

Program Guide



8th INTERNATIONAL PLANETARY PROBE WORKSHOP

Portsmouth
Virginia, USA

June 6-10, 2011

<http://www.planetaryprobe.org>

Short Course
June 4-5, 2011



Atmospheric
Flight Systems
Technologies



Welcome

Welcome to the 8th International Planetary Probe Workshop, and to historic Portsmouth, Virginia, USA. This year's event is resuming an annual schedule, after a remarkable workshop in Barcelona last year. We have a full roster of participants, a varied program, and we are excited about the possibilities for collaboration. This year's theme is technology development, as reflected in our Short Course and many of the oral and poster presentations. Our community has been very busy over the past year; all of our work has generated an outstanding set of presentations and posters that you will encounter in the next four and a half days.

We are pleased to welcome an international group of scientists, technologists, engineers, mission designers, and policy makers to IPPW-8. Our committees have worked very hard in organizing the logistics for the workshop, planning the program, soliciting and evaluating nominees for the Al Seiff Award, and coordinating opportunities for student participation. We are delighted to host the meeting in the maritime city of Portsmouth, near the NASA-Langley Research Center. We recommend that all participants enjoy several vantage points throughout the week, and we hope you will take advantage of the exciting cultural and culinary experiences that await you here.

We encourage you to attend as many oral and poster sessions as possible, in order to benefit from the world-wide planetary probe mission experts who are attending IPPW-8. We have scheduled a relaxing poster session on Tuesday evening. To better associate the submitted posters with their sessions, we will also have posters available in conjunction with each session. In keeping with agendas at previous IPPWs, we have scheduled parallel oral sessions only on Thursday. Our conveners will coordinate their timing so it will be possible to move back and forth between the parallel sessions in the morning and afternoon. Of interest to our student and early career attendees is a professional development session, also scheduled for Thursday.

Since IPPW-8 is indeed a workshop, we also urge you to take advantage of the numerous opportunities during coffee breaks, lunches and social activities to build collaborative partnerships with other workshop participants. If you are joining us on the Wednesday afternoon tour of NASA-Langley, you will have the opportunity to see some unique, world-class facilities. In addition, the IPPW-8 sponsors have funded a significant number of students who would be interested in meeting the working planetary probe participants to gain a better understanding of how to build a future career in this exciting field. We are very encouraged to have a sizeable student population with us!

On Friday, 10 June, there will be a presentation on the plans for IPPW-9 in 2012, in Europe. We encourage you to attend this talk to learn about your next opportunity to join our community. In this time of transition for many of our Agencies, it is all the more valuable for us to reconnect with our colleagues and celebrate our strong planetary probe foundations-- please enjoy.

Let's make it a great week!

Bernie Bienstock
NASA Jet Propulsion Laboratory
IPPW-8 International Organizing Committee
US Co-Chair

Michelle Munk
NASA-Langley Research Center
IPPW-8 Local Organizing Committee Chair



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Rodrigo Haya Ramos

Deimos Space, Spain

Ethiraj Venkatapathy

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Jean-Marc Bouilly

Astrium Space Transportation, France

Jean-Pierre Lebreton

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Michael Wright

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Michael Wagner, NIA

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Denise Dublin

Virginia Space Grant Consortium, USA

Periklis Papadopoulos

San Jose State University, USA

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Comprehensive Agenda

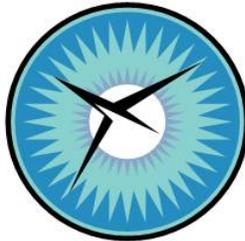
IPPW-8 Sponsors

University of Idaho

Microelectronics Research and
Communications Institute
College of Engineering
Dept. of Electrical and Computer
Engineering
Dept. of Mechanical Engineering
Department of Physics
NASA Idaho Space Grant Consortium
Univ. of Idaho Office of Research and
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Ablatives Laboratory

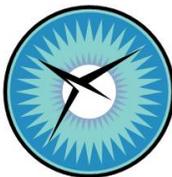


LOCKHEED MARTIN



Supporting Organizations

NATIONAL
INSTITUTE OF
AEROSPACE



University of Idaho

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Comprehensive Agenda

Sunday, June 5, 2011

- 16:00-19:00 **Poster Session – set up**
Port Foyer 1-3
- 16:00-19:00 **Registration Open for Workshop**
Holley Registration
- 18:00-20:00 **“College Night” IPPW Student Social**
Roger Brown’s Restaurant & Sports Bar

