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: 9 February, 2005

(2) Title of Proposal: H_2O maser in the merging system NGC 520: disk or nuclear kilomaser?

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	Students Only G/U	For Thesis?	Ph.D. Year
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(4) Related VLA previous proposal number(s):

(5) Contact author for scheduling: Paola Castangia
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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)	BnA, B				
(9) Wavelength(s) (400, 90, 20, 6, 3.5, 2, 1.3, 0.7 cm)	1.3				
(10) Time requested (hours)	2				

(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 February 5, we detected 22 GHz H_2O maser emission from the merging system NGC 520, using the 100-m Effelsberg telescope with a resolution of $40''$. Only interferometric measurements will allow us to discriminate between emission from a circumnuclear torus and a prominent star forming region offset from the main nucleus. The measured linewidth is small (0.6 km s^{-1}), suggesting high variability and a potentially short-lived flare, so that prompt observations are necessary. We propose to measure the maser with the VLA for 2 hours as a target of opportunity project in order to pinpoint its location with respect to other centers of activity in the NGC 520 complex.

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			
Rest Frequency (MHz)	22235.08			
Velocity (km/s)	2276			
Observing frequency (MHz)	22067.55			
Correlator mode	1A			
IF bandwidth(s) (MHz)	3.125			
Hanning smoothing (y/n)	n			
Number of channels per IF	256			
Frequency Resolution (kHz/channel)	12.207			
Rms noise (mJy/bm, nat. weight., 1 hr)	5/chan			
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)
NGC 520	01 24, +03.8	B	1.3	1A	3.125	0.13	N/A	4/chan	N/A	2

*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, given the variability of narrow maser lines

(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