VLBA PROPOSAL COVERSHEET

rcvd:

DEADLINES: Target of Opportunity observations
EMAIL TO: toosoc@nrao.edu
OR MAIL TO: Director NRAO, Edgemont Rd. Charlottesville, VA 22903-2475, USA

(1) Date Prepared: December 19, 2005

(2) Title of Proposal: Confirmation and follow up of new bright radio supernova in the ULIRG Arp 220

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	G/U	Students Only For Thesis?	Ph.D. Year
Rodrigo Parra	Onsala Space Obserevatory, Sweden	rodrigo@oso.chalmers.se	G	Yes	2007
John Conway	Onsala Space Observatory, Sweden	jconway@oso.chalmers.se			
Hannah Thrall	Jodrell Bank Observatory, UK	hthrall@jb.man.ac.uk	G	Yes	2007
Phil Diamond	Jodrell Bank Observatory, UK	pdiamond@jb.man.ac.uk			

(4) Related previous or current VLBI proposal(s): BL058, GD17, EP049 ◯ Resubmission

(5) Contact author for scheduling: Rodrigo Parra
Address: Onsala Space Observatory
SE-439 92 Onsala
Sweden

(6) Telephone: +46 (31) 772 5505
Fax: +46 (31) 772 5590, 0300

(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: ________
Aggregate bit rate:______ (_____ BB channels at _____ MSamples/sec of ◯ 1 bit, ◯ 2 bit)

(10) ⊗ Multi-epoch observation: 2 epochs of 12 hours each, separated by 3 months

(11) Network	Requested antennas	Total time requested
EVN & MERLIN		
VLBA	ALL	2 × 12 hours
other NRAO		
Non-VLBI Intruments		

(12) ABSTRACT (Do not write outside this space. Please type)
We have detected at 6 cm two new strong (1 mJy and 3 mJy) radio sources in Arp 220 using 1 Gbps observations from February 2005. The brightest source has also been detected at a weaker flux level in two other observations, at 6 cm in January 2003 and 18 cm in March 2005. Remarkably this new source is within 1 mas of the brightest OH megamaser feature in Arp 220. So far the lightcurve of this object is consistent with it being a slightly more luminous version of the type II supernova SN1986J. However to our knowledge this is the first clear detection of a truly luminous radio SN in a ULIRG and its evolution may be quite different from standard SN models. Given its unique location it may even be a different phenomenon entirely such as a flaring AGN. We propose VLBA multifrequency observations as soon as possible to help constrain the light curves of both of our detected sources.

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 Spectral channels per baseband channel: 16
◯ Other special processing: ______

(19) Postprocessing Location: Onsala Space Observatory

(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)	Arp 220			
RA (hh mm)	15:34:57.25			
Dec (dd.d)	23:30:11.33			
GST range (Europe)				
GST range (US)	17:00 - 05:00			
GST range (Other)				
Band(s)	S - C - X			
Flux density (Total, Jy)	1			
Flux density (correlated, mJy)	5			
RMS needed (mJy/beam)	0.1			
Peak/RMS needed	50			

(21) Preferred VLBI session or range of dates for scheduling, and why:
First epoch before early February, second epoch May 2006

(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).