Technical Page

Proposal Type:	Regular
General Category:	Planetary Radar
Observation Category:	Solar System
Total Time Requested:	23 Hours
Minimum Useful Time:	2 hr, including 1 hr setup

Proposal Title: Radar Polarimetry of the Near-Earth Asteroids 2001 SN263, 2003 YE45, and 2005 RC34

ABSTRACT:

We propose S-band (12.6 cm) radar observations of the asteroids (153591) 2001 SN263, (90403) 2003 YE45, and 2005 RC34 in order to study the surface physical properties and search for the presence or absence of regolith. These asteroids make close approaches to Earth in the coming year. The proposed radar observations will also provide rotation rates and size measurements for all three objects. If the incident radar wave refracts into a surface and is reflected by buried scatterers, the return echo will have a net linearly polarized component that can be measured using a polarimetric analysis. This technique has been used to study the lunar regolith and Venus volcanic deposits, and has been applied to the asteroids 1999 JM8, 4179 Toutatis, 2004 VG64 and 2006 VV2, all of which show a measurable degree of linear polarization in the received echo and likely possess a regolith covering. The requested observations are part of a larger project to observe a sample of asteroids and correlate the radar polarimetric properties with different sizes, shapes, and perhaps compositions.

Name	Institution	E-mail	Phone	Student
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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

2378-2382 MHz