



2010 International Space Development Conference Preliminary Program

ISDC MEALS, SPECIAL EVENTS AND MEETINGS

(* = separate registration & fee required)

WEDNESDAY

- 7:30 am - 5:00 pm – 8th Space Investment Summit* [*Warhol AB*]
- 12:00 - 1:30 pm – SIS Luncheon* [*Pollack AB*]
- 5:00 - 6:30 pm – SIS Reception* [*Pollack AB*]
- 7:00 - 9:00 pm – Private Dinner: AIAA Space Colonization Technical Committee [*Warhol AB*]
- 8:00 - 11:00 pm – Hospitality [*Pollack AB*]

THURSDAY

- 10:45 - 11:15 am – Coffee Break. *Sponsored by The Boeing Company.* [*Avedon AB*]
- 12:00 - 1:45 pm – Luncheon.* Speaker: Peter Diamandis (Founder/CEO, X-Prize Foundation) [*Louvre 2,3*]
- 5:00 - 5:45 pm – Meet & Greet speakers [*Avedon AB*]
- 6:00 - 7:00 pm – Pre-dinner Reception; cash bar [*Avedon AB and foyer*]
- 7:00 - 9:00 pm – “Italian Reception.”* [*Avedon AB*]
- 9:00 - 1:00 am – Hospitality; cash bar [*Avedon AB*]

FRIDAY

- 7:15am - 5:30 pm – Tour.* Argonne National Laboratory and Fermi National Accelerator Laboratory
- 12:00 - 1:45 pm – Luncheon.* “The Augustine Committee and U.S. Space Policy.” Speaker: Jeff Greason (Augustine Committee). Also: Kepler Space University Commencement ceremony [*Louvre 2,3*]
- 4:00 - 6:00 pm – Introduction and Reception: NSS Space Ambassadors. Special guest: George Whitesides (CEO, Virgin Galactic) [*Teylers*]
- 5:00 - 5:45 pm – Meet & Greet speakers [*Avedon AB*]
- 6:00 - 7:00 pm – Pre-dinner Reception for Charles Bolden (NASA Administrator); cash bar [*Avedon AB and foyer*]
- 6:30 - 8:00 pm – Reception for International Students [*Warhol AB*]
- 7:00 - 9:30 pm – Dinner.* Speaker: Charles Bolden (NASA Administrator) [*Avedon CD*]
- 9:30 (or when the Bolden Dinner ends) - 11:30 pm – NSS Chapters Assembly [*Teylers*]
- 8:00 pm - 1:00 am – Hospitality; cash bar [*Avedon AB*]

SATURDAY

- 9:00 - 12:00 & 2:00 – 3:00 pm: Students for the Exploration and Development of Space [SEDS] Executive Board and Council of Chapters [*Teylers*]
- 12:00 - 1:45 pm – Luncheon A.* Speaker: Lori Garver (Deputy Administrator, NASA) [*Louvre 2,3*]
- 12:00 - 1:45 pm – Luncheon B* - for students and their parents and teachers. Speaker: Bruce Clark, Sr. [*Louvre I*]
- 4:00 - 6:00 pm – Private Meeting: NSS Board of Governors [*Teylers*]
- 5:00 - 5:45 pm – Meet & Greet speakers [*Avedon AB*]
- 6:00 - 7:00 pm – Pre-dinner Reception for Buzz Aldrin and NSS Governors; cash bar [*Avedon AB and foyer*]
- 7:00 - 10:00 pm – Governors Dinner* (& NSS auction). Speaker: Buzz Aldrin (Astronaut, NSS Gov) [*Avedon CD*]
- 10:00 - 11:00 pm – Special Program: “How the Space Movement Began: 45th anniversaries of the L-5 Society and the National Space Institute.” Speakers: Fred Ordway, Mark Hopkins [*Avedon AB*]
- 8:00 pm - 1:00 am – Hospitality; cash bar [*Avedon AB*]

SUNDAY

- 9:00 am – 6:00 pm – NSS Board of Directors meeting [*Teylers*]
- 12:00 - 1:45 pm – Luncheon A.* Speaker: Speaker: John Marmie, LCROSS Team, NASA) [*Louvre 2,3*]
- 12:00 - 1:45 pm – Luncheon B* – for students and their parents and teachers. Speaker: Richard Garriott (civilian astronaut) [*Louvre I*]
- 5:00 - 5:45 pm – Meet & Greet speakers [*Avedon AB*]
- 6:00 - 7:00 pm – Pre-dinner Reception for Freeman Dyson; cash bar [*Avedon AB and foyer*]
- 7:00 - 10:00 pm – NSS Awards Banquet.* Speaker: Freeman Dyson (NSS Governor): “American and Russian Space Cultures” [*Avedon CD*]
- 8:00 - 10:00 – Informal get-together: Transhumanists and Futurists
- 8:00 pm - 1:00 am – Hospitality; cash bar [*Avedon AB*]

FRIDAY – SATURDAY – SUNDAY

Avedon AB will generally be available all day for rest, relaxation, chatting, without having to leave the area.

