazawa, Hironori Fujii, Takeo Watanabe
Aerospace Engineering, Tokyo Metropolitan University, Japan

[c-4] Launch Vehicle Structures

Session Date: 2008/6/3 15:00 - 17:00
Room: Room F
Chairpersons: Shinsuke Takeuchi (JAXA, Japan), Toshio Ogasawara (JAXA, Japan)

2008-c-15 (15:00-15:20)
Development of Manufacturing Technologies for H-IIB Launch Vehicle Structure
Keita Terashima¹, Eijiro Namura¹, Takumi Ujino¹, Makoto Arita², Hidenori Hara³, Tomohiko Goto³
¹Space Transportation Subsystem Research and Development Center, Japan Aerospace Exploration Agency (JAXA), Japan; ²H-IIB Launch Vehicle Project Team, Japan Aerospace Exploration Agency (JAXA), Japan; ³Mitsubishi Heavy Industries LTD, Nagoya, Japan

2008-c-16 (15:20-15:40)
Design and Development of Stage II Kick Motor Support Structure
## [c-5] Composite Structures

**Session Date**: 2008/6/3 17:10 - 18:30  
**Room**: Room F  
**Chairpersons**: Tomohiro Yokozeki (The University of Tokyo, Japan), Ovidiu Nemes (Technical University of Cluj-Napoca, Roumania)

### 2008-c-21 (17:10-17:30)
**Analysis of I-Section Orthotropic Beams Using Two Variable Refined Theory**  
Rameshchandra Shimpi, Amit Sowani  
*Aerospace Engineering Department, Indian Institute of Technology ~ Bombay, India*

### 2008-c-22 (17:30-17:50)
**Postbuckling Failure Analysis of Composite Stiffened Panels Considering Skin-Stiffener Debonding**  
Kwang-Soo Kim, Young-Soon Jang, Yeong-Moo Yi  
*Technology Division, Korea Aerospace Research Institute, Korea*

### 2008-c-23 (17:50-18:10)
**Permeation-after-impact Properties of CFRP Laminates for Use on Propellant Tank**  
Tomohiro Yokozeki1, Akiko Kuroda1, Akinori Yoshimura2, Toshiro Ogasawara2, Takahira Aoki1  
1*Department of Aeronautics and Astronautics, University of Tokyo, Japan, 2Advanced Composite Technology Center, Institute of Aerospace Technology, Japan Aerospace Exploration Agency, Japan*
Double-lap Joint Adhesive Assemblies Optimization in Aerospace Structures
Ovidiu Nemes1, Frederic Lachaud2
1Faculty of Material Science and Engineering, Technical University of Cluj-Napoca, Romania, 2Department of Mechanical Engineering, ENSICA Toulouse, France

2008-c-24 (18:10-18:30)

Nanoreinforced Laminated CFRP Composites
Mohamed Aly–Hassan1, Asami Nakai2, Hiroyuki Hamada2
1Venture Laboratory, Kyoto Institute of Technology, Japan, 2Kyoto Institute of Technology, Matsugasaki, Japan

[c-6] Structural Materials for Space Applications (1)
Session Date : 2008/6/4 8:50 – 10:10
Room : Room F
Chairpersons : Ken Goto (JAXA, Japan), Luigi Scatteia (CIRA – Italian Aerospace Research Centre, Italy)

2008-c-25 (8:50-9:10)
Evaluation by Rocket Combustor of C/C Composite Cooled Structure Using Metallic Cooling Tubes
Masao Takegoshi1, Fumiei Ono1, Shuichi Ueda1, Toshihito Saito1, Osamu Hayasaka2
1Japan Aerospace Exploration Agency, Japan, 2Foundation for Promotion of Japanese Aerospace Technology

2008-c-26 (9:10-9:30)
Fiber-matrix Interface Mechanical Properties of Carbon–Carbon Composites
Ken Goto1, Miho Ishii2, Hiroshi Hatta3, Ichiro Shiota2
1Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, 2Department of Materials Science and Technology, Kogakuin University, Japan, 3Advanced Composite Technology Center, Japan Aerospace Exploration Agency, Japan

2008-c-27 (9:30-9:50)
Micrometeoroid Impact Damage on Thin Ceramic Component for Interplanetary Probe
Yasuko Motoyashiki1, Daisuke Shindo2, Kyoko Okudaira1, Sunao Hasegawa1, Eiichi Sato1
1Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, 2Tokai University, Japan

2008-c-28 (9:50-10:10)
Efficient Heat Energy Management via Heat-Directed Composite Materials for Aerospace Applications
Mohamed Aly–Hassan1, Hiroshi Hatta2, Hiroyuki Hamada3
1Venture Laboratory, Kyoto Institute of Technology, Japan, 2Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency (JAXA), Japan, 3Kyoto Institute of Technology, Matsugasaki, Japan

[c-7] Structural Materials for Space Applications (2)
Session Date : 2008/6/4 10:20 – 12:00
Room : Room F
Chairpersons : Yasuko Motoyashiki (JAXA, Japan),
### Development of Hybrid C/SiC Composites for Space Optics and Structures

Matthias Kroedel$^1$, Tsuyoshi Ozaki$^2$

$^1$ECM Ingenieur-Unternehmen fuer Energie- und Umwelttechnik GmbH, Germany,
$^2$Mitsubishi Electric Corporation, Japan

### Advances in Ultra High Temperature Ceramics For Hot Structures

Luigi Scatteia$^1$, Federico Monteverde$^2$, Stefania Cantoni$^1$

$^1$Advanced Materials and Technologies, CIRA – Italian Aerospace Research Centre, Italy,
$^2$CNR-ISTEC, Italy

### Multidimensional P-Version Finite Element For Ablative TPS

Koichi Takasaki

IAT, JAXA, Japan

### Formation Al Ultra Fine Structure and Properties

Tibor Kvackaj$^1$, R. Kocisko$^1$, T. Kuskulic$^1$, I. Pokorny$^1$, M. Fujda$^1$, T. Donic$^2$, M. Besterci$^2$, K. Sulieiova$^3$, M. Molnarova$^1$, A. Kovacova$^1$

$^1$Dpt. of Metal Forming Faculty of Metallurgy, Technical University, Slovakia,
$^2$Faculty of Mechanical Engineering, University of Zilina Vel’ky diel, Slovakia,
$^3$Institute of Materials Research of Slovak Academy of Sciences, Slovakia

### Mechanical Properties, Microstructure, Deformation and Fracture in Mechanically Alloyed Al–Al4C3 Composite

Michal Besterci$^1$, Oksana Velgosova$^2$, Ladislav Pesek$^3$, Tibor Kvackaj$^4$

$^1$Slovak Academy of Sciences, Institute of Materials Research, Slovakia,
$^2$Faculty of Metallurgy, Department of Non-ferrous Metals and Waste Treatment, Technical University in Kosice, Slovakia,
$^3$Faculty of Metallurgy, Department of Materials Science, Technical University in Kosice, Slovakia,
$^4$Faculty of Metallurgy, Department of Metals Forming, Technical University in Kosice, Slovakia

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[c-8] NDI and Structural Health Monitoring

**Session Date**: 2008/6/4 13:30 – 14:50  
**Room**: Room F  
**Chairpersons**: Yoji Okabe (The University of Tokyo, Japan), Ning Hu (Tohoku University, Japan)

### Nondestructive Inspection Method for Solid Rocket Motor

Takahiro Otsuka, Akiyoshi Sato, Masashi Minato

Department of Quality Assurance, IHI AEROSPACE Co., LTD, Japan

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Identification of Impact Force on Stiffened Composite Panels
Satoshi Atobe¹, Hu Ning², Hisao Fukunaga²
¹Graduate School of Engineering, Tohoku University, Japan, ²Department of Aerospace Engineering, Tohoku University, Japan

Delamination Identification in Composite Laminites Using Lamb waves
Ning Hu, Hisao Fukunaga
Department of Aerospace Engineering, Tohoku University, Japan

Damage Detection in CFRP Laminates by Ultrasonic Wave Propagation Using MFC Actuator and FBG Sensor
Yoji Okabe¹, Fumihiro Nakayama²
¹Department of Mechanical and Biofunctional Systems, Institute of Industrial Science, The University of Tokyo, Japan, ²Department of Aeronautics and Astronautics, Graduate School of Engineering, The University of Tokyo, Japan

Si-doping for the Protection of Hydrogenated Diamond-like Carbon Films in a Simulated Atomic Oxygen Environment in LEO
Masahito Tagawa¹, Kumiko Yokota¹, Akira Kitamura², Koji Matsumoto³, Akitaka Yoshigoe⁴, Yuden Teraoka⁴, Julien Fontaine⁵, Michel Belin⁵
¹Department of Mechanical Engineering, Kobe University, Japan, ²Department of Maritime Engineering, Kobe University, Japan, ³Japan Aerospace Exploration Agency, ⁴Japan Atomic Energy Agency, ⁵École Centrale de Lyon, France

Effect of EUV from the Oxygen Plasma in the Ground-based Atomic Oxygen Test of Fluorinated Polymer
Kumiko Yokota¹, Kazuhiro Kishida¹, Hidehiro Yasuda¹, Akio Okamoto², Masahito Tagawa¹
¹Department of Mechanical Engineering, Kobe University, Japan, ²Technology Research Institute of Osaka Prefecture, Japan

Evaluation of White Paints Exposed to Space Environment on ISS Russian Service Module / Space Environment Exposure Device
Junichiro Ishizawa
Electronic, Mechanical Components and Materials Engineering Group, Japan Aerospace Exploration Agency (JAXA), Japan

Proton Irradiation Effects on Dielectric Coatings on Optics
Kazuhiisa Fujita¹, Kazuyuki Suzuki², Shinji Motokoshi³, Katsuto Kisara⁴
### [c-10] Materials Characterization in Space Environment (2)

**Session Date**: 2008/6/4 16:50 – 18:10  
**Room**: Room F  
**Chairpersons**: Masahito Tagawa (Kobe University, Japan), Junichiro Ishizawa (JAXA, Japan)

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| 2008-c-43 (16:50-17:10) | Effects of Long-term Irradiation with Effective Factors of LEO Environment on Properties of Solid Lubricant | Koji Matsumoto\(^1\), Masahito Tagawa\(^2\), Masao Akiyama\(^3\)  
\(^1\)Institute of Aerospace Technology, Japan Aerospace Exploration Agency, Japan, \(^2\)Kobe University, Japan, \(^3\)IHI Aerospace Co., Ltd |
| 2008-c-44 (17:10-17:30) | Advancement of the Materials Applicability Analysis/Evaluation for the Manned Space Systems | Sachie Eguchi\(^1\), Satoru Tachihara\(^1\), Yasufumi Matsuo\(^2\)  
\(^1\)Human Space Safety and Mission Assurance Office, Japan Aerospace Exploration Agency, Japan, \(^2\)Japan Manned Space Systems Corporation |
| 2008-c-45 (17:30-17:50) | Effect of Gravity on Silicon Dissolution in Germanium Melt | Sadik Dost\(^1\), Neil Armour\(^1\), Brian Lent\(^1\), Yasunori Okano\(^2\)  
\(^1\)Department of Mechanical Engineering, University of Victoria, Canada, \(^2\)Department of Chemical and Materials Engineering, Shizuoka University, Hamamatsu, Japan |
Department of Earth Sciences, Grad.Sch. Sci. & Eng., Yamaguchi University, Japan |

### [d-1] Guidance, Navigation and Control for Space Exploration

**Session Date**: 2008/6/3 8:30 – 9:50  
**Room**: Room D  
**Chairpersons**: Tatsuaki Hashimoto (JAXA, Japan), Shin-Ichiro Nishida (JAXA, Japan)

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| 2008-d-01 (8:30-8:50) | Dynamic Performance of Landing Radar BBM in Field Experiment | Takahide Mizuno\(^1\), Seisuke Fukuda\(^2\), Tomohiko Sakai\(^2\), Yu Okada\(^3\), Teppel Sato\(^4\), Kenji Kishimoto\(^5\)  
\(^1\)Spacecraft Engineering, Institute of Space and Astronautical Science, Japan, \(^2\)Institute of Space and Astronautical Science, JAXA, \(^3\)Kamakura Works, Mitsubishi Electric Corporation, Japan, \(^4\)Tokyo Science University, Japan, \(^5\)Meiji University, Japan |
2008-d-02 (8:50-9:10)
Miniaturized 3D-LIDAR for Lunar Landing
Bettina Moebius¹, Martin Pfennigbauer², Uwe Soppa³
¹AOCS Sensors, Jena-Optronik GmbH, Germany, ²Riegl Research Forschungsgesellschaft mbH, Horn, Austria, ³Astrium GmbH, Bremen, Germany

2008-d-03 (9:10-9:30)
Experimental Study of 2D Scanning LIDAR with MEMS Technology
Yasuhiro Kajikawa¹, Makoto Mita², Takuya Hayashi³, Takahide Mizuno²
¹Department of Information and Communication Engineering, Tokyo Denki University, Japan, ²ISAS/JAXA, ³TOKYO KEISO CO.,LTD.

2008-d-04 (9:30-9:50)
Surface Exploration Rover and Guidance Scheme for Planetary Robotic Exploration
Takashi Kubota¹, Masatsugu Otsuki², Yasuharu Kunii³, Yoji Kuroda⁴
¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²JAXA/ISAS, Japan, ³Chuo University, Japan, ⁴Meiji University, Japan

[d-2] Space Robotics
Session Date : 2008/6/3 10:00 – 12:00
Room : Room D
Chairpersons : Kazuya Yoshida (Tohoku University, Japan), Fuyuto Terui (JAXA, Japan)

2008-d-05 (10:00-10:20)
Multi-Constrained Optimal Control of 3D Robotic Arm Manipulators
Pavel Trivailo¹, Hironori Fuji², Hirohisha Kojima³, Takeo Watanabe²
¹School of Aerospace, Mechanical and Manufacturing Engineering, RMIT University, Australia, ²Department of Aerospace Engineering, Tokyo Metropolitan University, Japan

2008-d-06 (10:20-10:40)
Morphable Beam Device and Beam Shape Generation Algorithm
Saburo Matunaga, Thomas Iljic, Yohei Tanaka, Yoshiyuki Miura
Department of Mechanical and Aerospace Engineering, Tokyo Institute of Technology, Japan

2008-d-07 (10:40-11:00)
Development of High Power Dexterous Robot Hand for Space and Commercial Uses
Mitsushige Oda
Institute of Aerospace Technology, JAXA, Japan

2008-d-08 (11:00-11:20)
Proposal of a Tethered Space Walking Robot
Mitsushige Oda
Institute of Aerospace Technology, JAXA, Japan

2008-d-09 (11:20-11:40)
Control Architecture for Self-reconfigurable Space Structure

Keita Sawayama¹, Takashi Matsuzawa², Toshiaki Iwata², Kazuo Machida³

¹Department of Aeronautics and Astronautics, University of Tokyo, Japan, ²National Institute of Advanced Industrial Science and Technology (AIST), Japan, ³Research Center for Advanced Science and Technology, University of Tokyo, Japan

2008-d-10 (11:40–12:00)

Delay-Time Estimated Constant Torque Control for Two-Dimensional Free-Flying Space Robot

Hirohisa Kojima, Shinji Kasahara

Department of Aerospace Engineering, Tokyo Metropolitan University, Japan

[d-3] Attitude Determination

Session Date : 2008/6/3 13:30 – 14:50
Room       : Room D
Chairpersons : Takanori Iwata (JAXA, Japan), Ken Maeda (NEC Toshiba Space Systems, Japan)


Robust Attitude Determination for Spacecraft with Magnetic Sensors

Shoji Yoshikawa, Takehiro Nishiyama

Advanced Technology R&D Center, Mitsubishi Electric Corporation, Japan

2008-d-12 (13:50–14:10)

The Attitude Determination of HIT-SAT from Magnetometer Data

Kouta Matsushima¹, Kosei Ishimura¹, Tsuyoshi Totani¹, Shin Satori², Ryuichi Mitsuhashi², Akihiro Nakamura³, Toshihiko Yasunaka⁴, Kotaro Hori⁵, Norihisa Hirota²

¹Hokkaido University, Japan, ²Hokkaido Institute of Technology, Japan, ³Department of AIMDA Ltd., Japan, ⁴Department of Uematsu Electric Co. Ltd., Japan, ⁵Department of B.U.G, Inc., Japan

2008-d-13 (14:10–14:30)

Attitude Determination Concept for QSAT

Yuya Mimasu, Jozef van der Ha

Department of Aeronautics and Astronautics, Kyushu University, Japan

2008-d-14 (14:30–14:50)

Method to Control Nano-satellite Attitude, Using Star Blurred and Skew Image

Takaya Inamori, Nobutada Sako, Yoichi Hatsutori, Shinichi Nakasuoka

Dept. of Aeronautics and Astronautics, The University of Tokyo, Japan

[d-4] Attitude Maneuver

Session Date : 2008/6/3 15:00 – 16:20
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Chairpersons : Fuyuto Terui (JAXA, Japan), Shin-Ichiro Sakai (JAXA, Japan)
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<td>Katsuhiko Yamada¹, Naoki Takatsuka¹, Takeya Shima²</td>
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<td>¹Aerospace Engineering, Graduate School of Engineering, Nagoya University, Japan, ²Advanced Technology R&amp;D Center, Mitsubishi Electric Corporation, Japan</td>
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<td>A New Method for Motion Planning of Rotating Bodies under Multiple Constraints</td>
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<td>Takehiro Nishiyama¹, Katsuhiko Yamada², Shoji Yoshikawa¹</td>
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<td>¹Mechatronics Department, Advanced Technology R&amp;D Center, Mitsubishi Electric Corporation, Japan, ²Graduate School of Engineering, Nagoya University, Japan</td>
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<td>2008-d-19</td>
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<td>Department of Aerospace Engineering, Tokyo Metropolitan University, Japan</td>
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**[d-5] Attitude and Tether Control Methods**

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<td>System Performance Analysis of Three Dimensional Reaction Wheel for the Attitude Control of Microsatellites</td>
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<td>Yoji Shirasawa¹, Yuichi Tsuda²</td>
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<td>¹Department of Aeronautics and Astronautics, University of Tokyo, Japan, ²ISAS, JAXA, Japan</td>
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<td>2008-d-22</td>
<td>A Study on Vibration Isolator for Reaction Wheel Assembly</td>
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### [d-6] Spacecraft Dynamics and Control Experiences

**Session Date** : 2008/6/4 10:20 – 12:00  
**Room** : Room D  
**Chairpersons** : Saburo Matsunaga (Tokyo Institute of Technology, Japan), Ken Maeda (NEC Toshiba Space Systems, Japan)

#### 2008-d-23  (10:20–10:40)

**Deployment Dynamics of a Large Solar Array Paddle**  
Takanori Iwata¹, Kiyoshi Fujii², Kazuro Matsumoto²  
¹Institute of Aerospace Technology, Japan Aerospace Exploration Agency, Japan, ²NEC TOSHIBA Space Systems

#### 2008-d-24  (10:40–11:00)

**Boom Deployment Angle Estimation and On-orbit Operation Results of ETS-VIII Large Deployable Reflector**  
Takeya Shima¹, Hidekazu Tanaka², Hiroo Yonechi², Katsuhiko Yamada³, Akira Meguro⁴, Motofumi Usui², Kyoji Shintate⁴  
¹Mechatronics Department, Advanced Technology R&D Center, Mitsubishi Electric Corporation, Japan, ²Kamakura Works, Mitsubishi Electric Corporation, ³Nagoya University, Japan, ⁴Japan Aerospace Exploration Agency, Japan

#### 2008-d-25  (11:00–11:20)

**Dynamic Modeling and Experimental Verification of the Pointing Technology in Balloon-Borne Telescope System for Optical Remote Sensing of Planets**  
Yuji Sakamoto¹, Tomoaki Kanazawa¹, Yasuhiro Shouji¹, Yukihiro Takahashi², Kazuya Yoshida¹, Makoto Taguchi³  
¹Department of Aerospace Engineering, Tohoku University, Japan, ²Department of Geophysics, Tohoku University, Japan, ³National Institute of Polar Research

#### 2008-d-26  (11:20–11:40)

**Control System of Balloon Based-Operation Vehicle(BOV) for Micro Gravity Experiment**  
Nobutaka Bando¹, Shin-ichiro Sakai¹, Shouhei Kadooka², Tetsuo Yoshimitsu¹, Hiroaki Kobayashi¹, Kazuhaisa Fujita¹, Shujiro Sawai¹, Tatsuaki Hashimoto¹  
¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²Musashi Institute of Technology, Japan

#### 2008-d-27  (11:40–12:00)

**Development of Micro Gravity Test Bed for Closed-Loop Attitude Dynamics Test and Demonstration of Precision Attitude Control**  
Shingo Tange¹, Shigemune Taniwaki², Naoshi Kondo³, Yuta Matsubashi¹, Syo Mizunuma²  
¹Department of Mechanical Engineering, Ehime University, Japan, ²Graduate School of Science and Engineering, Ehime University, Japan, ³Graduate School of Agriculture, Koto University, Japan

### [d-7] Rendezvous and Proximity Operations

**Session Date** : 2008/6/4 15:20 – 16:40  
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Relative Motion Estimation and Control Strategy for a Spacecraft to an Uncooperative Object
Fuyuto Terui, Heihachiro Kamimura
Advanced Space Technology Research Group, Japan Aerospace Exploration Agency, Japan

Attitude-Motion Estimation from RFID Data Sequence
Hideyuki Tanaka, Kazuo Machida, Takehisa Yairi
Research Center for Advanced Science and Technology, The University of Tokyo, Japan

Technology of H-II Transfer Vehicle Rendezvous System
Toru Kasai, Hirohiko Uematsu, Satoshi Ueda
HTV Project Team, Japan Aerospace Exploration Agency, Japan

Design and Evaluation Results of HTV GN&C Subsystem
Nobuharu Kambara¹, Shigeki Hotta¹, Masaharu Suzuki¹, Hirohisa Nagashima¹, Daisuke Watabe¹, Satoshi Ueda², Noboru Motoyama², Keichi Wada², Toru Kasai², Hirohiko Uematsu²
¹Space Information Systems Department, Mitsubishi Electric Corporation (MELCO) Kamakura Works, Japan, ²HTV Project Team, JAXA, Japan

Suppression of Relative Position Variation during One Orbit for Precise Formation Flying
Shoji Yoshikawa¹, Takeya Shima¹, Katsuhiko Yamada²
¹Advanced Technology R&D Center, Mitsubishi Electric Corporation, Japan, ²Nagoya University, Japan

An Approach to Control of Two Spacecraft Formation Flying
Yan-Ru Hu, Alfred Ng
Directorate of Spacecraft Engineering, Canadian Space Agency, Canada

