Proposal Identification No.: R1539

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Technical Page

Proposal Type: Regular
General Category: Planetary Radar
Sub-Category: Radar
Observation Category: Solar System
Total Time Requested: 88 Hours

Proposal Title: Radar Imaging of Asteroids 4 Vesta and 654 Zelinda in 2001-2002

ABSTRACT:

We propose delay-Doppler radar imaging of main-belt asteroids 4 Vesta and 654 Zelinda in order to derive otherwise unavailable information about sizes, shapes, topography, small-scale morphology, and near-surface bulk density. For Vesta, thirteen nights of observing should yield 10-km-resolution maps of radar reflectivity and decimeter-scale roughness, which can be combined with the HST-based shape model and geological map to constrain the nature and origin of the surface. Previously obtained CW data on Zelinda suggest interesting topography in the form of a large (>15 km) flat region. The 2002 apparition is one of the strongest radar opportunities for any main-belt asteroid until after 2020, and hence nine nights of imaging should support a high-resolution 3-D shape model and should enable us to refine the rotation period and determine the pole direction.

<table>
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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 (S-band radar)