**VLBA PROPOSAL COVERSHEET**

DEADLINES: 1st of Feb., June, Oct.
EMAIL TO: toosoc@nrao.edu

rcvd:

**(1)** Date Prepared: January 4, 2005

**(2)** Title of Proposal: Multi-epoch VLBA observations of SGR 1806–20 following a giant X-ray flare.



| **(3)** AUTHORS (Add * for new location) | INSTITUTION | E-mail | G/U | Students Only: For Thesis? | Students Only: Ph.D. Year |
|---|---|---|---|---|---|
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| Maura McLaughlin | Jodrell Bank Observatory | Maura.McLaughlin@manchester.ac.uk | | | |
| Rob Fender | University of Southampton | rpf@science.uva.nl | | | |
| | | | | | |



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


**(5)** Contact author for scheduling: Mike Garrett
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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: ______
Aggregate bit rate:______ ( ______ BB channels at ______ MSamples/sec of ○ 1 bit, ○ 2 bit )

**(10)** ⊗ Multi-epoch observation: 2 epochs of 8 hours each, separated by 24 hours

| **(11)** Network | Requested antennas | Total time requested |
|---|---|---|
| EVN & MERLIN | | |
| VLBA | ALL | 16 |
| other NRAO | Y1 | |
| | | |
| Non-VLBI Intruments | | |


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

On 27 December 2004, the Soft Gamma Repeater SGR $1806-20$ emitted a Giant Flare (GF), which was detected with multiple X-ray 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 $\sim 25$ years. We observed SGR 1806–20 with the VLA on January 3 & 4, 2005 and detected radio emission coincident with the X-ray source. Moreover, we resolved the source at both 4.9 and 8.5 GHz. We request here higher resolution observations with the VLBA at 20cm; these will build on the current set of VLA observations and will be complementary to MERLIN 5 GHz observations (sheduled on Jan 5, PI: Fender).


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 $\lambda$s except 13cm (RCP) and 3.6cm (RCP).

**(16)** Tape usage (Show <recording time>/<total time>): 6/8

**(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: 32
◯ Other special processing: ______

**(19)** Postprocessing Location: JIVE

**(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) | SGR 1806–20 | | | |
| RA (hh mm) | 18h 08m | | | |
| Dec (dd.d) | -20.4 | | | |
| GST range (Europe) | | | | |
| GST range (US) | 21 - 05 GST | | | |
| GST range (Other) | | | | |
| Band(s) | | | | |
| Flux density (Total, Jy) | 80 mJy | | | |
| Flux density (correlated, mJy) | 10 mJy | | | |
| RMS needed (mJy/beam) | 0.050 | | | |
| Peak/RMS needed | 10 | | | |

**(21)** Preferred VLBI session or range of dates for scheduling, and why:
As soon as possible - source fading.

**(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).