MONDAY MORNING

- 11:00 - 12:00 pm – NSS Town Meeting [*Avedon AB*]



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GENERAL PROGRAMMING

Throughout the Conference there will be a plethora of individual programs aimed at both space “insiders” and “outsiders” providing updates on the latest in many areas of space research, exploration and development.

SPECIAL PROGRAMMING

Thursday and Friday, all day: BUS: **“THE BUSINESS OF SPACE”**

Coordinator and Chair: Clifford McMurray (NSS)

These programs focus on the growing privatization and commercialization of space. Speakers will provide updates on leading “NewSpace” companies and future trends.

Thursday and Friday, all day, with additional programs Saturday and Sunday:

SSP: **“1st NSS SPACE SOLAR POWER SYMPOSIUM”**

Coordinator and Chair: John C. Mankins (Artemis Innovation Management Solutions, LLC)

A two-day multi-track program brings together scientists from around the world to report and compare notes on the latest developments in all the fields involved in bringing limitless space solar power to Earth.

As this Program Book goes to press, we expect a live videoconference Sunday morning with Dr. A. P. J. Abdul Kalam, former President of India and scientist and aeronautical engineer instrumental in the development of the Indian space program.

Thursday afternoon and Friday morning: **“SPACE COLONIZATION”**

Organized by the Space Colonization Technical Committee (SCTC) of the American Institute of Aeronautics and Astronautics (AIAA)

Chair: Anita Gale (The Boeing Company)

These programs will explore multiple problems, and possible solutions, that need to be addressed for space colonies to be established successfully.

Friday afternoon: **“SPACE 2.0: REBOOTING OUR SPACE VISION”**

In three program hours James Logan, M.D., and Daniel R. Adamo go back to basics, analyze the premises upon which our space program is based (and upon which all our beautiful illustrations of settlements on the Moon and Mars are based), consider whether the laws of science present any showstoppers to space settlement, and consider what alternatives we might have for dealing with such showstoppers.

Saturday morning: **“SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM”**

Organizer and Chair: Jim Schier (Manager of Planning Systems, NASA Space Communications & Navigation Program)

These programs will describe the problems, solutions and promise of the space communication and navigation technologies NASA is developing to support government and commercial space satellites and human and robotic missions over the next two decades.

Saturday all day: **“LIVING IN SPACE”**

Sponsored and coordinated by Kepler Space University

Chair: Sherry Bell

These programs consider various aspects of what it will be like living in space settlements, technologically and sociologically.

Sunday all day and Monday morning: **“EDUCATION AND SPACE”**

Coordinator and Chair: Lynne Zielinski (Glenbrook N. HS, NSS Director)

Host: Elizabeth F. Wallace (Kepler Space University)

These programs, which may be of particular interest to teachers and students, feature many ways of understanding, illustrating, and teaching about various aspects of space science and exploration.

Sunday afternoon and Monday morning: BS&T: **“BREAKTHROUGH SCIENCE AND TECHNOLOGY”**

Coordinator and Chair: William Gardiner (Laboratory Director, Analytech; NSS Director)

Space is not all rocket science. These programs will example technologies that do not yet exist, but if they can be better understood and mastered, will lead to giant leaps in how we get from here to there – “there” being other worlds, both in our solar system and around other stars.



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SPECIAL PROGRAMMING (continued)

Friday, Saturday, Sunday and Monday: **“MANY ROADS TO SPACE”**

ISDC registrants come together to exchange views, to seek new ideas and new directions to follow in pushing for accelerated space development, and to pass on their own ideas and experiences. Many of them have unique perspectives, experiences and ideas on various matters relating to space science, technology, development, promotional techniques and space policy, but the opportunities for others to hear them hitherto have been informal and catch-as-catch can. In MRTS, individual registrants make 15-minute presentations on any of such matters of special importance to them and of potential interest to others. These mini-presentations should help spread the diversity of ideas and experiences that abound but which cannot always find a forum or do not need a full-length program slot.

Monday morning: **ASTRONOMY**

Coordinator: Audrey Fischer (Secretary, Chicago Astronomical Society)

The CAS has prepared a collection of programs to make sky-gazing more fun, from artificial satellites to galaxies. The track will include actual astronophotography, using the telescopes in Australia in real-time.

Except for Thursday morning, all programs begin on the hour and end 45 minutes later, leaving 15-minute breaks. Thursday morning the 11:00 program will begin at 11:15.



