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: April 18th, 2005

(2) Title of Proposal: Nature of the bright and compact VLA 7-mm continuum emission associated with a Herbig AeBe star: A circumstellar dust disk?

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	G/U	Students Only For Thesis?	Ph.D. Year
José M. Torrelles	ICE (CSIC) and UKATC	torrelles@ieec.fcr.es			
William R. Dent	UKATC, ROE	dent@roe.ac.uk			
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(4) Related VLA previous proposal number(s):

(5) Contact author for scheduling: José M. Torrelles
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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)	Any of B, CnB, or C				
(9) Wavelength(s) (400, 90, 20, 6, 3.5, 2, 1.3, 0.7 cm)	6, 3.5, 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)

As part of a program to study the circumstellar dust/gas contents around HAeBe stars by Dent et al. (2005), we have searched at the VLA Archive for cm/7mm observations toward 8 sources with submm CO emission. We find that HD169142 has strong ($\simeq 4.4$ mJy) unresolved ($\leq 0.7''$) 7 mm continuum emission. This is one of the brightest 7 mm sources ever detected with the VLA toward HAeBe stars, and it could be an excellent candidate for follow-up VLA-A 7 mm observations to resolve dust emission. However, the lack of available cm continuum data does not allow to establish clearly whether the 7 mm source is tracing dust or free-free emission from a wind. We are requesting VLA exploratory time at 6, 3.5, and 1.3 cm continuum to: (1) reveal the nature of the 7 mm source, and (2) optimize the best strategy for follow-up VLA-A 7 mm observations (deadline October 1st). HD169142 retains a relatively massive disc (0.02 $M_\odot$), being likely in transition between AeBe and debris. This is of great interest for understanding how the dust and gas is removed during this transition phase, being an excellent candidate to resolve its dust contents with the VLA, which offers the best resolution available today provided that the source is strong enough.

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)
HD169142	18 24, -29.8	Any	6		50	0.0005	1″	0.05	10	0.75
“	“	Any	3.5		50	0.0005	1″	0.05	10	0.5
“	“	Any	1.3		50	0.001	1″	0.1	10	0.75

*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 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