VLA OBSERVING APPLICATION

A
rcvd:

DEADLINES: 1st of Feb., June., Oct. for next configuration following review
INSTRUCTIONS: Each numbered item must have an entry or N/A
E-MAIL TO: propsoc@nrao.edu (different for some Rapid Response Science)
OR MAIL TO: Director NRAO, 520 Edgemont Rd., Charlottesville, VA 22903-2475

(1) Date Prepared: February 17, 2005

(2) Title of Proposal: Investigation of the Radio Afterglow following the Giant Flare of 27 December 2004 from SGR 1806−20

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	G/U	Students Only For Thesis?	Ph.D. Year
S. R. Kulkarni	Caltech				
P. B. Cameron	Caltech		G	Yes	2008
D. A. Frail	NRAO				

(4) Related VLA previous proposal number(s):

(5) Contact author for scheduling: D. A. Frail
address: NRAO/VLA

(6) Telephone: 505 835 9115
E-mail: dfrail@nrao.edu
Fax:

(7) Scientific Category: ○ solar system ⊗ galactic ○ extragalactic ○ other:

Rapid Response Science: ○ Known Transient ○ Exploratory ⊗ Target of Opportunity
Joint Proposal: ○ VLA/VLBA ○ VLA/GBT ○ VLA/VLBA/GBT

(8) Configurations (one per column) (A+Pt, A, B, C, D, BnA, CnB, DnC, Any)	B				
(9) Wavelength(s) (400, 90, 20, 6, 3.5, 2, 1.3, 0.7 cm)	90, 3.5				
(10) Time requested (hours)	10				

(11) Type of observation: ⊗ continuum ○ spectroscopy ○ multichannel continuum ○ polarimetry ○ solar
(check all that apply) ⊗ pulsar ○ high-time resolution ○ Pie Town link ○ other:

(12) Suitable for dynamic scheduling? ○ Suitable ○ Unsuitable

(13) ABSTRACT (do not write outside this space)

The radio afterglow following the giant flare from soft gamma-ray repeater (SGR) 1806−20 has already given us insight into the energetics of this burst, as well as the distance to this enigmatic object. Here we propose to further investigate several outstanding puzzles in the evolution of the radio afterglow, particularly its chromatic decay. This may be the first indication of evolution in the microphysics of relativistic shocks, and provide a direct window into the physics of trans-relativistic shocks. As such, this afterglow provides an opportunity to bridge the gap in our understanding of astrophysical flows, namely that between relativistic shocks from cosmological γ-ray bursts and the non-relativistic shocks from supernovae and supernova remnants.

(14) Observer present for observations? ○ Yes ⊗ No Data analysis at? ⊗ Home ○ AOC or CV (2 weeks notice)

(15) Help required: ⊗ None ○ Consultation ○ Friend (extensive help)

(16) Spectroscopy only	line 1	line 2	line 3	line 4
Transition (HI, OH, etc.)				
Rest Frequency (MHz)				
Velocity (km/s)				
Observing frequency (MHz)				
Correlator mode				
IF bandwidth(s) (MHz)				
Hanning smoothing (y/n)				
Number of channels per IF				
Frequency Resolution (kHz/channel)				
Rms noise (mJy/bm, nat. weight., 1 hr)				
Rms noise (K, nat. weight., 1 hr)				

(17) Number of sources:	**1**

(If more than 10 please attach list. If more than 30 give only selection criteria and LST range(s).)

(18) NAME	Coordinates 1950 ○ RA hh mm	2000 ⊗ Dec. ± xx.x°	Conf.	λ (cm)	Corr. mode	Band-width per IF (MHz)	Total Flux (Jy)*	LAS	Required rms (mJy/bm)	Required dynamic range	Time request (hr)
SGR 1806−20	18 08	-20.4	B	3.5		50	0.001	0.025″	0.025		5
				90		3.1	0.02	0.025″	3.0		5

*For spectral line, this should be the total flux at the peak of the line

Notes to the table (if any):

(19) Restrictions to elevation (other than hardware limits) or HA range (give reason):

(20) Preferred range of dates for scheduling (give reason): **Monitoring proposal. 10 epochs spaced over 90 days.**

(21) Dates which are not acceptable:

(22) Special hardware, software, or operating requirements:

(23) Please attach a self-contained Scientific Justification **not in excess of 1000 words.** (Preprints or reprints will be ignored.) Please include the full addresses (postal and e-mail) for first-time users or for those that have moved (if not contact author). When your proposal is scheduled, the contents of the cover sheets become public information (Any supporting pages are for refereeing only).

v4.3 10/04