

VLBA PROPOSAL COVERSHEET

BS 174 To  
 revd: 3/2/2007

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

(1) Date Prepared: March 2, 2007

(2) Title of Proposal: High Spatial Resolution Monitoring of the 2007  
 Outburst of the Jet-Producing White Dwarf in CH Cygni

(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):  Resubmission

(5) Contact author for scheduling: Michael Rupen  
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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 MHz  
 Aggregate bit rate: 256 ( 8 BB channels at 16 MSamples/sec of  1 bit,  2 bit )

(10)  Multi-epoch observation: 7 epochs of 8 hours each, separated by 1, 2, 4, 8, 14, 21, 28 days

(11) Network	Requested antennas	Total time requested
EVN & MERLIN		
VLBA	ALL	5x8 hours
other NRAO		
Non-VLBI Instruments		

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

CH Cygni is a symbiotic star that contains a jet-producing white dwarf (WD). Although sporadic collimated outflows have been detected from this interacting binary from radio through X-ray wavelengths, no jet ejection event has ever been observed from inception, through peak radio brightness, through the eventual fading. CH Cyg is currently undergoing a strong (10 mJy) radio outburst, following an optical fading which corresponds to pre-jet states that seem to occur approximately once per decade. Here we propose VLBA imaging of this outburst, starting as soon as possible, to complement our approved VLA monitoring campaign (AS909). CH Cyg has never before been observed with the VLBA, and never before been monitored so intensively. To complement the radio observations, we are also requesting monitoring with *RXTE*.

Scheduler use only obs 313  
 (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  $\lambda$ 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: \_\_\_\_\_

Other special processing: \_\_\_\_\_

(19) Postprocessing Location: NRAO-SOC, CfA, MSSL

(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)	CH Cygni			
RA (hh mm)	19 24			
Dec (dd.d)	+50.2			
GST range (Europe)				
GST range (US)	19-10			
GST range (Other)				
Band(s)	L			
Flux density (Total, Jy)	0.001-0.01			
Flux density (correlated, mJy)	0.5-10			
RMS needed (mJy/beam)	0.05			
Peak/RMS needed	10:1			

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

Observations every 2-3 days, starting NOW, to track the source during the optically-thick rise to maximum.

(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](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).