Control of Formation Flying Using Solar Sail around Collinear Libration Point
Triwanto Simanjuntak¹, Yuichi Tsuda², Jun’ichiro Kawaguchi²
¹Department of Aeronautics & Astronautics, The University of Tokyo, Japan, ²Institute of

Session Date : 2008/6/5 9:30 – 10:30
Room : Room D
Chairpersons : Makoto Yoshikawa (JAXA, Japan), Yasuhiro Kawakatsu (JAXA, Japan)

2008-d-36 (9:30-9:50)
“GNSS Kinematic Relative Positioning for Spacecraft Data Analysis of a Dynamic Testbed”
Peter Buist
Department of Earth Observation and Space Systems, Delft University of Technology, The Netherlands

2008-d-38 (9:50-10:10)
Orbit Determination of Hayabusa During Close Proximity Phase
Hitoshi Ikeda1, Takashi Kominato2, Masatoshi Matsuoka2, Takafumi Ohnishi3, Makoto Yoshikawa4
1Department of Aeronautics and Astronautics, Kyushu University, Japan, 2NEC Aerospace Systems Ltd., Japan, 3Fujitsu Ltd., Japan, 4JAXA, Japan

2008-d-39 (10:10-10:30)
Sensitivity Analysis for the Navigation of Interplanetary Mission by Using Modified Orbit Estimator
Tsutomu Ichikawa
Japan Aerospace Exploration Agency, Japan

[d-10] Interplanetary Trajectory and Mission Design

Session Date : 2008/6/5 10:40 – 11:40
Room : Room D
Chairpersons : Lin Liu (Nanjing University, China), Yasuhiro Kawakatsu (JAXA, Japan)

2008-d-42 (10:40-11:00)
Analysis of Low Energy Interplanetary Transfer with Capture trajectories to L1 and L2 points
Masaki Nakamiya1, Daniel Scheeres2, Hiroshi Yamakawa3, Makoto Yoshikawa4
1Department of Space and Astronautical Science, The Graduate University for Advanced Studies, Japan, 2Department of Aerospace Engineering, University of Michigan, 3Kyoto University, Japan, 4Japan Aerospace Exploration Agency, Japan

2008-d-43 (11:00-11:20)
Trajectory Options of the Planet-C Auxiliary Payload after the Venus Swing-by
Mutsuko Morimoto1, Yasuhiro Kawakatsu2, Jun’ichiro Kawaguchi2
1Research and Development Office, JSPEC/JAXA, Japan, 2ISAS & JSPEC/JAXA, Japan

2008-d-44 (11:20-11:40)
Trajectory Design of Solar Sail Spacecraft for Interplanetary Rendezvous Missions
### [d-11] Attitude and Orbit Control Systems

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#### 2008-d-45 (13:00–13:20)

WINDS (Wideband Inter–Networking engineering test and Demonstration Satellite) Initial Operation Results and Performance Evaluation

Yoshihisa Arikawa¹, Yasuo Nakamura¹, Tsunehiko Araki¹, Yuuichi Fujiwara¹, Isao Baba²

¹WINDS Project Team, Office of Space Applications, Japan Aerospace Exploration Agency, Japan, ²NEC, Japan

#### 2008-d-46 (13:20–13:40)

Design of Attitude and Orbit Control System for Greenhouse Gases Observing Satellite (GOSAT)

Naomi Hosokawa, Yasuhiro Nakashiki, Takao Anzai, Yoshitaka Nishida, Takeshi Tohara, Keiji Inoshiro, Masaki Wakao

*Mitsubishi Electric Corporation, Kamakura Works, Japan*

#### 2008-d-47 (13:40–14:00)

Attitude Control System of the ASTRO-G Satellite: For the Fast Rest-To-Rest Attitude Maneuver

Shin-ichiro Sakai¹, Nobutaka Bando¹, Tsutomu Nakamura², Ken Maeda³, Toshio Kamiya³, Naoto Ogura³, Nanako Mochizuki¹, Yasuhiro Murata¹, Tatsuaki Hashimoto¹, Hirobumi Saito¹

¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²University of Tokyo, Japan, ³NEC Toshiba Space Systems, Japan

#### 2008-d-48 (14:00–14:20)

Science and Technology Demonstration Satellite TSUBAME and its Attitude Control System Using Micro CMGs

Kota Fujihashi, Kuniyuki Omagari, Yasumi Konada, Masaki Maeno, Hiroki Ashida, Junichi Nishida, Shiniohi Inagawa, Yoshiyuki Miura, Saburo Matunaga

*Department of Mechanical and Aerospace Engineering, Tokyo Institute of Technology, Japan*

#### 2008-d-49 (14:20–14:40)

Comparison of Different Magnetorquer Control Laws for QSAT

Kikuko Miyata, Tomohiro Narumi, Jozef van der Ha

*Department of Aeronautics and Astronautics, Kyushu University, Japan*

### [d-12] Guidance, Navigation and Control for Atmospheric Flight

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[d-13] Dynamics and Control of Solar Sail

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<td>¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²The University of Tokyo, Japan</td>
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<td>Osamu Mori¹, Hirotaka Sawada¹, Fuminori Hanaoka², Junichiro Kawaguchi¹, Yasuyuki Miyazaki³, Hiraku Sakamoto⁴</td>
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<td>¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²Department of Aerospace and Astronautics, The University of Tokyo, Japan, ³Department of Aerospace Engineering, Nihon University, Japan, ⁴Department of Mechanical and Aerospace Engineering, Tokyo Institute of Technology, Japan</td>
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[d-14] Orbit Transfer and Control

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<td>¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²Department of Aerospace and Astronautics, The University of Tokyo, Japan, ³Department of Aerospace Engineering, Nihon University, Japan, ⁴Department of Mechanical and Aerospace Engineering, Tokyo Institute of Technology, Japan</td>
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Precision Orbit Control of the Advanced Land Observing Satellite (ALOS) for SAR Interferometry

Takanori Iwata¹, Masanobu Shimada²
¹Institute of Aerospace Technology, Japan Aerospace Exploration Agency, Japan, ²Earth Observation Research Center, Japan Aerospace Exploration Agency, Japan

2008-d-59  (10:40–11:00 )

Orbit Maneuver Compensation of KAGUYA for its Safe and Accurate Lunar Transfer

Yasuhiro Kawakatsu¹, Hiroshi Terada², Masatoshi Matsuoka², Takafumi Ohnishi³
¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²NEC Aerospace Systems, Co.Ltd., ³Fujitsu, Ltd.

2008-d-60  (11:00–11:20 )

Effect of Thermal Radiation Force for Trajectory during Swing-by

Motonori Terauchi, Ieyoung Kim, Toshiya Hanada, Jozef van der Ha
Department of Aeronautics and Astronautics, Kyushu University, Japan

2008-d-61  (11:20–11:40 )

On Orbit Drift and Control of Spacecrafts around the Equilateral Equilibrium Points in the Earth+Moon System

Lin Liu, Huigen Liu, Xiyun Hou
Department of Astronomy, Nanjing University, China

2008-d-62  (11:40–12:00 )

Station–Keepin of Spacecrafts around the Equilateral Equilibrium Points

Xiyun Hou, Huigen Liu, Lin Liu
Department of Astronomy, Nanjing University, China

[e-1] Fluid Dynamics (1)

Session Date : 2008/6/3 8:30 – 10:10
Room : Room G
Chairpersons : Hideyuki Tanno (JAXA, Japan) , Hiromitsu Kawazoe (Tottori University, Japan)

2008-e-01  (8:30–8:50 )

Influence of Cross–wire on Supersonic Jet Flow Characteristics

Lovaraju Pinnam¹, Rathakrishnan Ethirajan²
¹Mechanical Engineering, K.L. College of Engineering, Acharya Nagarjuna University, India, ²Professor, Aerospace Engineering, IIT Kanpur

2008-e-02  (8:50–9:10 )

Effect of Level of Over Expansion in a Suddenly Expanded Flow for Area Ratio 6.25

Sher Khan¹, Aahmed Saleel¹, E. Rathakrishnan²

2008-e-03  (9:10–9:30 )

Development of an Improved Parallelized Hybrid DSMC–NS Algorithm and Its Applications
in Hypersonic Flow Computation
Jong-Shinn Wu¹, Y.-Y. Lian², K.-C. Tseng², Y.-S. Chen²
¹Department of Mechanical Engineering, National Chiao Tung University, Taiwan,
²National Space Organization, Taiwan

2008-e-04 (9:30–9:50)
Studies on Co-flow Jets Delivered by Orifices
Saumya Jain¹, Lovaraju Pinnam², Rathakrishnan Ethirajan¹
¹Department of Aerospace Engineering, Indian Institute of Technology Kanpur, India,
²Department of Mechanical Engineering, KL College of Engineering Vijayawada, India

2008-e-05 (9:50–10:10)
Computational Analysis of Supersonic Free Jet Acoustics for Predicting Rocket Plume Noise
Taku Nonomura¹, Kozo Fujii²
¹Department of Aeronautics and Astronautics, University of Tokyo, Japan,
²ISAS/JAXA, Japan

[e-2] Fluid Dynamics (2)

Session Date : 2008/6/3 10:20 – 12:00
Room : Room G
Chairpersons : Hirotaka Otsu (Shizuoka University, Japan),
               Kazuhisa Fujita (JAXA, Japan)

2008-e-06 (10:20–10:40)
Suitability of Rapid Prototyping for High-Speed Nozzles
Rathakrishnan Ethirajan¹, Kavuluri Narayana²
¹Department of Aerospace Engineering, Indian Institute of Technology Kanpur, India,
²Department of Mechanical Engineering, KL College of Engineering, Vijayawada, India

2008-e-07 (10:40–11:00)
Aerodynamic Force Measurement in HIEST
Hideyuki Tanno, Tomoyuki Komuro, Kazuo Sato, Katsuhiro Itoh, Masahiro Takahashi
Space Transportation Propulsion Research and Development Center, Japan Aerospace Exploration Agency, Japan

2008-e-08 (11:00–11:20)
Nonlinear Stability of Evaporation with Marangoni Convection
Ranga Narayanan, Wei-Dong Guo
Department of Chemical Engineering, University of Florida, USA

2008-e-09 (11:20–11:40)
Forced Interactions in Fluid Turbulence
Trevor Moulden
Aerospace, The University of Tennessee Space Institute, USA

2008-e-10 (11:40–12:00)
New Measurement Method for aerodynamic Force by a Single Video Camera
### [e-3] Vehicle Aero-thermodynamics (1)

**Session Date**: 2008/6/3 13:30 – 15:30  
**Room**: Room G  
**Chairpersons**: Yukimitsu Yamamoto (JAXA, Japan), Osamu Imamura (The University of Tokyo, Japan)


**Low Ballistic-Coefficient Lifting Entry Vehicle with Hoop-Supported Membrane Structure**  
Kojiro Suzuki  
*Department of Advanced Energy, GSFS, University of Tokyo, Japan*

#### 2008-e-12 (13:50–14:10)

**Aerodynamic Characteristics of the Reentry Vehicle System with the Lifting Toroidal Ballute**  
Hirotaka Otsu  
*Department of Mechanical Engineering, Shizuoka University, Japan*

#### 2008-e-13 (14:10–14:30)

**Study on Mini Re-Entry System Using Deployable Membrane Aeroshell**  
Masashi Koyama¹, Osamu Imamura¹, Kojiro Suzuki¹, Kazuhiro Yamada²  
¹*Department of Advanced Energy, The University of Tokyo, Japan*, ²JAXA, Japan

#### 2008-e-14 (14:30–14:50)

**Breathing Blunt Nose Concept for Drag Reduction in Supersonic Flow**  
Ashish Vashishta, Hemant Sharma, P. Lavaraju, E. Rathakrishnan  
*Department of Aerospace Engineering, Indian Institute of Technology Kanpur, India*

#### 2008-e-15 (14:50–15:10)

**Numerical Analysis on Aerodynamic Characteristics of Delta Wing with Variable Geometry Device in Supersonic and Hypersonic Flows**  
Masashi Kanamori¹, Osamu Imamura², Kojiro Suzuki²  
¹*Department of Aeronautics and Astronautics, University of Tokyo, Japan*, ²*Department of Advanced Energy, University of Tokyo*

#### 2008-e-16 (15:10–15:30)

**Water-Impact of Reentry Bodies with Inclined Angles**  
Koju Hiraki¹, Kentaro Tsugawa¹, Kazunari Ideno², Masanobu Inoue¹  
¹*Department of Mechanical and Control Engineering, Kyushu Institute of Technology, Japan*, ²*Mitsubishi Heavy Industry*

---

### [e-4] Vehicle Aero-thermodynamics (2)

**Session Date**: 2008/6/3 15:40 – 17:40  
**Room**: Room G  
**Chairpersons**: Kojiro Suzuki (The University of Tokyo, Japan)
Koju Hiraki (Kyushu Institute of Technology, Japan)

2008-e-17 (15:40-16:00)

Numerical and Experimental Characterizations of the SiFRP Ablator for the Combustion Chamber Heat Shields of Liquid Rocket Engines

Kenichi Hirai
Technology Development Department, IHI Aerospace Co., Ltd, Japan

2008-e-18 (16:00-16:20)

Catalysis of Metallic and Ceramic TPS-Materials

Georg Herdrich, Markus Fertig
Space Transportation, IRS, Germany

2008-e-19 (16:20-16:40)

CFD Construction of Aerodynamic Data Base (ADDB) for Lifting Body Flight Experiment (LIFLEX)

Yukimitsu Yamamoto¹, Taro Tsukamoto¹, Mitsuru Kurita¹, Yoshihisa Aoki¹, Makoto Kaneda², Maiko Miyazaki²
¹Computational Science Research Group, JAXA, Japan, ²Tokyo Business Service Inc., Japan

2008-e-20 (16:40-17:00)

The Advanced URANUS Navier–Stokes Code for the Simulation of Nonequilibrium Re-entry Flows

Markus Fertig, Georg Herdrich
Institut fuer Raumfahrtsysteme, Universitaet Stuttgart, Germany

2008-e-21 (17:00-17:20)

Numerical Simulation of MHD Flow Control Using Air–Core Magnet under Various Flight Conditions

Tomoyuki Yoshino, Satoshi Kondo, Takayasu Fujino, Motoo Ishikawa
Department of Engineering Mechanics and Energy, University of Tsukuba, Japan

2008-e-22 (17:20-17:40)

Acceleration of Windtunnel-based Shape Optimization Process for Hypersonic Vehicle

Osamu Imamura¹, Tatsuya Matsumoto¹, Tadaharu Watanuki², Kojiro Suzuki¹
¹Department of Advanced Energy, Graduate School of Frontier Sciences, The University of Tokyo, Japan, ²Department of Aeronautics and Astronautics, The University of Tokyo, Japan

[e-5] Plasma Flows (1)

Session Date : 2008/6/4 8:30 – 10:10
Room : Room H
Chairpersons : Masato Funatsu (Gunma University, Japan), Atsushi Matsuda (Nagoya University, Japan)

2008-e-23 (8:30-8:50)

High-speed Measurement of Vibrational and Rotational Temperatures of Nitrogen Molecules Behind Hypervelocity Shock Wave by CARS Method
Youichi Endo¹, Kazuo Maeno², Masanori Ota³, Keishi Arimura⁴, Ryo Harada⁴
¹Division of Artificial System Science, Graduate school of Engineering, Chiba University, Japan, ²Division of Artificial System Science, Chiba University, Japan, ³Division of Architecture and Urban Science, Chiba University, Japan, ⁴Department of Urban Environment Systems, Chiba University, Japan

2008-e-24 (8:50-9:10)
Flow Characteristics of Plasma Wind Tunnel Using Magnetic Nozzle
Yoshiki Takama, Kojiro Suzuki
Department of Advanced Energy, The University of Tokyo, Japan

2008-e-25 (9:10-9:30)
Computational Simulation of Arc Heater Flows for Martian Atmosphere
Takeharu Sakai, Shingo Ichikawa, Yuta Saruhashi
Department of Aerospace Engineering, Nagoya University, Japan

2008-e-26 (9:30-9:50)
Radiation Measurements of an Expansion Flow Region in a Low-pressure Air Micro-Plasmajets
Kiichi Gotoh¹, Masato Funatsu¹, Hiroyuki Shira², Kiyoshi Kubota³, Fumio Takakusagi⁴
¹Mechanical System Engineering, Graduate School of Engineering, Gunma University, Japan, ²Gunma University, Japan, ³Gunma Prefectural Maebashi Technical High School, Japan, ⁴School of Engineering, Gunma University, Japan

2008-e-27 (9:50-10:10)
State-Resolved Vibrational Relaxation and Dissociation Kinetics of N₂
Kazuhisa Fujita
Institute of Aerospace Technology, Japan Aerospace Exploration Agency, Japan

[e-6] Plasma Flows (2)

Session Date : 2008/6/4 10:20 – 12:00
Room : Room H
Chairpersons : Kazuo Maeno (Chiba University, Japan), Takeharu Sakai (Nagoya University, Japan)

2008-e-28 (10:20-10:40)
Nonequilibrium Vibrational Population Distribution in Microwave-discharged Nitrogen Plasma at a Low Pressure
Kenji Shibusawa¹, Masato Funatsu², Hiroyuki Shirai², Fumio Takakusagi²
¹Ibaraki National College of Technology, Japan, ²School of Engineering, Gunma University, Japan

2008-e-29 (10:40-11:00)
Single bubble behavior induced by Nd:YAG laser focusing near solid wall in liquid nitrogen
Yoshihiro Yamamoto¹, Sho Nakajima¹, Soju Watanabe², Takumi Sirato³, Masanori Ota⁴, Kazuo Maeno⁴
¹Graduate School of Engineering, Chiba University, Japan, ²KOMORI Corporation, Tokyo Japan, ³MAYEKAWA MFG. CO., LTD, Tokyo Japan, ⁴Faculty of Engineering, Chiba University, Japan
Comparison of Enthalpy Measurements by Probe and Laser Diagnostics in Arc-heater Flows
Satoshi Nomura¹, Alseny Diallo¹, Makoto Matsui², Hiroki Takayanagi², Georg Herdrich³, Kimiya Komurasaki¹, Yoshihiro Arakawa²
¹Department of Advanced Energy, The University of Tokyo, Japan, ²Department of Aeronautics and Astronautics, The University of Tokyo, Japan, ³Stuttgart University, Germany

Investigation of plasma behavior induced by repetitive laser pulses
Atsushi Matsuda, Yohei Sekiya, Rizal Rosli, Takeharu Sakai, Akihiro Sasoh
Department of Aerospace Engineering, Nagoya University, Japan

Operation Characteristics of Laser Driven Plasma Wind Tunnel
Makoto Matsui¹, Koji Shinmi¹, Tatsuya Ueno¹, Kimiya Komurasaki², Yoshihiro Arakawa¹
¹Department of Aeronautics and Astronautics, The University of Tokyo, Japan, ²Department of Advanced Energy, The University of Tokyo, Japan

ISACS-DOC: Monitoring and Diagnostic System for AKARI and HINODE
Mitsue Mizutani¹, Ryoji Takaki², Hideyuki Honda², Toshinori Hirose¹
¹Solutions and Services Div., Science Solutions Unit, Fujitsu Limited, Japan, ²Institute of Space and Astronautical Science(ISAS), Japan Aerospace Exploration Agency(JAXA), Japan

Adaptive Limit Checking for Spacecraft Telemetry Data Using Kernel Principal Components Analysis
Minoru Inui¹, Yoshinobu Kawahara¹, Kohei Goto¹, Takehisa Yairi², Kazuo Machida²
¹Department of Aeronautics and Astronautics, University of Tokyo, Japan, ²The University of Tokyo, Research Centre for Advanced Science and Technology, Japan

Design of Quasi-Zenith Satellite Navigation System and ground segment
Hiroyuki Miyamoto, Motohisa Kishimoto, Hidemi Hase, Mikio Sawabe, Koji Terada
QZSS Project Team, JAXA, Japan

The Data Processing System of MAXI from Onboard to Ground
Masaki Ishikawa
Session Date: 2008/6/5 16:10 - 17:30
Room: Room G
Chairpersons: Koji Tanaka (JAXA, Japan), Seisuke Fukuda (JAXA, Japan)

2008-f-05 (16:10-16:30)
The Study of a Super Low Altitude Satellite
Atsushi Noda, Shunsuke Imamura, Akira Ogawa, Masayoshi Utashima, Masanori Homma
1Systems Engineering Office, JAXA, Japan, 2Office of Space Applications, JAXA, Japan

2008-f-06 (16:30-16:50)
Remote Synchronization System for Onboard Crystal Oscillator (RESSOX) Experiments Using L1CA/L1C/L2/L5 Generator
Masato Fukui, Akira Iwasaki, Toshiaki Iwata, Takashi Matsuzawa, Yuji Hashibe
1Department of Engineering, University of Tokyo, Japan, 2National Institute of Advanced Industrial Science and Technology (AIST), Japan, 3Space Engineering Development Co. Ltd., Japan

2008-f-07 (16:50-17:10)
Influence of Control Time Delay on the Dynamics of Satellite Capture
Hiroki Nakanishi, Masaaki Kodama, Kazuya Yoshida
Department Aerospace Engineering, Tohoku University, Japan

2008-f-08 (17:10-17:30)
A Demonstration Flight of a Fuel Cell System for Super-Pressure Balloons
Masatoshi Uno, Takanobu Shimada, Keita Ogawa, Daisuke Noguchi, Yusuke Ariyama, Naoya Fukuzawa, Hitoshi Naito, Yoshitsugu Sone, Yoshitaka Saito
1Institute of Space and Astronautical Science, JAXA, Japan, 2Research and Development Department, Advanced Engineering Services, Japan, 3Faculty of Engineering, University of Hosei, Japan, 4Institute of Space Technology and Aeronautics, JAXA, Japan

Session Date: 2008/6/6 9:00 - 10:20
Room: Room G
Chairpersons: Takaji Kato (JAXA, Japan), Ranga Narayanan (University of Florida, USA)

2008-f-09 (9:00-9:20)
Overview of JEM Ground System for JEM Launch Operation
Masahiro Hisa, Kanji Kobayashi, Takeshi Ikeda
JEM Operations Project Team, Japan Aerospace Exploration Agency, Japan

2008-f-10 (9:20-9:40)
Japanese Experiment Module (JEM) Flight 2J/A Assembly Scenario
Keiko Suzuki, Toru Yoshihara, Katsuyoshi Arai, Kichiro Imagawa
### Space Station (2)

**Session Date**: 2008/6/6 10:30 – 11:50  
**Room**: Room G  
**Chairpersons**: Kotaro Kiritani (JAXA, Japan), Tomoaki Toda (JAXA, Japan)

