VLBA PROPOSAL COVERSHEET

rcvd:

DEADLINES: 1st of Feb., June, Oct.
EMAIL TO: propsoc@nrao.edu

(1) Date Prepared: 2005Jan13

(2) Title of Proposal: VLBA Astrometry of 7 $M_\odot$ Black Hole in XTE 1118+48

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	Students Only G/U	For Thesis?	Ph.D. Year
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(4) Related previous or current VLBI proposal(s): BD087, BD105 ◯ 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: Wideband (geodetic) setup.

(9) Recording format: ◯ Default continuum setup (VLBA only), ◯ VLBA/MkIV, ◯ MkIII: Mode
Bandwidth per BaseBand channel:
Aggregate bit rate: 256 (8 BB channels at 16 MSamples/sec of ◯ 1 bit, ⊗ 2 bit)

(10) ⊗ Multi-epoch observation: 4 epochs of 3 hours each, separated by (see text)

(11) Network	Requested antennas	Total time requested
EVN & MERLIN		
VLBA	ALL	12
other NRAO		
Non-VLBI Intruments		

(12) ABSTRACT (Do not write outside this space. Please type)
We would like to trigger a shot at XTE 1118+48, a 7 $M_\odot$ black hole transient that has re-appeared after 4.5 years. We would do a short run of 3 hours at 256 MB/s alternating S/X and U bands. We request (upto) 4 segments, if the flux exceeds 3mJy. The previous event lasted 3 months at a steady flux of ∼10mJy, but faded quickly. A few days delay may be harmless, but we are unsure at present. Our last astrometry of this object resulted in a 3-d velocity measured for a black hole (Nature, 2001, 413, 139). It was detected by the Ryle Telescope yesterday at 12mJy at 2cm and rising, and by the VLA this morning at C,X,U,K bands with 5.8, 9.5, 8.5, 11 mJy. ATEL telegrams (including 387 based on this morning's VLA monitoring) report the X-ray, optical, and radio resurgence. Our goals, as in BD105, are to use VLBA data supplemented by spectroscopic radial velocity to refine the space velocities of this BH X-ray binary, and clarify its birthplace, & evolutionary history.

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>): _____

(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: 2 s Spectral channels per baseband channel: 16
◯ 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)	XTE J1118+48			
RA (hh mm)	11 18 10			
Dec (dd.d)	48 02 14			
GST range (Europe)				
GST range (US)	15:30 - 21:30			
GST range (Other)				
Band(s)	13/3.6, 2cm			
Flux density (Total, Jy)	10mJy			
Flux density (correlated, mJy)	1-10mJy			
RMS needed (mJy/beam)	0.1mJy			
Peak/RMS needed	>10			

(21) Preferred VLBI session or range of dates for scheduling, and why:

(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).