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PROGRAM

Thursday, May 27, 2010

"THE BUSINESS OF SPACE"

[Avedon CD]

- 9:00 - 9:45** -- *Keynote*. George Nield (Associate Administrator for Commercial Spaceflight, FAA)
- 10:00 - 10:45** -- *Report on the 8th Space Investment Summit*. Paul Eckert (International & Commercial Strategist, Boeing; SIS Executive Coordinator), moderator; Douglas Comstock, (Director, Innovative Partnerships Program, NASA Office of the Chief Technologist); Max Grimard, Vice President/Deputy Head, Strategy & Business Development, EADS Astrium; Robert Jacobson (Partner, Desert Sky Holdings LLC); Amaresh Kollipara (Managing Partner, Earth2Orbit LLC); Michael Leventhal (Attorney / Consultant, mc² The Law Firm)
- 10:45 - 11:15** -- Coffee Break (sponsored by the Boeing Company)
- 11:15 - 12:00** -- *Space Adventures' New Venture*. Eric Anderson (President/CEO, Space Adventures)

TRACK A [Avedon CD]

- 2:00 - 2:45** -- *How to Build a Successful Space Company*. Tim Pickens (Commercial Space Advisor, Dynetics, Inc.)
- 3:00 - 3:45** -- *Google X-Prize Update*. Jason Calaiaro (Astrobotic); Kevin Myric (Synergy Moon)
- 4:00 - 4:45** -- *Spaceport America*. Rick Hohmans (Acting Director, Spaceport America)

TRACK B [Avedon AB] --

- 2:00 - 2:45** -- *The Space Competiveness Index*. David Vaccaro (Senior Analyst, Futron)
- 3:00 - 3:45** -- (a) *Orbital Outfitters: Spacesuits and More*. Jeff Feige (CEO, Orbital Outfitters)
(b) *Aurora Aerospace: Training Civilians for Spaceflight*. Howard Chipman (CEO, Aurora Aerospace)
- 4:00 - 4:45** -- (a) *Can Your Airport Become a Spaceport*. Derek Nolek (Mechanical Design Engineer, RS&H Aerospace & Defense)
(b) *NASA-Ames: Business' Gateway to NASA*. Bruce Pittman (Director of Flight Projects & Chief Systems Engineer, NASA-Ames)

1st NSS SPACE SOLAR POWER SYMPOSIUM

Global Progress Toward Solar Power Satellites
[Warhol AB]

- 9:00 - 9:45** -- Session 1-1 / SPS Introduction
(a) *Overview of Recent Developments in Space Solar Power*. John C. Mankins (Artemis Innovation)
(b) *An International Policy Forum on Space Solar Power*. George Dietrich (Space Canada).
(c) *Background for SPS: Studies in the 1970s*. Gordon Woodcock (The Boeing Company, ret.)
- 10:00 - 10:45** -- Session 1-2 / SPS and Related Government Efforts - I
(a) *SSP Concepts and Activities at the Japan Aerospace Exploration Agency*. Prof. Susumu Sasaki (ISAS/JAXA)
(b) *Recent Technology Developments at the US Naval Research Laboratory*. Paul Jaffe (NRL)
- 11:15 - 12:00** -- Session 1-3 / SPS Commercial Ventures
(a) *Prospects for SSP Technology Flight Experiments at EADS Astrium*. Frank Steinsiek (EADS Astrium)
(b) *Space Solar Power and the Space Energy Group*. Feng Hsu (Space Energy Group)
(Afternoon)
- 2:00 - 2:45** -- Session 1-4 / SPS and Related Government Efforts - II
(a) *Policy Considerations for Space Solar Power*. Eva-Jane Lark (BMO Nesbitt Burns)
(b) *International Collaboration in Space Solar Power: "The Sun, The Ancients and The Modern World."* Janet Verrill
- 3:00 - 3:45** -- Session 1-5 / The Challenges of SPS Systems
(a) *Debating the Point: A Recent Discussion on the Topic of Space Solar Power*. Gary Barnhard (NSS)
(b) *Systems Comparison of Ground and Space Solar Power*. John Strickland (NSS)
- 4:00 - 4:45** -- Session 1-6 / International Studies of Space Solar Power
Results of the Recently Completed International Academy of Astronautics Space Solar Power Study. John C. Mankins (Artemis Innovation) and Prof. Nobuyuki Kaya (Kobe University)



National Space Society

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AIAA-Space Colonization

Technical Committee:

“SPACE COLONIZATION”

[Pollack AB]

- 2:00 - 2:45** -- *Geopolitics of Space*. John Brandenburg
(Orbital Technologies Corporation)
- 3:00 - 3:45** -- (1 *Space Settlement as a Human
Imperative*. Gordon Woodcock (The Boeing
Company, ret.)
(2 *Triggers for Space Settlement*. Anita Gale (The
Boeing Company)
- 4:00 - 4:45** --1 *Artificial Gravity*. Narayanan
Ramachandran (NASA Marshall SFC)
(2 *Long-Duration Space Flight in the Soviet Era*. B.J.
Bluth (NASA, ret.)
- 5:00 - 5:45** -- *An International Lunar Research Park*.
Dave Heck (Wisconsin Space Grant
Consortium)

2010 International Space Development Conference Preliminary Program
Friday, May 28, 2010
"THE BUSINESS OF SPACE"

[Avedon CD]