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¹R & D Solution Unit, Chiyoda Advanced Solutions Corporation, Japan; ²JAXA, Japan |
| 2008-f-14 | Introduction of JEM Experimental Payload, Image Processing Unit (IPU) | Hidetoshi Nakagami¹, Seiji Ennyu¹, Tai Nakamura², Keiji Murakami²  
¹R & D Solution Unit, Chiyoda Advanced Solutions Corporation, Japan; ²JAXA, Japan |
| 2008-f-15 | Proximity Communication System (PROX) – Role as a lighthouse on ISS – | Kota Tanabe, Yusuke Suzuki, Motoyuki Harada |
Department of Chemical Engineering, University of Florida, USA |

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### Small Satellite (1)

**Session Date**: 2008/6/6 13:30 – 15:30  
**Room**: Room G  
**Chairpersons**: Nobutada Sako (The University of Tokyo, Japan), Alex da Silva Curiel (Surrey Satellite Technology Ltd., UK)

**Session | Title | Authors**
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Flexible Standard Bus for ISAS/JAXA Small Scientific Satellite Series
Seisuke Fukuda¹, Shujiro Sawai¹, Shin-ichiro Sakai¹, Hirobumi Saito¹, Takao Nakagawa¹, Takayuki Tohma⁵, Junko Takahashi⁵, Kenji Kitade²
¹ISAS, JAXA, Japan, ²NEC Corporation, Japan, ³NEC Aerospace Systems, Ltd, Japan

2008-f-18 (13:50-14:10)

Fast, Affordable, Science and Technology SATellite (FASTSAT) and the Small Satellite Market Development Environment
Mark Boudreaux, Edward Montgomery, Joseph Casas
NASA, MSFC, USA

2008-f-19 (14:10-14:30)

Panel configuration of the Panel ExTension SATellite (PETSAT) demonstrator spacecraft
Steve Greenland¹, Shinichi Nakasuka¹, Chisato Kobayashi²
¹Department of Aeronautics and Astronautics, Intelligent Space Systems Laboratory, The University of Tokyo, Japan, ²Astro-Technology SOHLA, Osaka, Japan

2008-f-20 (14:30-14:50)

QSAT: A Low–Cost Design for 50kg Class Piggyback Satellite
Yoshihiro Tsuruda, Toshiya Hanada, Jozef van der Ha
Department of Aeronautics and Astronautics, Kyushu University, Japan

2008-f-21 (14:50-15:10)

Small Infrared Astrometry Satellite Nano-JASMINE Bus System
Nobutada Sako, Yoichi Hatsutori, Takaya Inamori, Shinichi Nakasuka
Department of Aeronautics and Astronautics, University of Tokyo, Japan

2008-f-22 (15:10-15:30)

Flight Model Development of Tokyo Tech Nano-Satellite Cute-1.7+APD II
Hiroki Ashida, Junichi Nishida, Kuniyuki Omagari, Ken Fujiiwara, Yasumi Konda, Tomio Yamanaka, Yohei Tanaka, Masaki Maeno, Kota Fujiihashi, Shinochi Inagawa, Yoshiyuki Miura, Saburo Matunaga
Department of Mechanical and Aerospace Engineering, Tokyo Institute of Technology, Japan

2008-f-23 (15:40-16:00)

Simple and Small De-orbiting Package for Nano-Satellites Using an Inflatable Balloon
Shinichi Nakasuka¹, Kei Senda², Akihito Watanabe³, Taku Yajima⁴, Hironori Sahara¹
¹Aeronautics and Astronautics, University of Tokyo, Japan, ²Division of Mechanical Science and Engineering, Kanazawa University, Japan, ³Sakase Adtech, Co., Ltd., ⁴IHI Aerospace Engineering, Co., Ltd.

2008-f-24 (16:00-16:20)
Attitude Estimation of Small Satellite HIT-SAT by Fluctuation in Receiving Electric Field Power

Tatsuhiro Sato1, Kyohei Takenami2, Shinya Nishizato2, Ryuichi Mitsuhashi2, Shin Satori2, Satoshi Kase2

1Department of Electronics, Graduate School of Engineering, Hokkaido Institute of Technology, Japan, 2Department of Electronics, Hokkaido Institute of Technology, Japan

2008-f-25 (16:20-16:40)

Development of Fudai Sun Sensor (FSS) – Development of a Space Component by Students

Takatoshi Obata1, Hideaki Itoh1, Yukitaka Kakimi2, Hiroshi Okubo1

1Department of Aerospace Engineering, Osaka Prefecture University, Japan, 2Advanced Engineering Services

2008-f-26 (16:40-17:00)

Scalable Mission Data Handling System Applied to ISAS/JAXA Small Scientific Satellite

Seisuke Fukuda1, Yasumasa Kasaba2, Tadayuki Takahashi1, Masaharu Nomachi3, Takeshi Takashima1, Motohide Kokubun1, Masanobu Ozaki1, Keiichi Matsuzaki1, Takahiro Yamada1

1ISAS, JAXA, Japan, 2Tohoku University, Japan, 3Osaka University, Japan

2008-f-27 (17:00-17:20)

Efficient Data Handling System Architecture for Small Satellite

Takahiro Kato1, Akira Sakurai2, Jozef van der Ha1

1Department of Aeronautics and Astronautics, Kyushu University, Japan, 2Institute for Q-shu Pioneers of Space

2008-f-28 (17:20-17:40)

Development of a Hardware-in-the-Loop Simulation Environment on a MDVE for FPGA-based On-board Computing Systems

Toshinori Kuwahara1, Albert Falke1, Claas Ziemke1, Jens Eickhoff2, Hans-Peter Roesser1, Yasir Muhammad1

1Institute of Space Systems, Universitaet Stuttgart, Germany, 2EADS Astrium GmbH, Germany

[g-1] Advance Solid Rocket

Session Date : 2008/6/3 8:30 – 10:10
Room : Room E
Chairpersons : Hiroto Habu (JAXA, Japan), Shinji Ishimoto (JAXA, Japan)

2008-g-01 (8:30-8:50)

The Advanced Solid Rocket for Various Small-sat Missions

Atsushi Mayumi1, Hirohito Ohtsuka1, Kazuhiro Yas1, Yasuhiro Morita2, Hiroto Habu2

1IHI Aerospace Co., Ltd., Japan, 2JAXA, Japan

2008-g-02 (8:50-9:10)

Research on an Advanced Solid Rocket Launcher in Japan

Yasuhiro Morita1, Takayuki Imoto2, Hirohito Ohtsuka3

1Space Transportation Engineering, JAXA, Japan, 2JAXA, Japan, 3IHI Aerospace, Japan
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<td>The Avionics System Design Concept for the Advanced Solid Rocket</td>
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<td>Office of Space Flight and Operations, JAXA, Japan</td>
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<td>Kazuyuki Miho</td>
<td>Advanced Solid Rocket Team, JAXA, Japan</td>
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<td>2008-g-05 (9:50-10:10)</td>
<td>Numerical Analysis of Acoustic Environment for Designing Launch-pad of Advanced Solid Rocket</td>
<td>Seiji Tsutsumi¹, Kota Fukuda¹, Ryoji Takaki¹, Eiji Shima¹, Kozo Fujii¹, Kyoichi Uii²</td>
<td>¹JEDI Center, JAXA, Japan, ²Office of Space Flight and Operations, JAXA, Japan</td>
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[g-2] Space Tourism and ELV

- **Session Date**: 2008/6/3 10:20 – 12:00
- **Room**: Room E
- **Chairpersons**: Hiroshi Kawato (MHI, Japan), Sylvain Guedron (CNES Launcher Directorate Evry, France)

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<td>Christophe Chavagnac¹, Hughes Laporte-Weywada²</td>
<td>¹Business Division Launchers, EADS Astrium, France, ²Headquarters, EADS Astrium, France</td>
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<td>2008-g-07 (10:40-11:00)</td>
<td>The XP Spaceplane: Advances in the Design and Development of a Fully Reusable Suborbital RLV</td>
<td>Charles Lauer, David Faulkner</td>
<td>Rocketplane Global, Inc., USA</td>
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<td>Conceptual study of space environmental experiment platform using H-IIA 2nd stage</td>
<td>Gen Mano, Ko Ogawara, Osamu Kitayama, Toshimasa Ochiai</td>
<td>Mitsubishi Heavy Industries, Ltd (MHI), Japan</td>
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### [g-3] Human Space Transportation

#### Session Date
2008/6/3 13:30 – 14:30

#### Room
Room E

#### Chairpersons
Toshiki Morito (JAXA, Japan), Charles Lauer (Rocketplane Global, Inc., USA)

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<td>Edmardo Tomei¹, I-Shih Chang²</td>
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<td>Preliminary Study for Manned Spacecraft with Escape System and H-IIB Rocket</td>
<td>Takane Imada¹, Michio Ito², Shinichi Takata¹</td>
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### [g-4] ISS Service and Reentry

#### Session Date
2008/6/3 15:00 – 16:20

#### Room
Room E

#### Chairpersons
Atsushi Murakami (IHI Aerospace Co., Ltd, Japan), Takane Imada (JAXA, Japan)

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<td>Specific Features of Mission Control in Case of Several Transport Vehicles Attached to the ISS</td>
<td>Tatiana Matveeva</td>
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<td>Koji Yamanaka, Dai Asoh, Kotaro Kiritani</td>
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<td>Multidisciplinary Optimization of Space Vehicle Composition and Interplanetary Trajectory</td>
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[g-5] RLV and Design Optimization

Session Date : 2008/6/3 16:30 – 17:50
Room : Room E
Chairpersons : Takeshi Tsuchiya (The University of Tokyo, Japan), Kenji Fujii (JAXA, Japan)

[g-6] Flight Experiment and Demonstration

Session Date : 2008/6/4 8:50 – 10:10
Room : Room E
Chairpersons : Shinji Ishimoto (JAXA, Japan), Toshiki Morito (JAXA, Japan)
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<th>Session Date</th>
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</table>
| 2008-g-25 (8:50-9:10) | Development Project of Winged Experimental Rocket Led by University Consortium  | Masashi Wakita¹, Koichi Yonemoto²  
¹Kyushu Institute of Technology, Japan, ²Faculty of Engineering, Kyushu Institute of Technology, Japan |
| 2008-g-26 (9:10-9:30) | Development of Supersonic Vehicle for Demonstration of a Precooled Turbojet Engine | Shujiro Sawai¹, Kazuhiisa Fujita¹, Hiroaki Kobayashi¹, Shin'ichiro Sakai¹, Nobutaka Bando¹, Shouhei Kadooka², Nobuyuki Tsuibo¹, Koji Miyaji³, Taku Uchijama⁴, Tatsuki Hashimoto¹  
¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency (JAXA), Japan, ²Musashi Institute of Technology, Japan, ³Yokohama National University |
| 2008-g-27 (9:30-9:50) | Concept Study of Flight Experiment to Realize Next Generation Launch System | Kenji Fujii¹, Shinji Ishimoto¹, Hiroshi Kawato²  
¹Office of Space Flight and Operations, Japan Aerospace Exploration Agency, Japan, ²Mitsubishi Heavy Industries, LTD., Japan |
| 2008-g-28 (9:50-10:10) | Launchers Technological Demonstrator Status | Sylvain Guedron, Philippe Supie, Laura Appolloni, Paolo Baiocco, Yves Prel  
CNES Launcher Directorate Evry, France |

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### Facilities in JEM Pressurized Module

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| 2008-h-01 (8:30-8:50) | Application of System Identification Technique to the Space Experiment | Tai Nakamura  
Human Space Systems and Utilization Program Group, Japan Aerospace Exploration Agency, Japan |
| 2008-h-02 (8:50-9:10) | Control & Data Handling of the Fluid Science Laboratory on the ISS Columbus module | Giorgio Trinchero  
Operations, Thales Alenia Space, Italy |
| 2008-h-03 (9:10-9:30) | Preparation of Space Experiment in the FPEF Facility: Heat Transfer at the Interface in the Systems with Cylindrical Symmetry | Valentina Shevtsova¹, Hendrik Kuhlmann², Alex Nepomnyashchy³, Satoshi Matsumoto⁴, Koichi Nishino⁵, Shinichi Yoda⁶  
¹MRC, Dept. Chemical Physics, ULB, Belgium, ²Institute of Fluid Mechanics and Heat Transfer, Austria, ³Technion, Israel Institute of Technology, Israel, ⁴Japan Aerospace |
**Exploration Agency, Japan, Dept. of Mech. Engng. Yokohama National University, Japan**

2008-h-04 (9:30-9:50)

Multipurpose Utilization Rack for KIBO/ISS

Keiji Murakami, Toshikazu Kobayashi, Shuji Araki, Masato Koyama

Space Environment Utilization Center, JAXA, Japan

2008-h-05 (9:50-10:10)

Aquatic Habitat (AQH) Biological Test Status for Medaka Breeding

Satoko Uchida1, Yasushi Kono2, Mitsuyo Masukawa1, Sayaka Umemura1, Toru Sakimura1, Keiji Murakami1

1JAXA, Japan, 2Advanced Products & Space Systems Department, Mitsubishi Heavy Industries, LTD., Japan

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**[h-2] Researches in JEM Exposed Facilities**

Session Date: 2008/6/3 10:20 - 12:20

Room: Room C

Chairpersons: Ryota Sato (JAXA, Japan), Daiki Takahashi (JAXA, Japan)

2008-h-06 (10:20-10:40)

All Sky Survey for MeV Gamma Ray Astronomy using Electron Tracking Compton Camera

Toru Tanimori, Hidetoshi Kubo, Kantaro Miuchi, Shigeto Kabuki, Atsushi Takada, Yoko Okada, Hironobu Nishimura, Kaori Hattori, Kazuki Ueno

Department of Physics, Kyoto University, Japan

2008-h-07 (10:40-11:00)

Dark Matter Search by High-Energy Electron Observations

Kenji Yoshida1, Shoji Torii2, Katsuki Kasahara2, Yuki Shimizu2, Tadahisa Tamura3

1Department of Electronic Information Systems, Shibaura Institute of Technology, Japan, 2Waseda University, Japan, 3Kanagawa University, Japan

2008-h-08 (11:00-11:20)

Monitor of All-sky X-ray Image (MAXI) Mission on the International Space Station

Daiki Takahashi

Space Environment Utilization Center Human Space Systems and Utilization Program Group, Japan Aerospace Exploration Agency, Japan

2008-h-09 (11:20-11:40)

Observation Program of Ultra Heavy Nuclei in Galactic Cosmic Rays

Satoshi Kodaira

Research Institute for Science and Engineering, Waseda University, Japan

2008-h-10 (11:40-12:00)

Submillimeter Limb-emission Sounder JEM/SMILES Aboard the Space Station

Ryota Sato1, Satoshi Ochiai2

1Space Environment Utilization Center, JAXA, Japan, 2NICT
2008-h-11 (12:00-12:20)
CALET Mission for the Observation of Cosmic Rays on the International Space Station
Tadahisa Tamura
Department of Engineering, Kanagawa University, Japan

[ h-3] ISS Utilization (1)

Session Date : 2008/6/3 13:30 - 14:50
Room : Room C
Chairpersons : Olivier Minster (ESA-ESTEC, Netherlands), Shinichi Yoda (JAXA, Japan)

2008-h-12 (13:30-13:50)
The ESA Programme in Physical Science: Research Including Applications in Space and on the Ground
Science and Applications Division, Directorate of Human Spaceflight, ESA-ESTEC

2008-h-13 (13:50-14:10)
Flight Operations of the European Module “Columbus” on the ISS
Juan Canales-Romero
German Space Operations Center (GSOC), German Aerospace Center - DLR, Germany

2008-h-14 (14:10-14:30)
JEM Utilization Planning in the Increment 17 and 18
Nobuyoshi Fujimoto¹, Yoshimasa Higuchi²
¹Space Environment Utilization Center, JAXA, Japan, ²JAMSS

2008-h-15 (14:30-14:50)
Preparation Status of Payload Operations for the First Experiment in JEM
Takao Wakatsuki, Waka Nishikawa, Ryoji Kobayashi
Space Environment Utilization Center, Japan Aerospace Exploration Agency, Japan

[ h-4] ISS Utilization (2)

Session Date : 2008/6/3 15:00 - 16:00
Room : Room C
Chairpersons : Shuji Araki (JAXA, Japan), Takehiko Ishikawa (JAXA, Japan)

2008-h-16 (15:00-15:20)
JEM Utilization Plan beyond 2010
Shuji Araki, Keiji Murakami, Tatsuo Matsueda, Masato Koyama, Tetsuo Tanaka
Space Environment Utilization Center, JAXA, Japan

2008-h-17 (15:20-15:40)
Problems and Prospects of Orbital Stations Utilization
[h-5] Microgravity Experiment Systems

Session Date : 2008/6/3 16:30 – 18:10
Room : Room C
Chairpersons : Shinichi Yoda (JAXA, Japan), Takehiko Ishikawa (JAXA, Japan)

2008-h-20 (16:30–16:50)
The XP Spaceplane: A Multi-role Suborbital Reusable Launch Vehicle for Space Testing and Microgravity Science Applications
Charles Lauer, David Faulkner
Rocketplane Global, Inc., USA

2008-h-21 (16:50–17:10)
Design of Brake Control System on Sounding Rocket Experiment
Toru Suzuki
Department of System Design, Tokyo Metropolitan University, Japan

2008-h-22 (17:10–17:30)
Progress of Balloon-based Micro-gravity Experiment System
Tatsuaki Hashimoto¹, Shujiro Sawai¹, Shin’ichiro Sakai¹, Nobutaka Bando¹, Hiroaki Kobayashi², Kazuhiisa Fujita², Yuko Inatomi¹, Takehiko Ishikawa¹, Tetsuo Yoshimitsu¹, Yoshitaka Saito¹
¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²Institute of Aerospace Technology, Japan Aerospace Exploration Agency, Japan

2008-h-23 (17:30–17:50)
Microgravity Experiment System using Free-fall Capsule from a High Altitude Balloon (Result of the 2nd test flight)
Takehiko Ishikawa, Tatsuaki Hashimoto, Shujiro Sawai, Yoshitaka Saito, Yuko Inatomi, Tetsuo Yoshimitsu, Shin’ichiro Sakai, Hiroaki Kobayashi, Kazuhiisa Fujita, Nobutaka Bando
Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan

2008-h-24 (17:50–18:10)
Micro- and Nanotechnology for Space Development: Current involvements and promising possibilities
Marco Chacin, Andreas Kroier, Andreas Kruselburger, Naomi Kurahara
International Space University, France
2008-h-25 (8:50-9:10)

Microgravity Experiment on Transition to Oscillatory Thermocapillary Flow in Liquid Bridge of High Prandtl Number Fluid onboard the ISS

Satoshi Matsumoto1, Yasuhiro Kamotani2, Koichi Nishino3, Hiroshi Kawamura4, Masahiro Kawaji5, Mitsuo Ohnishi6, Nobuyuki Imaishi7, Atsuki Komiya8, Shinichi Yoda1

1Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, 2Department of Mechanical and Aerospace Engineering, Case Western Reserve University, USA, 3Department of Mechanical Engineering, Yokohama National University, Japan, 4Department of Mechanical Engineering, Tokyo University of Science, Japan, 5Department of Chemical Engineering and Applied Chemistry, University of Toronto, Canada, 6IHI AeroSpace Co., Ltd., Japan, 7Institute for Materials Chemistry and Engineering, Kyushu University, Japan, 8Institute of Fluid Science, Tohoku University, Japan

2008-h-26 (9:10-9:30)

Effect of Interfacial Heat Transfer on the Onset of Oscillatory Thermocapillary Flow in Liquid Bridge

Kai Li, Bo Xun, Wen-Rui Hu

National Microgravity Laboratory, Institute of Mechanics, Chinese Academy of Sciences, China

2008-h-27 (9:30-9:50)

Proposal of Experiments for the Clarification of Heat Transfer Mechanisms in Microgravity Nucleate Boiling

Yoshino Sakata, Shota Akagi, Sayuri Yoshioka, Yasuhisa Shinmoto, Haruhiko Ohta

Department of Aeronautics and Astronautics, Kyushu University, Japan

2008-h-28 (9:50-10:10)

Environmental Fluid Dynamics in Space Capsule

Zhaohua Yin, Tao Wang, Wenrui Hu

National Microgravity Laboratory, Institute of Mechanics, Chinese Academy of Science, China

[h-7] Fluid Science (2)

2008-h-29 (10:20-10:40)

Development of Non-combustible Rocket Engine by Using Explosive Boiling of Liquid Nitrogen

Osamu Kawanami, Tomoya Suzuki, Itsuro Honda, Yousuke Kawashima

Department of Mechanical and System Engineering, University of Hyogo, Japan

2008-h-30 (10:40-11:00)

Boiling Heat Transfer Experiments by using Transparent Heated Microtube
Shih-Che Huang¹, Osamu Kawanami¹, Kazunari Kawakami¹, Itsuro Honda¹, Yousuke Kawashima¹, Haruhiko Ohta²
¹Department of Mechanical and System Engineering, University of Hyogo, Japan, ²Department of Aeronautics and Astronautics, Kyushu University

2008-h-31 (11:00–11:20)

Boiling Heat Transfer in a Narrow Channel with Thermal Spray Coating
Hitoshi Asano, Kosuke Aoki, Masashi Inoue, Katsumi Sugimoto, Nobuyuki Takenaka
Department of Mechanical Engineering, Kobe University, Japan

2008-h-32 (11:20–11:40)

Heat Transfer Enhancement in Subcooled Boiling with Ultrasonic Field
Koichi Suzuki¹, Fumio Inagaki², Ichiro Ueno¹
¹Department of Mechanical Engineering, Tokyo University of Science, Japan, ²School of Mechanical Engineering, Tokyo University of Science

2008-h-33 (11:40–12:00)

Development of High-performance Space Thermal Management System using Nucleate Boiling of Alcohol Aqueous Solutions
Yuuki Tsukinari, Takashi Sakai, Yasunori Ito, Yasuhisa Shinmoto, Haruhiko Ohta
Department of Aeronautics and Astronautics, Kyushu University, Japan

[h-8] Combustion (1)

Session Date : 2008/6/4 13:30 – 14:50
Room : Room C
Chairpersons : Osamu Moriue (Kyushu University, Japan), Osamu Fujita (Hokkaido University, Japan)


Flame-Spread Experiments of Two-dimensional Droplet-Cloud Elements with Uneven Droplet Spacing in Microgravity
Tomoaki Fujiyama, Kazuki Yagi, Masato Mikami, Naoya Kojima
Department of Graduate School of Science and Engineering, University of Yamaguchi, Japan