12:30-14:00

Lunch
Portsmouth Ballroom V

14:00-15:50

Session 4: EDL Technology Department
Portsmouth Ballroom I-IV

15:50-16:20

Coffee Break
Port Foyer III-IV

16:20-18:00

Session 4 cont’d
Portsmouth Ballroom I-IV

Monday, June 6, 2011

- 7:00-8:30 **Registration**
Portsmouth Registration
- 7:00-8:30 **Breakfast Buffet**
Portsmouth Ballroom V
- 8:30-10:00 Welcome
Session 1: Outlook for Probe Missions
Portsmouth Ballrooms I-IV
- 10:00-10:30 **Coffee Break – Port Foyer III-IV**
- 10:30-12:30 **Session 1 cont’d**
Portsmouth Ballrooms I-IV
- 12:30-14:00 **Lunch – Portsmouth Ballroom V**
- 14:00-15:30 **Session 2: Probe Missions**
Portsmouth Ballrooms I-V
- 15:30-16:00 **Coffee Break – Port Foyer III-IV**
- 16:00-18:00 **Session 2 cont’d**
Portsmouth Ballroom III-IV
- 19:00 – 22:00 **Welcome Reception**
Town Point Club -recommend travel via Ferry

18:15-20:30

Poster Session & Wine/Cheese Reception
Port Foyer I-III/Terrace

Wednesday, June 8, 2011

- 7:00-8:30 **Registration**
Portsmouth Registration
- 7:00-8:30 **Breakfast Buffet**
Portsmouth Ballroom V
- 8:30-9:40 **Session 5: Science Instrumentation**
Portsmouth Ballroom I-IV
- 9:40-10:10 **Coffee Break**
- 10:10-12:30 **Session 5 cont’d**
Portsmouth Ballroom I-IV
- 12:30-13:30 **Lunch (on your own)**
- 13:30-17:00 **Field Trip – NASA Langley Research Center**
- 18:00-21:00 **Banquet – Virginia Air & Space Center**

Thursday, June 9, 2011

- 7:00-8:30 **Registration**
Portsmouth Registration
- 7:00 -8:30 **Breakfast Buffet**
Admiral Ballroom
- 8:30-10:00 **Session 6A: New Technologies**
Portsmouth Ballroom I-III
- 8:30-10:00 **Session 6B: Aeroassist and Experimental Missions**
Portsmouth Ballroom IV
- 10:00-10:30 **Coffee Break**
- 10:30-12:20 **Session 6A cont’d**
Portsmouth Ballroom I-III

Tuesday, June 7, 2011

- 7:00-8:30 **Registration**
Portsmouth Registration
- 7:00-8:30 **Breakfast Buffet**
Portsmouth Ballroom V
- 8:30-10:00 **Session 3: Science from Probes and Penetrators**
Portsmouth Ballroom I-IV
- 10:00-10:30 **Coffee Break**
Port Foyer III-IV
- 10:30-12:30 **Session 3 cont’d**
Portsmouth Ballroom I-IV

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Thursday, June 9, 2011 cont'd...

- 10:30-12:30 **Session 6B cont'd**
- 12:30-14:00 **Lunch**
Portsmouth Ballroom V
- 13:00-14:30 **Professional Development Session (STUDENTS)**
Portsmouth Ballroom IV
- 14:30-16:30 **Session 7A: Advances in TPS Technology for Planetary Probe Design**
Portsmouth Ballroom I-III
- 14:30-16:30 **Session 7B: Airless Body Surface Missions**
Portsmouth Ballroom IV
- 16:30-17:00 **Coffee Break**
- 17:00-18:30 **Session 7A: cont'd**
Portsmouth Ballroom I-III
- 17:00-18:30 **Session 7B: cont'd**
Portsmouth Ballroom IV
- 19:00-21:00 IOC Dinner – Brutti's
467 Court Street, Olde Towne Portsmouth

Friday, June 10, 2011

- 7:00 – 8:30 **Registration**
Portsmouth Registration
- 7:00-8:30 **Breakfast Buffet**
Portsmouth Ballroom V
- 8:30-10:30 **Closing Discussion & Panel**
Portsmouth Ballroom I-IV
- 10:30-11:00 **Coffee Break**
Port Foyer III-IV
- 11:00-11:30 **Student Awards Presentation**
Portsmouth Ballroom I-IV
- 11:30-12:00 **IPPW-9 Introductions**
- 12:00- 12:30 **Closing Comments**



Registration

On-site registration (collection of badge and IPPW-8 Program) can be performed in the Renaissance Portsmouth Hotel at the following times and locations:

Early Registration

Sunday, June 5, 2011, 16:00 – 19:00, Holley Registration

Main Registration

Monday, June 6, 2011, 07:00 – 08:30, Portsmouth Registration

Late Registration

Whenever you arrive, Portsmouth Registration

Break Out Room – Admiral Ballroom

For your convenience, a break out room is available to you for the duration of IPPW-8. Please feel free to use this space for impromptu meetings and/or discussions.

