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: September 25, 2003

(2) Title of Proposal: Spectral index of the most distant radio quasar SDSS J0836+0054

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	Students Only G/U	For Thesis?	Ph.D. Year
S. Frey *	FÖMI SGO, Hungary	frey@sgo.fomi.hu			
L. Mosoni *	Konkoly Obs., Hungary	mosoni@konkoly.hu	G	Yes	2004
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(4) Related VLA previous proposal number(s): N/A

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(7) Scientific Category: ◯ solar system ◯ galactic ⊗ extragalactic ◯ other:
Rapid Response Science: ◯ Known Transient ⊗ Exploratory ◯ Target of Opportunity

(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)	6 cm, 20 cm				
(10) Time requested (hours)	0.5 h, 0.5 h				

(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)

SDSS J0836+0054 ($z = 5.82$) is the most distant radio-detected quasar known to date. We successfully imaged it with VLBI at 1.6 GHz in June 2002 (Frey et al. 2003). We have recently been granted EVN observing time at 5 GHz on Nov 4, 2003. The source is known to have steep spectral index between 20 cm and 6 cm wavelengths ($\alpha = -0.8$, Petric et al. 2003). It also appears variable. In order to more reliably derive mas-scale spectral properties of the source using VLBI data taken at two different epochs, by this proposal we apply for supporting short exploratory VLA observations. Given the compact nature of the source, by comparing its L-band VLA and VLBI (2002) and VLA (2003) flux densities, we may assess the extent of possible variability. Comparison of C-band VLA and EVN flux densities measured at the same time give direct information on the compactness.

NRAO use only
(08/03)

(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:	**3**

(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)
J0836+0054	08 36, +00.9	B	6, 20		50	0.00058, 0.00175				20 min, 20 min
0839+033	08 39, +03.3	B	6, 20		50	0.55, 0.62				6 min, 6 min
3C 147	05 42, +49.8	B	6, 20		50	7.94, 22.50				4 min, 4 min

*For spectral line, this should be the total flux at the peak of the line

Notes to the table (if any): Sources #2 and 3 are calibrators

(19) Restrictions to elevation (other than hardware limits) or HA range (give reason): N/A

(20) Preferred range of dates for scheduling (give reason): On or around November 4, 2003 – the date of the scheduled EVN VLBI observation (EF011)

(21) Dates which are not acceptable: N/A

(22) Special hardware, software, or operating requirements: N/A

(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).