Mehta M. Renno N. O. Sengupta A. Pokora M.  
*Cratering on Planetary Bodies Due to Spacecraft Landings* [#2350]

Erosion and plume impingement pressure characteristic curves provide insight into the cratering physics due to spacecraft landings and possible evidence for brines on Mars.

Chappelow J. E. Golombek M. P.  
*Can Mars’ Current Atmosphere Land Block Island Sized Meteorites?* [#2351]

Given the recent discovery of three more iron meteorites on Mars, the question arises: Can Mars’ current atmosphere decelerate them sufficiently or is a denser one required? And if it can, how does this happen?

Lunine J. Artemieva N. Tobie G.  
*Impact Cratering on Titan: Hydrocarbons Versus Water* [#1537]

The lack of ethane at Titan’s surface is shown to be consistent with impact breaching of Titan’s crust through most of its history.

Bray V. J. Collins G. S. Morgan J. V. Melosh H. J.  
*Development of a Hydrocode Strength Model for Large Impacts in Pure Water Ice* [#2430]

We present a material strength model for simulating impacts into ice, comparing results to observational data from Ganymede. Results from this work have future applications for investigation of central pit formation and Europa’s crustal thickness.

Artemieva N. Shuvalov V.  
*Tunguska Explosion - Final Remarks* [#1268]

We present distal effects related to the Tunguska explosion in 1908 (white nights in Europe, in particular) and discuss the possibility of finding Tunguska-related cosmic material.

*Impact Hydrocode Benchmark and Validation Project: Impacts Into Cohesionless Soil* [#2048]

We present initial results of validation tests of a polyethylene cylinder impacting a cohesionless soil (dry sand) at 1G and 464G (where G is Earth’s gravity).

Collins G. S. Melosh H. J. Wilson C. R. Wünnemann K.  
*Improvements to the Epsilon-Alpha Porosity Model for Impact Simulations* [#2033]

We have modified the epsilon-alpha porosity model to improve the treatment of highly porous materials and include dilatancy in planetary-scale impact simulations. We describe model developments and present validation results.

Anderson J. L. B. Burleson T. Cintala M. J.  
*Target and Projectile: Material Effects on Crater Excavation and Growth* [#2084]

Three suites of impact crater experiments are compared using ejection-speed and crater-size scaling. Implications for the deformation style of the projectile (ductile or brittle) and the grain size of the target material are discussed.

Watters W. A.  
*The Concave Planform of Transient Impact Craters in Fractured Targets* [#2684]

Transient impact craters forming in targets that have aligned fractures can sometimes have a concave planform. We estimate the planform hinge trace at Endurance Crater (Meridiani Planum), and propose a physical model that illustrates the origin of the concave shape.

Zucker R. V. Stewart S. T.  
*Fault Weakening and Shear Localization During Crater Collapse* [#2460]

We present a model of temperature- and pressure-dependant strain-weakening along faults during crater collapse.
Stewart S. T.  
*Toward an Impact Basin Formation Scaling Law* [2722]

The impact energies required to form the largest impact scars on planets remains an unsolved problem. In this work, I present a method of constraining the size of the transient cavity for impact basins.

Billingham L.  Collins G. S.  Nevard S. A.  Wünneemann K.  
*Transient Crater Scaling for Giant Impacts* [1996]

We use the iSALE hydrocode to test crater scaling relations for giant impacts. Our parameter study explores the influence of both target curvature and temperature profile on the diameter and volume of transient craters.

Head J. W. III  
*The Transition from Complex Craters to Multi-Ringed Basins on Terrestrial Planetary Bodies: The Scale-Dependent Role of the Expanding Melt Cavity and Progressive Interaction with the Displaced Zone* [1029]

The “nested melt-cavity” model combines main components of the cratering process (transient cavity, displaced zone, melt cavity) and provides a basis for understanding the characteristics of the transition from complex craters to multi-ringed basins.

Roberts J. H.  
*Heating of the Martian Interior Due to Giant Impacts: Revisited* [2049]

Heating from giant impacts has been suggested as a possible cause for the cessation of the martian dynamo. Core heat flow heterogeneity and shock heating models are revisited to better understand how impacts can affect the thermal evolution of Mars.