

SPACE AND COSMIC RAY PHYSICS SEMINAR

University of Maryland
Computer & Space Sciences Building, Room 2400
4:30 PM Monday, November 15, 2004
Coffee, Tea & cookies 4:00-4:30 PM

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First Results from Cassini on the Ion Composition in Saturn's Magnetosphere

On July 1, 2004 Cassini became the first space probe to go into orbit about Saturn, beginning a 4-year mission that will include 74 orbits of the planet, 44 close flybys of Titan, and a number of flybys of Saturn's icy moons. The advanced instrumentation carried by the Cassini orbiter and the Huygens probe, which will land on Titan on January 14, 2005, will add greatly to our knowledge of the planet, its rings and moons, and its complex magnetosphere, building on the results from Saturn flybys by Pioneer 11, Voyager 1 and Voyager 2.

This talk will emphasize the results from the University of Maryland instrument CHEMS (Charge-Energy-Mass Spectrometer) that measures the mass and charge state of ions in the energy per charge range 3-220 keV/e. During Cassini's first pass through Saturn's magnetosphere, CHEMS was able to answer questions left open by the previous missions concerning the composition of the plasma. The most abundant species were H^+ , H_2^+ , and O^+ . Also present were the molecular ions OH^+ , H_2O^+ , and O_2^+ as well as doubly charged oxygen O^{++} . CHEMS observed a near absence of N^+ ions. This composition, which features water products, indicates that Saturn's rings and icy moons are strong plasma sources while Titan, with its largely nitrogen atmosphere, is not.

<http://space.umd.edu/seminars>

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