- 9:00 - 9:45** -- *XCor Aerospace Update*. Jeff Greason (CEO, XCOR)
- 10:00 - 10:45** -- *Bigelow Aerospace Update*. Michael Gold (Director of D.C. Operations & Business Growth, Bigelow)
- 11:00 - 11:45** -- *NRSC-Suborbital Research and Opportunities*. Steven H. Collicott, (Purdue U) (Afternoon)
- 2:00 - 2:45** -- *Winning the Northrup Grumman Lunar Lander Centennial Challenge*. Dave Masten (President/CEO, Masten Space Systems)
- 3:00 - 3:45** -- (1) *Competing With Larger Companies*. Chirinjeev Kathuria (Chairman, PlanetSpace)
 (2) *A Business Strategist's Look at NewSpace*. Ken Davidian (Office of Commercial Space Transportation, FAA)
- 4:00 - 4:45** -- *NASA's COTS Program Update*. Dennis Stone (Assistant Manager, Program Integration, Commercial Crew & Cargo Program, NASA)

1st NSS SPACE SOLAR POWER SYMPOSIUM

[Warhol A]

TRACK A / SPS Concepts: Technologies, Systems & Applications

- 9:00 - 9:45** -- Session 2A-1 / Wireless Power Transmission - 1
 (a) *Prospects for Microwave Wireless Power Transmission*. Prof. Nobuyuki Kaya (Kobe Univ)
 (b) *Recent US Activities in Wireless Power Transmission*. Frank Little (TAMU)
- 10:00 - 10:45** -- Session 2A -2 / Wireless Power Transmission - 2
 (a) *Delivering Solar Energy to Earth by Reflection*. Stan Rosen (The Boeing Company, ret.)
 (b) *Wireless Power Transmission Demonstrations in Japan*. Shoichiro Mihara (USEF)
- 11:00 - 11:45** -- Session 2A -3 / Wireless Power Transmission - 3
 Fundamental Physics of WPT: Investigation Of General Maxwell's Equation of Attenuation, Inhomogeneity and Anisotropy, and The Environment Influences on Wireless Energy Transmission From SPS to the Earth Surface. Dr. Dao Khac An and Dr. Tran Manh Tuan (Vietnam Academy of Science and Technology) (Afternoon)
- 2:00 - 2:45** -- Session 2A -4 / Ground Energy Integration

- (a) *Bringing Space Based Solar Power Home to the Earth*. Wayne Finger (RS&H)
 (b) *Strategies for Solar and SSP Radiant Energy Thermal-Chemical Fuel Production*. Robert Wegeng (PNNL)

3:00 - 3:45 -- Session 2A -5 / Technology Demonstrations & Space Experiments

- (a) *Microwave Wireless Power Transmission Prototype for Space Solar Power Station*
 (b) Femi Ishola (University of Lagos, Nigeria) *Wireless Power Transmission Field Experiments – Recent Demos and Future Plans*. Prof. Nobuyuki Kaya (Kobe University)
- 4:00 - 4:45** -- Session 2A - 6 / Space Applications of Space Solar Power and Related Technologies
 (a) *Server Sky - Data Centers in Orbit*. Keith Lofstrom (Server Sky)
 (b) *Orbital Power Beaming for Extraterrestrial Exploration*. Seth Potter (The Boeing Company)

[Warhol B]

TRACK B / SPS Implementation: Supporting Systems & Issues

- 9:00 - 9:45** -- Session 2B-1 / Supporting Technologies & Systems – Robotics and Autonomy
 (a) *Systems Autonomy and Space Solar Power*. Anthony R. Gross (NASA ARC)
 (b) *The Role of Intelligent Modular Systems in Space Solar Power*. John C. Mankins (Artemis Innovation Management Solutions LLC)
- 10:00 - 10:45** -- Session 2B -2 / Supporting Technologies & Systems – Structures and Materials
 (a) *The Application of Expandable Material/Structural Systems to Large-Area Solar Collectors and Apertures*. John Dorsey (NASA LaRC), et al.
 (b) *Magnetically Inflated Structures*. James R. Powell (MagLev 2000)
- 11:00 - 11:45** -- Session 2B -3 / Supporting Technologies & Systems – Lunar Resources & SSP
 (a) *The Use of Lunar Resources in Developing Space Solar Power*. Alex Ignatiev (University of Houston)
 (b) *Novel Strategies for Lunar Networks and Development*. Robert Wegeng (PNNL) (Afternoon)
- 2:00 - 2:45** -- Session 2B -4 / Supporting Technologies & Systems – Transportation 1
 (a) *Launch Concepts for SPS: Reusable Heavy Lift Launch Vehicles*. Ralph Nansen (Rockwell, ret.)
 (b) *Architectures to Enable Affordable Space Solar Power Space Transportation*. Joe Howell (NASA MSFC, Ret.)
- 3:00 - 3:45** -- Session 2B-5 / Supporting Technologies & Systems – Transportation 2
Potential In-Space Infrastructure and Refueling. Dallas G. Bienhoff (The Boeing Company)

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4:00 - 4:45 -- Session 2B-6 / Supporting Technologies & Systems – Transportation 3 (2) *Overcoming Constraints with Innovative Mission Architectures: A Design Reference Program.*

