VLBA PROPOSAL COVERSHEET

DEADLINES: 1st of Feb., June., Oct.

rcvd:

(1) Date Prepared: 28 Jan 2002

(2) Proposal Title: **First-Epoch Pulsar Astrometry with the VLBA**

(3) AUTHORS	INSTITUTION/LOCATION	For Grad Students Only: Observations For Ph.D. Thesis?	For Grad Students Only: Anticipated Ph.D. Year
S. Chatterjee, J. M. Cordes, D. Wong	Cornell University	SC (yes)	2003
W. Brisken, W. M. Goss, E. B. Fomalont, J. Benson, M. McKinnon	NRAO		
S. E. Thorsett, R. Ellis	U.C. Santa Cruz	RE (yes)	2005
M. Kramer, A. Lyne	Jodrell Bank, U.K.		
T. J. W. Lazio; D. C. Backer	NRL; U.C. Berkeley		
A. Golden	National University of Ireland		

(4) Related previous or current VLBI proposal(s): BC120, BB126, BB136, BC115, BC116

(5) Contact author for scheduling: S. Chatterjee

Telephone: (607) 255 9020
Updated E-Mail: shami@astro.cornell.edu
Fax: (607) 255 8803

Address: 518 Space Sciences
Cornell University
Ithaca, NY 14853

(6) Scientific Category (indicate all that apply):

⊗ astrometry & geodesy, ○ solar, ○ propagation, ○ planetary, ○ stellar, ⊗ pulsar, ○ ISM, ○ masers, ○ normal galaxies, ○ active galaxies, ○ cosmology

(7) 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 _____

(8) Recording format: ○ Default continuum setup (VLBA only) ⊗ VLBA/MkIV ○ MkIII (Mode ____)

Bandwidth per BaseBand channel: 8 MHz

Aggregate bit rate 256Mb/s(8 BB channels at 16 MSamples/sec of ○ 1 bit, ⊗ 2 bit samples)

(9) ⊗ Multi-epoch observation: 22 epochs of 2 hours each, separated by (See Table 1); + 24 hours.

(10) Network	Requested antennas	Total time requested
EVN		
VLBA	All	44 + 24 hours
OTHER NRAO		
Non-VLBI Instruments		

(11) ABSTRACT (Do not write outside this space. Please type.)

We propose start-up observations for a large multi-epoch project for VLBA astrometry on a sample of pulsars, in order to obtain parallaxes and proper motions. This project aims to: (1) at least double the number of measured pulsar parallaxes; (2) yield direct transverse velocity measurements of pulsars, which constrain the physics of supernova core-collapse and address the velocity distribution of the pulsar population; (3) provide essential calibration points for the Galactic electron density model, which improves the distance scale for those pulsars without parallax measurements; and (4) address other scientific questions, such as reference frame ties, supernova remnant associations, etc. As requested by the scheduling committee in response to BC120, we propose the first trimester of gated, phase-referenced observations for a small subset of our targets, as well as VLBA follow-up observations for a VLA survey now underway to find in-beam calibrators and refine initial positions. (The large project will be re-submitted for skeptical review.)

Scheduler use only
(02/01)

(12) Observation type: ⊗ Interferometry, ○ Spectroscopy, ⊗ Pulsar, ⊗ Phase referencing, ○ Single dish,

(13) Proposal is ⊗ Suitable ○ Unsuitable for dynamic scheduling.

(14) Polarization: ○ Single Polarization ⊗ Dual Circular Polarization
Global network standard for single polarization is LCP for all λs except 13cm (RCP) and 3.6cm (RCP).

(15) Tape usage (Show <recording time>/<total time>): 2/2 per epoch

(16) Assistance required:
Observation Setup: ⊗ Consultation, ○ Extensive help, ○ Observe file preparation (VLBA only)
Postprocessing: ⊗ Consultation, ○ Extensive help, ○ Calibration service (VLBA only)

(17) Processor: ⊗ Socorro ○ JIVE ○ Haystack ○ Bonn ○ Washington ○ Other _____
Special processing: ○ XPol, ⊗ Pulsar gate, ⊗ Multiple Fields: 1 or 2
Averaging time: 2 sec Spectral channels per baseband channel: 16
○ Other special processing: _____

(18) Postprocessing Location: Cornell, Socorro, etc.

(19) 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)	See Table 1.			
RA (hh mm)				
Dec (dd.d)				
GST range (Europe)				
GST range (US)				
GST range (Other)				
Band(s)				
Flux density (Total, Jy)				
Flux (correlated, mJy)				
RMS needed (mJy/beam)				
Peak/RMS needed				

(20) Preferred VLBI session or range of dates for scheduling, and why:
First trimester observations:
Within ±10 days of the optimal dates listed in Table 1.
VLA follow-up:
6 hours centered at 7 hrs LST (in the array center);
2 × 9 hours centered at 18 hrs LST (array center).

(21) Dates which are NOT acceptable, and why:

(22) 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.jive.nl/jive/evn/evn.html.

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