

Technical Page

Proposal Type: Regular
 General Category: Planetary Radar
 Observation Category: Solar System
 Total Time Requested: 92 Hours

Proposal Title: S-Band Radar Observations of Titan and Iapetus in 2001

ABSTRACT:

Time is requested for S-Band radar observations of Titan to be made near opposition of the Saturn system in November/December 2001 and observations of Iapetus to be made in January 2002. Sixteen observing sessions are requested to measure the radar scattering properties of Titan at 22.5° intervals in longitude. Our Arecibo radar observations of Titan in 1999 provided the first 12.6 cm detection of Titan and allowed estimates of its mean cross section, circular polarization ratio and scattering law. Observations in 2000 with higher sensitivity covered approximately 180° of longitude. The results from the 2000 observations indicate that Titan's cross section may be relatively uniform except for the longitudes of the bright near-IR feature. They also strongly suggest that the radar echo from Titan has both a specular and a diffuse component. This result, if real, could have significant implications for current models of Titan's surface. The proposed observations would be aimed at verifying existence of function of longitude. They are also aimed at investigating the scattering properties of the bright IR feature near 120° longitude. We are requesting four days of observations of Iapetus in January as follow up on a possible marginal detection obtained in 2000. Improvements in the sensitivity of the Arecibo radar system should make the proposed observations of Titan and Iapetus 1.5 to 2.0 times more sensitive than those of 2000.

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I do NOT want to do remote observing.

Instrument Setup

S-Band radar S-band receiver

Atmospheric Optical Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

2380 MHz