(a) *The StarTram Concept – Achieving Earth to Orbit Transportation for SSP at less than \$100 per Kilogram.* James R. Powell (MagLev 2000)

(b) *The Launch Loop: a Low Cost Earth-To-High-Orbit Launch System.* Keith Lofstrom (Server Sky)

James S. Logan, M.D. and Daniel R. Adamo

“MANY ROADS TO SPACE”

[Field]

PLENARY SESSION / Symposium Wrap-Up Session
[Pollack AB]

4:00 - 4:45 -- (1) *Selling Space in Cyberspace.* Jay Wittner (Wittner Consulting)

5:00 - 5:45 -- Session 2C-1 / Symposium Wrap-Up Session

Future Directions for Space Solar Power. John C. Mankins (Artemis Innovation)

Plus... Individual Session Reports

AIAA-SCTC: “SPACE COLONIZATION”

[Pollack AB]

9:00 - 9:45 -- (a) *Lunar Dust Mitigation.* Narayanan Ramachandran (Marshall Space Flight Center, NASA)

(b) *The Extreterrestrial Imperative and Krafft Ehrlicke.* BJ Bluth (NASA, Ret.)

10:00 - 10:45 -- (a) *A Lunar Outpost.* Ed McCullough (The Boeing Company, Ret.)

(b) *Lunar Habitation ISRU.* Eric Rice (Orbitec)

11:00 - 11:45 -- *Building a Moonbase: State of the Art.* Dennis Wingo (Founder/President, Skycorp)

**“SPACE 2.0:
REBOOTING OUR SPACE VISION”**

[Pollack AB]

2:00 - 2:45 -- Session 1 / Inconvenient Truths

(1) *The Demise of SPACE 1.0 - Catastrophe or Opportunity?* James S. Logan, M.D. (Co-Founder, Space Medicine Associates, Inc.)

(2) *The Five Deep Space Constraints for Human Exploration: Delta-V, Radiation, Microgravity, Resources, Infrastructure.* James S. Logan, M.D.

3:00 - 3:45 – Session 2 / Reality Bites.

(1) *Why the Surface of Mars Remains a "Bridge Too Far"...and the Lunar Surface Isn't That Much Better.* Daniel R. Adamo (Independent Astrodynamics Consultant)

(2) *Radiation & Microgravity: The Ultimate Showstoppers...Unless....* James S. Logan, M.D.

4:00 - 4:45 – Session 3 / Emergence of SPACE 2.0

(1) *Turning Constraints into Design Drivers: The Perfect Destination(s).* James S. Logan, M.D. and Daniel R. Adamo

2010 International Space Development Conference Preliminary Program
Saturday, May 29, 2010
CURRENT EVENTS / PLANNING FOR SPACE

[Avedon CD]

9:00 - 9:45 -- *The "NewSpace" Paradigm: The Role of the New Space Entrepreneurs.* Lon Levin (President, Sky Seven Ventures; NSS Governor), *Moderator*; Jeff Feige (CEO, Orbital Outfitters); Chirinjeev Kathuria (Chairman, PlanetSpace); Dave Masten (President/CEO, Masten Aerospace)

10:00 - 10:45 -- SSP: *Why Space Solar Power (SSP) Is the Answer and the ONLY Answer to Our Long Term Energy Needs.* James Michael (Mike) Snead (President, Spacefaring Institute, LLC)

11:00 - 11:45 -- SSP: SSP Unlimited.

(1)

(2)

(Afternoon)

2:00 - 2:45 -- *The Great Debate - I: What the Argument About the Obama Space Policy Is All About.* Scott Pace, Director, Space Policy Institute; NSS Governor)

3:00 - 3:45 -- *The Great Debate - II: Alternate Views.* Rusty Schweikart (Apollo astronaut); Robert Zubrin (President, The Mars Society); **AND AUDIENCE DISCUSSION**

4:00 - 4:45 -- *Virgin Galactic: Update and Outlook.* George Whitesides (CEO, Virgin Galactic)

5:00 - 5:45 -- *Yuri's Night: Including Fun in the Space Movement.* Loretta Hidalgo Whitesides, *Moderator*; Ryan Kobrick; Chris Lewicki; Brice Russ

**Kepler Space University:
"LIVING IN SPACE"**

[Pollack AB]

9:00 - 9:45 -- *Moon Base Dsign: Report Of NASA "NPSIRES" Program Moon Base Design Integrated Project Team.* Edward B. Kiker (Kepler Space University)

10:00 - 10:45 -- *A Versatile Robotic Manipulator for Performing Assembly and Payload Handling Operations on Planetary Surfaces.* John T. Dorsey (NASA Langley Research Center)

11:00 - 11:45 -- *Adapting Plants to the Moon.* Daniel Hawk (Wisconsin Space Grant Consortium). David Dunlop (NSS), *Moderator*

(Afternoon)