2008-h-35 (13:50–14:10)

Effect of Sample Width on Flame Spread Rate over a Thin Material in Microgravity
Shuhei Takahashi¹, Yasunori Seki¹, Tadayoshi Ihara¹, Kazunori Wakai¹, Subrata Bhattacharjee²
¹Department of Mechanical and Systems Engineering, Gifu University, Japan, ²Department of Engineering, San Diego State University, USA

2008-h-36 (14:10–14:30)

Enhancement of Droplet Combustion under Uniform Electrical Fields
Kiyotaka Yamashita¹, Osamu Imamura², Jun Osaka³, Shinji Nakaya⁴, Mitsuhiro Tsue¹, Michikata Kono¹
¹Department of Aeronautics and Astronautics, University of Tokyo, Japan, ²Department of Advanced Energy, University of Tokyo, Japan, ³Department of Aeronautics and Astronautics, Nagoya University, Japan, ⁴Department of Mechanical Engineering, Osaka Prefecture University, Japan
2008-h-37 (14:30-14:50)

Effects of Droplet Spacing on Evaporation of a Cluster of 13 Fuel Droplets

Daisuke Segawa¹, Go Agata¹, Dai Hara¹, Hiroyuki Sugihara¹, Shinji Nakaya¹, Toshikazu Kadota²
¹Osaka Prefecture University, Japan, ²niad-ue, Japan

2008-h-38 (15:00-15:20)

Cool-Flame Behaviors of an n-Decane/Ethanol Binary-Fuel Droplet in Microgravity

Osamu Moriue, Dajiro Eto, Kei Shimada, Hiroya Sahara, Eiichi Murase
Department of Mechanical Engineering Science, Faculty of Engineering, Kyushu University, Japan


Development of Apparatus for Microgravity Experiments on Evaporation and Combustion of Palm Methyl Ester Droplet in High-Pressure environments

Masato Suzuki¹, Hiroshi Nomura¹, Nozomu Hashimoto²
¹Department of Mechanical Engineering, College of Industrial Technology, Nihon University, Japan, ²Central Research Institute of Electric Power Industry, Japan

2008-h-40 (15:40-16:00)

Numerical Analysis on Premixed Flame Propagation in Acoustic Field

Takuma Yano, Takuo Kuwahara, Mitsuaki Tanabe
Department of Aerospace Engineering, College of Science and Technology, Nihon University, Japan

2008-h-41 (16:00-16:20)

Ignition Phenomena of Electric Wire in Microgravity and Expectations to the Future Space Experiment

Osamu Fujita, Kei Agata, Yutaka Ichimura, Hiroyuki Ito, Yuji Nakamura
Division of Mechanical and Space Engineering, Hokkaido University, Japan

2008-h-42 (16:30-16:50)

JAXA-GCF Project — The Past, Present and Future

Satoshi Sano¹, Masaru Sato¹, Hiroaki Tanaka², Koji Inaka³, Shinichi Shinozaki⁴, Sachiko Takahashi², Mari Yamanaka², Erika Hirota⁵, Yan Bin⁶, Tomoyuki Kobayashi¹, Tetsuo Tanaka¹
### Life Science/Human Exploration

**Session Date:** 2008/6/5 8:30 – 9:50  
**Room:** Room H  
**Chairpersons:** Kyoichiro Toki (Tokyo University of Agriculture and Technology, Japan), Toshimasa Ochiai (Mitsubishi Heavy Industries, Ltd., Japan)

#### 2008-h-47  (8:30-8:50)

**Instrument for Measuring the Body Mass of Astronaut**

Yusaku Fujii¹, Kazuhiko Shimada², Masayuki Yokota¹, Seiji Hashimoto¹  
¹Department of Electronic Engineering, Gunma University, Japan, ²Medical Operations, JAXA

#### 2008-h-48  (8:50-9:10)

**Development of Recoverable Satellite as Compact Spacelab for Advanced Lifescience and Medicine**

Toshimasa Ochiai, Hirochika Murase, Atsuko Homma, Hiroshi Kawato, Koji Shimura, Hiroaki Matsumoto  
Space Systems Designing Section, Mitsubishi Heavy Industries, Ltd., Japan
2008-h-49 (9:10–9:30)
Study on Difficulty Peculiar to the Coolant for Manned Space Systems
Ichirou Aoki, Hiroyasu Mizuno, Yasuyoshi Hayakawa, Koki Oikawa, Kichiro Imagawa
Human Space Systems and Utilization Mission Directorate, Japan Aerospace Exploration Agency, Japan

2008-h-50 (9:30–9:50)
A Simulation of Space Plantation as a Semi-Closed Ecological System
Kyoichiro Toki, Tadashi Yokoyama, Ayumi Sato, Takehiro Sasamoto
Mechanical Systems Engineering, Tokyo University of Agriculture and Technology, Japan

[0-1] Inter-satellite and Laser Communications

Session Date: 2008/6/6 8:50 – 10:10
Room: Room F
Chairpersons: Morio Toyoshima (NICT, Japan), TBD

2008-j-01 (8:50–9:10)
Breadboard model of Laser Communication System for Hokkaido Satellite “TAIKI”
Yoshihide Aoyanagi1, Toshiki Kato1, Shin Satori1, Toshihiko Yasunaka1, Tsutomu Uematsu2
1Department of Applied Electronics, Hokkaido Institute of Technology, Japan, 2Uematsu Electric Co., Ltd, Japan

2008-j-02 (9:10–9:30)
Comparison of Free-space and Fiber-based Transmission Systems in Quantum Cryptography
Morio Toyoshima1, Yoshihisa Takayama1, Hiroo Kunimori1, Masahiro Takeoka2, Mikio Fujiwara1, Masahide Sasaki2
1New Generation Wireless Communications Research Center, National Institute of Information and Communications Technology (NICT), Japan, 2New Generation Network Research Center, National Institute of Information and Communications Technology (NICT), Japan

2008-j-03 (9:30–9:50)
Inter-Satellite Link System Demonstration for Formation Flight SCOPE Mission
Tomoaki Toda1, Sachiko Houzawa2, Yoshifumi Saito1, Yu-Ichi Taoda1, Hajime Ishimaru3, Hideho Tomita3
1Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, 2Office of Space Application,Japan Aerospace Exploration Agency, 3HIM Technology

2008-j-04 (9:50–10:10)
Inter-orbit Communication System in Japanese Experiment Module – Initial Operation Scenario –
Tatsuya Ijiri, Daisaku Ozawa, Katsuyoshi Arai, Kichiro Imagawa
JEM Development Project Team, JAXA, Japan
### [J-2] Mobile Satellite and Advanced Systems

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<th>Institution</th>
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<td>2008-j-06</td>
<td>10:40-11:00</td>
<td>FROM THE FIRST GALILEO NAVIGATION SATELLITE TO SMALL COMSATS</td>
<td>Alex da Silva Curiel, Philip Davies, Martin Unwin, Doug Liddle, Martin Sweeting</td>
<td>Surrey Satellite Technology Ltd., UK</td>
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<td>2008-j-07</td>
<td>11:00-11:20</td>
<td>Key Features of Quasi Zenith Satellite Bus System</td>
<td>Erika Myojin, Akihiro Matsumoto, Noriyasu Inaba, Koji Terada</td>
<td>Department of Space Applications, QZSS Project Team, Japan Aerospace Exploration Agency, Japan</td>
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<td>2008-j-08</td>
<td>11:20-11:40</td>
<td>Mobile Satellite Systems - A Roadmap to Advanced Services and Capabilities</td>
<td>Stephen Sichi</td>
<td>Space and Intelligence Systems, The Boeing Company, USA</td>
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<tr>
<td>2008-j-09</td>
<td>11:40-12:00</td>
<td>Global Monitoring System of Migratory Bird Using RFID and Data Collection Satellite</td>
<td>Toshihiko Kitano, Yasumisu Tomioka, Isao Nakajima</td>
<td>Tokai University School of Medicine, Japan</td>
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### [J-3] ETS-VIII and Mobile Satellite Systems

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<td>2008-j-10</td>
<td>13:30-13:50</td>
<td>Development and In-orbit Performance of Large Deployable Antenna Reflector Onboard Engineering Satellite VIII</td>
<td>Akira Meguro¹, Kyoji Shintate², Motofumi Usui³, Akio Tsujihata⁴</td>
<td>¹Space Application Program Systems Engineering Office, Japan Aerospace Exploration Agency, Japan, ²QZSS project, Japan Aerospace Exploration Agency, Japan, ³Space Application Center, Japan Aerospace Exploration Agency, Japan, ⁴ETS-VIII project, Japan Aerospace Exploration Agency, Japan</td>
</tr>
<tr>
<td>2008-j-11</td>
<td>13:50-14:10</td>
<td>Global Monitoring System of Migratory Bird Using RFID and Data Collection Satellite</td>
<td>Toshihiko Kitano, Yasumisu Tomioka, Isao Nakajima</td>
<td>Tokai University School of Medicine, Japan</td>
</tr>
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</table>
In-orbit Electrical Performance of Large Deployable Reflector and Communications Experiments on ETS-VIII
Hiroki Kohata¹, Motofumi Usui⁴, Kei Sunagawa¹, Yasuhiro Yamasa²
¹Japan Aerospace Exploration Agency, Japan, ²NEC Toshiba Space System

2008-j-12 (14:10-14:30)
A study on the Quadrant Detector to Pursuit a Noise-level Beacon on Ku-band from an Ambulance
Isao Nakajima, Hiroshi Juzoji, Toshihiko Kitano, Yasumitsu Tomioka
Nakajima Lab. School of Medicine, Tokai University, Japan

2008-j-13 (14:30-14:50)
A Study on Network Topology Based on Metaheuristic Methods
Isao Nakajima, Hiroshi Juzoji, Toshihiko Kitano, Yasumitsu Tomioka
Nakajima Lab. Tokai University School of Medicine, Japan

2008-j-14 (14:50-15:10)
Limitation on Improvement of Satellite Visibility by Space Diversity of Two Geostationary Satellites in Urban Areas of Japan
Toshihiko Kitano, Hiroshi Juzoji, Isao Nakajima
Tokai University School of Medicine, Japan

[j-4] WINDS and Broadcasting

Session Date : 2008/6/6 15:20 – 17:00
Room : Room F
Chairpersons : Isao Nakajima (Tokai University, Japan), TBD

S-Band Satellite Digital Multimedia Broadcasting for Marine Users as a Ubiquitous Media
Yoshitake Yamaguchi¹, Sei-Ichi Saitoh², Fumihiro Takahashi²
¹Department of Engineering, Mobile Broadcasting Corporation, Japan, ²SpaceFish LLP, Japan

2008-j-16 (15:40-16:00)
Development of The Wideband InterNetworking engineering test and Demonstration Satellite (WINDS)
Tetsuo Sato¹, Yasuo Nakamura¹, Tsunehiko Araki¹, Tsuyoshi Maeda¹, Isao Baba², Tsuyoshi Toriumi²
¹WINDS project team, JAXA, Japan, ²NEC, Japan

2008-j-17 (16:00-16:20)
Study of WiMAX Site Diversity for WINDS Experiment in Indonesia
Rizki Sawitri, Baso Maruddani, U. Sastrokusumo
Telecommunication Engineering, Bandung Institute of Tech (ITB), Indonesia

2008-j-18 (16:20-16:40)
Evaluation of Corporation Broadband Internet Performance using WINDS Satellite in
![Image](image-url)

**Indonesia**

*Gusti Ayu Meliati, J. Suryana, U. Sastrokusumo*

*Telecommunication Engineering, Institute Technology of Bandung (ITB), Indonesia, Indonesia*

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**Study of Winds Parameter Evaluation for Broadband Vsat in Indonesia**

*Prita Kandella, J. Suryana, U. Sastrokusumo*

*Telecommunication Engineering, Bandung Institute of Technology (ITB), Indonesia, Indonesia*

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[k-1]  **Small Solar System Bodies Exploration (1)**

**Session Date**: 2008/6/3 14:00 – 16:00

**Room**: Room A

**Chairpersons**: Hajime Yano (JAXA, Japan), Marco Chacin (Tohoku University, Japan)

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**2008-k-01 (14:00–14:20)**

**Development of Impact Probability Estimation System for Near–Earth Objects**

*Tomohiro Yamaguchi¹, Makoto Yoshikawa²*

¹The Graduate University for Advanced Studies, Japan, ²JAXA, Japan

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**2008-k-02 (14:20–14:40)**

**Foresight: A Small Satellite Radio Tagging Mission Design to Near Earth Object Apophis**

*A.C. Charania¹, Mark Schaffer¹, John Olds¹, Jesse Koenig²*

¹SpaceWorks Engineering, Inc. (SEI), USA, ²SpaceDev, Inc.

---

**2008-k-03 (14:40–15:00)**

**A study on Constitution of Asteroids with Brazil–Nut Effect**

*Yuichi Miwa¹, Hajime Yano², Mutsuko Morimoto², Osamu Mori², Jun’ichiro Kawaguchi²*

¹Department of Aeronautics and Astronautics, University of Tokyo, Japan, ²ISAS/JAXA, Japan

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**2008-k-04 (15:00–15:20)**

**On Robotic Motion for Planetary Exploration under Microgravity Environments**

*Marco Chacin, Kazuya Yoshida*

Space Robotics Laboratory – Department of Aerospace Engineering, Tohoku University, Japan

---

**2008-k-05 (15:20–15:40)**

**TANPOPO: Astrobiology Exposure and Micrometeoroid Capture Experiments**

*Akihiko Yamagishi¹, Shin–ichi Yokobori¹, Hajime Yano², Kyoko Okudaira², Kensei Kobayashi³, Makoto Tabata⁴, Hideyuki Kawai⁴, Masanichi Yamashita⁵, Hiroshi Naraoka⁵, Hajime Mita⁵*

¹Department of Life Sciences, Tokyo University of Pharmacy and Life Sciences, Japan, ²ISAS/JAXA, Japan, ³Department of Chemistry and Biotechnology, Yokohama National University, Japan, ⁴Graduate School of Science and Technology, Chiba University, Japan, ⁵Department of Earth Sciences, Okayama University, Japan, ⁶Department Environmenta Life Science, Fukuoka Institute of Technology, Japan
The post-Hayabusa Asteroid Sample Return Mission of Japan

Makoto Yoshikawa, Hajime Yano, Masanao Abe, Junichiro Kawaguchi
Japan Aerospace Exploration Agency, Japan

[k-2] Small Solar System Bodies Exploration (2)

Session Date: 2008/6/3 16:10 – 18:30
Room: Room A
Chairpersons: Makoto Yoshikawa (JAXA, Japan), A. C. Charania (Space Works Engineering, Inc. (SEI), USA)

Sampling System of Asteroid and Comet Nucleus Samples
Hajime Yano1, Takaaki Noguchi2, Matsunaga Saburo3, Hironori Fujii4, Makabe Teruo5, Yayoi Miura5, Sunao Hasegawa1, Higuchi Ken7, Sampling Sub-Group the Minor Body Exploration Working Group7
1ISAS and JSPEC, Japan Aerospace Exploration Agency, Japan, 2Ibaraki University, Japan, 3Tokyo Institute of Technology, Japan, 4Tokyo Metropolitan University, Japan, 5University of Tokyo, Japan, 6Earthquake Research Institute, University of Tokyo, 7ISAS/JAXA, Japan

The Effective Projectile Shape for Asteroid Impact Sampling
Teruo Makabe1, Hajime Yano2
1Department of Geosystem engineering, University of Tokyo, Japan, 2Department of Planetary Science, The Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency

Experiment on Penetration Performance of a Sampler for Asteroid Exploration
Motoki Tanemura, Hironori Fujii, Takeo Watanabe
Department of aerospace engineering, Tokyo Metropolitan University, Japan

Projection Experiment and System Consideration for Asteroid Tethered Sampling
Ken Fujiiwara1, Saburo Matunaga1, Junichi Nishida1, Tomio Yamanaka1, Takuro Ikeda1, Hajime Yano2, Osamu Morii2, Hiroaki Tanaka3
1Department of Mechanical and Aerospace Engineering, Tokyo Institute of Technology, Japan, 2JAXA/ISAS, Japan, 3National Defense Academy of Japan, Japan

Result of Micro-Gravity Experiment using Parabolic Flight for Tethered Recovery in Tethered Sampling Method
Saburo Matunaga
Department of Mechanical and Aerospace Engineering, Tokyo Institute of Technology, Japan

Micro Gravity Experiment and 3 Dimensional Dynamic Analysis of Tethered Sampler
Takeo Watanabe, Hironori Fujii, Hirohsa Kojima, Hiroshi Takikawa, Masakazu Yukizane, Kazuki Ito
Department of Aerospace Engineering, Tokyo Metropolitan University, Japan

2008-k-13 (18:10–18:30)

Dyson Asteroid Shells: Hollow Worlds from the Outside-In
A.C. Charania
SpaceWorks Engineering, Inc. (SEI), USA

[k-3] Planetary Environment Exploration

Session Date : 2008/6/4 8:30 – 10:30
Room : Room B
Chairpersons : Masato Nakamura (ISAS/JAXA, Japan), Hiroshi Yamakawa (Kyoto University, Japan)

2008-k-14 (8:30-8:50)
The Planet-C Venus Climate Orbiter Mission of Japan
Masato Nakamura1, Nobuaki Ishii1, Makoto Suzuki1, Takeshi Imamura1, Takumi Abe1, Atsushi Yamazaki1, Munetaka Ueno2, Takehiko Satoh1
1ISAS/JAXA, Japan, 2The University of Tokyo, Japan

2008-k-15 (8:50-9:10)
Research Activities on Venus Atmosphere Balloon Observation Mission
Tetsuya Yamada1, Kazuyuki Hirose2, Tomoaki Toda2, Hiroshi Takeuchi2, Naoki Izutsu2, Kazuo Fujita2, Nobuaki Ishii2
1Div. for Space Systems and Astronautics, Institute of Space and Astronautical Science (ISAS) / JAXA, Japan, 2ISAS/JAXA

2008-k-16 (9:10-9:30)
Atmospheric Survey Micro Instrument Probe for Titan Exploration Missions
Marco Chacin, Andreas Kruselburger, Naomi Kurahara
International Space University, France

2008-k-17 (9:30-9:50)
ESD Plasma Propagation Measurements on Large-Scale Solar Panels In Simulated LEO Environment
Hideto Mashidori1, Minoru Iwasa1, Atsushi Wada2, Kumi Nitta1, Kazuhiro Toyoda3
1Institute of Aerospace Technology (IAT), Japan Aerospace Exploration Agency (JAXA), Japan, 2Office of Space Flight and Operations, Japan Aerospace Exploration Agency (JAXA), Japan, 3Department of Electrical Engineering, Kyushu Institute of Technology, Japan

2008-k-18 (9:50-10:10)
SCOPE : Future Formation-Flying Magnetospheric Satellite Mission
Yoshifumi Saito1, Kiyoshi Maezawa1, Masaki Fujimoto1, Iku Shinohara1, Hirotsugu Kojima2, Yuichi Tsuda3, Ken Higuchi1, Tomoaki Toda3, Takeshi Takashima1, Ayako Matsuoka1
1Space Plasma Physics, Institute of Space and Astronautical Science, Japan, 2Research Institute for Sustainable Humanosphere, Kyoto University, Japan, 3Institute of Space and Astronautical Science, Japan

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<td>Manabu Kato (JAXA/ISAS, Japan), Tatsuaki Okada (JAXA, Japan)</td>
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### 2008-k-20 (10:40-11:00)

**KAGUYA(SELENE) Mission Overview**

Yoshisada Takizawa, Susumu Sasaki, Manabu Kato

**SELENE, JAXA, Japan**

### 2008-k-21 (11:00-11:20)

**KAGUYA(SELENE) Science Mission**

Susumu Sasaki, Manabu Kato, Yoshisada Takizawa

**Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan**

### 2008-k-23 (11:20-11:40)

**Development of Mission Instruments Onboard Kaguya (SELENE)**

Hironori Maejima1, Yuichi Iijima1, Hisashi Otake1, Satoru Nakazawa1, Naoki Tateno2, Susumu Sasaki1, Yoshisada Takizawa1

1SELENE Project, JAXA, Japan, 2Japan Space Forum

### 2008-k-24 (11:40-12:00)

**Electromagnetic Compatibility of SELENE (KAGUYA)**

Satoru Nakazawa1, Yu-ichi Iijima1, Hideo Tsunakawa2, Masaki Matsushima2, Takayuki Ono3, Atsushi Kumamoto4, Yoshiya Kasahara4, Shingo Ikegami5, Tomoaki Ishikawa6

1Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, 2Tokyo Institute of Technology, Japan, 3Tohoku University, Japan, 4Kanazawa University, Japan, 5NEC Corporation, Japan, 6I-NET Corporation, Japan

### 2008-k-25 (12:00-12:20)

**KAGUYA Data Delivery and EPO Plan**

Shinichi Sobue1, Manabu Kato1, Hirokazu Hoshino1, Hayato Okumura2, Yoshisada Hoshino5

1SELENE, JAXA, Japan, 2ISAS/JAXA

## [k-5] Kaguya Special Session (2): System and Operation–1

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<td>Takahiro Iwata (JAXA, Japan), Satoru Nakazawa (JAXA, Japan)</td>
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### 2008-k-26 (13:30-14:30)

**KAGUYA Data Delivery and EPO Plan**

Shinichi Sobue1, Manabu Kato1, Hirokazu Hoshino1, Hayato Okumura2, Yoshisada Hoshino5

1SELENE, JAXA, Japan, 2ISAS/JAXA
2008-k-26 (13:30-13:50)

The Operation Result of SELENE
Hisahiro Konishi, Nobuhiro Nomura

Institute of Space and Astronautical Science, JAXA, Japan

2008-k-27 (13:50-14:10)

Determination, Prediction and 3-D Graphical Display of "KAGUYA" Orbit
Mina Ogawa, Masao Hirota, Takafumi Ohnishi, Chiaki Aoshima, Kenji Shinozaki, Shoh Taniguchi, Nobuhiro Miyahara, Shigehiro Mori, Takahiro Inoue, Michiaki Horii, Takaji Kato

1Consolidated Space Tracking and Data Acquisition Department, Japan Aerospace Exploration Agency, Japan, 2FUJITSU Limited

2008-k-28 (14:10-14:30)

Orbital Maneuver Plan and Operation Results of KAGUYA during Lunar Transfer Orbit and Lunar Orbit Injection
Takaaki Katoh, Hiroshi Terada, Kimie Tanaka, Kohzoh Ohtani, Erika Kamikawa, Masatoshi Matsuoka, Shuichi Matsumoto, Yosihisa Takizawa, Mina Ogawa, Yasuhiro Kawakatsu, Kazuhiro Kasuga

