MONTANA STATE UNIVERSITY | College of LETTERS & SCIENCE

Physics Colloquium

Friday, April 22, 2016
4:10-5:00 PM
EPS 103

The Volcanism, Atmosphere, and Tidal Heating of Io

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Abstract:
Volcanism shapes the surfaces and atmospheres of terrestrial planets, yet the widespread activity that dominated the early history of the rocky bodies in our Solar System can only be inferred from modern signatures of ancient activity. Jupiter's moon Io presents a unique laboratory for observing the dynamic processes of massive effusive volcanism and atmospheric escape and replenishment in real time. Io's volcanism is powered by tidal heating, and the distribution and composition of volcanic eruptions provides a window into Io's internal state. Since 2013, we have been conducting a high cadence, high spatial resolution observing campaign aimed at understanding Io's volcanism and tidal heating. Detections of bright outburst eruptions indicate extreme effusion rates, while the spatial distribution of activity during this period reveals significant asymmetries and deviates from current tidal heating model predictions. Io's volcanic atmosphere feeds a complex system of neutral and plasma material in the Jupiter system. Multi-wavelength observations during the ongoing EXCEED mission and the upcoming Juno arrival may provide clues into the connection between Io's volcanism and Jupiter's plasma environment.

Host:
Angela Des Jardins, Director
Montana Space Grant Consortium

****** Refreshments served in the EPS second floor atrium at 3:45 ******