



# 8th INTERNATIONAL PLANETARY PROBE WORKSHOP

Portsmouth  
Virginia, USA

June 6-10, 2011

Online registration at:  
<http://www.planetaryprobe.org>

Short Course  
June 4-5, 2011



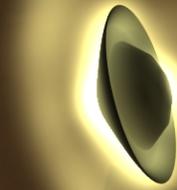
Atmospheric  
Flight Systems  
Technologies

# WELCOME

to the IPPW-8 Short Course on

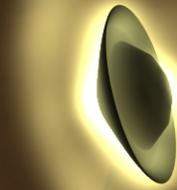
# Atmospheric Flight Systems Technologies

# IPPW Short Course History



IPPW	Year	Location	Short Course Topic
1	2003	Lisbon, Portugal	n/a
2	2004	Mountain View, USA	n/a
3	2005	Anavyssos, Greece	Parachute Short Course
4	2006	Pasadena, USA	In Situ Instruments for Planetary Probes and Aerial Platforms
5	2007	Bordeaux, France	Controlled Entry and Descent into Planetary Atmospheres
6	2008	Atlanta, USA	Extreme Environments Technologies
7	2010	Barcelona, Spain	Planetary Protection
8	2011	Portsmouth, USA	Atmospheric Flight Systems Technologies

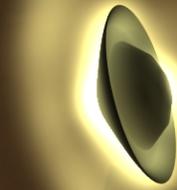
# This Year's Program – Day 1



## DAY 1 – JUNE 4 – SATURDAY

	8:30	9:00	Registration	
	9:00	9:15	Introduction	Tibor Balint & Michelle Munk
L-1	9:15	10:00	Overview of <b>NASA's Space Technology Roadmap</b>	James Reuther
L-2	10:00	10:30	Anybody agree on what <b>Technology Readiness Levels</b> mean	Karen McNamara
	10:30	11:00	<i>Coffee Break</i>	
L-3	11:00	11:30	Preparing your <b>Technology</b> for Successful <b>Infusion</b>	Bonnie James
L-4	11:30	12:00	<b>SIAD</b> (Supersonic Inflatable Aerodynamic Decelerator)	Mark Adler
L-5	12:00	12:30	<b>HIAD</b> (Hypersonic Inflatable Aerodynamic Decelerator)	Neil Cheatwood
	12:30	13:15	Lunch	
L-6	13:15	14:30	Supersonic <b>Retropropulsion</b>	Karl Edquist
L-7	14:30	15:00	Aerothermal <b>modeling</b> and validation	Mike Wright
	15:00	15:30	<i>Coffee Break</i>	
L-8	15:30	16:15	New Developments in <b>Thermal Protection Systems</b>	Robin Beck
L-9	16:15	17:00	<b>Modeling</b> the Terminal Descent Flight Dynamics of Unpowered Landers; An Introduction for Mission Scientists	Juan R. Cruz