1NEC Aerospace Systems, Ltd, Japan, 2Japan Aerospace Exploration Agency, Japan, 3NEC Corporation, Japan

2008-k-29 (14:30-14:50)

KAGUYA (SELENE) Trajectory Plans for Lunar Orbit Injection Contingency
Yasuhiro Kawakatsu

Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan

2008-k-30 (14:50-15:10)

Attitude and Orbit Control System of SELenological & ENgineering Explorer, 'KAGUYA'
Yoshihiro Iwamoto, Kazuhisa Tanaka, Yosuke Iwayama, Keita Ogo, Shuichi Matsumoto, Setoru Tayama, Yosiyuki Ishijima, Shingo Ikegami

1Control Systems Group, NEC TOSHIBA Space Systems, Ltd, Japan, 2Japan Aerospace Exploration Agency, 3NEC Corporation

2008-k-31 (15:10-15:30)

Data Handling Subsystem in "KAGUYA"
Akihiko Hamada, Kazuyuki Yamada, Koichi Takahashi, Takayuki Imamura, Hisahiro Konishi, Hisashi Otake

1Space Subsystem & Equipment Group, Space Engineering Division, NEC TOSHIBA Space Systems, Ltd, Japan, 2NEC Aerospace Systems, Ltd, Japan, 3Japan Aerospace Exploration Agency, Japan

2008-k-32 (15:40-16:00)


Session Date : 2008/6/4 15:40 – 17:40
Room : Room B
Chairpersons : Susumu Sasaki (JAXA, Japan), Yasuhiro Kawakatsu (JAXA, Japan)
A Design and Operation Outline of KAGUYA Communication System

Harunobu Kobayashi¹, Hironori Maejima², Katsuhide Yonekura², Toru Hamaki³
¹1st engineering Department, Space Systems and Public Information System Division, NEC Aerospace Systems, Ltd., Japan, ²JAXA, Japan, ³NEC TOSHIBA Space Systems, Japan

2008-k-33 (16:00–16:20)

Development of SELENE High-Gain Antenna

Toru Hamaki¹, Yashuhiko Okada¹, Hiroyuki Kobayashi², Misa Konno², Masafumi Kimura², Koji Kuno², Hiroshi Amou², Ryoji Nishi², Norikazu Nakajima³, Hironori Maejima⁴, Katsuhide Yonekura⁴
¹NEC TOSHIBA Space Systems, Japan, ²NEC Aerospace Systems, Japan, ³Tokyo Electronic Systems, Japan, ⁴JAXA, Japan

2008-k-34 (16:20–16:40)

SELENE Solar Array Paddle Subsystem Design

Tomonori Ishii¹, Hiroyuki Minamino², Akira Sato², Shingo Ikekami³, Yukishige Nozaki⁴, Hiroyuki Ichino¹, Tomoko Matsuo¹, Hideaki Koakutsu¹, Toshiaki Nagata¹
¹Mitsubishi Electric Corp, Japan, ²JAXA, Japan, ³NEC Corp., Japan, ⁴NEC TOSHIBA Space Systems, Ltd, Japan

2008-k-35 (16:40–17:00)

Thermal Control of Lunar Exploring Spacecraft SELENE (KAGUYA)

Yukio Matsufuji¹, Hiroyuki Minamino², Satoru Nakazawa², Yasuyuki Nakamura³
¹Thermal Mechanical Systems Group, NEC/TOSHIBA Space Systems, Ltd, Japan, ²SELENE Project team, Institute of Space and Astronautical Science, JAXA, Japan, ³Thermal Mechanical Group, NEC TOSHIBA Space Systems, Ltd, Japan

2008-k-36 (17:00–17:20)

On-orbit Operation Results of “KAGUYA” Lunar Explorer Propulsion Subsystem

Mamoru Takahashi¹, Masayuki Tamura¹, Mizuho Ikeda², Kouseki Akai³, Takeshi Sasaki⁴, Kenichi Kajiwara⁵, Ideo Masuda⁵, Daisuke Goto⁵
¹Liquid Propulsion Office, Space Systems Department, IHI Aerospace, Japan, ²Space Systems Division, NEC Corporation, Japan, ³Space Systems Division, NEC TOSHIBA Space Systems, Japan, ⁴SELENE Project Team, JAXA, Japan, ⁵Spacecraft Propulsion Engineering Group, JAXA, Japan

2008-k-37 (17:20–17:40)

Summary of the Separation System for R/V-Star Satellites of KAGUYA

Kazuhiro Abe¹, Kukuma Okazaki¹, Takayuki Sato², Wataru Masui³, Yosuke Nakamura⁴, Hiroyuki Minamino⁴, Takeshi Sasaki⁴, Akira Satoh⁴, Takahiro Iwata⁴
¹NIPPI Corporation, Japan, ²NEC Toshiba Space Systems, Japan, ³NEC, Japan, ⁴JAXA, Japan

[k-7] Kaguya Special Session (4): Initial Scientific Results-1

Session Date : 2008/6/5 8:30 – 9:50
Room : Room B
Chairpersons : Takayuki Ono (Tohoku University, Japan), Makiko Ohtake (JAXA, Japan)

2008-k-38 (8:30–8:50)
Science Results and Goals of SELENE (Kaguya) Mission

Manabu Kato¹, Shin-i-chi Sobue², Susumu Sasaki¹, Yoshisada Takizawa²
¹Division of planetary science, JAXA/ISAS, Japan. ²JAXA/SELENE, Japan

2008-k-39 (8:50-9:10)

Origin of the Asymmetry in the Lunar Crustal Composition

Tomoko Arai
Antarctic Meteorite Research Center, National Institute of Polar Research, Japan

2008-k-40 (9:10-9:30)

X-ray Fluorescence Spectrometry of Lunar Surface by XRS Onboard SELENE (Kaguya)

Tatsuaki Okada¹, Kei Shirai¹, Yukio Yamamoto¹, Takehiko Arai¹, Kazunori Ogawa², Hiroaki Shiraishi¹, Masatsuna Iwasaki³, Taichi Kawamura³, Morito Hisataka³, Manuel Grande⁴, Manabu Kato¹
¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan. ²Department of Earth and Planetary Sciences, Tokyo Institute of Technology, Japan. ³Department of Earth and Planetary Science, University of Tokyo, Japan. ⁴Institute of Mathematical and Physical Sciences, University of Wales, Aberystwyth, UK

2008-k-41 (9:30-9:50)

High Performance Germanium Gamma-Ray Spectrometer On Lunar Polar Orbiter SELENE (KAGUYA)

Nobuyuki Hasebe¹, Eido Shibamura¹, Takashi Miyachi¹, Takeshi Takashima³, Kobayashi Masanori¹, Osamu Okudaira¹, Naoyuki Yamashita¹, Shingo Kobayashi¹, Makoto Hareyama¹, Kunitomo Sakurai¹
¹Research Institute for Science and Engineering, Waseda University, Japan. ²College of Health Science, Saitama Prefectural University, Japan. ³Inst. of Space and Astronautical Science, JAXA, Japan. ⁴Nippon Medical School, Japan

2008-k-43 (10:20-10:40)

Preliminary Results of the SELENE Multiband Imager

Makiko Ohtake¹, Junichi Haruyama¹, Tsuneo Matsunaga², Yasuhiro Yokota¹, Tomokatsu Morota¹, Chikatoshi Honda¹, Yoshihiko Ogawa², Masaya Torii¹
¹Planetary Science, Japan Aerospace Exploration Agency, Japan. ²The National Institute for Environmental Studies

2008-k-44 (10:40-11:00)

Preliminary Results of the SELENE Terrain Camera

Junichi Haruyama¹, Makiko Ohtake¹, Tsuneo Matsunaga², Tomokatsu Morota¹, Chikatoshi Honda¹, Yasuhiro Yokota¹, Masanao Abe¹, Masaya Torii¹, Yasuhi Yamaguchi², Atsushi Yamaji³
¹ISAS, JAXA, Japan. ²NIES, Japan. ³Nagoya University, Japan. ⁴Kyoto University, Japan

2008-k-45 (11:00-11:20)

Development of Operation Plan and Log Management System for LISM
### 2008-k-46 (11:20-11:40)

**Generalized Formulation of Image Correction Applied to SELENE/LISM/MI**

Taichi Takayama\(^1\), Akira Iwasaki\(^1\), Yasuhiro Yokota\(^2\), Junichi Haruyama\(^2\), Makiko Otake\(^2\), Tsuneo Matsumaga\(^3\)

\(^1\)Department of Aeronautics and Astronautics, The University of Tokyo, Japan, \(^2\)Japan Aerospace Exploration Agency, \(^3\)National Institute for Environmental Studies

### 2008-k-47 (11:40-12:00)

**Initial Results from the Lunar Radar Sounder Observation on-board the Kaguya (Selene) Spacecraft**

Takayuki Ono\(^1\), Atsushi Kumamoto\(^1\), Yamaguchi Yasushi\(^2\), Atsushi Yamaji\(^3\), Takao Kobayashi\(^4\), Yoshiya Kasahara\(^5\), Hiroshi Oya\(^6\)

\(^1\)Graduate School Science, Tohoku University, Japan, \(^2\)Graduate School of Science, Nagoya University, \(^3\)Graduate School of Science, Kyoto University, \(^4\)Korea Institute of Geoscience & Mineral Resources, \(^5\)Information Media Center of Kanazawa University, \(^6\)Fukui University of Technology

### 2008-k-48 (12:00-12:20)

**Preliminary Results of the Lunar Topography by KAGUYA-LALT Mission**

Hiroshi Araki\(^1\), Seiichi Tazawa\(^1\), Hirotomo Noda\(^1\), Emiko Migita\(^2\), Izumi Kamiya\(^3\), Nobuyuki Kawano\(^1\), Sho Sasaki\(^1\)

\(^1\)RISE project office, National Astronomical Observatory, Japan, \(^2\)Department of Astronomical Science, The Graduate University for Advanced Studies, Japan, \(^3\)Geographical Survey Institute, Japan

### [k-9] Kaguya Special Session (6): Initial Scientific Results-3

**Session Date**  : 2008/6/5 13:00 – 15:00  
**Room**  : Room B  
**Chairpersons**  : Yoshifumi Saito (JAXA, Japan), Hiroshi Araki (National Astronomical Observatory, Japan)

#### 2008-k-49 (13:00-13:20)

**Low Energy Charged Particle Measurement by MAP-PACE Onboard KAGUYA**

Yoshifumi Saito, Shoichiro Yokota, Kazuhi Asamura, Toshifumi Mukai  

*Space Plasma Physics, Institute of Space and Astronautical Science, Japan*


**Observation of the Near-Earth Plasmas by Telescope of Extreme Ultraviolet (TEX) Onboard SELENE: Science from the Moon**

Ichiro Yoshikawa\(^1\), Atsushi Yamazaki\(^2\), Kazuo Yoshioka\(^1\), Go Murakami\(^1\), Fukuhiro Ezawa\(^1\), Takenori Toyota\(^1\), Wataru Miyake\(^3\), Makoto Taguchi\(^3\), Masayuki Kikuchi\(^4\), Masato Nakamura\(^2\)

\(^1\)Department of Earth and Planetary Science, University of Tokyo, Japan, \(^2\)ISAS, JAXA, Japan, \(^3\)Tokai University, Japan, \(^4\)National Institute of Polar Research, Japan

#### 2008-k-51 (13:40-14:00)

**Properties of SELENE Small Satellites for Selenodetic Measurements; Rstar (Okina) and Vstar (Ouna)**
Exploration of Lunar Gravity by VLBI Observations of SELENE (KAGUYA)

Hideo Hanada¹, Takahiro Iwata², Noriyuki Namiki³, Nobuyuki Kawano¹, Sho Sasaki¹, Koji Matsumoto¹, Hirotomo Noda¹, Seiitsu Tsuruta¹, Kazuyoshi Asari¹, Toshiaki Ishikawa¹, Fuyuhiko Kikuchi¹

¹RISE Project Office, National Astronomical Observatory of Japan, Japan, ²Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ³Department of Science, Kyushu University, Japan

Differential Phase Delay Estimation in VRAD Mission of SELENE (KAGUYA)

Fuyuhiko Kikuchi¹, Qinghui Liu¹, Koji Matsumoto¹, Yoshiaki Ishihara¹, Jingsong Ping², Hideo Hanada¹, Takahiro Iwata³, Noriyuki Namiki³, Nobuyuki Kawano¹, Sho Sasaki¹

¹RISE Project Office, National Astronomical Observatory of Japan, Japan, ²Shanghai Astronomical Observatory, China, ³JAXA, Japan, ⁴University of Kyushu, Japan

Studying the Lunar Ionosphere with the SELENE Radio Science Experiment

Takeshi Imamura¹, Koh-Ichiro Oyama², Takahiro Iwata³, Yusuke Kono⁴, Koji Matsumoto⁴, Qinghui Liu⁴, Hirotomo Noda⁴, Yoshifumi Futaana⁵, Alexander Nabatov⁶

¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²Japan Aerospace Exploration Agency, Japan, ³Japan Aerospace Exploration Agency, Japan, ⁴National Astronomical Observatory of Japan, ⁵The Swedish Institute of Space Physics, ⁶Ukrainian Academy of Science

Japanese Moon Landing Mission SELENE-2

Tatsuaki Hashimoto¹, Takeshi Hoshino², Satoshi Tanaka¹, Kohtaro Matsumoto², Jun’ichiro Kawaguchi²

¹Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ²JAXA Space Exploration Center, Japan Aerospace Exploration Agency, Japan

Evaluation of Low-Pressure Mobility System for Lunar Vehicle

Sachiko Wakabayashi¹, Yoshihide Kohno², Shin-Ichiro Nishida¹

¹Lunar and Planetary Exploration Group, Japan Aerospace Exploration Agency, Japan, ²Bridgestone Corporation, Japan
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<td>Shin-Ichiro Nishida, Sachiko Wakabayashi</td>
<td>A Study on Mobility Platform of Lunar Work Rover</td>
<td>Research and Development Department, JAXA Space Exploration Center, Japan</td>
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<td>Takeshi Hoshino, Kohtaro Matsumoto</td>
<td>Strategies and Systems for Long Term Activities on the Moon</td>
<td>JSPEC, JAXA, Japan</td>
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<td>Eric Rohmer¹, Giulio Reina², Kazuya Yoshida¹</td>
<td>A Novel Teleoperated Hybrid Wheel-Limbed Hexapod for the Exploration of Lunar Challenging Terrains</td>
<td>¹Tohoku University, Japan, ²University of Salento</td>
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<td>Tomoyuki Yoshimatsu¹, Akira Iwasaki¹, Junichi Haruyama², Makiko Ohtake³, Tsuneo Matsunaga⁴</td>
<td>Lunar Surface Roughness Estimation Using Stereoscopic Data</td>
<td>¹Department of aeronautics and astronautics, University of Tokyo, Japan, ²University of Tokyo, ³JAXA, ⁴National Institute for Environmental Studies</td>
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<td>Naoki Sato</td>
<td>Concept for JAXA Future Human Space Program</td>
<td>Human Space Systems and Utilization Program Group, JAXA, Japan</td>
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<td>Tetsuya Yamamoto, Tetsuya Nagase, Toshimichi Tsumaki</td>
<td>MHI Activities on Future Lunar Exploration</td>
<td>Mitsubishi Heavy Industries, Ltd (MHI), Japan</td>
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Development Plan for Future Mission from HTV System
Shinichi Takata, Hiroshi Sasaki, Takane Imada
HTV Project Team, JAXA, Japan

2008-k-65 (9:30–9:50)

Air Revitalization System Aim to Establish Circulated Life Support System
Masato Sakurai
Institute of Space Technology and Aeronautics, Japan Aerospace Exploration Agency (JAXA), Japan

2008-k-66 (9:50–10:10)

Lunar Utilization and Landing Candidate Site Selection by Using SELENE Product
Hirokazu Hoshino, Hayato Okumura, Kai Matsui, Shinichi Sobue
SELENE project, JAXA, Japan

2008-k-67 (10:10–10:30)

Construction of Lunar Nomenclature Search System
Junya Terazono1, Subhash Bhalla2, Tomoko Izumita2, Noriaki Asada2, Hirohide Demura2, Naru Hirata2
1Information Systems and Technology Center, The University of Aizu, Japan, 2The University of Aizu

[m-1] Visible and High-energy Astronomy

Session Date : 2008/6/5 8:30 – 10:30
Room : Room G
Chairpersons : Shoji Torii (Waseda University, Japan), Takeshi Imamura (JAXA, Japan)

2008-m-01 (8:30–8:50)

TSUBAME: toward the Frontier of X-ray/Gamma-ray Polarimetry in Astronomy
Takahiro Toizumi1, Jun Kataoka1, Yoshihiro Tsubuku1, Mitsuyoshi Kobayashi1, Yoichi Yatsu1, Makoto Arimoto1, Nobuyuki Kawai1, Kenji Yamasaki1, Ken Fujiwara2, Junichi Nishida2, Saburo Matsunaga2
1Department of Physics, Faculty of Science, Tokyo Institute of Technology, Japan, 2Department of Mechanical and Aerospace Engineering, Tokyo Tech, Japan

2008-m-02 (8:50–9:10)

Balloon Borne Experiment with CALET Prototype
Yuki Shimizu, Shoji Torii
Research Institute for Science and Engineering, Waseda University, Japan

2008-m-03 (9:10–9:30)

The 2007 BESS-Polar Scientific Flight in Antarctica
Masaya Hasegawa
IPNS, 2nd division, High Energy Accelerator Research Organization (KEK), Japan

2008-m-04 (9:30–9:50)

Yoichi Hatsutori\textsuperscript{1}, Masahiro Suganuma\textsuperscript{1}, Yukiyasu Kobayashi\textsuperscript{1}, Naoteru Gouda\textsuperscript{1}, Taihei Yano\textsuperscript{1}, Yoshiyuki Yamada\textsuperscript{2}, Masahiro Yamauchi\textsuperscript{3}

\textsuperscript{1}National Astronomical Observatory of Japan, Japan, \textsuperscript{2}Department of Physics, Kyoto University, Japan, \textsuperscript{3}Department of Astronomy, University of Tokyo, Japan

\textbf{2008-m-05 (9:50–10:10)}

\textbf{A Star Image Extractor for Small Satellites}

Yoshiyuki Yamada\textsuperscript{1}, Masahiro Yamauchi\textsuperscript{2}, Naoteru Gouda\textsuperscript{2}, Yukiyasu Kobayashi\textsuperscript{2}, Takuji Tsujimoto\textsuperscript{2}, Taihei Yano\textsuperscript{2}, Masahiro Suganuma\textsuperscript{2}, Shinichiro Nakasuka\textsuperscript{3}, Nobutada Sako\textsuperscript{3}, Takaya Inamori\textsuperscript{3}

\textsuperscript{1}Kyoto University, Japan, \textsuperscript{2}National Astronomical Observatory, Japan, \textsuperscript{3}University of Tokyo, Japan

\textbf{2008-m-06 (10:10–10:30)}

\textbf{HINODE: New Space-borne Observatory for Investigating the Sun}

Toshifumi Shimizu

\textit{ISAS, JAXA, Japan}

\section*{[m-2] Infrared and Radio Astronomy}

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  \item \textbf{Room}: Room G
  \item \textbf{Chairpersons}: Hiroshi Murakami (JAXA, Japan), Takeshi Imamura (JAXA, Japan)
\end{itemize}

\textbf{2008-m-07 (10:40–11:00)}

\textbf{Operations and Initial Results of the Infrared Astronomical Satellite AKARI}

Hiroshi Murakami

\textit{Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan}

\textbf{2008-m-08 (11:00–11:20)}

\textbf{Infrared Space Observatory SPICA: Overview and Current Status}

Hiroshi Murakami, Takao Nakagawa

\textit{Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan}

\textbf{2008-m-09 (11:20–11:40)}

\textbf{Far-Infrared Interferometric Telescope Experiment: I. Interferometer Optics}

Eri Kato\textsuperscript{1}, Hiroshi Shibai\textsuperscript{1}, Mitsunobu Kawada\textsuperscript{1}, Masanao Narita\textsuperscript{2}, Taro Matsuo\textsuperscript{1}, Atsushi Ohkubo\textsuperscript{1}, Miki Suzuki\textsuperscript{1}, Tetsuo Kanoh\textsuperscript{1}, Kouichi Yamamoto\textsuperscript{1}

\textsuperscript{1}Graduate School of Science, University of Nagoya, Japan, \textsuperscript{2}Institute of Space and Astronautical Science, JAXA, Japan

\textbf{2008-m-10 (11:40–12:00)}

\textbf{Far-Infrared Interferometric Telescope Experiment (FITE): II. Sensor Optics}

Tsunehito Kohyama\textsuperscript{1}, Hiroshi Shibai\textsuperscript{1}, Mitsunobu Kawada\textsuperscript{1}, Toyoki Watabe\textsuperscript{2}, Taro Matsuo\textsuperscript{1}, Shun Mochizuki\textsuperscript{1}, Yuka Matsumoto\textsuperscript{1}, Hirono Morishita\textsuperscript{1}, Yasuo Doi\textsuperscript{3}

\textsuperscript{1}Graduate School of Science, University of Nagoya, Japan, \textsuperscript{2}Technical center, University of Nagoya, Japan, \textsuperscript{3}Department of Earth Science and Astronomy, University of Tokyo, Japan
Large Scale Structure and Galaxies Detected in Radio Survey
Faustino Nhanombe
Astronomy, National Institute of Meteorology, Mozambique

Current Status of Seismo-Electromagnetic Observation Satellite Missions
Tetsuya Kodama
Satellite Operations Engineering Department, Office of Space Applications, JAXA, Japan

Extensible Flexible Optical System for Nano-Scale Remote Sensing Satellite "PRISM"
Yuuki Sato, Yasuhiro Kusakawa, Kensuke Shimizu, Takashi Tanaka, Sang Kyun Kim, Mitsuhiro Komatsu, Il-Yun Yoo, Casey Lambert, Shinichi Nakasuka
Department of aeronautics and astronautics, University of Tokyo, Japan

Compact Cryogenic Whole Air Sampler using JT-Cooler
Hideyuki Honda¹, Shinji Morimoto², Takashi Yamanouchi², Issei Iijima¹, Tetsuya Yoshida¹, Shuji Aoki³, Takakiyo Nakazawa³
¹ISAS, JAXA, Japan, ²National Institute of Polar Research, Japan, ³Graduate School, University of Tohoku, Japan

ASTER 8-year Operation and Scientific Achievement
Yasushi Yamaguchi¹, Michael Abrams², Hiroji Tsu³
¹Graduate School of Environmental Studies, Nagoya University, Japan, ²Jet Propulsion Laboratory, USA, ³Earth Remote Sensing Data Analysis Center, Japan