Monday, June 6, 2011, Day 1 – Morning Located in the Portsmouth Ballroom I-IV

07:00 – 08:30	Registration – located in Portsmouth Registration
07:00 – 08:30	Breakfast Buffet – located in Portsmouth Ballroom V
08:00 – 08:30	Today's Speakers and Conveners Meet in Portsmouth Ballroom I-IV
08:30 – 12:30	Session 1: Opening, Outlook for Probe Missions
	Session Conveners:
	<ul style="list-style-type: none">• Bernie Bienstock• Neil Cheatwood• Michael Amato
08:30 – 08:45	Opening Welcome and Logistics <i>M. Munk – Logistics</i> <i>S. Jurczyk – Official Welcome from NASA Langley Research Center</i> <i>B. Bienstock – Opening of IPPW-8</i>
08:45 – 09:00	Al Seiff Award Presentation <i>J. Arnold</i>
09:00 – 09:30	The Huygens History <i>J.P. Lebreton</i>
9:30 – 10:00	Planetary Probes and The Planetary Decadal Survey <i>A. Simon-Miller</i>
10:00 – 10:30	Coffee Break
10:30 – 11:00	25 Years of Deep Space Exploration at ESA <i>M. Coradini</i>
11:00 – 11:30	NASA Investments in Our Future: Exploring Space through Innovation and Technology <i>M. Gazarik</i>
11:30 – 12:00	ESA Exploration Programmes from ISS to the Lunar Lander Mission <i>B. Gardini</i>
12:00 – 12:30	Progress Toward a Complete Response to the Planetary Decadal Survey <i>J. Adams</i>
12:30 – 14:00	Lunch – Portsmouth Ballroom V



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Monday, June 6, 2011, Day 1 - Afternoon Located in the Portsmouth Ballroom I-IV

14:00 – 18:00	Session 2: Probe Missions
	<p>Session Conveners:</p> <ul style="list-style-type: none"> • Christine Szalai • Andrew Ball
14:00 – 14:20	<p>Mars Science Laboratory Entry, Descent and Landing System Design, Development and Prelaunch Status <i>A. Steltzner</i></p>
14:20 – 14:40	<p>ExoMars EDM Mission and Design Overview <i>O. Bayle</i></p>
14:40 – 15:00	<p>End To End Mission Performances of Exomars2016 EDM <i>R. Haya Ramos</i></p>
15:00 – 15:30	<p>Future Missions and Technologies within the Mars Robotic Exploration Preparation (MREP) Programme <i>K. Geelen</i></p>
15:30 – 16:00	Coffee Break
16:00 – 16:20	<p>The Mission MIRIAM-2: Putting Gossamer Ballute Through and Atmospheric Entry Flight Test <i>H.S. Griebel</i></p>
16:20 – 16:40	<p>Venus Deep Atmosphere Descent Probe (VDAP) <i>J.B. Garvin</i></p>
16:40 – 17:00	<p>Venus Pathfinder – A Compact Long-Lived Lander <i>R. Lorenz</i></p>
17:00 – 17:20	<p>Titan Aerial Explorer (TAE): Exploring Titan By Balloon <i>J.L. Hall</i></p>
17:20 – 17:40	<p>An Advanced Design For a Titan Balloon <i>J. Nott</i></p>
17:40 – 18:00	<p>Mission Concept For Entry Probes to the Four Outer Planets Based On E-Sail Propulsion <i>J.P. Lebreton</i></p>
19:00 – 22:00	<p>Welcome Reception – Town Point Club</p>



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IPPW-8 Program

Welcome Reception

- Day:** Monday, 6 June 2011
- Times:** 18:30 & 18:45 – Ferry Departures
19:00 – 19:30 – Arrival
19:30 – 22:00 – Reception (drinks and light refreshments)
- Location:** Town Point Club, 101 West Main Street, Norfolk, VA 23510
- Dress Code:** Business casual (Men: slacks with collared shirt with or without jacket. Women: slacks or skirt with or without jacket) Gentlemen are expected to remove their hats/caps when they enter the Club, and shirts should be tucked in. Athletic attire, sneakers, t-shirts and shorts are not permitted.
- Arrival:** It is recommended that you take the **Paddleboat Ferry** from the Renaissance Hotel to Downtown Norfolk, crossing the Elizabeth River. Round trip ferry tickets have been purchased for you and can be found in your Registration Packet. However, if you would like to drive, it is about a 10 minute car-ride, and driving directions can be found in your Registration Package

Please inform us during registration of any special mobility requirements.

Town Point Club, in Norfolk, Virginia, is a superior private business Club comprised of formal and casual dining areas, meeting rooms, business center and a convenient location to entertain business and friends.