2:00 - 2:45 -- (1) *Habitation Concepts and Tools for Asteroid Missions & Commercial Applications.* David Smitherman (NASA Marshall Space Flight Center)

(2) *Use of Solar Power for People on the Moon.* Feng Hsu (Space Energy Group)

3:00 - 3:45 -- (1) *Solar Panels from Lunar Regolith.* Peter J. Schubert (Packard Engineering)

(2) *Communication Between Worlds: What Will the "News" Be Like in a Multi-Planet Civilization.* Walt Putnam (Dean, Kepler Space University)

4:00 - 4:45 -- (1) *A Legal System for People in Space.* David Shrunk (Kepler Space University)

(2) *Human Governance in Space.* Bob Krone (Provost, Kepler Space University)

(3) *Universities for Space.* Bob Krone (Provost, Kepler Space University)

5:00 - 5:45 -- *Lessons from Analog Mars.* Robert Zubrin (President, The Mars Society)

SPACE COMMUNICATIONS AND NAVIGATION

[Warhol AB]

9:00 - 9:45 -- Session 1 / Space Communications & Navigation I: The Plan - Evolving to Meet Future Needs

This session will focus on NASA's plans to evolve its Space Communications & Navigation networks (Space Network, Near Earth Network, and Deep Space Network) to meet the needs of anticipated missions for the next 20 years. It will also address joint efforts by the European, Japanese, and other space agencies to develop capabilities for cross support of each other's missions. Presentations:

(a) *NASA's Planned Space Communications & Navigation Architecture to 2030.* Jim Schier (Manager of Planning Systems, NASA Space Communications & Navigation Program)

(b) *NASA's Mars Telecommunications: Evolving to Meet Robotic and Human Mission Needs,* James Schier

(c) *Letting Everyone into the Game - International Interoperability.* Peter Shames (Jet Propulsion Laboratory) or James Schier

10:00 - 10:45 -- Session 2 / Space Communications & Navigation II: New Capabilities, New Technologies, and New Opportunities

This session will describe the technologies and standards being developed to enhance NASA's Space Communications networks including laser communications, the Solar System Internet, and software-defined radios. Presentations:

(a) *Laser Communications and the Lunar Laser Communications Demonstration (LLCD).* John Rush (NASA HQ) or Hsiao Smith (NASA GSFC)

(b) *CoNNeCT: Software-Defined Radio Testbed.* Rich Reinhard/NASA GRC

(c) *Solar System Internet.* John Rush (NASA HQ) or Adrian Hooke (JPL)

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11:00 - 11:45 – Session 3 / Space Communications & Navigation III: The Wild Card - Commercial Communications for Exploration and Science

NASA employs commercial ground stations as part of the Near Earth Network. NASA's Tracking and Data Relay Satellite System (TDRSS) was originally commercially owned and leased by NASA. A NASA study in 2008 assessed the feasibility of establishing commercial lunar communications capabilities to support human and robotic missions. With major program changes in the current NASA budget, this panel will discuss the prospects for continuation and expansion of commercial communications to support exploration and science missions. Panelists: James Schier, Moderator; Gary Barnhard (Executive Director, National Space Society); Ken Davidian, (FAA Office of Commercial Space Transportation); Jeff Volosin (NASA Near Earth Network Manager); Others TBD

(3) *Paradise Regained: The Re-Greening of Earth.*
Charles "Les" Johnson (NASA)

GENERAL
[Warhol AB]

- 2:00 - 2:45** -- *Effective Spaceport Development Infrastructure.* Mike Ryan
3:00 - 3:45 -- (1) *SPS and the Desalination of Fresh Water.* Don Flournoy (Ohio University)
(2) *Satellite-Serving Spacecraft.* Gary Horsham
4:00 - 4:45 -- *Next Generation Propulsion (NERVA).*
James Dewar
5:00 - 5:45 -- *Science of 2010 (the Movie) v Science of 2010 (the Reality).* Bill Higgins (Fermilab)
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"MANY ROADS TO SPACE"
[Field]

- 2:00 - 2:45** -- (1) *A Free-Market Path to Commercial Space Development.* Jackie DeWayne Reynolds
(2) *Making Health in Space a Model for Health on Earth.* William Gardiner (Laboratory Director, Analytech; NSS Director)
(3) *The Importance of Personal Space Technology.* Tom Jaquish
3:00 - 3:45 -- (1) *Orbital Debris Removal.* James E. Dunstan
(2) *Space Colonization Training Center.* James L. Schoenfelder
(3) *Earth-Based Horizontal Hypersonic MagLev.* Don Wade
4:00 - 4:45 -- (1) *Redefining Time to Understand Space.*
Thomas W. Sills
(2) *Communicating CETI with Terrestrial Intelligence.*
William Alba Director (Science and Humanities Scholars Program Director, AP / EA Program, Carnegie Mellon University)

2010 International Space Development Conference Preliminary Program**Sunday, May 30, 2010****GENERAL - I**

[Avedon CD]

