Department of Physics and Space Sciences
Presents:

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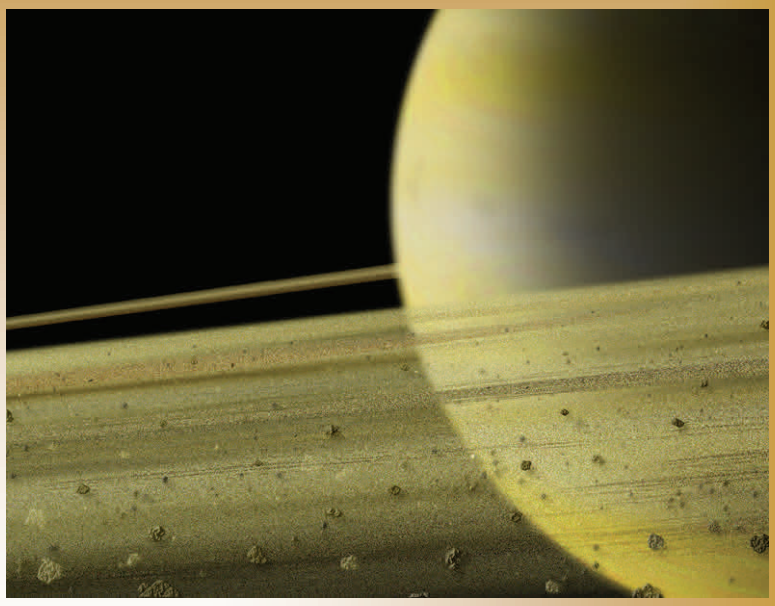

Spectroscopic Analysis of Saturn's Rings and Proposed Laboratory Investigations of Icy Material

Saturn's rings are composed mostly of water ice with a small amount of contaminants that arise from micrometeorite impacts. The exact composition and fractional abundance of the contaminants remains the subject of debate. The FUV spectrum contains a water ice absorption edge at 165 nm where the reflectance below 165 nm is determined by the composition and abundance of the non-icy material and the reflectance longward of 165 nm is determined by both water ice and non-icy material. We have been using both lit-face and unlit-face observations of Saturn's rings with the Cassini Ultraviolet Imaging Spectrograph (UVIS) to investigate the variations of ring brightness and relative contamination across the rings. However, new laboratory spectra of contaminated icy mixtures from the FUV to the infrared is needed to help constrain the composition and fractional abundance of the contaminants. Also, hypervelocity impact experiments where simulated micrometeorite particles impact ice may shed light on the interaction of Saturn's rings with the dust environment and how the impacts affect both the composition and morphology of ring particles. Low velocity icy impact experiments in microgravity conditions will help constrain the redistribution of icy regolith that covers ring particles, which affects the observed reflectance spectra. I will discuss the current state of the spectroscopic work dealing with Saturn's rings and proposed laboratory experiments.

Friday, October 12th 4:00pm—5:00pm

OPS Room 140