Comparison of ASTER TOA radiance with MODIS
Hiroto Kanno, Akira Iwasaki
Department of Aeronautics and Astronautics, The University of Tokyo, Japan
Japanese Cloud Profiling RADAR for EarthCARE
Toshiyoshi Kimura¹, Hiroshi Kumagai²
¹Earth Observation Research Center, Japan Aerospace Exploration Agency, Japan, ²National Institute of Information and Communications Technology

Development of a W-band Antenna for Space-borne 94 GHz Doppler Radar
Kazuyuki Okada¹, Masahiro Kojima¹, Yukie Iida¹, Toshiyoshi Kimura¹, Hiroaki Horie¹, Hirotaka Nakatsuka¹, Yukihiro Kankaku¹, Minoru Okumura²
¹Office of Space Applications, Japan Aerospace Exploration Agency, Japan, ²NEC Corporation, Japan

Operation Earth Observation Using Small Satellites
Alex da Silva Curiel, Paul Stephens, Mike Cutter, Martin Sweeting
Surrey Satellite Technology Ltd., UK

Joseph Casas¹, John Glaser², Kenneth Coperhaver³, George May¹, Karen Stephens¹
¹NASA, Marshall Space Flight Center, USA, ²U.S. Environmental Protection Agency, Office of Research and Development, USA, ³Institute for Technology Development, Champaign, IL, USA

A Conceptual Design of Optical Sensors for the Disaster Monitoring Satellites System
Hiroko Imai¹, Haruyoshi Katayama¹, Shinichi Suzuki², Yuji Osawa²
¹Earth Observation Research Center (EORC), Office of Space Applications, Japan Aerospace Exploration Agency (JAXA), Japan, ²Space Applications Program Systems Engineering Office, Office of Space Applications, JAXA

An Operation Concept of the Disaster Monitoring Satellite Mission
Shinichi Suzuki, Osawa Yuji
Space Applications Program Systems Engineering Office, JAXA, Japan

Sea Ice Observation for Disaster Prevention
Futoshi Takiguchi, Akiko Suzuki, Haruchika Kamimura, Tomohiro Watanabe
Japan Aerospace Exploration Agency, Japan
A Conceptual Design of the Disaster Monitoring Satellite System
Yuji Osawa, Shinichi Suzuki
Space Applications Program Systems Engineering Office, JAXA, Japan

Earth Observation (3)

Session Date : 2008/6/5 13:00 – 15:00
Room : Room F
Chairpersons : Tamotsu Igarashi (RESTEC, Japan), Masanobu Shimada (JAXA, Japan)

2008-n-11 (13:00-13:20)
A Study on the Impact of Humans on Water Resources in Greater Dhaka of Bangladesh by Using Remote Sensing
Ashraf Dewan1, Yasushi Yamaguchi2
1Earth and Environmental Sciences, Nagoya University, Japan, 2Graduate School of Environmental Studies, Nagoya University

2008-n-12 (13:20-13:40)
Development Status of the Dual-Frequency Precipitation Radar for the Global Precipitation Measurement
Yasutoshi Hyakusoku1, Masahiro Kojima1, Kinji Furukawa1, Yasuyuki Ishii1, Toshio Iguchi2, Nobuhiro Takahashi2, Hiroshi Hanado2, Minoru Okumura3
1GPM/DPR Project Team, Japan Aerospace Exploration Agency, Japan, 2Environment Sensing and Network Group, Applied Electromagnetic Research Center, National Institute of Information and Communications Technology, 3RF Systems Group, Space Engineering Division, NEC TOSHIBA Space systems, Ltd

2008-n-13 (13:40-14:00)
Difference of Vegetation Cover Change between the South and North Korean Area Across the DMZ since 1960s Seen on Satellite Images
Toshiro Sugimura1, Sotaro Tanaka2
1RESTEC, Japan, 2Toyo Univ.

2008-n-14 (14:00-14:20)
GCOM Mission Overview
Toshitaka Sasaki, Keizo Nakagawa
GCOM Project Team, JAXA, Japan

2008-n-15 (14:20-14:40)
Environmental Monitoring of Kitakyushu by US Reconnaissance Satellite and Landsat/MSS
Toshiro Sugimura1, Kuniaki Isobe2, Tetsuji Yamamoto3
1RESTEC, Japan, 2Asia Air Survey, 3Think Earth Science

2008-n-16 (14:40-15:00)
Sofradir Advances in Infrared Detectors for Space Applications
Philippe Chorier1, Philippe Tribolet2, Michel Vuillermet2, Aurelien Dariel2
1Space department, Sofradir, France, 2Sofradir, France
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<td>Satoshi Tsuchida (Advanced Industrial Science and Technology, Japan), Youseke Miyagi (JAXA, Japan)</td>
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<tr>
<th>2008-n-17 (15:10–15:30)</th>
<th>Adaptation to Rapid Glacier Retreat in the Tropical Andes using ALOS data</th>
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<tr>
<td>Yukio Haruyama, Tamotsu Igarashi, Makoto Ono, Tsutomu Yamanokuchi, Nobuhiro Tomyiama, Ryoichi Furuta, Riiko Ueno</td>
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<td>RESTEC, Japan</td>
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<tr>
<th>2008-n-18 (15:30–15:50)</th>
<th>Disaster Information Extraction from ALOS Images</th>
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<tr>
<td>Tamotsu Igarashi, Ryoichi Furuta, Makoto Ono</td>
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<td>Research Department, RESTEC, Japan</td>
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<th>2008-n-19 (15:50–16:10)</th>
<th>High Precision and High Resolution Global Precipitation Map from Satellite Data</th>
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<tr>
<td>Kenichi Okamoto¹, Nobuhiro Takahashi², Koyuru Iwanami³, Shiochi Shige¹, Takji Kubota⁴</td>
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</tr>
<tr>
<td>¹Department of Aerospace Engineering, Osaka Prefecture University, Japan, ²National Institute of Information and Communications Technology, ³National Research Institute for Earth Science and Disaster Prevention, ⁴EORC, Japan Space Exploration Agency</td>
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<th>2008-n-20 (16:10–16:30)</th>
<th>Development of a Multi-Spectrum Imager for the S-520 Sounding Rocket</th>
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<td>Yasuhiro Shoji¹, Takechi Yoshikawa¹, Yuji Sakamoto², Yukihiro Takahashi³, Kazuya Yoshida¹</td>
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<tr>
<td>¹Graduate school of Engineering, Tohoku University, Japan, ²Graduate School of Engineering, University of Tokyo, Japan, ³Graduate School of Science, Tohoku University, Japan</td>
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<td>Masaru Koga, Akira Iwasaki</td>
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<td>aeronautics and astronautics, The University of Tokyo, Japan</td>
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<tr>
<th>2008-n-22 (16:50–17:10)</th>
<th>On-Orbit Reconstruction of Satellite Optics with Observed Image</th>
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<tr>
<td>Norihide Miyamura</td>
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<tr>
<td>Department of Aeronautics and Astronautics, University of Tokyo, Japan</td>
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<tr>
<td>Hiroshi Une¹, Hiroshi Yarai¹, Mikio Tobita¹, Shinzaburo Ozawa¹, Takuya Nishimura¹, Kojin Wada², Tomomi Amagai², Midori Fujiwara², Akira Suzuki², Hiroshi Sato¹, Mamoru Koarai¹</td>
<td></td>
</tr>
<tr>
<td>¹Geography and Crustal Dynamics Research Center, Geographical Survey Institute, Japan, ²JAXA, Japan</td>
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</tbody>
</table>
[p-1] Space Medicine and Physiology (1)

Session Date: 2008/6/3 9:00 - 10:20
Room: Room H
Chairpersons: Kunihiko Tanaka (Gifu University, Japan), Hiroshi Oshima (JAXA, Japan)

2008-p-01 (9:00-9:20)
Preparation Status and Future Plan of Aquatic Habitat (AQH)
Sayaka Umemura1, Mitsuyo Masukawa1, Toru Sakamura1, Satoko Uchida2, Yasushi Kono2, Keiji Murakami1
1Space Environment Utilization Center, Japan Aerospace Exploration Agency, Japan, 2Mitsubishi Heavy Industries, LTD., Japan

2008-p-02 (9:20-9:40)
Space Biomedical Research Project of JAXA
Ryutaro Izumi1, Megumi Ogawa1, Shino Kawashima1, Natsuhiro Inoue1, Hiroshi Ohshima1, Kazunari Tanaka1, Chiaki Mukai1, Shoichi Tachibana2
1Space Biomedical Research Office, Japan Aerospace Exploration Agency, Japan, 2Astronauts Medical Operations Group, JAXA, Japan

2008-p-03 (9:40-10:00)
Development of Intelligent Suits for Disuse Atrophy of Musculoskeletal System Using Hybrid Exercise Method
Naoto Shiba1, Yoshihiko Tagawa2, Kazuhiko Yoshimitsu1, Tohoru Matsuagaki1, Tomohisa Inada1, Kiyoshi Numada1, Takashi Maeda1, Hitomi Yamaguchi1, Arata Narita1, Tetsuya Nishi3
1Division of rehabilitation, Kurume university school of medicine, Japan, 2Kyushu Institute of Technology, Japan, 3GOLDWIN inc., Japan

2008-p-04 (10:00-10:20)
CROSS-CULTURAL TRAINING REQUIREMENTS FOR LONG-DURATION SPACE MISSIONS: Results of a Survey of Astronauts and Ground Support Personnel
Leena Tomi1, Daniel Kealey2, Marvin Lange3, Patricia Stefanowska4, Valerie Doyle4
1Operational Space Medicine, Canadian Space Agency, Canada, 2People In Development, Manotick, Canada, 3Royal Ottawa Hospital, Ottawa, Canada, 4University of McMaster, Hamilton, Canada

[p-2] Space Medicine and Physiology (2)

Session Date: 2008/6/3 10:30 - 11:30
Room: Room H
Chairpersons: Chiaki Mukai (JAXA, Japan), Leena Tomi (Canadian Space Agency, Canada)

2008-p-06 (10:30-10:50)
Utilization and Verification Flight Experiments of Crew PADLES, JAXA Crew Passive Dosimeter
Shizu Yabe1, Aiko Nagamatsu1, Yu Koike1, Satoru Ishida1, Ichiro Tayama1, Keiji Murakami2, Shuji Araki2, Hiroko Tawara2, Shoichi Tachibana1, Masato Koyama8, Koji Yanagawa1
### Human Space Technology

**Session Date**: 2008/6/3 13:30 – 14:30  
**Room**: Room H  
**Chairpersons**: Ryutaro Izumi (JAXA, Japan), Chiaki Mukai (JAXA, Japan)

#### 2008-p-10 (13:30-13:50)

**Usability of a Gas-pressurized Elastic Glove for Extravehicular Activity**  
Kunihiko Tanaka\(^1\), Kenji Yamagata\(^2\), Chikara Abe\(^1\), Hironobu Morita\(^1\)  
\(^1\)Department of Physiology, Gifu University, Graduate School of Medicine, Japan, \(^2\)JAXA, Japan

#### 2008-p-11 (13:50-14:10)

**Core-suit System Space Suit**  
Kenji Yamagata, Mamoru Mohri, Koji Yanagawa, Takao Yamaguchi, Naoko Murakami  
Human Space Technology Development Group, Japan Aerospace Exploration Agency, Japan

#### 2008-p-12 (14:10-14:30)

**Fashion for Space Tourism, which Drives Popularization and Commercialization**  
Misuzu Onuki\(^1\), David Jankowski\(^2\), Charles Lauer\(^3\)  
\(^1\)Space Frontier Foundation, Japan, \(^2\)DestinySpace.com, \(^3\)Rocketplane Global, Inc.

### International Cooperation of Large Scale Space Programs

**Session Date**: 2008/6/6 10:40 – 12:00  
**Room**: Room B  
**Chairpersons**: Neville Marzwell (NASA - Jet Propulsion Laboratory - California Institute of Technology, USA), Nobuyuki Kaya (Kobe University, Japan)

#### 2008-r-1-01 (10:40-11:00)

**New Opportunities for International Cooperation in Space-based Solar Power**  
John Mankins  
Office of the President, Managed Energy Technologies LLC, USA
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<td>2008-r-1-02</td>
<td>11:00-11:20</td>
<td>Current Status of the Implementation of the Global Exploration Strategy and Japan’s contribution for the Coordination</td>
<td>Kaori Sasaki, JSPEC, JAXA, Japan</td>
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<td>2008-r-1-03</td>
<td>11:20-11:40</td>
<td>Proposal for Modification of ISS Constitution</td>
<td>Fujio Nakano, Tomifumi Godai, [SORANOKAI], Space Policy Think-tank, Japan</td>
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<td>2008-r-1-04</td>
<td>11:40-12:00</td>
<td>Promoting International Space Development and Collaboration Online</td>
<td>Christopher Boshuizen, Charles Gabriel, Space-Industry.com, Australia</td>
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| 2008-r-1-06 | 13:50-14:10 | Space Demonstration for the Solar Power Satellite of the Sandwich Type | Nobuyuki Kaya¹, Masahisa iwashita¹, Shinichi Nakasuka², Leopold Summerer³, John Mankins⁴  
¹Department of Computer Science and Systems Engineering, Kobe University, Japan,  
²Department of Aeronautics and Astronautics, University of Tokyo,  
³ESTEC, ESA,  
⁴Artemis Innovation Management Solutions, LLC |
| 2008-r-1-08 | 14:30-14:50 | Technology Developments in Radiation-Hardened Electronics for Space Environments | Andrew Keys, Joe Howell, NASA’s Marshall Space Flight Center, USA |
| 2008-r-1-09 | 14:50-15:10 | Demonstration Experiment for Tethered Solar Power Satellite |  
### [r-1-2] Space Solar Power

**Session Date:** 2008/6/6 13:30 – 15:30  
**Room:** Room B  
**Chairpersons:** John Mankins (Managed Energy Technologies LLC, USA), Susumu Sasaki (JAXA, Japan)
Space Experiment of Bare Tape-Tether Technology on the Sounding Rocket S520 the 25th

Hironori Fujii¹, Takeo Watanabe², Hirohisa Kojima², Koh-Ichiro Oyama², Susumu Sasaki³, Hirotaka Ohtsu⁴, John Williams⁵, Binyamin Rubin⁶, Charles Johnson⁶, Geroge Khazanov⁷, Pavel Trivailo⁸

¹Aerospace Engineering, Tokyo Metropolitan Institute for Technology, Japan, ²Tokyo Metropolitan University, Japan, ³ISAS/JAXA, Japan, ⁴Shizuoka University, Japan, ⁵Colorado State University, USA, ⁶NASA/MSFC, USA, ⁷NASA/MSFC, USA, ⁸Royal Melbourne Institute of Technology, Australia
A New View on the Sun with Hinode Mission

Taro Sakao1, Saku Tsuneta2, Masumi Shimojo2, Noriyuki Narukage1, Ryuhei Kano2, Takahiro Obara3, Shinichi Watari3

1Research Division for Basic Space Science, ISAS/JAXA, Japan, 2National Astronomical Observatory, Japan, 3National Institute of Information and Communications Technology, Japan

Solar Wind Observations and Space Weather

Munetoshi Tokumaru, Masayoshi Kojima, Ken'ichi Fujiki

Solar-Terrestrial Environment Laboratory, Nagoya University, Japan

Highly Energetic Electron Environment in the Inner Magnetosphere

Takahiro Obara, Haruhisa Matsumoto, Tateo Goka

Japan Aerospace Exploration Agency, Japan

Forecast of High-energy Electron Flux at Geostationary Orbit Using Neural Network

Shinichi Watari1, Masahiro Tokumitsu2, Kentarou Kitamura3, Yoshiteru Ishida2

1Space Environment Group, National Institute of Info. and Com. Tech., Japan, 2Toyohashi University of Technology, 3Tokuyama College of Technology

MAGDAS for Geospace Environment Monitoring

Kiyohumi Yumoto, Hideaki Kawano, MAGDAS Group

Space Environment Research Center, Kyushu University, Japan

Research and Development of Satellite Operation Warning System for Spacecraft Using Space Weather Forecast

Masashi Nakayama, Kiyokazu Koga, Haruhisa Matsumoto, Tateo Goka

Space Environment Measurement Group, Institute of Aerospace Technology, Japan Aerospace Exploration Agency, Japan

Space Weather Influence on the Human Physiological and Cardio-Health State: Results of Azerbaijani and Collaborative Studies

Elchin Babayev

Shamakhy Astrophysical Observatory and Institute of Physics, Azerbaijan National Academy of Sciences, Azerbaijani Republic
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<td>2008-r-2-08</td>
<td>13:30-13:50</td>
<td>Monitor System for Space Electromagnetic Environments</td>
<td>Hirotsugu Kojima¹, Yuto Saito¹, Yuta Mizuochi¹, Yasuhisa Takizawa², Hisato Iwai³, Satoshiヤギタニ¹, Hiroshi Yamakawa¹, Yoshikatsu Ueda¹</td>
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<td>¹Research Institute for Sustainable Humanosphere, Kyoto University, Japan, ²Advanced Telecommunications Research Institute International, ³Department of Engineering, Doshisha University, ⁴Graduate School of Natural Science and Technology, Kanazawa University</td>
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<td>2008-r-2-09</td>
<td>13:50-14:10</td>
<td>Numerical Study on Spacecraft Charging Mitigation by Plasma Injection</td>
<td>Hideyuki Usui¹, Koujiro Imasato¹, Yoshiharu Omura¹, Hitoshi Kuninaka²</td>
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<td>¹Research Institute for Sustainable Humanosphere, Kyoto University, Japan, ²JAXA/ISAS</td>
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<tr>
<td>2008-r-2-10</td>
<td>14:10-14:30</td>
<td>Evaluation of Multi-Utility Spacecraft Charging Analysis Tool(MUSCAT) by Observation Data on Engineering Test Satellite-V(ETS-V)</td>
<td>Kiyokazu Koga¹, Hiroko O. Ueda¹, Shinji Hatta², Jeongho Kim², Mengu Cho³, Takanobu Muranaka¹, Satoshi Hosoda¹, Tateo Goka¹</td>
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<td>¹Japan Aerospace Exploration Agency, Japan, ²MUSCAT Space Engineering Ltd, Japan, ³Kyushu Institute of Technology, Japan</td>
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<td>2008-r-2-11</td>
<td>14:30-14:50</td>
<td>Estimation of Auroral Environment by Electrostatic Full-particle Simulations Modeling of REIMEI Satellite Observations</td>
<td>Hiroko Ueda¹, Masaki Okada², Hideyuki Usui³, Takanobu Muranaka¹, Iku Shinohara⁴</td>
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<td>¹JAXA’s Engineering Digital Innovation Center, Japan Aerospace Exploration Agency, Japan, ²National Institute of Polar Research, Japan, ³Research Institute for Sustainable Humanosphere, Kyoto University,Japan, ⁴Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency,Japan</td>
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<tr>
<td>2008-r-2-12</td>
<td>14:50-15:10</td>
<td>Polar Orbit Plasma Environment Database for spacecraft Charging Analysis</td>
<td>Takamitsu Hamanaga, Mengu Cho</td>
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<td>Department of Electrical Engineering, Kyushu Institute of Technology, Japan</td>
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<td>Space Environment Measurement Group, Institute of Aerospace Technology, Japan</td>
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<td>2008-r-2-14</td>
<td>15:30-15:50</td>
<td>Evaluation of Electric Field Probe On-board Spacecraft Using a 3D Full PIC Simulation</td>
<td>Takanobu Muranaka¹, Hiroko Ueda¹, Hideyuki Usui², Iku Shinohara³</td>
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### Session Date: 2008/6/3 16:00 - 18:20
### Room: Room B
### Chairpersons: Tateo Goka (JAXA, Japan), Yugo Kimoto (JAXA, Japan)

#### 2008-r-2-15 (16:00-16:20)
**Present Status of ISO Standardization Efforts of Solar Panel ESD Test Methods**
Mengu Cho  
Laboratory of Spacecraft Environment Interaction Engineering, Kyushu Institute of Technology, Japan

#### 2008-r-2-16 (16:20-16:40)
**Investigation of Sustained Arc under Solar Cell**
Kazuhiro Toyoda\(^1\), Mengu Cho\(^1\), Shirou Kawakita\(^2\), Masato Takahashi\(^2\), Hirokazu Masui\(^1\)
\(^1\)Laboratory of Spacecraft Environment Interaction Engineering, Kyushu Institute of Technology, Japan, \(^2\)Japan Aerospace Exploration Agency, Japan

#### 2008-r-2-17 (16:40-17:00)
**Spectroscopic Measurement of Secondary Arc Plasma on Solar Array**
Kazuhiro Toyoda, Takayuki Ose, Hirokazu Masui, Mengu Cho  
Laboratory of Spacecraft Environment Interaction Engineering, Kyushu Institute of Technology, Japan

#### 2008-r-2-18 (17:00-17:20)
**Sustained Arc Test for Formulating Design Guideline of Solar Array Panel**
Hirokazu Masui, Takayuki Ose, Kazuhiro Toyoda, Mengu Cho  
Department of Electrical Engineering, Kyushu Institute of Technology, Japan

#### 2008-r-2-19 (17:20-17:40)
**Development of an Atomic Oxygen Irradiation System for Charging Property Database**
Noor Mundari, Hirokazu Masui, Minoru Iwata, Kazuhiro Toyoda, Mengu Cho  
Department of Electrical Engineering, Kyushu Institute of Technology, Japan

#### 2008-r-2-20 (17:40-18:00)
**Simulation Experiment on High Voltage Solar Array in LEO Plasma Conditions**
Koji Tanaka\(^1\), Hiroyuki Toyota\(^2\), Michio Tajima\(^2\), Susumu Sasaki\(^1\)
\(^1\)Space Information and Energy Department, ISAS/JAXA, Japan, \(^2\)ISAS/JAXA, Japan

#### 2008-r-2-21 (18:00-18:20)
**ESD Test for Triple-Junction Space Solar Cells with Monolithic Diode**
Yukishige Nozaki\(^1\), Hirokazu Masui\(^2\), Kazuhiro Toyoda\(^2\), Junichiro Ninomiya\(^2\), Hirokazu Watabe\(^1\), Mengu Cho\(^2\)
\(^1\)Space Engineering Division, NEC Toshiba Space Systems, Ltd., Japan, \(^2\)Department of...
### [r-2-4] Space Environment (3)

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<td>Haruhisa Matsumoto (JAXA, Japan),</td>
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<td>Junichiro Ishizawa (JAXA, Japan)</td>
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#### 2008-r-2-22 (10:00–10:20)

