Geophysical Research Abstracts
Vol. 12, EGU2010-11356, 2010
EGU General Assembly 2010

First results from Cassini's 2010 close encounter with Rhea

G. H. Jones (1), E. Roussos (2), N. Krupp (2), S. M. Krimigis (3), and D. G. Mitchell (3)

(1) Mullard Space Science Laboratory, University College London, United Kingdom (ghj@mssl.ucl.ac.uk), (2) Max Planck Institut fuer Sonnensystemforschung, Katlenburg-Lindau, Germany, (3) Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland, USA

On March 2, 2010, the Cassini spacecraft performed a close flyby of Saturn's second-largest moon, Rhea, approaching to $\sim$100 km of the surface. During a previous flyby in 2005, observations by the spacecraft's MIMI instrument of an extended depletion of energetic ($>\sim$20 keV) electrons led to the inference that the moon may be surrounded by an orbiting disk of debris [Jones et al., Science 319, 1380, 2008]. Short-lived, deeper, electron depletions located at near-symmetrical locations on either side of Rhea may be explained by the presence of discrete narrow rings or arcs orbiting the moon. A more distant encounter occurred in August 2007, where the broad electron absorption signature was again observed downstream by the MIMI and CAPS instruments. The March 2010 flyby provides the first opportunity for further observations of the enigmatic electron absorption signature in the immediate vicinity of the moon, including a period when upstream of Rhea. We review the results of this encounter and their implications for the presence of the proposed debris disk.