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
OR MAIL TO: Director NRAO, 520 Edgemont Rd., Charlottesville, VA 22903-2475

(1) Date Prepared: October 18, 2003

(2) Title of Proposal: *Ad Hoc* proposal for 1.4 GHz imaging of the second FIR and CO luminous QSO discovered within the Epoch of Reionization

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	Grad Students Only For Ph.D. Thesis?	Anticipated Ph.D. Year
C. Carilli	NRAO			
F. Bertoldi, K. Menten	MPIfR			
F. Walter	NRAO			
P. Cox	Paris-Sud			
A. Omont	IAP			
X. Fan	U. Arizona			
M. Strauss	Princeton			

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

(5) Contact author for scheduling: Carilli
address:

(6) Telephone: 7306
E-mail: ccarilli@nrao.edu
Fax:

(7) Scientific Category: ○ solar system ○ galactic ⊗ extragalactic ○ other:

(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)	21				
(10) Time requested (hours)	6				

(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)

This is an ad hoc proposal to study the radio continuum properties of the optical QSO SDSS J1048+4637. This QSO at $z = 6.23$ was the first to show a clear Gunn-Peterson absorption trough in its optical spectrum, indicating a substantialy neutral ($> 1\%$) IGM, implying that the source is within the Epoch of Reionization (EoR). Recent mm continuum and line observations have revealed a large dust and molecular gas mass associated with the QSO, making it the second FIR-luminous, molecular gas-rich QSO discovered within the EoR (after 1148+5255 at $z = 6.42$). The proposed observations are designed to test the possibility of a co-eval starburst in the host galaxy of the AGN, as well as to search for possible clustering of radio sources along the line of sight to the QSO.

NRAO use only
(03/02)

(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)
J1048+4637	10 48 45.05 +46 37 18.3	B	21		50		40	0.01		6

*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 <u>Scientific Justification</u> **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).

v4.1 3/02