- 9:00 - 9:45** -- *Getting to Mars Sooner and Less Expensively Than You Think.* Robert Zubrin (President, The Mars Society)
- 10:00 - 10:45** -- *A Personal Perspective on Space.* Richard Garriott (civilian astronaut)
- 11:00 - 11:45** -- *SSP: International Implications of Space Solar Power – Part I.* Dr. A.P.J. Kalam (former President of India): *By Videoconference* (Afternoon)
- 2:00 - 2:45** -- *SSP: International Implications of Space Solar Power – Part II.* Taylor Dinerman, Chair. Panel TBD
- 3:00 - 3:45** -- *Protecting Earth From Impacts.* Rusty Schweikart (Apollo astronaut)
- 4:00 - 4:45** -- *Significance of Water on the Moon & 50 Priority Targets.* Mark Robinson; Dave Dunlop (NSS), moderator
- 5:00 - 5:45** -- *Planning for Lunar Development: Water, Scientific Priorities & International Cooperation.* Clive Neal; Dave Dunlop (NSS), moderator

GENERAL - II

[Warhol AB]

- 9:00 - 9:45** -- (1) *An Open Source Approach to the Google X-Prize.* Michael Barrucco (Team FRED); Sean Casey (Team FRED)
(2) *Recovering the Lost Images of the Moon.* Dennis Wingo
- 10:00 - 10:45** -- (1) *Ways to Make Space Settlement Knowledge Commercially Profitable.* Edythe Weeks
(2) *Future of the Workforce in Space.* Mike Ryan
- 11:00 - 11:45** -- *Landing & Robotics on the Lunar Surface.* (Afternoon)
- 2:00 - 2:45** -- (1) *Space & the Rise or Fall of Humanity.* Douglas Mallette.
(2) *Personal Liberty & Lunar Settlements.* James E. Dunstan)
- 3:00 - 3:45** -- *Beam Power Propulsion.* Dmitriy Tseliakovich
- 4:00 - 4:45** -- *BTS&T: Progress Toward Revolutionary Propulsion Physics: Space Drives &FTL.* Marc Millis (Tau Zero Foundation)

EDUCATION AND SPACE

[Warhol AB]

8:30 - 8:55 -- *THIS 8:30-8:55 SPECIAL SESSION IS ONLY FOR STUDENTS AND THEIR PARENTS AND ACCOMPANYING TEACHERS: Innovation & Entrepreneurialism.* Chirinjeev Kathuria (Chairman, PlanetSpace)

[Pollack A]

TRACK A

- 9:00 - 9:45** -- *AIAA International Space Settlement Design Competition.* Anita Gale (The Boeing Company)
- 10:00 - 10:45** -- *Team Robotics – An Interactive Adventure Using Robots and the Space Shuttle.* Margie Corp (Orenic Intermediate School)
- 11:00 - 11:45** -- *NSS-NASA Space Settlement Design Competition: International Collaboration by Students from Three Countries.* JICU (the first international team to enter the NASA/NSS SSDC). Collaborating students teams from Ireland, Japan, and United States. JICU is Space Settlement Design Contest. Students from Japan's Saibi High School, St. Flannan's College, in Ireland, and three middle schools from Jacksonville, Florida comprise team JICU. Irish students designed the overall structure while the Japanese and American students contributed to the settlement subsystems. With a capacity of 20,000 inhabitants, it is designed to be completely self-sufficient. ISDC 2010 will mark the first meeting of JICU students -- Also presentations by two other student winning teams

(Afternoon)

- 2:00 - 2:45** -- *Demonstrating Microgravity and Weightlessness in the Classroom.* Richard DeLombard (NASA, ret.)
- 3:00 - 3:45** -- (1) *NSS-NASA Ames Space Settlement Design Competition.* Presentations by two student teams.
(2) *Competitions, Grants, and Educational Opportunities in Aerospace.* Kevin Simmons (Einstein Fellow, National Science Foundation)
- 4:00 - 4:45** -- *Microgravity is NOT Zero Gravity; See Microgravity in Action.* Richard DeLombard
- 5:00 - 5:45** -- (a) *Electrostatics in Microgravity.* GADGET students
(b) *Resonance in Microgravity.* GADGET students

[Pollack B]

TRACK B

- 9:00 - 9:45** -- *Art and the Promotion of Space Exploration.* Jim Plaxco (NSS)
- 10:00 - 10:45** -- (1) *Promoting Aerospace Activities in the Classroom: TEKNA-THEOS Inc.* Kevin Simmons (Science Teacher and Einstein Fellow, National Science Foundation)

