

# Physics Colloquium

## Fifteen Years of a Mars-Orbiting Radar

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**4:00 p.m.**  
**114 Begeman Hall**

The European-led Mars Express spacecraft has been in orbit around Mars since December 2003. Included in its instrument payload is the Mars Advanced Radar for Subsurface and Ionosphere Sounding (MARSIS), built at the University of Iowa, which in its two modes measures (1) electrons and their behavior in the upper atmosphere and (2) polar cap and subsurface structure. This presentation will focus primarily on the first of these topics. From its orbiting platform, MARSIS observes both spacecraft-local plasma properties and remote ionospheric structure. This synergy provides a comprehensive picture of the Mars plasma environment, including density profiles, particle motions, and seasonal effects. Since Mars does not possess a global magnetic field, the Sun is able to provide significant influence on the planet, creating a highly dynamic region that has contributed to the loss of most of Mars' atmosphere. Results throughout the 15 years of the mission will be presented, including current and upcoming science targets.

*Everyone Welcome! Refreshments Provided.*