

VLBA PROPOSAL COVERSHEET

DEADLINES: 1st of Feb., June, Oct.
 EMAIL TO: propsoc@nrao.edu
 OR MAIL TO: Director NRAO, Edgemont Rd. Charlottesville, VA 22903-2475, USA

rcvd:

- (1) Date Prepared: January 15, 2007
 (2) Title of Proposal: TOO - Interferometric Radar Observations of Asteroid 2006 VV2

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	Students Only		
			G/U	For Thesis?	Ph.D. Year
Greg Black	University of Virginia	gblack@virginia.edu			
Donald Campbell	Cornell University	campbell@astro.cornell.edu			

- (4) Related previous or current VLBI proposal(s): BB187 Resubmission
- (5) Contact author for scheduling: Greg Black (6) Telephone: 434-243-8941
 Address: PO Box 400325 Fax: 434-924-3104
 Dept. of Astronomy
 University of Virginia
 Charlottesville, VA 22904-4325
- (7) Scientific Category: astrometry & geodesy galactic extragalactic other: Solar System object
 Rapid Response Science: Known Transient Exploratory Target of Opportunity
- (8) Wavelength(s) requested (those not available on the global network are indicated with a small circle):
 90cm 50cm 30cm 21cm 18cm 13cm 6cm 5cm 3.6cm 3.6/13cm
 2cm 1.3cm 7mm 3mm
 Global Network standard bands Special frequencies: _____
- (9) Recording format: Default continuum setup (VLBA only), VLBA/MkIV, MkIII: Mode _____
 Bandwidth per BaseBand channel: 0.125 MHz
 Aggregate bit rate: 32 (8 BB channels at 2 MSamples/sec of 1 bit, 2 bit)
- (10) Multi-epoch observation: _____ epochs of _____ hours each, separated by _____

(11) Network	Requested antennas	Total time requested
EVN & MERLIN		
VLBA	ALL	2 hr
other NRAO	GBT	2 hr
Non-VLBI Instruments		

(12) ABSTRACT (Do not write outside this space. Please type)
 Near Earth asteroid 2006 VV2 will approach the Earth to within 0.024 AU in late March-early April 2007 at which time we request a short VLBA+GBT session to image and do astrometry of this asteroid while it's illuminated by the Arecibo radar. Synthesis radar imaging can provide plane-of-sky image and position information orders of magnitude better than other ground-based methods, and which is complementary to standard radar mapping. The asteroid's diameter is likely between 1.5 and 2 km, and we expect a spatial resolution of order 50 m. We request the raw data streams in order to correlate in software to achieve a narrow frequency resolution matched to the object's bandwidth which depends on its unknown rotation rate but is likely $\lesssim 20$ Hz. However, the echo from this object may be strong enough to be seen at the relatively coarse frequency resolution of the VLBA correlator.

- (13) Observation type: Interferometry, Spectroscopy, Pulsar, Phase referencing
- (14) Proposal is Suitable Unsuitable for dynamic scheduling.
- (15) Polarization: Single Polarization Dual Circular Polarization
 Global network standard for single polarization is LCP for all λ s except 13cm (RCP) and 3.6cm (RCP).
- (16) Tape usage (Show <recording time>/<total time>): _____
- (17) Assistance required:
 Observation Setup: Consultation, Extensive help, Observe file preparation
 Postprocessing: Consultation, Extensive help, Calibration service
- (18) Processor: Socorro, JIVE, Haystack, Bonn, Washington, Other _____
 Special processing: XPol, Pulsar gate, Multiple Fields: _____
 Averaging time: _____ Spectral channels per baseband channel: 1024
 Other special processing: need to extract raw data
- (19) Postprocessing Location: home
- (20) Source list: J2000 B1950
 If more than 4 sources, please attach list. If more than 30, give only selection criteria and GST range(s)

	Source 1	Source 2	Source 3	Source 4
Name(s)	Asteroid 2006 VV2			
RA (hh mm)	10 37			
Dec (dd.d)	+06.2			
GST range (Europe)				
GST range (US)	14:00 - 16:00			
GST range (Other)				
Band(s)	13 cm			
Flux density (Total, Jy)				
Flux density (correlated, mJy)				
RMS needed (mJy/beam)				
Peak/RMS needed				

- (21) Preferred VLBI session or range of dates for scheduling, and why:
 2007 Apr 1. Must coincide with asteroid close approach and transmit window from Arecibo. 2007 Mar 31 could be an optional date, but less optimal.
- (22) Dates which are NOT acceptable, and why:
 All others. Object is only observable at requested times.
- (23) Attach a self-contained scientific justification, not in excess of 1000 words.
 Preprints or reprints will not be forwarded to the referees.

Information about the capabilities of the VLBA may be found on the World Wide Web by starting at the NRAO home page, <http://www.nrao.edu>, and selecting the VLBA from "Sites and Telescopes."

A brief summary of the capabilities of the EVN antennas is given in the EVN STATUS TABLE in the EVN USER GUIDE, which may be found at http://www.evlbi.org/user_guide/user_guide.html.

Please include the full postal addresses for first-time users or for those that have moved (if not contact author).