Technical Page

Proposal Type: Regular
General Category: Planetary Radar
Observation Category: Solar System
Total Time Requested: 29.25 Hours

Proposal Title: Radar Observations of Two Distinctive Near-Earth Asteroids

ABSTRACT:
We propose radar imaging, physical modeling, and orbit refinement of two highly unusual asteroids in May 2002. 1580 Betulia is a very large, C-class, highly inclined, Earth-crossing Amor with an extraordinary lightcurve. Previous radar observations have suggested a possibly bifurcated object. The expected SNRs during our requested dates are high enough to support imaging and shape reconstruction at 100-m resolution. This is the best Betulia radar opportunity in this century. Goldstone and Arecibo imaging in May 2000 revealed 1999 KW4 to be a binary system with a km-sized primary and a secondary roughly one-third as large. Cursory initial analysis suggests that the primary’s density is between 1.8 and 3.0 g/cc. We propose delay-Doppler imaging observations of 1999 KW4 to extend the time base of the radar data to a full year, to optimize constraints on the asteroid’s physical and dynamical properties. This is the most favorable 1999 KW4 radar opportunity until 2036.

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<tr>
<th>Name</th>
<th>Institution</th>
<th>E-mail</th>
<th>Phone</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steven J Ostro</td>
<td>Jet Propulsion Laboratory</td>
<td><a href="mailto:ostro@reason.jpl.nasa.gov">ostro@reason.jpl.nasa.gov</a></td>
<td>818-354-3173</td>
<td>no</td>
</tr>
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I might want to do remote observing.

Instrument Setup

S-Band radar

Atmospheric Optical Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned