VLBA PROPOSAL COVERSHEET

rcvd:

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

(1) Date Prepared: March 13, 2008

(2) Title of Proposal: Is the transient in NGC2770 a relativistic SN explosion?

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	G/U	Students Only: For Thesis?	Students Only: Ph.D. Year
Michael Bietenholz	York U./HartRAO	mbieten@yorku.ca			
Alicia Soderberg	Princeton University	alicia@astro.princeton.edu			
Norbert Bartel	York University	bartel@yorku.ca			

(4) Related previous or current VLBI proposal(s): BS181 ○ Resubmission

(5) Contact author for scheduling: Michael Bietenholz
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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: 32 MHz
Aggregate bit rate: 512 (____ BB channels at ____ 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	Eb	
VLBA	ALL	12
other NRAO	HSA = Y27, GBT	12 hrs
Non-VLBI Intruments		12

(12) ABSTRACT (Do not write outside this space. Please type)
Two months ago we serendipitously discovered an extremely luminous X-ray outburst (XRO) which we subsequently showed marks the birth of a supernova of Type Ibc (SN 2008D). Given the large energy release of the XRO and the fact that GRBs are associated with SNe Ibc, we speculated that the explosion may be relativistic. Moreover, we also showed that SN 2008D had detectable radio emission which (together with the nearby distance of 27 Mpc) presents the opportunity for VLBI resolution of the expanding ejecta, and a direct measurment of the size. Our VLBA observations of the SN in February give a most likely value for the ejecta velocity which is mildly relativistic, but do not exclude a zero velocity at the 3-sigma level. Here we request follow-up VLBI global network observations of the fading radio emission to fully resolve the ejecta and determine whether the nature of the explosion was related to the GRB phenomena.

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: ______
○ Other special processing: ______________________________

(19) Postprocessing Location: HartRAO,York University

(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)	SN 2008D	SN 2008D		
RA (hh mm)	09:09:30.6517	09:09:30.6517		
Dec (dd.d)	+33:08:20.153	+33:08:20.153		
GST range (Europe)				
GST range (US)	4-14	4-14		
GST range (Other)				
Band(s)	6cm	3.6cm		
Flux density (Total, Jy)	0.0005	0.0004		
Flux density (correlated, mJy)	$\lesssim$0.5	$\lesssim$0.4		
RMS needed (mJy/beam)	0.01	0.01		
Peak/RMS needed	10	10		

(21) Preferred VLBI session or range of dates for scheduling, and why:
April 15-May 30 2008; As early as possible in this period due to the declining flux density

(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).