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Tuesday, June 7, 2011, Day 2 – Morning Located in the Portsmouth Ballroom I-IV

07:00 – 08:30	Registration – located in Portsmouth Registration
07:00 – 08:30	Breakfast Buffet – located in Portsmouth Ballroom V
08:00 – 08:30	Today's Speakers and Conveners Meet in Portsmouth Ballroom I-IV
08:30 – 12:30	Session 3: Science from Probes and Penetrators
	Session Conveners: <ul style="list-style-type: none">• Tom Spilker• Tim van Zoest
08:30 – 09:00	New Tools to Characterize Mars Atmosphere for EDL <i>F. Forget</i>
09:00 – 09:20	Entry Trajectory Reconstruction Using Phoenix Radio Link <i>O. Karatekin</i>
09:20 – 09:40	Airborne Observation of the Hayabusa Sample Return Capsule Re-entry <i>J.H. Grinstead</i>
09:40 – 10:00	Radiation Modeling for the Reentry of the Hayabusa Sample Return Capsule <i>M.W. Winter</i>
10:00 – 10:30	Coffee Break
10:30 – 11:00	Giant Planet Formation, Saturn and Uranus Entry Probes, and the Decadal <i>S. Atreya</i>
11:00 – 11:30	2012 Decadal Survey Giant Planet Entry Probe Science <i>T.R. Spilker</i>
11:30 – 11:50	Outer Planet Doppler Wind Measurements <i>D.H. Atkinson</i>
11:50 – 12:10	Titan Aerial Explorer <i>J.I. Lunine</i>
12:10 – 12:30	DISCUSSION – PSDS Entry Probe Science: Implementation & Augmentation <i>Panel</i>
12:30 – 14:00	Lunch – Portsmouth Ballroom V



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Tuesday, June 7, 2011, Day 2 - Afternoon Located in the Portsmouth Ballroom I-IV

14:00 – 18:00	Session 4: EDL Technology Development
	Session Conveners: <ul style="list-style-type: none">• Anuscheh Nawaz• Augusto Caramagno
14:00 – 14:30	Going Beyond Rigid Aeroshells: Enabling Venus In-Situ Science Missions with Deployables <i>E. Venkatapathy</i>
14:30 – 15:00	A Comparison of Inflatable and Semi-Rigid Deployable Aerodynamic Decelerators for Future Aerocapture and Entry Missions <i>R.R. Rohrschneider</i>
15:00 – 15:30	ExoMars 2016 – GNC Approach for Entry Descent and Landing Demonstrator <i>S. Portigliotti</i>
15:30 – 15:50	The MSL EDL Mode Commander <i>P. Brugarolas</i>
15:50 – 16:20	Coffee Break
16:20 – 16:40	Supersonic Retro-Propulsion Flight Test Concepts <i>E. Post</i>
16:40 – 17:00	Maximum Attainable Drag Limits for Atmospheric Entry via Supersonic Retropropulsion <i>N.M. Bakhtian</i>
17:00 – 17:20	Rotary Wing Decelerator Use on Titan <i>T. Steiner</i>
17:20 – 17:40	Small Probe Reentry Investigation for TPS Engineering (SPRITE) <i>D.E. Empey</i>
17:40 – 18:00	The Development of a CO₂ Test Capability in the NASA JSC Arcjet for Mars Reentry Simulation <i>S.V. Del Papa</i>
18:15 – 20:30	Poster Session and Wine & Cheese Reception – Located in Port Foyer I-III/Terrace



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Tuesday, June 7, 2011 Poster Session and Wine & Cheese Reception Port Foyer I-III/Terrace

Session 1: Opening, Outlook for Probe Missions

No Posters for Session One

Session 2: Probe Missions

Study of Planetary Entry Probes (PEP) For Venus and Outer Planets: Saturn, Uranus and Neptune

D. Rebuffat, P. Falkner, J. Larranaga, J. Romstedt, K. Geelen

Session 3: Science from Probes and Penetrators

The Mars Climate Database, Current Status and Future Improvements

E. Millour, F. Forget, A. Spiga, S. Lebonnois, S.R. Lewis, L. Montabone, P.L. Read, M.A. Lopez-Valverde, F. Gonzalez-Galindo, F. Lefevre, F. Montmessin, M.-C. Desjean, J.-P. Huot, MCD/GCM Development Team

Accommodation Study for an Anemometer on a Martian Lander

B. Lenoir, D. Banfield

ARMADILLO - A Demonstration for Low-Cost In-Situ Investigations of the Upper Atmosphere of Planetary Bodies

R. Laufer, G. Lightsey, G. Herdrich, R. Srama, G. Earle, C. Wiedemann, E. Chester, H. Hill, T. Henderson, R. Sandau, L. Matthews, T. Hyde