**Issues and Consequences of Space Environmental Effect on Materials**

Masahito Tagawa, Kumiko Yokota  
*Department of Mechanical Engineering, Kobe University, Japan*

#### 2008-r-2-23 (10:20–10:40)

**Effect of Long Time Orbit Exposure Test on Solid Lubricative Coating**

Masahiro Tosa¹, Akira Kasahara¹, Masahiro Goto¹, Yuriy Pihosh¹, Eiji Miyazaki², Yugo Kimoto², Mineo Suzuki², Kichiro Imagawa²  
¹Materials Reliability Center, National Institute for Materials Science, Japan, ²Japan Aerospace Exploration Agency, Japan

#### 2008-r-2-24 (10:40–11:00)

**Effect of Atomic Oxygen and Ultraviolet Rays Irradiation to Aerogel**

Riyo Yamanaka, Yugo Kimoto  
*Institute of Aerospace Technology, Japan Aerospace Exploration Agency, Japan*

#### 2008-r-2-25 (11:00–11:20)

**Development of Plane-parallel Impact-ionization Dust Detectors with Large Aperture: A Candidate for Kibo Exposed Facility Payload**

Sho Sasaki¹, Hideo Ohashi², Takayuki Hirai³, Takeo Iwai³, Hiromi Shibata⁴, Ken-ichi Nogami⁵, Masayuki Fujii⁶  
¹RISE Project Office, National Astronomical Observatory of Japan, Japan, ²Tokyo Univ. Marine Science and Technology, Japan, ³Univ. Tokyo, Japan, ⁴Kyoto Univ., Japan, ⁵Dokkyo Univ. School of Medicine, Japan, ⁶Waseda Univ., Japan

#### 2008-r-2-26 (11:20–11:40)

**Research on Europa’s Dust Cloud at The Open University’s Hypervelocity Impact (HVI) Laboratory**

Katarina Miljkovic¹, Emma Taylor¹, Nigel Mason¹, John Zarnecki²  
¹Physics and Astronomy, The Open University, UK, ²Planetary and Space Science Research Institute, The Open University, UK

#### 2008-r-2-27 (11:40–12:00)

**Titan Satellite Would be a Carbon-Cluster Factory -From Gas-Gun Experiment-**

Tetsu Mieno¹, Sunao Hasegawa²  
¹Department of Physics, Shizuoka University, Japan, ²ISAS, JAXA, Japan

### [r-2-5] Debris (1)

<table>
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<th>Session Date</th>
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<td>2008/6/4 13:50 – 15:50</td>
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</table>
An Assessment of the Current LEO Debris Environment and What Needs to be Done to Preserve it for Future Generations

J.-C. Liou
ESCG/ERC, USA

Test Result of New Observational Strategy for Detection of Eccentric Objects Near the Geosynchronous Region

Toshifumi Yanagisawa, Hirohisa Kurosaki, Atsushi Nakajima
Advanced Space Technology Research Group, Japan Aerospace Exploration Agency, Japan

R&D on Space Debris Detection Software

Emi Imai1, Taisei Fukaya2, Hirohisa Kurosaki3, Atsushi Nakajima4
1Mechanical Engineering, Shizuoka University, Japan, 2Tokyo Metropolitan University, Japan, 3JAXA, Japan

Optical Observation of LEO Debris Caused by Feng Yun 1C

Hirohisa Kurosaki, Toshifumi Yanagisawa, Atsushi Nakajima
Institute of Aerospace Technology, JAXA, Japan

Space Debris Mitigation Efforts through the Disposition of the Service Module of the Unmanned Space Experiment Recovery System (USERS)

Koichi Ijichi1, Atsuo Ushikoshi1, Shuji Nakamura1, Hiroshi Kanai2
1Advanced Satellite Project Department, Institute for Unmanned Space Experiment Free Flyer, Japan, 2Institute for Unmanned Space Experiment Free Flyer, Japan

For Better Calculation of the Average Cross-Sectional Area of Breakup Fragments

Toshiya Hanada1, Jer-Chyi Liou2, Paula Krisko3, Takashi Nakajima4
1Department of Aeronautics and Astronautics, Kyushu University, Japan, 2ESCG/ERC, USA, 3ESCG/Jacobs, USA, 4JAXA, Japan
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<tr>
<td>2008-r-2-37</td>
<td>16:40-17:00</td>
<td>Recovery Method for Small Debris as Small Satellite Mission</td>
<td>Toshiaki Iwata Energy Technology Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Japan</td>
</tr>
<tr>
<td>2008-r-2-38</td>
<td>17:00-17:20</td>
<td>Hypervelocity Impact Experiment on Thin Film Structure</td>
<td>Yoichi Nagaoka¹, Koji Tanaka², Susumu Sasaki² ¹Department of Space and Astronautical Science, The Graduate University for Advanced Studies, Japan, ²Research Division for Space Applications, ISAS/JAXA, Japan</td>
</tr>
<tr>
<td>2008-r-2-39</td>
<td>17:20-17:40</td>
<td>Two-stage Light Gas Gun HEK</td>
<td>Hideyuki Tanno, Tomoyuki Komuro, Kazuo Sato, Katsuhiko Itoh, Masahiro Takahashi Space Transportation propulsion research and development center, Japan Aerospace Exploration Agency, Japan</td>
</tr>
<tr>
<td>2008-r-2-40</td>
<td>17:40-18:00</td>
<td>Research and Development of Electrodynamic Tethers for Space Debris Mitigation</td>
<td>Yasushi Ohkawa, Satomi Kawamoto, Shoji Kitamura, Shin-ichiro Nishida Institute of Aerospace Technology, JAXA, Japan</td>
</tr>
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<td>2008-r-2-28</td>
<td>18:00-18:20</td>
<td>UN Resolution on Space Debris Mitigation: Rules, Implementation and International Control</td>
<td>Setsuko Aoki Faculty of Policy Management, Keio University, Japan</td>
</tr>
</tbody>
</table>

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**[r-3-1] Space Law and Policy (1)**

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<tr>
<td>2008-r-3-01</td>
<td>15:00-15:20</td>
<td>Analysis of Commercial Transportation Services to Propellant Depots</td>
<td>A.C. Charania, Dominic DePasquale, John Olds SpaceWorks Engineering, Inc. (SEI), USA</td>
</tr>
</tbody>
</table>
### Space Law and Policy (2)

**Session Date**: 2008/6/3 16:30 – 17:30  
**Room**: Room H  
**Chairpersons**: Yasuaki Hashimoto (The National Institute for Defense Studies (NIDS), Japan), Masahiko Sato (JAXA, Japan)

| 2008-r-3-02 (15:20-15:40) | Japanese Fundamental Law on the Space Activities  
Yasuaki Hashimoto  
*Research Department, The National Institute for Defense Studies, Japan*

| 2008-r-3-03 (15:40-16:00) | The Possibility of Soft Law in the field of Arms Control in Outer Space – Focusing on the ASAT Code of Conduct –  
Yukiko Kodachi  
*Keio University, Japan*

| 2008-r-3-04 (16:00-16:20) | Key Aspects of a European Space Situational Awareness System  
Wolfgang Rathgeber  
*European Space Policy Institute (ESPI), Austria*

Saeko Sakamoto, Seiko Morikawa, Yuri Ishizu  
*Legal Affairs Division, Japan Aerospace Exploration Agency, Japan*

| 2008-r-3-06 (16:50-17:10) | Study of Economical Efficiency of HEOs –Based Ku-Band Mobile Communication for Ambulatory Application  
Yasumitsu Tomioka, Isao Nakajima, Toshihiko Kitano, Hiroshi Juzoji  
*Nakajima Lab. School of Medicine, Tokai University, Japan*

| 2008-r-3-07 (17:10-17:30) | Japanese New Space Law and Policy from Industry Perspective  
Hiroshi Yoshida  
*CEO, excalibur KK, Japan*

### Space Engineering, Orbit Analysis and Asteroid

**Session Date**: 2008/6/4 13:30 – 15:30  
**Room**: Room H  
**Chairpersons**: Yoshiaki Nakamura (Nagoya University, Japan), Hirokazu Tahara (Osaka Institute of Technology, Japan)

Hiroshi Yoshida  
*CEO, excalibur KK, Japan*
Infra-free (IF) Architecture System as the Method for Post-Disaster Shelter Model

Huai Chang
Department of Architecture, University of Tokyo, Japan

2008-s-02 (13:50-14:10)

Antarctic–Lunar Analog: A South Pole Experience for Planning Projects on the Moon

Yuki Takahashi
Physics Department, University of California, Berkeley, USA

2008-s-03 (14:10-14:30)

"Progressive Development of International Law" on Remote Sensing Activities: from the View of International Cooperation

Masatoshi Fukunaga
Keio University, Japan

2008-s-04 (14:30-14:50)

Economic Rationality of On-Orbit Servicing by Reduction of Transportation Cost

Yasuhiro Akiyama
University of Tokyo, Japan

2008-s-05 (14:50-15:10)

Effect of Diameter on Thermocapillary Convection in Liquid Bridge (Preliminary Experiment for the JEM Experiment)

Kiyofumi Hirokawa
Department of Mechanical Engineering, Tokyo University of Science, Japan

2008-s-06 (15:10-15:30)

Two-Step Simulation for the Formation of Asteroid Itokawa from the Restricted Three-body Problem to the Multi-body Problem

Masatoshi Hirabayashi
Department of Aeronautics and Astronautics, The University of TOKYO, Japan

2008-s-07 (15:40-16:00)

"Excelsior"—a Soka University Pico-satellite

Hironobu Kume
Faculty of Engineering, University of Soka, Japan

2008-s-08 (16:00-16:20)

University of Tokyo Nano Satellite Project "PRISM"

Mitsuhito Komatsu
Department of Aeronautics & Astronautics, University of Tokyo, Japan
2008-s-09 (16:20-16:40)
System Identification and Nonlinear Temperature Control Law of Insulation and Heat Transport System for Space Using Fluorinated Inactive Liquids
Masayuki Sugita
Department of Mechanical Engineering, Aoyama Gakuin University, Japan

2008-s-10 (16:40-17:00)
Out-of-Plane Orbital Transfer for Tethered Satellite Systems
Masaoki Iwase
Department of Aeronautics and Astronautics, Kyushu University, Japan

2008-s-11 (17:00-17:20)
Development of a Small-scale Combustor Applying the Pellet Catalyst for Controlling Infrared Ray Irradiation
Go Ohmura
Department of Mechanical Engineering, Shibahara laboratory, Osaka university, Japan

2008-s-12 (17:20-17:40)
The Selection and Development of Antistatic Coating for Space Applications
Musashi Sakamoto
Department of Electrical Engineering, Kyusyu Institute of Technology, Japan

2008-s-13 (10:00-10:20)
Model Acquisition Using Probabilistic Reasoning and Statistical Learning, and Application to Fault Detection for Spacecraft
Akihiro Yoshiki
Department of Aeronautics and Astronautics, The University of Tokyo, Japan

2008-s-14 (10:20-10:40)
Preliminary Analysis of Electrostatic Charging of Traveling Wave Tube
Tetsunori Nagata
Electrical Engineering, Kyushu Institute of Technology, Japan

2008-s-15 (10:40-11:00)
Experimental Study of the Contamination Simulator
Tomoyuki Yamamoto
Department of Electrical Engineering, Kyushu Institute of Technology, Japan

2008-s-16 (11:00-11:20)
Arc Tracking between Space Cables Due to Electrostatic Discharge
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<tr>
<th>Session Date</th>
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<th>Chairpersons</th>
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</table>
| 2008-s-17 (11:20-11:40) |      | Hikaru Kayano  
Department of Electrical Engineering, Kyushu Institute of Technology, Japan |
| 2008-s-18 (11:40-12:00) |      | Yusuke Sadakane  
Department of Electrical Engineering, Kyushu Institute of Technology, Japan |

**Space Debris and Ablator**

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</table>
| 2008-s-19 (13:00-13:20) | Room H | Shigeru Aso (Kyushu University, Japan),  
Harunori Nagata (Hokkaido University, Japan) |
Department of Aerospace Engineering, Tokyo Metropolitan Institute of Technology, Japan |
| 2008-s-21 (13:40-14:00) |      | Chiharu Kikkawa  
Department of Aerospace Engineering, Tokyo Metropolitan University, Japan |
| 2008-s-22 (14:00-14:20) |      | Nanako Saito  
Shizuoka University, Japan |
| 2008-s-23 (14:20-14:40) |      | Yuki Kobayashi  
Shizuoka University, Japan |
| 2008-s-24 (14:40-15:00) |      | Yasunori Furukawa  
Department of Electrical Engineering, Kyusyu Institute of Technology, Japan |
### An Experimental Study on Thermal Response of Lightweight Carbon-Phenolic Ablators

Yusuke Kobayashi  
*Department of Aerospace Engineering, Nagoya University, Japan*

### Magnetohydrodynamics, Tether and Robotics

**Session Date**: 2008/6/5 15:10 – 16:50  
**Room**: Room H  
**Chairpersons**: P. M. Bainum (Howard University, USA), Hiroyuki Ogawa (JAXA, Japan)

**2008-s-25 (15:10-15:30)**

*Evaluation of Magnetic Field Inflation in the Laboratory Model of Magnetoplasma Sail*

Tomohiro Ayabe  
*Department of Aeronautics and Astronautics, Tokai University, Japan*

**2008-s-26 (15:30-15:50)**

*Numerical Study of the Magnetic Diffusion Effects in Magneto Plasma Sail*

Tomoya Fujimoto  
*Graduate School of Engineering, Shizuoka University, Japan*

**2008-s-28 (15:50-16:10)**

*Analytical and Experiment Evaluation of Electrodynamic Tether Propulsion with zMagnetic Coil (Mag-Tether)*

Kazuhiro Hara  
*Graduated School of Engineering, University of Shizuoka, Japan*

**2008-s-29 (16:10-16:30)**

*Development of Measurement System of Field Emission Electron on a Electron-emitting Film*

Yoshihiko Fujiwara  
*Department of Electrical Engineering, Kyushu Institute of Technology, Japan*

**2008-s-30 (16:30-16:50)**

*Intelligent Workspace for Space Robots Using Visual Markers*

Satoshi Hirashita  
*Department of Aeronautics and Astronautics, University of Tokyo, Japan*

### Formation Flight, Aerodynamics, Transportation

**Session Date**: 2008/6/6 8:30 – 10:30  
**Room**: Room H  
**Chairpersons**: Shigeru Aso (Kyushu University, Japan), Ikuo Hirata (Shizuoka University, Japan)

**2008-s-31 (8:30-8:50)**

*Formation Flight Control of Airship by Virtual Structure and Sliding Mode Control*

Ryuichi Hagioka
Aerodynamic Force Measurement and Flow Visualization of Laser Energy Deposition over a Blunt Body in Supersonic Flow
Yohei Sekiya
Department of Aerospace Engineering, University of Nagoya, Japan

State Estimation and Control of Air Launch Rocket
Masashi Miura
Department of Space and Astronautical Science, SOKENDAI, Japan

Wind Tunnel Test of Mach 5-Class Hypersonic Airplane
Hiroki Nakatani
Department of Mechanical Engineering, Tokyo University of Science, Japan

Experimental Investigation of TSTO Aerodynamic Interaction Flowfield at Hypersonic Speed
Hiroshi Ozawa
Department of Aerospace Engineering, Nagoya University, Japan

Experimental Investigation of N2 Rovibrational Relaxation behind Strong Shock Waves
Gouji Yamada
The Graduate School of Frontier Sciences, University of Tokyo, Japan

Influence of Azimuthally Nonuniform Propellant Flow Rate on Thrust Vector and Discharge Current Oscillation in a Hall Thruster
Yasuhiro Fukushima
Department of Aeronautics and Astronautics, The University of Tokyo, Japan

Experimental Study of an Applied-Field Magnetoplasmodynamic Thruster
Ryota Takaya
Department of Aerospace Engineering, University of Nagoya, Japan
An Ion Machined Accelerator Grid for the ECR Ion Thruster
Yasuhiro Toyoda
Department of Aeronautics and Astronautics, University of Tokyo, Japan

Performance Measurement of Powdered Propellant Pulsed Plasma Thruster
Takefumi Saito
Department of Aeronautics and Astronautics, The University of Tokyo, Japan

Thrust Measurement of Microwave Rocket with Repetitive Pulse Operation
Yuya Shiraishi
Department of Advanced Energy, The University of Tokyo, Japan

Experiment Research of Autonomous Driving Valve for Pulse Detonation Engine
Ken Matsuoka
Department of Engineering Mechanics and Energy, University of Tsukuba, Japan

Effective Project Management of Small Satellite Projects from the System Engineer’s Point of View, An Example of the Small Satellite Flying Laptop Project
Toshinori Kuwahara, Hans-Peter Roesser, Albert Falke
Institute of Space Systems, Universitaet Stuttgart, Germany

Strategic Systems Engineering Revisited
Yoshiaki Ohkami¹, Hidekazu Nishimura²
¹Advanced Research Center, Systems Design and Management, Keio University, Japan,
²Keio University, Japan

Systems Engineering Enhancement Initiative in JAXA
Masashi Okada, Shizuo Yamamoto, Toshifumi Mukai
Systems Engineering Group, Japan Aerospace Exploration Agency (JAXA), Japan

A Study of Safety Evaluation Simulation for Manrated Space Transportation System
Ryoma Yamashiro
Space Transportation System Research and Development Center, JAXA, Japan
2008-t-05 (14:50–15:10)
Optimization of Rocket Operational Efficiency and Risk
Toshiaki Takemae, Toru Shimada
Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency (JAXA), Japan

2008-t-06 (15:10–15:30)
Probabilistic Risk Assessment for Japanese Experiment Module (JEM)
Masami Miki1, Satomi Takada2
1Department of S&PA, JAMSS, Japan, 2Department of S&MA, JAXA, Japan

[t-2] Systems Engineering and Information Technology (2)

Session Date : 2008/6/6 16:00 – 17:40
Room : Room H
Chairpersons : Hiroshi Miyoshi (JAXA, Japan), Nobuto Yoshioka (JAXA, Japan)

2008-t-08 (16:00–16:20)
Development of Satellite Design-Aid System
Toshihiko Yamawaki1, Yoshio Morooka1, Takahiro Nakatsuka1, Atsushi Morishita2, Nobuto Yoshioka1, Ikunao Tada1, Yasushi Ueda1, Keizo Nakagawa2, Toshiyuki Nakashima4
1JEDI Center, JAXA, Japan, 2IT Consultant, Japan, 3GCOM Project, JAXA, Japan, 4Fujitsu Limited, Japan

2008-t-09 (16:20–16:40)
Engineering-Tools Integration Framework ‘COMGY’ for a Satellite Designing
Yasushi Ueda1, Nobuto Yoshioka1, Toshihiko Yamawaki1, Atsushi Morishita2
1JEDI, JAXA, Japan, 2IT Consultant, Japan

2008-t-10 (16:40–17:00)
Definition of User-requirement for Design Support Systems for Space Systems
Yuji Kado, Toshihiro Yamawaki, Nobuyuki Izuka, Kenichiro Fujimoto, Akira Oyama, Koichi Okita
JAXA’s Engineering Digital Innovation Center (JEDI), JAXA, Japan

2008-t-11 (17:00–17:20)
Intelligent Mission Analysis System concept for Responsive Advanced Solid Rocket
Takeshi Tamura1, Hirohito Ohtsuka1, Naruhisa Sano1, Yasuhiro Morita2, Takayuki Imoto2, Moriyasu Fukuzoe2
1IHI Aerospace Co., Ltd., Japan, 2Japan Aerospace Exploration Agency (JAXA), Japan

2008-t-12 (17:20–17:40)
Knowledge Management Activity in Satellite domain in Japanese Space Agency
Hiroaki Tateshita, Midori Soga, Takao Fukuda, Hiroshi Miyoshi
Japan Aerospace Exploration Agency (JAXA), Japan
[u-1] Space Education and Outreach : Challenges for the Next Generation

Session Date : 2008/6/6 8:30 – 10:10
Room : Room A
Chairpersons : Stig Kemi (Swedish Space Corporation Esrange, Sweden), Makoto Yoshikawa (JAXA, Japan)

2008-u-01 (8:30–8:50)

Virtual Space Culture Center keeps the Dream Alive : the Story of C22SR in La Reunion
Guy Pignolet
Science Sainte Rose, Reunion

2008-u-02 (8:50–9:10)

A Teachers’ Message from Space — “Teachers in Space” Has Been Launched For Children
Misuzu Onuki¹, Edward Wright², Charles Lauer³, Chrissy Pappe⁴
¹Space Frontier Foundation, Japan, ²United States Rocket Academy, ³Rocketplane Global, ⁴Space Explorers, Inc.

