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: toosoc@nrao.edu (different for some Rapid Response Science)
OR MAIL TO: Director NRAO, 520 Edgemont Rd., Charlottesville, VA 22903-2475

(1) Date Prepared: 30 December 2004

(2) Title of Proposal: Search for radio emission associated with a Giant Flare from SGR 1806–20

(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 VLA previous proposal number(s):

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(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)	any				
(9) Wavelength(s) (400, 90, 20, 6, 3.5, 2, 1.3, 0.7 cm)	20, 6, 3.5				
(10) Time requested (hours)	15				

(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)

On 27 Dec 2004, the Soft Gamma Repeater (SGR) $1806-20$ emitted a Giant Flare (GF), which was detected with *INTEGRAL*, KONUS, *SWIFT*, *RHESSI*, and even one of the GOES satellites, as reported thus far. GFs are extremely rare events with total energies upwards of 10^{44} ergs, i.e., at least a factor of 10^3 higher than the average SGR bursts; only three have been detected to date in a time span of ~ 25 years. Preliminary calculations of the flux and total energy of the latest event place it at the same, if not a higher level than the previous two flares seen from other SGRs. We request here ToO observations with the VLA to study the energetics of the radio emission associated with this GF, and probe the physics of extreme magnetic fields in neutron stars and their decay.

NRAO use only
(10/04)

(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 ○ 2000 ⊗ RA hh mm 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	any	20/6/3	Cont.	50	0.0005	<0.1″	30	5	15

*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): As soon as possible; source likely to be undetectable after 15 Jan 2005

(21) Dates which are not acceptable:

(22) Special hardware, software, or operating requirements:
15 hours to be split into 3-hour blocks, observed once every 3 days for 15 days.

(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).

National Space Science Technology Center, NASA/MSFC, XD-12, 320 Sparkman Drive, Huntsville, AL 35805, USA

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