Session 4: EDL Technology Development

Ongoing Validation of Computational Fluid Dynamics for Supersonic Retro-Propulsion

D.G. Schauerhamer, K.A. Trumble, W. Kleb, J.R. Carlson, P.G. Buning, K. Edquist, E. Sozer

Entry and Powered Descent Guidance for Mars Robotic Precursors

R.R. Sostaric, E.G. Llama, R.W. Powell

Multi-Mission Earth Entry Vehicle Design Trade Space and Concept Development Status

R.W. Maddock

Thermal Soak Analysis of SPRITE Probe

P. Agrawal, Y.K. Chen, D.K. Prabhu, D. Empey, E. Venkatapathy, J. Arnold

Design Choice Considerations for Vehicles Utilizing Supersonic Retropropulsion

A.M. Korzun, I.G. Clark, R.D. Braun

Session 5: Science Instrumentation

The Student Raindrop Detector (SRD): An Instrument for Measuring Methane Rain on Titan

A. Tucker, G. Wilson, H. Truong, T. Kunz, K. Palmer, C. Therrian, J.W. Barnes, D.H. Atkinson, R. Lorenz

Planetary Polarization Nephelometer

D. Banfield, A. Saltzman

Science and Education with Mars Express' Visual Monitoring Camera (VMC)

H.S. Griebel, T. Ormston, M. Denis, J. Landeau-Constantin, D. Scouka, L. Griebel, C. Scorza, M. Frommelt

Development of Instrumentation for Hypersonic Inflatable Aerodynamic Decelerator Characterization

G.T. Swanson, A.M. Cassell



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Session 5: Science Instrumentation cont'd...

Mars Microphone 2016: a Unique Opportunity for Student Involvement

A. Minier, W. Rapin, D. Perez Escobar, D. Mimoun, Mars Microphone 2016 Team

Session 6A: New Technologies

One-Way Uplink Ranging for Enhancing Planetary Wind Measurements

K. Oudrhiri, D.H. Atkinson, S.W. Asmar, S. Bryant, T.R. Spilker

TDNR: A Modular Nano-Rover Platform for Networked Planetary Missions

A. Rademacher, A. Singh, J. Singh, J. Cortez, K. Wittahachchi, M. Paremski, Y. Exunkpe, Dr. P. Papadopoulos, M.S. Murbach, B. Feretich

Development of an Autonomous High Altitude Balloon Cutdown System

K. Ramus, K. Baird, C. Gonzalez, G. Wilson, W. Taresh, R. Riggs, G. Korbel, D.H. Atkinson, Idaho Near Space Engineering Team

Analysis of Anomalous Variations in High Altitude Balloon Ascent Rates near the Tropopause

W. Taresh, K. Ramus, K. Baird, C. Gonzalez, G. Wilson, R. Riggs, G. Korbel, D.H. Atkinson, Idaho Near Space Engineering Team

The Titan Sky Simulator

J. Nott

Session 6B: Aeroassist, Experimental Missions and EDL Mission Design

Vertical Structure and Wind Shear In a Simulated Triton Atmosphere

C. Miller, N.J. Chanover, J.R. Murphy

Aerodynamic Stability of Blunted-Cone Entry Vehicles

D.R. Ladiges, E.C. Button, C.R. Lilley, N.S. Mackenzie, E. Ross, J.E. Sader

Saturn System Mission Opportunities Using a Titan Aerogravity Assist for Orbital Capture

R.M. Booher, J.E. Lyne

Statistical Entry, Descent and Landing Performance Reconstruction of the Mars Phoenix Lander

S. Dutta, I.G. Clark, R.P. Russell, R.D. Braun

Determination of Aerodynamic Damping Coefficients of Entry Vehicles in Transonic Regime

S. Paris, O. Karatekin, A. Karitonov, J. Ouvrard

Session 7A: Advances in TPS Technology for Planetary Probe

Modeling of the Material Response of Thermal Protection Systems in Hypersonic Flows

J. Wiebenga, I. D. Boyd, A. Martin

Advanced Rigid Ablative TPS

M. Gasch

Rotating Arcjet test model: Time-accurate Trajectory Heat Flux Replication in a Ground Test Environment

B. Laub, J. Grinstead, A. Dyakonov, E. Venkatapathy

Low Density Flexible Carbon Phenolic Ablators

M. Stackpoole, J. Thornton, W. Fan, P. Agrawal, E. Doxtad, R. Beck

EDL Heatshield Experiments with Dual-Layer Ablators, Advanced Materials and Variable Honeycombs

J. Congdon



IPPW-8 Program

Session 7A: Advances in TPS Technology for Planetary Probe cont'd...

