

Tuesday, September 22, 2015

TARGET PROPERTIES

1:45 p.m. Pathology and Anatomy Lecture Hall

**Chairs:** Gareth Collins  
Michael Poelchau

- 13:45 Schultz P. H. \*  
[Scaling Laboratory Experiments to Natural Planetary Experiments](#) [#1099]  
Laboratory experiments reveal critical processes that can be used to understand processes at much broader scales. This review will provide illustrations of past and ongoing research that underscore this approach.
- 14:15 Kiuchi M. \* Nakamura A. M.  
[The Effect of Gravity Acceleration and Internal Friction Angle of Regolith on Impact Crater Size on Asteroid Surface](#) [#1073]  
We conducted low velocity impact experiments onto granular materials under a reduced gravity and obtained a gravitational dependence of crater diameter under 0.01–1 G. In addition, we considered the crater size under ultra-high vacuum condition.
- 14:30 Tatsumi E. \* Sugita S.  
[Cratering Efficiency Reduction due to Armoring on the Coarse-Grained Targets](#) [#1090]  
Cratering experiments on coarse-grained targets, simulating the surface of rubble-pile asteroids, such as Itokawa. The transfers of energy and momentum on the disruption of the first target grain would model the cratering efficiency reduction.
- 14:45 Hoerth T. \* Poelchau M. H. Kenkmann T. Hupfer J. Schäfer F.  
[Influence of Impactor Size on Momentum Multiplication](#) [#1030]  
Hypervelocity impact experiments into sandstone targets using different projectile sizes were conducted. The momentum multiplication factor increases with increasing impactor size. This is attributed to an increased amount of spallation.
- 15:00 Silber E. A. \* Osinski G. R.  
[The Role of Damage and Porosity on Crater Size: Insights from Modeling Lunar Impacts](#) [#1023]  
In our study, we investigate the role of target damage and porosity on morphology and temporal evolution of transitional and simple-to-complex lunar craters.
- 15:15 DISCUSSION
- 15:30 *Coffee Break*
- 15:45 Poelchau M. H. \* Hoerth T. Schäfer F. Kenkmann T.  
[Experimental Cratering in Solid Rocks and the Difficulties of Strength Scaling](#) [#1102]  
Dynamic brittle failure of rocks is a highly complex subject. This poses some issues for strength scaling, in particular, which type of failure is actually relevant for crater formation.
- 16:00 Milbury C. \* Johnson B. C. Melosh H. J. Collins G. S. Blair D. M. Soderblom J. M. Nimmo F. Phillips R. J. Bierson C. J. Zuber M. T.  
[The Effect of Pre-Impact Porosity and Vertical Density Gradients on the Gravity Signature of Lunar Craters as Seen by GRAIL](#) [#1085]  
We use iSALE to model complex crater formation on the Moon. We vary initial target porosity and model vertical density/porosity gradients in the crust. We calculate the Bouguer anomaly associated with the craters and match them to GRAIL observations.

- 16:15 McDermott K. H. \* Burchell M. J.  
[Impact Experiments on Multi-Layer Targets with an ice Crust](#) [#1006]  
Variation of impact crater morphology with subsurface densities and ice crust thickness on multi-layer targets with an ice crust.
- 16:30 DISCUSSION
- 16:45 Melosh H. J. \*  
[Acoustic Fluidization: What It Is, and Is Not](#) [#1004]  
Acoustic fluidization is widely invoked to explain the peculiar mechanical conditions that permit central peak formation. Many observers, however, attribute to it predictions that it does not make. Its actual predictions are clarified in this talk.
- 17:00 Vogt B. \* Shipton Z. K. Reimold W. U.  
[Bridging the Gap: Formation of Voluminous Pseudotachylitic Rocks in Tectonic and Impact Settings](#) [#1058]  
Pseudotachylitic breccias (PTBs) from the Outer Hebrides Fault Zone, Scotland, show structural similarities to impact PTBs. In both impact and tectonic settings, processes additional to friction heat melting are requisite for the formation of PTBs.
- 17:15 DISCUSSION