Thursday, June 19, 2014
MODELING, SIMULATION, AND TESTING
1:30 p.m.   Beckman Institute Auditorium

Chairs:  
Carlie Zumwaldt
Kerry Zarchi

1:30 p.m.  
Kohlman L. W. *   Li B.   Prakash V.   Pereira J. M.   Carney K. S.   Revilock D. M.
Ruggeri C. R.   Lawrence C.   Wu X.
High Rate, Low Temperature Testing and Modeling of Water Ice for High Speed Ballistic Probes [#8052]
High rate, low temperature testing and modeling of water ice is important in design of ballistic probes for in-situ evaluation of icy moon composition. The results of coupon and impact testing will be presented, as well as a new modeling approach.

1:45 p.m.  
Buchwald R. *
Simulation Based Landing System Verification — About the Challenges of Non-Linear Error Estimation [#8053]
Simulation based verification of non-linear events comes with additional risks. Special focus has to be set on software validation and error estimation. A dedicated uncertainty factor has been derived and evaluated on the basis of terrestrial tests.

2:00 p.m.  
de Crombrugghe G. *   Zander F.   Morgan R.   McIntyre T.
Experimental Simulation of Venus Atmospheric Entry in the X2 Super-Orbital Expansion Tube [#8004]
Only a small number of impulse facilities in the world are able to simulate Venus atmospheric entry flows. This presentation describes the design of relevant test conditions in the X2 expansion tube. Trajectory points above 95 km are achievable.

2:15 p.m.  
Jaramillo-Botero A. J. B. *   Beegle L. W. B.   Hodyss R. P. H.
Goddard W. A. G. III   Darrach M. R.
Hypervelocity Impact Effects on Space Mission Instrumentation [#8051]
Understanding the physics and chemistry of hypervelocity collisions of small impactors on spacecrafts and their instruments is critical to their survival and operational accuracy, as well as for the design of future mission instrumentation.

2:30 p.m.  
Sengupta A. *   Mehta M.   Vizcaino J.   Metzger P.
Plume Impingement Induced Surface Erosion During Retro-Propulsive Landings on Mars [#8118]
The quantification of the environment that occurs as a result of the engine plumes impinging the soil during landings on Mars is critical for robotic and human landed mission architectures.

2:45 p.m.  
Tardivel S. *   Scheeres D. J.   Michel P.   Van wal S.
Modelling of Asteroid Surfaces to Understand Landing Operations [#8104]
A model of asteroid surface using faceted high-resolution shape, stochastic rock distribution and regolith contact dynamics is presented, with application to mission Hayabusa 2. It highlights new opportunities for in-situ exploration of small bodies.

3:00 p.m.  
Witte L. *
A Stochastic Model for the Landing Dispersion of Hazard Detection and Avoidance Capable Flight Systems [#8033]
To support landing site assessments for HDA-capable flight systems and to facilitate trade studies between the potential HDA architectures versus the yielded probability of safe landing a stochastic landing dispersion model has been developed.
3:15 p.m. Glaab L. J. * Fremaux C. M.  
*Vertical Spin Tunnel Testing and Stability Analyses of Earth Entry Vehicles* [#8010]  
This report presents results from dynamic stability testing in the NASA LaRC Vertical Spin Tunnel of a series of Multi-Mission Earth Entry Vehicles and subsequent data analysis. Evaluation of a proposed dynamic stability criteria is also performed.

3:30 p.m. Van Hove B. * Karatekin O.  
*Observing the Martian Atmosphere Using Flight Data: Stochastic Filtering Methods* [#8068]  
Application of novel Kalman filtering method to Mars flight data records, focus on reconstruction of atmospheric environment, in preparation for the ExoMars 2016 demonstrator mission.

3:45 p.m. COFFEE BREAK

4:00 p.m. PANEL DISCUSSION