Performance Characterization, Sensitivity and Comparison of a Dual Layer Thermal Protection System

C.D. Kazemba, M.K. McGuire, A. Howard, I.G. Clark, R.D. Braun

Resin Impregnated Carbon Ablator (RICA): A New Thermal Protection System Material for High-Speed Planetary Entry Vehicles

J. Esper, H.-P. Roeser, G. Herdrich

RASTAS SPEAR: Radiation-Shapes-Thermal Protection Investigations for High Speed Earth Re-entry

J.M. Bouilly, A. Pisseloup, O. Chazot, G. Vekinis, A. Bourgoing, B. Chanetz, O. Sladek

Development of a Thermal Protection System Mass Estimating Relationship based on FIAT Predictions

S. Sepka, J.O. Arnold, E. Venkatapathy, K. Trumble

Session 7B: Airless Body Surface Missions

No Posters for Session 7B



8th International
Planetary Probe Workshop
June 6-10, 2011
Portsmouth, VA, USA

IPPW-8 Program

Wednesday, June 8, 2011, Day 3 Located in the Portsmouth Ballroom I-IV

07:00 – 08:30	Registration – located in Portsmouth Registration
07:00 – 08:30	Breakfast Buffet – located in Portsmouth Ballroom V
08:00 – 08:30	Today's Speakers and Conveners Meet in Portsmouth Ballroom I-IV
08:30 – 12:30	Session 5: Science Instrumentation
	<p>Session Conveners:</p> <ul style="list-style-type: none"> • Pat Beauchamp • Athena Coustenis • Jean-Pierre Lebreton
08:30 – 09:00	<p>Payload Options for Future Entry Probe Missions <i>T.R. Spilker</i></p>
09:00 – 09:20	<p>Titan Lake Probe: Science Requirements and Instrumentation <i>J.H. Waite</i></p>
09:20 – 09:40	<p>Instruments for In Situ Titan Missions <i>P.M. Beauchamp</i></p>
09:40 – 10:10	Coffee Break
10:10 – 10:30	<p>Spacecraft-to-Spacecraft Radio Links Instrumentation for Planetary Gravity, Atmospheric and Surface Sciences <i>S.W. Asmar</i></p>
10:30 – 10:50	<p>The Mars Microphone 2016 Experiment <i>D. Mimoun</i></p>
10:50 – 11:10	<p>Lidar Instrument for Global Measurement of Mars Atmosphere <i>F. Amzajerdian</i></p>
11:10 – 11:30	<p>Martian Sonic Anemometer <i>D. Banfield</i></p>
11:30 – 11:50	<p>The ChemCam Instrument for the 2011 Mars Science Laboratory Mission: System Requirements and Performance <i>R. Perez</i></p>
11:50 – 12:10	<p>MEADS Calibration & MSL Trajectory Reconstruction <i>M. Schoenenberger</i></p>
12:10 – 12:30	<p>Optical Emission Spectroscopic Experiments for In-Flight Entry Research <i>S. Lein</i></p>
12:30 – 13:30	Lunch – On Your Own
13:30 – 17:30	<p>Field Trip – Tour of NASA Langley Research Center (or Free Time) Must have been pre-approved. Please see Shannon Verstynen at Registration to see if you are on the Tour List. Bus will leave PROMPTLY at 13:30.</p>
18:00 – 21:00	Banquet – Virginia Air & Space Center



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Banquet

Day: Wednesday, 8 June 2011

Times: 18:00 – 19:00 – Reception (drinks and light refreshments)
19:00 – 21:00 – Dinner & Cash Bar

Location: Virginia Air & Space Center, 600 Settlers Landing Road, Hampton, VA 23669

Dress Code: Casual

Arrival: Transportation will be provided to and from the Banquet.

If you are taking the Tour of NASA Langley Research Center, you will be taken to the Banquet directly after the tour (then you will be returned back to the hotel after the Banquet).

If you are not taking the Tour, there will be a bus leaving from the Renaissance Hotel at 17:00 to take you to the Banquet (and return you to the hotel after the Banquet).

However, if you would like to drive, it is about a 30-40 minute car-ride, and driving directions can be found in your Registration Package

Please Sign-Up at the Registration Desk if you are NOT going on the Tour and will need Transportation to the Banquet.

Located in Hampton, VA, the birthplace of America's space program, the Virginia Air & Space Center features interactive aviation exhibits spanning 100 years of flight, more than 30 historic aircraft, a hands-on space gallery, unique space flight artifacts, and more! Your imagination will soar as you launch a rocket, pilot a space shuttle, program Mars rovers for a mission, become an air traffic controller, fly an airplane, and climb aboard a WWII bomber! Come face-to-face with the Apollo 12 Command Module that went to the moon, a Mars meteorite, a three-billion-year-old moon rock, a DC-9 passenger jet, a replica 1903 Wright Flyer, and more!





