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: 2005 November 23

(2) Title of Proposal: **SN 2005gj: A Hydrogen-rich Type Ia Supernova Near Maximum**

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	Grad Students Only: For Ph.D. Thesis?	Grad Students Only: Anticipated Ph.D. Year
A. M Soderberg	Caltech	ams@astro.caltech.edu	Yes	2006
D. A. Frail	NRAO	dfrail@nrao.edu		

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

(5) Contact author for scheduling: Dale A. Frail
address: Caltech

(6) Telephone: (505) 835-7338
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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)	D	D			
(9) Wavelength(s) (400, 90, 20, 6, 3.5, 2, 1.3, 0.7 cm)	3.6	1.3			
(10) Time requested (hours)	0.25 x 4	0.75 x 4			

(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)

Narrow hydrogen emission lines have recently been identified in the spectrum of the young Type Ia SN 2005gj at z=0.06. This is the second clear detection of hydrogen in the spectrum of a Type Ia supernova, preceeded only by SN 2002ic (Hamuy *et al.*, 2003, Nature, 424, 651). In both cases the hydrogen lines are attributed to the ejecta interacting with dense circumstellar material. We request radio observations to search for non-thermal emission from the circumstellar interaction. These observations may shed light on the progenitors of thermonuclear supernovae.

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.)				
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. $\pm$ 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)
(see Table 1) SN2005gj	03 01, -00.5	D	3.6		50		8.0	0.05		0.25
SN2005gj	03 01, -00.5	D	1.3		50		3.0	0.1		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).

v4.1 3/02