

Technical Page

Proposal Type: Regular
 General Category: Planetary Radar
 Observation Category: Solar System
 Total Time Requested: 25 Hours

Proposal Title: S band radar mapping of Saturn's rings

ABSTRACT:

In October 1999 we obtained the first true radar images of Saturn's rings, using the Arecibo S-band solar system radar at a wavelength of 12.6cm. The opening angle of the rings was 19.9°, and dual-circular polarization data were collected over a period of 5 days. We propose to continue these observations as the ring opening angle increases to 23.6° in November 2000, and as Saturn moves to more northerly declinations, increasing the available tracking time per day. The radar images show strong azimuthal structure in the rings, similar to the asymmetry seen in the A ring at visible wavelengths, which is diagnostic of gravitational instabilities in the rings. Circular polarization ratio measurements vs opening angle will shed light on the question of the thickness and vertical structure of the rings. We will also look for a reappearance of the low Doppler excess reported in the mid-1970s, and better characterize its source.

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I NA want to do remote observing.

Instrument Setup

S-Band radar

Atmospheric Optical Instruments:

Special Equipment or setup: Radar data acquisition software.

RFI Considerations**Frequency Ranges Planned**

2370 - 2390