VLBA PROPOSAL COVERSHEET

rcvd:

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

(1) Date Prepared: October 2, 2006

(2) Title of Proposal: VLBA imaging of the gamma-ray binary LS I +61°303

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	G/U	Students Only: For Thesis?	Students Only: Ph.D. Year
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(4) Related previous or current VLBI proposal(s): ○ Resubmission

(5) Contact author for scheduling: Miguel Ángel Pérez-Torres **(6)** Telephone: +34-665252538
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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: 2 epochs of 5.5 hours each, separated by 1 day

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

(12) ABSTRACT (Do not write outside this space. Please type)
The high-mass x-ray binary LS I +61°303 has been recently discovered at very high energy (TeV) γ-rays. The TeV flux has been found to be variable, hinting at a periodic structure that could follow that of the observed radio emission. Recent VLBA experimental results seem to indicate that both, the radio and TeV emissions, are produced by the interaction of a the wind from a young pulsar with that of the companion star, contradicting the previously assumed accretion/jet (microquasar) scenario. We propose two 5.5-hour long epochs of 5 GHz VLBA observations of LS I +61°303 around the maximum of the detected emission at high energies. Our proposed observations are part of a multi-wavelength campaign that includes simultaneous observations at TeV using MAGIC and also with MERLIN, near infra-red and Chandra (one epoch), all of them already approved. We aim at studying the correlations between the TeV flux with the wind morphological, temporal and spectral changes both in intra-day and day-to-day timescales. The acquired data will be very useful as input for detailed, time-dependent modelling of this relevant system.

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: ________ Spectral channels per baseband channel: 32________
○ Other special processing: ____

(19) Postprocessing Location: Granada__________

(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)	LS I +61°303			
RA (hh mm)	02 40 31.6657			
Dec (dd.d)	+61 13 45.604			
GST range (Europe)				
GST range (US)	01:15 - 06:45			
GST range (Other)				
Band(s)	6			
Flux density (Total, Jy)	0.025			
Flux density (correlated, mJy)	1			
RMS needed (mJy/beam)	0.040			
Peak/RMS needed	≥500			

(21) Preferred VLBI session or range of dates for scheduling, and why:
26 and 27 October 2006 (starting at GST 01:15), as there are simultaneous observations being carried with other instruments (MERLIN, Calar Alto, Chandra, and MAGIC).

(22) Dates which are NOT acceptable, and why:
Any other date.

(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).