

Technical Page

Proposal Type: Urgent
 General Category: Planetary Radar
 Observation Category: Solar System
 Total Time Requested: 20 Hours

Proposal Title: Radar Observations of Near-Earth Asteroid 2003 KP2

ABSTRACT:

Relatively large objects such as 2003 KP2 (3 km diameter) are available for imaging only a few times per year, and we need to use every opportunity to image these targets. These large (>1 km) objects which, if on a collision course with Earth, would be capable of causing global destruction. Although there is no general agreement as to the best method for hazard mitigation, all agree that knowing as much as possible about internal structure of the asteroid in question is vital. Radar imaging can help determine the internal structure by giving us information about the size, spin rate and even density in the case of binary systems.

Asteroid 2003 KP2 was discovered by the LINEAR asteroid search program on 22 May, 2003. Nothing is known about the physical properties of this object other than its absolute magnitude of 15.3, which suggests that its diameter is within a factor of two of 3 km. Assuming a rotation period of 4 h, we should be able to obtain S/N of about 30 per run, and obtain images at 100 m resolution during its approach to 0.19 AU of the Earth in late September 2003. If the object has a relatively slow rotation rate, then the S/N will be higher than predicted, allowing higher resolution imaging, but we will need several days to obtain good rotational coverage. A fast rotation rate will simplify the rotational coverage, but several days will be required to achieve sufficient S/N. Imaging at 100m resolution will allow good determination of the overall shape of the object, and will resolve large surface features. It will also allow detection of satellites, if any exist.

The 2003 apparition is the best opportunity to observe this object for at least 80 years.

Name	Institution	E-mail	Phone	Student
Michael C Nolan	Arecibo Observatory	nolan@naic.edu	787 878 2612 x334	no

Service Observing Request

- None
- All of the observing run.
- Part of the observing run.
- Queue Observing

Remote Observing Request

- No
- Maybe
- Yes

Instrument Setup

S-Band radar

S-band receiver

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned