Proposal Title:  S-Band Radar Observations of Enceladus

ABSTRACT:

We propose S-band radar observations of Saturn’s moon Enceladus to improve our previous detection. The goals of these new observations are to reduce the radar albedo uncertainties, provide the echo’s polarization properties to understand the scattering mechanism, and probe large scale variations of these properties with longitude. Improvement of Enceladus’s dataset is necessary for comparison to our 13 cm wavelength radar observations of the other mid-size Saturnian satellites and recent Cassini RADAR measurements of them at 2.2 cm wavelength. The surfaces of these moons are known to be fairly clean water ice which can be extremely transparent at centimeter wavelengths, and the radar probes subsurface structures and is sensitive to the presence of non-ice contaminants. Six days are requested to obtain adequate integration time and longitude coverage, and near Saturn opposition to maximize echo strength. This is the last good opportunity to observe Enceladus from Arecibo until 2028.

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<tr>
<th>Name</th>
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Remote Observing Request

X Observer will travel to AO

☐ Remote Observing

☐ In Absentia (instructions to operator)

Instrument Setup

S-Band radar

S-band receiver

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations
Frequency Ranges Planned

2380