# This Year's Program – Day 2

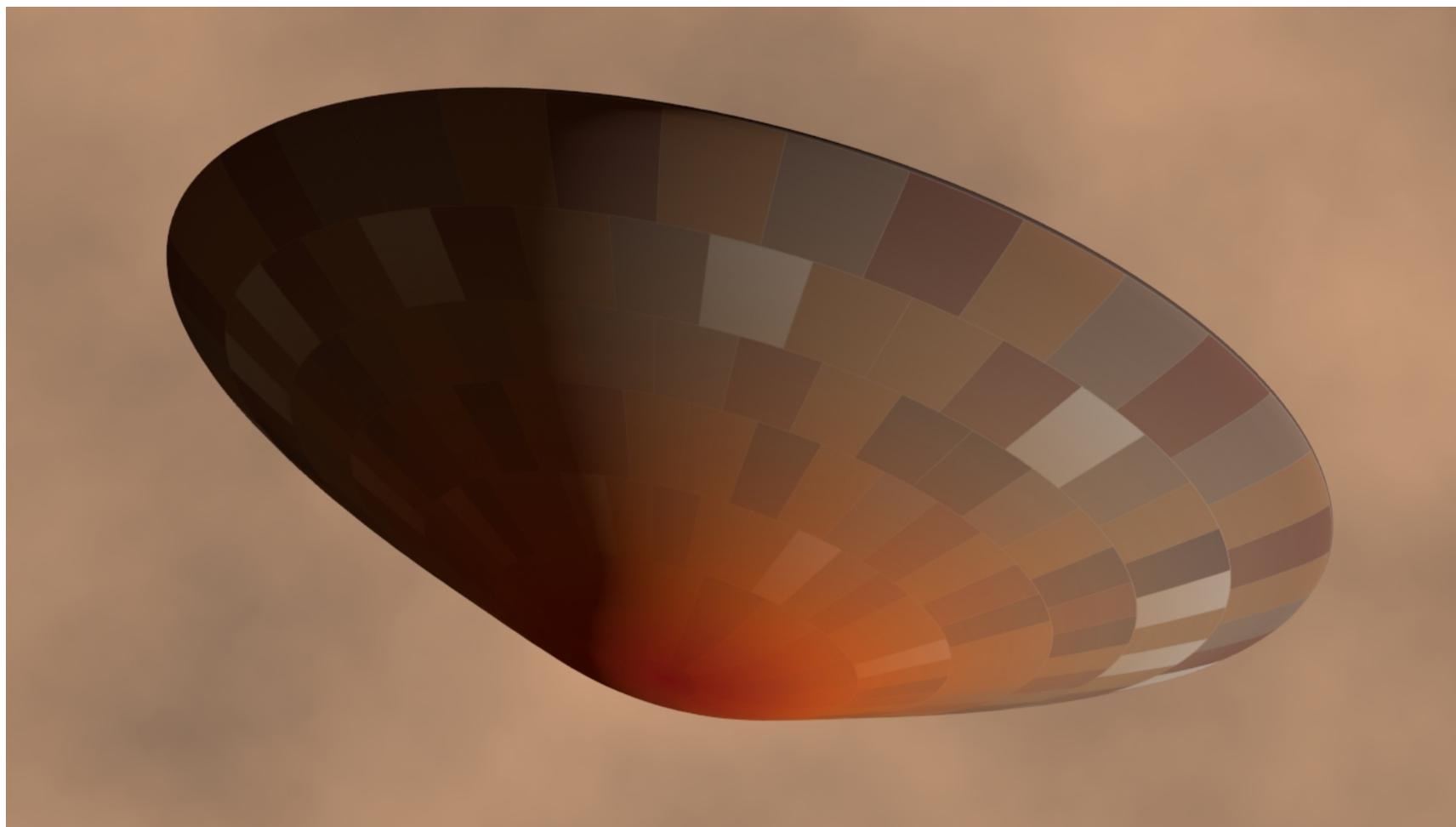


## DAY 2 – JUNE 5 – SUNDAY

L-10	9:15	10:00	Advanced <b>Entry</b> Concepts	Chuck Campbell
L-11	10:00	10:45	<b>Aerial Mobility</b> Systems: design, sizing, and testing of planetary balloons (including the inflation system)	Jeff Hall
	10:45	11:30	<i>Coffee Break</i>	
L-12	11:30	12:15	Winged Planetary <b>Airplanes</b>	Henry Wright
L-13	12:15	13:00	Innovative <b>Ideas</b> : helicopters, micro flight systems, lake landers	Ralph Lorenz
	13:00	14:30	<i>Lunch</i>	
D	14:30	16:00	<b>DEBATE</b>	Moderators: Lecturers
	16:00	16:15	Closing Remarks	Michelle Munk & Tibor Balint

Presentation material will be posted on the conference website:  
[www.planetaryprobe.org](http://www.planetaryprobe.org)

**HAVE A GREAT TIME!**



# Possible Panel Discussion Questions



- Do we need a flight demonstration of Aerocapture, before applying it to a science mission? Is it the risk posture of missions that is standing in the way of adopting Aerocapture? If so, how do we change it?
- What will it take to make a competed balloon mission or an aerocapture mission selectable?
- The last Discovery AO incentivized the use of technologies (\$10+M). Is this a good practice and will it make a difference?
- How do we get missions to “buy in” to technology developments and then actually use the technologies? Are there lessons learned that can apply? How does this work in other countries?

# Possible Panel Discussion Questions



- Which is more important: Demonstration or validation?
- What criteria would you use to prioritize the EDL technologies that you have heard about in the Short Course? What would the priority be?
  - HIAD, SIAD, Supersonic Retropropulsion, TPS, Aero and Aerothermodynamic Models, Balloons, Airplanes, Alternative Means

# Possible Panel Discussion Questions



- How will we get technology to the reliability levels required by MSR and human missions?
- Does anyone want to pose a question?
- General comments/thoughts on what you have heard over the past 2 days?