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: 25 July 2005

(2) Title of Proposal: Molecular Masers in V838 Monocerotis

(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): AC725

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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)	Current				
(9) Wavelength(s) (400, 90, 20, 6, 3.5, 2, 1.3, 0.7 cm)	1.3, 0.7 cm				
(10) Time requested (hours)	1.5				

(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)

In early 2002, the previously unknown variable star V838 Monocerotis suddenly erupted, becoming temporarily one of the most luminous stars in the Milky Way. In November 2003, we searched the circumstellar environment of V838 Mon for SiO, H_2O, and OH masers. Our search resulted in no detections. Deguchi et al. (2005) now report detection of SiO maser emission from V838 Mon in February and April 2005 with the Nobeyama 45-meter telescope. The evolving conditions around this eruptive star apparently now support maser emission. We propose to search for the reported SiO maser emission, to refine its position, and to look for weaker spatial or spectral components. We also ask for time to follow up our 2003 search for H_2O maser emission. Successful detections with the VLA will be followed with a request for high angular resolution observations to trace the dynamical behavior of the circumstellar environment of this peculiar, evolving star.

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.)	H_2O	SiO (J=1−0, v=1)	SiO (J=1−0, v=2)	
Rest Frequency (MHz)	22235.08	43122.808	42820.542	
Velocity (km/s)	0	0	0	
Observing frequency (MHz)				
Correlator mode	1A	2AD	2AD	
IF bandwidth(s) (MHz)	6.25	6.25	6.25	
Hanning smoothing (y/n)	n	n	n	
Number of channels per IF	128	64	64	
Frequency Resolution (kHz/channel)	48.8	97.7	97.7	
Rms noise (mJy/bm, nat. weight., 1 hr)	2.4	4.2	4.2	
Rms noise (K, nat. weight., 1 hr)	7	13	13	

(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)
V838 Mon	07 04, −03.8	Current	1.3	1A	6.25			6		15 min.
V838 Mon	07 04, −03.8	Current	0.7	2AD	6.25			7		75 min.

*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):

(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