PROPOSAL COVERSHEET

rcvd:

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

(1) Date Prepared: December 3, 2003

(2) Title of Proposal: VLBA parallax observations of a merging binary pulsar

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	Students Only G/U	For Thesis?	Ph.D. Year
Steve Thorsett	UCSC	thorsett@ucolick.org			
Walter Brisken	NRAO, Socorro	wbrisken@nrao.edu			

(4) Related previous or current VLBI proposal(s): ◯ Resubmission

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(7) Scientific Category: ⊗ astrometry & geodesy ◯ galactic ◯ extragalactic ◯ other:
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: 8
Aggregate bit rate: 256 (8 BB channels at 16 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 hours
other NRAO		
Non-VLBI Intruments		

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

The estimated binary neutron star merger rate increased by an order of magnitude with the discovery of the J0737−3039 binary pulsar system, implying a LIGO detection rate of 0.5 to 1 per year. A critical parameter of this rate estimate is the distance to the system which is estimated by the observed dispersion measure to be 0.5 kpc. Dispersion measure derived distances of nearby pulsars are known to be very approximate. A VLBA distance to this system should be straight forward even at its declination of -31° owing to its brightness and proximity to an ICRF reference source. A search for an in-beam calibrator to improve the precision is covered in a sister proposal. This proposal is for the first epoch of five over the course of one year; a proposal will be submitted by Feb. 1, 2004 for the remaining epochs.

Scheduler use only
(8/03)

(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 λs except 13cm (RCP) and 3.6cm (RCP).

(16) Tape usage (Show <recording time>/<total time>): 2hrs/2hrs

(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: 2 or 3
Averaging time: 2 Spectral channels per baseband channel: 32
○ Other special processing: ______

(19) Postprocessing Location: NRAO-SOC

(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)	J0737-3097			
RA (hh mm)	07:37:51.28			
Dec (dd.d)	−30:39:40.3			
GST range (Europe)				
GST range (US)	13:30 to 15:30			
GST range (Other)				
Band(s)	18, 21 cm			
Flux density (Total, Jy)	0.007			
Flux density (correlated, mJy)	0.007			
RMS needed (mJy/beam)	0.35			
Peak/RMS needed	20			

(21) Preferred VLBI session or range of dates for scheduling, and why:
Within two weeks of Feb 18, 2004 to maximize parallax signature.

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

(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).