2008-u-03 (9:10–9:30)

An Example of Space Education : Astronomy Programs at Paris Observatory
Jean Souchay
SYRTE, Observatoire de Paris, France

2008-u-04 (9:30–9:50)

Looking Back, Looking Forward and Aiming Higher: Visions of the Next 50 years in Space
Christopher Boshuizen¹, Tiffany Frierson², Heng Shi³, Bijal Thakore⁴, Kathleen Corderre⁵
¹Space-Industry.com, Australia, ²University of Memphis, ³Beijing University of Aeronautics & Astronautics, ⁴International Space University, ⁵Lockheed Martin Corporation

2008-u-05 (9:50–10:10)

KEEPING UP WITH THE FUTURE: PREPARING LEADERSHIP TALENT FOR THE EVOLVING SPACE SECTOR
Walter Peeters
International Space University (ISU), France

[u-2] Space Education and Outreach : Practical Rocket Activities

Session Date : 2008/6/6 10:20 – 12:20
Room : Room A
Chairpersons : Walter Peeters (International Space University (ISU), France), Misuzu Onuki (Space Frontier Foundation, Japan)

2008-u-06 (10:20–10:40)

The French National Rockets Launching Campaign and the Dawn of its Collaboration with Japanese Amateur Space Clubs
Christophe Scicluna¹, Kenji Ogimoto², Minoru Sasaki³, Koichi Yonemoto⁴
¹Space Division, Planete Sciences, France, ²Space Club Kansai, Japan, ³Department of Human and Information Systems Engineering, Gifu University, Japan, ⁴Department of
2008-u-07 (10:40-11:00)

System Development of an Experimental Rocket for Launching Campaign Organized by French Association Planete Sciences

Minoru Sasaki¹, Noriaki Nakano², Satoru Ohmaya¹
¹Department of Human and Information Systems Engineering, Gifu University, Japan, ²Space Club Gifu

2008-u-08 (11:00-11:20)

Development of 90 kgf class CAMUI hybrid rocket for a CanSat experiment

Harunori Nagata¹, Tsutomu Uematsu², Mitsunori Ito¹, Akihito Kakikura¹, Yudai Kaneko¹, Kazuhiro Mori¹, Norikazu Murai³, Tatsushi Sato³, Ryuichi Mitsuhashi³, Tsuyoshi Totani¹
¹Division of Mechanical and Space Engineering, Hokkaido University, Japan, ²Camuispaceworks Co. Ltd., ³Hokkaido Institute of Technology, Japan

2008-u-09 (11:20-11:40)

Collaborative Sounding Rocket Launch in Alaska and Development of Hybrid Rockets

Tomohisa Ono, Akimasa Tsutsumi, Toshiyuki Ito, Yuji Kan
Department of Aeronautics and Astronautics, Graduate School of Engineering, Tokai University, Japan

2008-u-10 (11:40-12:00)

A German–Swedish Collaboration for Student Experiments at Esrange/Sweden

Stig Kemi¹, Lennart Poroma¹, Thorwald Larsson², Per Magnusson², Johan Marcopoulos², Peter Turner³
¹Aerospace Service Division, Swedish Space Corporation Esrange, Sweden, ²Swedish National Space Board, Sweden, ³German Space Agency DLR/Moraba, Germany

2008-u-11 (12:00-12:20)

Space Education for Practical Engineering Design

Hiroaki Akiyama, Hitoshi Doki
AKITA Univ., Japan

[u-3] Space Education and Outreach : Unique Satellite Projects

Session Date : 2008/6/6 14:10 – 16:10
Room : Room E
Chairpersons : Christophe Scicluna (Planete Sciences, France), Junya Terazono (The University of Aizu, Japan)

2008-u-12 (14:10-14:30)

Philosophy of the CanSat Development Program at Tokyo Tech And the CanSat Project in 2007, "Phoenix"

Junichi Nishida, Hiroomi Ashida, Shinichi Inagawa, Masaki Maeno, Kota Fujihashi, Yasuake Hagiwara, Yoshiyuki Miura, Saburo Matunaga
Department of Mechanical and Aerospace Engineering, Tokyo Institute of Technology, Japan

2008-u-13 (14:30-14:50)

Space Outreach Program Using CANSAT-Kit
Takashi Eishima, Shinichi Nakasuka, Yuya Nakamura
Department of Aeronautics and Astronautics, University of Tokyo, Japan

2008-u-14 (14:50–15:10)
Project Based Learning of Space Engineering Through the Development of nano Satellite
Masahiko Yamazaki, Kosuke Arita, Yuta Araki, Yasuyuki Miyazaki, Yoshitaka Nakamura, Kazuo Matsubara
Nihon University, Japan

Orbital Experiment of Nano-satellite “HIT-SAT” as a Sub-payload of M-V Rocket
Tatsuhiro Sato1, Ryuichi Mitsuhashi1, Shin Satorii, Kosei Isimura2, Tsuyoshi Totani2, Akihiro Nakamura2, Kotaro Hori2, Toshihiko Yasunaka4
1Department of Electronics, Graduate School of Engineering, Hokkaido Institute of Technology, Japan, 2Hokkaido University, Japan, 3B.U.G, INC, Japan, 4Uematsu Electric Co., Ltd., Japan

2008-u-16 (15:30–15:50)
Kagawa Satellite STARS in Shikoku
Masahiro Nohmi, Takeshi Yamamoto, Akira Andatsu, Youhei Takagi, Yuusuke Nishikawa, Takashi Kaneko, Daisuke Kunitomi
Engineering, Kagawa University, Japan

2008-u-17 (15:50–16:10)
Improvement in University Satellite Operation Using Ground Station Network
Yasuhisa Oda1, Mitsuhito Komatsu2, Naomichi Kurahara3, Yuuya Nakamura2, Yuji Sakamoto4, Shinichi Nakasuka5, Anura Wickramanayake5, Priya Fernando5
1Department of Advanced Energy, the University of Tokyo, Japan, 2Department of Aeronautics and Astronautics, the University of Tokyo, Japan, 3Department of Electric Engineering, Kyushu Institute of Technology, Japan, 4Department of Aeronautics and Astronautics, the Tohoku University, Japan, 5Department of Space Engineering, Lueao University of Technology, Sweden

[u-4] Space Education and Outreach : Understanding for Space Projects
Session Date : 2008/6/6 16:20 – 18:20
Room : Room E
Chairpersons : Jean Souchay (Observatoire de Paris, France), Akemi Kurotani (JAXA, Japan)

2008-u-18 (16:20–16:40)
Water Rocket Seen from Educational Point of View
Toshiaki Takemae
Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan

2008-u-19 (16:40–17:00)
Paper Models of Spacecrafts for Education and Public Outreach
Seiichi Sakamoto
ISAS, JAXA, Japan
2008-u-20 (17:00-17:20)
ARLISS Comeback Competition: Six-year History of Autonomous Rover Challenge
Kazuya Yoshida
Department of Aerospace Engineering, Tohoku University, Japan

2008-u-21 (17:20-17:40)
Creationg Space Culture using "Kibo"
Masato Koyama, Naoko Matsuo
Space Environment Utilization Center, JAXA, Japan

2008-u-22 (17:40-18:00)
Space Education Strategy Using Data Obtained by Lunar and Planetary Missions
Junya Terazono¹, Makoto Yoshikawa², Naoki Wakabayashi³
¹Information Systems and Technology Center, The University of Aizu, Japan, ²The Institute of Space and Astronautical Science, JAXA, Japan, ³Tokyo University of Technology, Japan

2008-u-23 (18:00-18:20)
Education and Outreach of Asteroid Sample Return Mission Hayabusa
Makoto Yoshikawa, Hitoshi Kuninaka, Junichiro Kawaguchi
Japan Aerospace Exploration Agency, Japan

Poster Session

Session Date: 2008/6/5 18:30 - 20:00
Room: Exhibition Hall

2008-a-46p
Burning Characteristics and Mechanical Properties of AP/HTPB Propellant Containing Glycerin as a Plasticizer
Makoto Kohga, Kayoko Okamoto
Department of Applied Chemistry, National Defense Academy, Japan

2008-b-50p
Performance and Plasma Characteristics of a Quasi–Steady MPD Thruster with Cusp and Divergent–Nozzle Magnetic Field
Hirokazu Tahara
Department of Mechanical Engineering, Osaka Institute of Technology, Japan

2008-b-51p
Effects of Magnetic Field Configuration and Electrically–Floating Metal Plates for Low–Power Cylindrical Hall Thrusters
Hirokazu Tahara
Department of Mechanical Engineering, Osaka Institute of Technology, Japan

2008-b-52p
Performance Characteristics of a Direct–Current Arcjet Generator with NH3, mixture of H2 and N2, and CO2 Working Gases
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<td>Ground-Based Experiment and Numerical Simulation of Current Collection to Bare Tethers in High-Speed Magnetized Plasma</td>
<td>Hirokazu Tahara, Ryosuke Utsumi, Naomitsu Uemura</td>
<td>Department of Mechanical Engineering, Osaka Institute of Technology, Japan</td>
<td>2008-b-53p</td>
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<td>Research and Development of Electrothermal Pulsed Plasma Thrusters for Project of Osaka Institute of Technology Electric-Rocket-Engine onboard Small Space Ship (PROITERES)</td>
<td>Hirokazu Tahara, Shunsuke Kuroki, Go Yoshimoto, Yuki Miyai</td>
<td>Department of Mechanical Engineering, Osaka Institute of Technology, Japan</td>
<td>2008-b-54p</td>
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<tr>
<td>Performance Change Prediction in Long Operation for Magnetic-Layer-Type Hall Thrusters</td>
<td>Hirokazu Tahara, Ken-ichi Fukushima, Shigeki Omori, Hiroki Agata</td>
<td>Department of Mechanical Engineering, Osaka Institute of Technology, Japan</td>
<td>2008-b-55p</td>
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<tr>
<td>Performance Enhancement by Discharge Channel Structure Improvement for Anode-Layer-Type Hall Thrusters</td>
<td>Hirokazu Tahara, Shigeki Omori, Ken-ichi Fukushima, Hiroki Agata</td>
<td>Department of Mechanical Engineering, Osaka Institute of Technology, Japan</td>
<td>2008-b-56p</td>
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<tr>
<td>Design Analysis of Magnetoplasma Sail Propulsion System</td>
<td>Hiroki Sato¹, Takayasu Fujino², Kenichi Kubota³, Ikoh Funaki⁴, Hiroshi Yamakawa⁵</td>
<td>¹Department of Energy Engineering, University of Tsukuba, Japan, ²Department of Engineering Mechanics and Energy, University of Tsukuba, Japan, ³Department of Energy Sciences, Tokyo Institute of Technology, Japan, ⁴Space Transportation Division, Japan Aerospace Exploration Agency, Japan, ⁵Research Institute for Sustainable Humanosphere, Kyoto University, Japan</td>
<td>2008-b-57p</td>
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<td>A Numerical Simulation of the Channel Wall Erosion Having Anomalous Transport in Hall Thrusters</td>
<td>Hiroyuki Nakamoto, Yasunori Nejoh</td>
<td>Hachinohe Institute of Technology, Japan</td>
<td>2008-b-58p</td>
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<td>Neutralizer Development by Carbon Nanotube Cathode for Small Ion Engine</td>
<td>Yoshiyuki Taka¹, Akihiro Kugimiyade¹, Shinobu Nagai¹, Naoji Yamamoto², Hideki Nakashima²</td>
<td>¹Oita National College of Technology, Japan, ²Kyushu University, Japan</td>
<td>2008-b-59p</td>
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Study of 2.5~10cm Size Microwave Discharge Ion Thruster
Yoshiyuki Takao1, Akihiro Kugimiya1, Shinobu Nagai1, Naoji Yamamoto2, Hideki Nakashima5
1Oita National College of Technology, Japan, 2Kyushu University, Japan

Visualization and Numerical Simulation on the Jet of Linear Shaped Charges
Hitoshi Miyoshi1, Makoto Hikiji2, Masami Todokoro2
1Project Division, Chugoku Kayaku Co., Ltd., Japan, 2Yoshii Plant, Chugoku Kayaku Co., Ltd., Japan

On-Orbit System Identification Experiments of the Engineering Test Satellite-VIII
Tokio Kasai1, Isao Yamaguchi1, Hirotaka Igawa1, Shinji Mitani2, Takashi Ohtani2, Masafumi Ikeda3, Kei Sunagawa4
1Structure Technology Center, Japan Aerospace Exploration Agency, Japan, 2Spacecraft Guidance, Control and Dynamics Engineering Group, Japan Aerospace Exploration Agency, Japan, 3Satellite Operations Engineering Department, Japan Aerospace Exploration Agency, Japan, 4Satellite Applications and Promotion Center, Japan Aerospace Exploration Agency, Japan

High Temperature Gas Generator for Evaluation of C/C Composite Cooled Structure
Fumiei Ono1, Masao Takegoshi1, Toshihito Saito1, Shuichi Ueda1, Osamu Hayasaka2
1Japan Aerospace Exploration Agency, Japan, 2Foundation for Promotion of Japanese Aerospace Technology (JAST), Japan

Progressive Failure of Woven Composites Structure under Transverse Loading
Liqun Xing1, Kenneth Reifsnider1, Xinyu Huang2
1Mechanical Department, University of South Carolina, USA, 2Mechanical Department, University of Connecticut, USA

Estimation of Space Debris Rotation Motion by Iterative Least Square Method
Hirohisa Kojima1, Masayuki Soda2, Yutaka Usuda1, Keiichiro Kimoto2, Junya Ohkami2
1Department of Aerospace Engineering, Tokyo Metropolitan University, Japan, 2Department of Aerospace Engineering, Tokyo Metropolitan Institute of Technology, Japan

Microgoravity Experiment plans for ISS Applied Research Center Promotion Program
Naokiyo Koshikawa1, Takatoshi Kinoshita2, Masayoshi Tanaka2, Katsuhiryo Yamamoto2, Masahiko Abe2, Hideki Sakai3, Toshio Sakai3, Akira Miyamoto3, Koji Kubota4
1Space Utilization Research Center, JAXA, Japan, 2Nagoya Institute of Technology, Japan, 3Tokyo University of Science, Japan, 4Chiyoda Advanced Solutions Corporation

Influence of Gravity on Crystallization of Charged Colloidal Particles
Zhiwei Sun, Sheng-Hua Xu, Lei Liu
NML, Institute of Mechanics, Chinese Academy of Sciences, China
Flight Data of a CIGS Thin film Solar Cell Module without a Coverglass by a Pico satellite
Shirou Kawakita1, Mitsuru Imaizumi1, Koichi Kibe1, Yuuya Nakamura2, Shiniochi Nakasuka2
1Space Power Engineering Group, JAXA, Japan, 2The University of Tokyo, Japan

A Hardware Method to Realize Control System in the Cabinet of Microgravity Drop Tower
Hai Lin, Shixin Wan, Zhaohong Chi, Jingchang Xie
Chinese Academy of Sciences, Institute of Mechanics, NML, China

Development of the Next Generation Type Water Recovery System
Mitsuo Oguchi1, Satoru Tachihara2, Yoshiaki Maeda3, Terumi Ueoka3, Fujito Soejima3
1Advanced Space Technology Research Group, Japan Aerospace Exploration Agency, Japan, 2Tsukuba Space Center, Japan Aerospace Exploration Agency, Japan, 3New Medican Tech Corporation, Japan

Development of the EUV Detector for the BepiColombo Mission
Kazuo Yoshioka, Go Murakami, Takenori Toyota
Department of Earth and Planetary Science, The University of Tokyo, Japan

Development of the High-resolution FUV Detector for the BepiColombo Mission
Go Murakami, Fukuhiro Ezawa, Kazuo Yoshioka, Takenori Toyota
Department of Earth and Planetary Science, The University of Tokyo, Japan

Japanese Geospace Exploration during the Next Solar Maximum: The ERG Project
Takayuki Ono1, Yasumasa Kasaba1, Atsushi Kumamoto1, Masahumi Hirahara2, Takeshi Takashima3, Kazuhi Asamura3, Ayako Matsuoka3, Kazuo Shikowara4, Kanako Seki4, Yoshizumi Miyoshi4
1Graduate School Science, Tohoku University, Japan, 2Graduate School of Science, University of Tokyo, Japan, 3Japan Aerospace Exploration Agency, Japan, 4Solar-Terrestrial Environment Laboratory, Nagoya University, Japan

Are the Simulants Simulating “Space Weathering” All-round?
Jun Saito1, Masateru Ishiguro2
1Research and Development Center, PASCO Corporation, Japan, 2Department of Physics and Astronomy, Seoul National University

Lunar Magnetic Field Observation by MAP–LMAG onboard SELENE (KAGUYA): ground and in-orbit calibration
Hisayoshi Shimizu1, Futoshi Takahashi2, Masaki Matsushima2, Hidetoshi Shibuya3, Hideo Tsunakawa2
1Earthquake Research Institute, University of Tokyo, Japan, 2Department of Earth and Planetary Sciences, Tokyo Institute of Technology, Japan, 3Department of Earth
2008-m-16p

Observation of Neutral Sodium above Mercury during the Transit on November 9, 2006

Takenori Toyota, Junya Ono, Kazuo Yoshioka, Go Murakami, Fukuhiro Ezawa
Department of Earth and Planetary Science, The University of Tokyo, Japan

2008-m-17p

Measurements of the Vertical Distributions of N2O Isotopomer Ratios in the Stratosphere Using a Balloon-borne Cryogenic Sampler

Sakae Toyoda¹, Naohiro Yoshida¹, Satoshi Sugawara², Shigeyuki Ishidoya³, Shuji Aoki³, Takakiyo Nakazawa³, Toshinobu Machida⁴, Gen Hashida⁵, Shinji Morimoto⁵, Hideyuki Honda⁶, Ayumi Ohkawa⁷
¹Department of Environmental Chemistry and Engineering, Tokyo Institute of Technology, Japan, ²Miyagi University of Education, Japan, ³Tohoku University, Japan, ⁴National Institute of Environmental Studies, Japan, ⁵National Institute of Polar Research, Japan, ⁶JAXA, Japan

2008-m-18p

Development of Quartz Friction Gauge on Board Balloon and Sounding Rocket

Junichi Kurihara¹, Takumi Abe², Isao Murata³, Kaoru Sato⁴, Yoshihiro Tomikawa⁵
¹Solar-Terrestrial Environment Laboratory, Nagoya University, Japan, ²Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan, ³Graduate School of Environmental Studies, Tohoku University, Japan, ⁴Department of Earth and Planetary Science, Graduate School of Science, The University of Tokyo, Japan, ⁵National Institute of Polar Research, Research Organization of Information and Systems, Japan

2008-m-19p

Developments of the Sliding Launcher and Related Facilities for the New Japanese Balloon Base

Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency (JAXA), Japan

2008-m-20p

Development of a 2.5 μm Polyethylene Film for the High Altitude Balloon

Eiichi Mizuta¹, Daisuke Akita¹, Hideaki Fuke¹, Issei Iijima¹, Naoki Izutsu¹, Jiro Kawada¹, Yukihiko Matsuzaka¹, Yoshitaka Saito¹, Kouji Ichimura², Tsutomu Kobayashi³
¹ISAS, JAXA, Japan, ²UBE-MARUZEN POLYETHYLENE CO., LTD., Japan, ³SHIBATAYA KAKOHSHI CO., LTD., Japan

2008-n-24p

Monitoring Historical Drought Using Vegetation Water Temperature Condition Index in Nepal and Northeastern India

Naresh Shakya, Yasushi Yamaguchi
Nagoya University, Graduate School of Environmental Studies, Japan

2008-n-25p

Surface Heat Fluxes in Heterogeneous Area by Remote Sensing

Hemu Kafle, Yasushi Yamaguchi
### 2008-n-26p

**An Introduction of Commercial Earth Observation with TerraSAR-X in Japan**

Jun Saito<sup>1</sup>, Akio Suehiro<sup>2</sup>, Hiroyuki Okada<sup>2</sup>, Masahiro Ogawa<sup>2</sup>, Shuhei Hikosaka<sup>2</sup>, Yuzuru Matsu<sup>2</sup>, Toshifumi Hiramatsu<sup>2</sup>

<sup>1</sup>Research and Development Center, PASCO Corporation, Japan; <sup>2</sup>Satellite Business Division, PASCO Corporation, Japan

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### 2008-n-27p

**Characterizing the Urban Growth of Hanoi City from 1975 to 2003 by Remote Sensing and a Spatial Metric**

Pham Hai, Yasushi Yamaguchi

Graduate School of Environmental Studies, Nagoya University, Japan

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### 2008-n-28p

**L-band InSAR Coherence for the Muroto Area, Shikoku, Japan**

Makoto Omura

Department of Environmental Science, Kochi Women's University, Japan

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### 2008-n-29p

**Analysis of Deforestation Using Landsat MSS, TM and ETM+ Imageries and its Influence on Rainfall in Amazonia**

Megumi Maruyama, Yasushi Yamaguchi

Department of Earth and Planetary Sciences, Nagoya University, Japan

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### 2008-n-30p

**Design and Concept of the Compact Infrared Camera (CIRC) with Uncooled Infrared Detector**

Haruyoshi Katayama, Yoshihiko Okamura, Yoshio Tange, Kouji Nakau

Office of Space Applications, Earth Observation Research Center, Japan Aerospace Exploration Agency, Japan

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### 2008-n-31p

**Disaster Monitoring Using ALOS/PALSAR Data**

Yousuke Miyagi, Masanobu Shimada

Earth Observation Research Center, Japan Aerospace Exploration Agency, Japan

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### 2008-2-41p

**Highpervelocity Impact of Space Solar Pannels**

Shirou Kawakita<sup>1</sup>, Go Segami<sup>1</sup>, Kumi Nitta<sup>1</sup>, Hiroaki Kusawake<sup>1</sup>, Masato Takahashi<sup>1</sup>, Haruhisa Matsumoto<sup>2</sup>, Sunao Hasegawa<sup>3</sup>

<sup>1</sup>Space Power Engineering Group, JAXA, Japan; <sup>2</sup>Space Environment Measurement Group, JAXA, Japan; <sup>3</sup>Institute of Space & Astronautical Science, JAXA, Japan

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### 2008-2-42p

**Small Total Dose Measurement System for SOHLA-1 and SDS-1**

Yugo Kimoto, Yohei Sato, Hiroshi Tachihara

Institute of Aerospace Technology, JAXA, Japan
For a successful and efficient space exploration mission, technological innovations and inheritances shall always stay as a key-factor. From such a point of view, in this lecture which is arranged by Japan Region of International Academy of Astronautics, the recent activities and trend in technical education at universities in Japan are reviewed. Then, the recent achievements in lunar and planetary missions by JAXA are presented and the near-term and future missions requiring innovative approaches will be introduced.


Shinichi Nakasuka
Department of Aeronautics and Astronautics, University of Tokyo

Japan’s Leap in Lunar and Planetary Exploration – Technology Development and Inspirations for Innovation –

Junichiro Kawaguchi
Institute of Space and Astronautical Science, Japan Space Exploration Agency (JAXA)

Regional Meeting of International Academy of Astronautics (IAA)
(open to IAA Members and Corresponding Members, only)

Date : 2008/06/02 15:30 - 16:30
Room : Room C
Contact : Keiken Ninomiya (IAA Regional Secretary, Japan)

Outline of the program
The Astrodynamics, Navigation Guidance and Control Committee of ISTS encourages all ISTS attendants and university students to participate in the 4th "Spacecraft Control System Design Contest".
The theme of this year is "Debris Collection".

A service robot moves toward the first debris, captures it, moves toward the second debris. After it collects all the debris, the robot moves to the collection area, stays there and releases the debris. Evaluation is made how quickly the robot collects all the debris.

Sample Program of the 4th Spacecraft Control System Design Contest (updated 2008.04.25)

Get Together Place
Date : 2008/06/01 14:00 - 17:00
Room : Room D, Symposium Site
Admission Fee : free
All participants are welcome to the get together place for simple relish and beverages. Please feel to drop in and enjoy chat with other participants.

Welcome Reception

Date: 2008/06/02 18:30 - 20:30
Room: OKURA Act City Hotel Hamamatsu
Admission Fee: free

On Monday evening, all participants will be cordially invited to the Welcome Reception by Shizuoka Prefecture, Hamamatsu City, Hamamatsu Executive Committee with Japanese hospitality.

Commendation & Closing Ceremony

Date: 2008/06/06 18:30 - 20:30
Room: Hamamatsu Meitetsu Hotel
Admission Fee: 3,000JYE (Regular & Accompanying person)
1,000JYE (Student: Student ID Required)

The 26th ISTS Organizing Committee intends to make this last evening of the 26th ISTS an unforgettable event.