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

A

rcvd:

(1) Date Prepared:

(2) Title of Proposal: A new intermediate mass protostar in the Cepheus A HW2 region?

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	Grad Students Only: For Ph.D. Thesis?	Grad Students Only: Anticipated Ph.D. Year
Izaskun Jiménez–Serra*	IEM (CSIC)	izaskun@damir.iem.csic.es	yes	2006
Jesús Martín-Pintado*	IEM (CSIC)	jmartin.pintado@iem.cfmac.csic.es		
Claire Chandler	NRAO	cchandle@aoc.nrao.edu		
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(4) Related VLA previous proposal number(s):

(5) Contact author
for scheduling: Claire Chandler
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Observatory P.O. Box O
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(6) Telephone:
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Fax:

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

(8) Configurations (one per column) (A+Pt, A, B, C, D, BnA, CnB, DnC, Any)	C				
(9) Wavelength(s) (400, 90, 20, 6, 3.5, 2, 1.3, 0.7 cm)	0.7				
(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)

We have recently detected a hot (160 K), dense (2×10^8 cm^{-3}) and very compact (0.4",300 AU) molecular condensation in the CepA HW2 region. This condensation is located ∼300 AU SE of the thermal radio jet HW2. Two possibilities would explain the observational facts: (1) a hot, dense molecular spot in the circumstellar disk of HW2 externally heated by HW2 or (2) a hot core associated with an intermediate mass protostar of 10^3 L⊙. Higher angular and spectral resolution than the PdBI is needed to determine the nature of the hot condensation. We have used the VLA in B configuration (project AJ307) to image the SO_2 J=19(2,18)-18(3,15) line which involves levels 160 K above the ground state. Unfortunately, bad weather and problems with the setups did not provide the required sensitivity to detect the line. This proposal is timely since it will be part of the Izaskun's PhD Thesis. Before embarking in another 8 hours proposal in B configuration, we propose to use 2 hours of exploratory time in C configuration to measure the flux of this line in the 0.5" beam. These data will allow us to clearly establish the precise location of the hot core with respect to the radiojet.

NRAO use only
(03/02)

(15) Help required: ◯ None ◯ Consultation ◯ Friend (extensive help)

(16) Spectroscopy only	line 1	line 2	line 3	line 4
Transition (HI, OH, etc.)	$SO_2(19_{2,18} - 18_{3,15})$			
Rest Frequency (MHz)	43016.28			
Velocity (km/s)	-10			
Observing frequency (MHz)				
Correlator mode	2AD			
IF bandwidth(s) (MHz)	6.25			
Hanning smoothing (y/n)	n			
Number of channels per IF	64			
Frequency Resolution (kHz/channel)	97.656			
Rms noise (mJy/bm, nat. weight., 1 hr)	3			
Rms noise (K, nat. weight., 1 hr)	8			

(17) Number of sources:

(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)
HWC2-HC	22 56.30, +62.03	C	0.7	2AD	6.25	0.04	20	2	10	2

*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).

v4.1 3/02