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Thursday, June 9, 2011, Day 4 - Morning Parallel Sessions - Session 6A Portsmouth Ballroom I-III

07:00 - 08:30	Registration - located in Portsmouth Registration
07:00 - 08:30	Breakfast Buffet - located in Portsmouth Ballroom V
08:00 - 08:30	Today's Speakers and Conveners Meet in Portsmouth Ballroom I-III
08:30 - 12:30	Session 6A: New Technologies - Located in Portsmouth Ballroom I-III
	Session Conveners: <ul style="list-style-type: none"> • Jeremy Shidner • Stefano Portigliotti
08:30 - 09:00	PEDALS: Evolved Design of EDL Architectures <i>E. Chester</i>
09:00 - 09:30	Challenges of the Instrumentation for High Speed Entry Vehicles <i>A. Guelhan</i>
09:30 - 10:00	System Development for Mars Entry In-Situ Resource Utilization <i>S. Popovic</i>
10:00 - 10:30	Coffee Break
10:30 - 10:50	Terminal Descent and Landing System Architecture for a Mars Precision Lander <i>L. Peacocke</i>
10:50 - 11:10	Overview of Hypersonic Inflatable Aerodynamic Decelerator Large Article Ground Test Campaign <i>A.M. Cassell</i>
11:10 - 11:30	Low Density Supersonic Decelerator System <i>M. Adler</i>
11:30 - 11:50	CO₂ Propulsion for a Mars Surface Hopper <i>C. Perry</i>
11:50 - 12:10	Study of Roughness-Induced Transition <i>S. Yoon</i>
12:10 - 12:30	Three Dimensional Radiation in Martian Atmosphere <i>D. Andrienko</i>
12:30 - 14:00	Lunch - Portsmouth Ballroom V
13:30 - 14:30	Student Professional Development, Located in Portsmouth Ballroom IV

Professional Development Session

Portsmouth Ballroom IV

The goal of the Professional Development Session is to provide a forum for students to engage and interact with professionals on topics relevant to careers in planetary science, technologies and engineering. The session will include brief presentations from a panel of representatives from U.S. and European aerospace industry, academia, NASA, and ESA. Students will have ample opportunity to ask questions of the panelists. Specific topics include expert advice from the panelists on careers in planetary sciences and aerospace engineering, as well as lessons learned and advice.



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IPPW-8 Program

Thursday, June 9, 2011, Day 4 – Morning Parallel Sessions – Session 6B Portsmouth Ballroom IV

07:00 – 08:30	Breakfast Buffet – located in Portsmouth Ballroom V
08:00 – 08:30	Today's Speakers and Conveners Meet in Portsmouth Ballroom IV
08:30 – 12:30	Session 6B: Aeroassist, Experimental Missions and EDL Mission Design – Located in Portsmouth Ballroom IV
	<p>Session Conveners:</p> <ul style="list-style-type: none"> • Artem Dyakonov • Olivier Bayle
08:30 – 09:00	<p>Overview of the NASA Entry, Descent and Landing Systems Analysis Exploration Feed-Forward Study <i>A.M. Dwyer Cianciolo</i></p>
09:00 – 09:30	<p>AEROFAST: Martian Aerocapture for Future Space Transportation <i>T. Salmon</i></p>
09:30 – 10:00	<p>Mission Analysis and Flight Mechanics of Earth Experimental Missions <i>R. Haya Ramos</i></p>
10:00 – 10:30	Coffee Break
10:30 – 10:50	<p>Hayabusa Reentry: Trajectory Analysis and Observation Mission Design <i>A.M. Cassell</i></p>
10:50 – 11:10	<p>A Simple Analytical Equation to Accurately Calculate the Atmospheric Drag During Aerobraking Campaigns. Validation in the Martian Case. <i>F. Forget</i></p>
11:10 – 11:30	<p>Aerobraking Periapsis Control Strategies <i>M. Sánchez-Nogales</i></p>
11:30 – 11:50	<p>Planned Flight of the inflatable Reentry Vehicle Experiment 3 (IRVE-3) <i>R.A. Dillman</i></p>
11:50 – 12:10	<p>Dimensionless Parameters for Estimating Mass of Inflatable Aerodynamic Decelerators <i>J.A. Samareh</i></p>
12:10 – 12:30	TBD
12:30 – 14:00	Lunch – Portsmouth Ballroom V
13:30 – 14:30	Student Professional Development, Located in Portsmouth Ballroom IV

Professional Development Session

Portsmouth Ballroom IV

The goal of the Professional Development Session is to provide a forum for students to engage and interact with professionals on topics relevant to careers in planetary science, technologies and engineering. The session will include brief presentations from a panel of representatives from U.S. and European aerospace industry, academia, NASA, and ESA. Students will have ample opportunity to ask questions of the panelists. Specific topics include expert advice from the panelists on careers in planetary sciences and aerospace engineering, as well as lessons learned and advice.



