

Title: *Techniques for Distant Scatterometry of Saturn Satellites using the Cassini RADAR*

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Abstract:

From July 2004 through July 2008, the Cassini spacecraft will be conducting an extensive survey of the Saturn system with many instruments. The primary focus of the Cassini RADAR will be on imaging Titan through the optically thick hazy atmosphere. However, several other types of radar observations are also being planned. When the spacecraft swings past various icy satellites there will be a number of unique opportunities to collect Ku-band backscatter data using the Cassini RADAR in scatterometer mode. These data collections are distinct from the normal Titan observations because the range will be much larger (around 100,000 km) and the target bodies are much smaller. Generally, the angular size of the target body will be comparable to the beam-width (0.35 deg). To acquire enough signal in these circumstances, the radar will be operated in a narrow bandwidth tone mode during an extended integration. Integration times around half an hour or more will be typical. Passive radiometric measurements will simultaneously be obtained to aid in interpreting the backscatter results. This presentation will summarize the special technical issues involved in planning for these observations.