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 2, 2005

(2) Title of Proposal: Continuum Spectrum of a Water Maser AGN at $z = 0.66$

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	G/U	Students Only: For Thesis?	Students Only: Ph.D. Year
Jim Ulvestad	NRAO	julvesta@nrao.edu			
Richard Barvainis	National Science Foundation	rbarvai@nsf.gov			
Robert Antonucci	UC Santa Barbara	ski@spot.physics.ucsb.edu			

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

(5) Contact author for scheduling: Jim Ulvestad
address: NRAO
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Socorro, NM 87801

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E-mail: julvesta@nrao.edu
Fax: 505-835-7320

(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)	1,2,4,6,20				
(10) Time requested (hours)	1				

(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 GBT recently has detected the highest redshift extragalactic H_2O maser, at $z = 0.66$, in a type 2 quasar identified with the Sloan Digital Sky Survey. This maser, at an observed frequency of 13.4 GHz, is much more distant and luminous than any other known extragalactic H_2O megamaser. We have submitted a High Sensitivity Array proposal to attempt VLBI imaging of the maser, in an effort to determine the structure of the maser disk in the highly luminous object and to see if it could be used for a direct distance measurement at large distance. The only known continuum radio detections are with the VLA NVSS and FIRST surveys; FIRST shows a 73 mJy point source at 1.4 GHz. Here, we request an hour of VLA time to get a radio spectrum of this unique megamaser AGN, in order to determine the luminosity of the underlying core and estimate the sublimation radius of the maser, look for a flat-spectrum component that might be detected with VLBI, and get a better position for VLBI correlation.

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)
J0804+3607	08 04, +36.1	B	1,2,4,		50	0.01–	4″	0.2	30	1 hr
			6,20			0.07				

*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): Possibly during BU030 gap on 27 February

(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