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Thursday, June 9, 2011, Day 4 - Afternoon Parallel Sessions - Session 7A Portsmouth Ballroom I-III

14:30 - 18:30	Session 7A: Advances in TPS Technology for Planetary Probe Design - Located in Portsmouth Ballroom I-III
	Session Conveners: <ul style="list-style-type: none">• Ioana Cozmuta• Jean-Marc Bouilly
14:30 - 15:00	Challenges with Thermal Protection Material Development and Implementation: Lessons Learned from Recent NASA Experience <i>D. Ellerby</i>
15:00 - 15:30	Ongoing European Developments on Entry Heatshields and TPS <i>H. Ritter</i>
15:30 - 15:50	MEDLI Aerothermal Environment Reconstruction Efforts <i>T. White</i>
15:50 - 16:10	Orion Flight Test-1 Thermal Protection System Instrumentation <i>T.J. Kowal</i>
16:10 - 16:30	Flexible Ablators: Applications and Arcjet Testing <i>J.O. Arnold</i>
16:30 - 17:00	Coffee Break
17:00 - 17:30	Overview of Initial Development of Flexible Ablators for Mars EDL <i>R.A.S. Beck</i>
17:30 - 17:50	Aerofast: Development of Cork TPS Material and a 3D Comparative Thermal/Ablation Analysis of an Apollo & a Biconic Sled Shape for an Aerocapture Mission <i>G. Pinaud</i>
17:50 - 18:10	Modular Manufacturing of Honeycomb-Reinforced Charring Ablator Systems for the Aeroshells of Large EDL Vehicles <i>W. Congdon</i>
18:00 - 18:30	Round Table Discussion
19:00 - 21:00	Dinner On Your Own (organized dinner for IOC members)



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Thursday, June 9, 2011, Day 4 – Afternoon Parallel Sessions – Session 7B Portsmouth Ballroom IV

14:30 – 18:30 **Session 7B: Airless Body Surface Missions – Located in Portsmouth Ballroom IV**

Session Conveners:

- Behzad Raiszadeh
- Alain Pradier

14:30 – 15:00	Robotic and Human Space Exploration of Near-Earth Objects <i>D.D. Mazanek</i>
15:00 – 15:30	European GNC Technology Development and Perspective for Airless Bodies Exploration <i>A. Caramagno</i>
15:30 – 15:50	Mobile Autonomous General Instrument Carrier <i>T. van Zoest</i>
15:50 – 16:10	The ESA Lunar Lander Mission <i>A. Pradier</i>
16:10 – 16:30	Camera-Aided Inertial Navigation for Pinpoint Planetary Landing on Rugged Terrains <i>J. Delaune</i>
16:30 – 17:00	Coffee Break
17:00 – 17:30	Marco Polo-R: An Asteroid Sample Return Mission <i>M. Adler</i>
17:30 – 17:50	What Moonrise Lunar Sample Return Can Teach Us About Mars Sample Return <i>G. Chen</i>
17:50 – 18:10	Farside Explorer: Unique Science from a Mission to the Farside of the Moon <i>D. Mimoun</i>
18:00 – 18:30	VLBI Tracking of Phobos-Grunt Probe <i>G. Molera Calvés</i>
19:00 – 21:00	Dinner On Your Own (organized dinner for IOC members)



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IPPW-8 Program

Friday, June 10, 2011, Day 5 – Morning Located in the Portsmouth Ballroom I-IV

07:00 – 08:30	Registration – located in Portsmouth Registration
07:00 – 08:30	Breakfast Buffet – located in Portsmouth Ballroom V
08:00 – 08:30	Today’s Speakers and Conveners Meet in Portsmouth Ballroom I-IV
08:30 – 12:30	Session 8: Closing and Introduction to IPPW-9
	Session Conveners: <ul style="list-style-type: none">• Bernie Bienstock• Michelle Munk
08:30 – 09:00	Austerity In the Age of Innovation <i>B. Johns</i>
09:00 – 09:30	NASA Langley Research Center’s Engineering Directorate <i>S. Sandford</i>
09:30 – 10:30	Panel Discussion – International Cooperation Beyond Flagship Missions
10:30 – 11:00	Coffee Break
11:00 – 11:30	Student Awards Presentations
11:30 – 12:00	IPPW-9 Introductions
12:00 – 12:30	Closing Comments