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- (2) *Introduction to Hands On Universe Image Processing Software.* Kevin McCarron (Science Teacher at Oak Park and River Forest HS)
- 11:00 - 11:45** -- *Cassini: Huygens Mission to Saturn.* John Vitallo (NASA Jet Propulsion Laboratory Solar System Ambassador: NSS Director)
- (Afternoon)
- 2:00 - 2:45** -- (1) *Joining International Astronomical Search Collaboration to Find and Recover Asteroids.* Kevin McCarron (Science Teacher, Oak Park and River Forest HS)
- (2) *Introduction to Hands On Universe Image Processing Software.* Kevin McCarron
- 3:00 - 3:45** -- *Preparing the First Colonizers of the Moon.* David D. Thornburg (Thornburg Center for Space Education)
- 4:00 - 4:45** – (1) *NSS-NASA Space Settlement Design Competition.* Presentations by two student winning teams
- (2) *MyAstronaut.org: Vote for and Fund Suborbital Space Heroes.* Elizabeth F. Wallace
- 5:00 - 5:45** -- (1) *NSS-NASA Space Settlement Design Competition.* Presentations by two student winning teams.
- (2) *Children Talk About Living in Space.* Lonnie Schorr. Videotape.
- (2) *A New SSP Reference Design Based on an Elliptical 1.5 Hour Sub-Molniya Orbit.* Danny Royce Jones (Exploration Partners, LLC)
- (3) *Design Nuances in Spacecraft Interiors.* Kristin Medin (NewSpace Design Labs)
- 4:00 - 4:45** -- (1) *Redefining Time to Understand Space.* Thomas W. Sills
- (2) *Communicating CETI with Terrestrial Intelligence.* William Alba Director (Science and Humanities Scholars Program Director, AP / EA Program, Carnegie Mellon University)
- 5:00 - 5:45 -- (1) *A Quantum Vacuum Thruster.* William Scott Smith
- (2) TBD
- (3) TBD
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“MANY ROADS TO SPACE”

[Field]

- 9:00 - 9:45** -- (1) *Hypergolic Rocket Engines Using Non-Toxic Propellants.* James R. Hopkins
- (2) *Building a Space Civilization.* Philip Crume.
- 10:00 - 10:45** -- (1) *Opportunities for Asteroid Capture Into Earth Orbit.* Stephen D. Covey
- (2) *Earth-based Horizontal Hypersonic MagLev System.* Don Wade
- (3) *Lunar Observatory.* Carlton Rhoades
- 11:00 - 11:45** -- (1) *California of the 21st Century: Space Settlement from Myth to Powerhouse.* Christopher Davidson.
- (2) *Who Will Pay to Build Space Colonies.* John Cserep
- (3) *Scaffolding Our Way Into Outer Space.* Mike Kern
- (Afternoon)
- 2:00 - 2:45** -- (1) *Papua, New Guineau as a Spaceport.* Mark Sonter
- (2) *Sun-Powered Sling Launch to Solar System.* Paul Swift
- (3) *Constructing Concrete Space Stations in Lunar Orbit.* Don Wade
- 3:00 - 3:45** – (1) *Mars / Lunar Education and Demonstration Center.* Bruce Mackenzie



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BREAKTHROUGH SCIENCE & TECHNOLOGY

[Avedon C]

9:00 - 9:45 -- (1) *Solar Sails: Navigating the Inner Solar System*. Charles ("Les") Johnson (NASA)
(2) *Interstellar Travel: New Horizons*. Marc Millis (Tau Zero Foundation)

10:00 - 10:45 -- *Advanced Technology for Interstellar Flight*. Fabrizio Pinto President/CEO, InterStellar Technologies Corporation)

11:00 - 11:45 -- *Space Science & Technology Innovation Forum*. Bill Gardiner (Laboratory Director, Analytech; NSS Director), Chair; Les Johnson (NASA), Mark Millis; Fabrizio Pinto; Lynne Zielinski (Glenbrook North HS)

ASTRONOMY

[Avedon D]

9:00 - 12:00 pm – [NOTE: The sequence of the programs and length of each program have not yet been determined]

A Guide To Satellite Watching. Steve Szyman
Werner von Braun and his Explorer Satellite. Joseph Mayer

A Brief History of the Chicago Astronomical Society as the 150th Anniversary of Its Founding Approaches. Joseph Mayer. [Note: the CAS is the oldest astronomy association in the western hemisphere]

Astronomy for Fun -- Why It Is That Amateur Astronomers Can Produce Professional Results with Images of Planets, the Milky Way and Deep-Sky Galaxies. Dan Joyce

"One Star at a Time; Reclaim the Starry Night Sky" – the New Campaign of Astronomers Without Borders' to Reduce Light Pollution on a Global Scale. Audrey Fischer

Introduction of the Global StarPark Network and Some of the Very Best Starry Night Sky Photography in the World. Audrey Fischer.

Remote Robotic astronophotography Using Telescopes in Australia in Real-Time. Audrey Fischer

NATIONAL SPACE SOCIETY

11:00 - 12:00 pm -- NSS Town Meeting. *Open to all attendees*. [Avedon AB]

1:00 – 2:00 pm – ISDC Post-Mortem. *Open to all attendees*. [Warhol AB]

NSS's 29th annual International Space Conference is now concluded. Go home, travel safely, and celebrate Memorial Day with your family and friends. And let us all pause to remember, with greatest gratitude, all those fallen astronauts, soldiers, sailors and fliers who have given their lives in the service of their country.