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Title: The Curious Case of Comparative Planetology

Abstract: Data obtained from spacecraft and ground based observations in recent times expanded our knowledge about our Solar System, but with the growing body of information the number of unanswered questions also increased. Instead of studying objects separately, comparative planetology seeks to find basic principles and unifying concepts on multiple celestial bodies using common themes. Whether the processes operating on these bodies result in shared or different outcomes across the various worlds, we learn a lot about the objects and the processes of their formation and evolution by analyzing the resulting patterns systematically – often with the ultimate goal of extrapolating the findings to Earth and have a better understanding of our own planet.

In this presentation, we will look at comparative planetology through the lens of hypervelocity impacts. We will review available observations and various modeling techniques that can help reveal the characteristics and composition of the impactors, their origins, and their effects on planetary atmospheres.

Biosketch: Csaba Palotai received his Ph.D. in Mechanical Engineering from the University of Louisville (2006) with his dissertation focusing on planetary sciences. Between 2006 and 2015, he worked in the Department of Physics at the University of Central Florida as a Research Scientist. Currently, he is an Associate Professor of Planetary Sciences at the Florida Institute of Technology in Melbourne, Florida. His research interests include numerical modeling of the atmospheric physics and dynamics of the gas giant and ice giant planets in our Solar System, simulating the effects of comet and asteroid impacts on planetary atmospheres, and observing and studying terrestrial superbolides.