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: 22 September 2004

(2) Title of Proposal: Understanding the Infrared Emission of the Microquasar GRS 1915+105: Simultaneous Infrared, X-ray, and Radio Observations

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

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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)	A				
(9) Wavelength(s) (400, 90, 20, 6, 3.5, 2, 1.3, 0.7 cm)	6/4cm				
(10) Time requested (hours)	$2\times1 + 2\times0.5$				

(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)

We request VLA observations simultaneous with scheduled Spitzer observations of the microquasar GRS 1915+105. The Spitzer data will provide detailed IR spectra and photometry, and scheduled X-ray (RXTE) observations will determine the state of the accretion disk; the VLA is needed to characterize the strength and state of the radio jet. Given the extreme variability of the source simultaneous observations are essential, and only the VLA has the sensitivity to measure both the flux density and the spectral index on short timescales. Intercomparing these three data sets should clarify the origin of the IR emission, variously thought to arise in the relativistic jet (via synchrotron emission), the accretion disk, the companion star or an associated stellar wind, X-ray-heated dust, or a combination of all these processes.

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:	**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)
GRS 1915+105	19 15, +10.9	A	6/4		50	0.01	2″	0.01	100:1	$2 \times 1 +$ 2×0.5

*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): Simultaneous with Spitzer:
VLA day 59998 0005-0052 LST
VLA day 60001 2307-2325 LST
plus two other 1 hour slots toward the end of October (not yet known)

(21) Dates which are not acceptable:

(22) Special hardware, software, or operating requirements: Two subarrays, to measure two frequencies at once

(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).

v4.2 8/03