Technical Page

Proposal Type: Regular
General Category: Planetary Radar
Observation Category: Solar System
Total Time Requested: 10 Hours
Minimum Useful Time:

Proposal Title: Radar observations of high perihelion shift asteroid 2000 EE14 to quantify general relativity and solar quadrupole moment

ABSTRACT:
We request 10 hours of time spread over 3 consecutive sessions to obtain precise radar astrometry of 2000EE14. With a perihelion shift rate of 15 arcseconds per century, this near-Earth object (NEO) is one of the best objects for measuring the perihelion shift due to general relativity (GR) and the oblate Sun [Margot, 2003]. This proposal represents one component of a larger program in which the orbits of a dozen NEOs are monitored over several years to reduce uncertainties on GR parameters and to provide a dynamical measurement or upper bound on the gravitational quadrupole moment of the Sun ($J_{2\odot}$). Considerable improvements over previous studies involving Mercury and Icarus are expected because 1) several newly-discovered asteroids have orbits offering a better sensitivity to the solar $J_{2\odot}$, 2) our sample incorporates a range of heliocentric distances and inclinations that can unambiguously separate GR and $J_{2\odot}$ effects, 3) the center of mass locations of small bodies is more accurately determined than that of Mercury.

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

- Observer will travel to AO
- Remote Observing
- In Absentia (instructions to operator)

Instrument Setup

- S-Band radar
- S-band receiver

Atmospheric Observation Instruments:

Description of Observer Equipment: Portable Fast Sampler
Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned