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: February 11, 2004

(2) Title of Proposal: Exploratory search for OH (1720 MHz) masers towards the SNR G347.3-0.5 (RX J1713.7-3946)

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	Grad Students Only For Ph.D. Thesis?	Anticipated Ph.D. Year
W. M. Goss	NRAO	mgoss@aoc.nrao.edu		
G. Dubner	IAFE, Argentina	gdubner@iafe.uba.ar		
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A. Decourchelle	CEA-Saclay (France)	decour@calix.saclay.cea.fr		
G. Cassam-Chenaï	CEA-Saclay, France	gcc@discovery.saclay.cea.fr	YES	2004

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

(5) Contact author for scheduling: W.M.Goss
address:

(6) Telephone:
E-mail: mgoss@aoc.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)	C				
(9) Wavelength(s) (400, 90, 20, 6, 3.5, 2, 1.3, 0.7 cm)	18				
(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)

Using the VLA in its C configuration we propose to carry out a first search for OH (1720 MHz) masers towards two bright X-ray spots in the SNR G347.3-0.5 (RX J1713-3946). Recent *XMM-Newton* observations have disclosed the unexpected fact that the X-ray maximum observed to the SW of the remnant coincides with an enhancement in the absorbing column density (Cassam-Chenaï et al. 2004). This fact is interpreted in the framework of a local interaction between the SN shock and a molecular cloud. CO (J:1-0) observations carried out by Fukui et al. (2003) revealed the presence of dense molecular gas in the vicinity of G347.3-0.5. The positive detection of OH (1720 MHz) masers will allow us (1) to confirm the existence of physical interaction between the SNR shock and the molecular clouds, (2) to provide an independent distance estimate for G347.3-0.5, thus helping to solve the disagreement between the 1 and 6 kpc proposed so far, (3) to explain the differences between the NW and the SW X-ray maxima, and (4) to constrain the physical parameters of the shock-excited gas on the basis of the very specific conditions required to excite the 1720 MHz OH masers. Any positive detections will be followed by a new proposal using the A-array.

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.)	OH			
Rest Frequency (MHz)	1720			
Velocity (km/s)				
Observing frequency (MHz)	1720			
Correlator mode	1A			
IF bandwidth(s) (MHz)	0.78			
Hanning smoothing (y/n)	y			
Number of channels per IF	256			
Frequency Resolution (kHz/channel)	3.05			
Rms noise (mJy/bm, nat. weight., 1 hr)	8			
Rms noise (K, nat. weight., 1 hr)	10			

(17) Number of sources:	**2**

(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)
G347.3-0.5	17 12, -40.0	C	18	1A				8		1
G347.3-0.5	17 12, -39.5	C	18	1A				8		1

*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