

## Technical Page

Proposal Type: Regular  
 General Category: Planetary Radar  
 Observation Category: Solar System  
 Total Time Requested: 68 Hours

**Proposal Title:** Radar Observations of Mars During the 2005 Opposition

*ABSTRACT:*

We propose to make S-band radar observations of Mars during the 2005 opposition. These will be the first Arecibo observations of Mars since 1993 and the first using the upgraded radar telescope. The observations will be devoted to delay-Doppler imaging using waveforms designed to mitigate or eliminate the effects of echo overspreading. The increased sensitivity afforded by the upgrade will enable us to make Mars radar images of unprecedented quality and resolution. Images of the diffuse/depolarized echo will be used to map out variations in small-scale surface roughness, which is of intrinsic geologic interest as well as useful for lander hazard assessment. We will image radar-bright features such as the northern lava flows and south polar ice cap as well as map out radar-dark features such as "Stealth" and other putative ash flows and debris lobes. We also plan to make the first true polarization-ratio images of the planet.

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**Service Observing Request**

**Remote Observing Request**

None

All of the observing run.

Part of the observing run.

Queue Observing

No

Maybe

Yes

**Instrument Setup**

S-Band radar

S-band receiver

**Atmospheric Observation Instruments:**

**Special Equipment or setup:** May need some hardware and software support if we attempt to try an alternative to the long-code system for the transmitted waveform.

**RFI Considerations**

## Frequency Ranges Planned

2380