



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: 01 June 2004
(2) Title of Proposal: ToO Observations of the Thermonuclear Supernova (Type Ia) 2006X

Table with 5 columns: (3) AUTHORS, INSTITUTION, E-mail, Grad Students Only (For Ph.D. Thesis?, Anticipated Ph.D. Year). Rows include K.W. Weiler, C. Stockdale, R.A. Sramek, S.D. Van Dyk, N. Panagia, S. Immler.

(4) Related VLA previous proposal number(s): AW623

(5) Contact author for scheduling: Richard A. Sramek
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(7) Scientific Category: [radio buttons] solar system, galactic, extragalactic, other:
Rapid Response Science: [radio buttons] Known Transient, Exploratory, Target of Opportunity

Table with 6 columns: (8) Configurations, (9) Wavelength(s), (10) Time requested, and Total. Rows show configurations A, wavelengths 1.3 and 3.5 cm, and time requested 2.5 hours.

(11) Type of observation: [radio buttons] continuum, spectroscopy, multichannel continuum, polarimetry, solar, pulsar, high-time resolution, Pie Town link, other: (check all that apply)

(12) Suitable for dynamic scheduling? [radio buttons] Suitable, Unsuitable

(13) ABSTRACT (do not write outside this space)

SN 2006X was discovered on 7.10 Feb 2006 in the galaxy M100 (IAUC 8667) and was determine to be a type Ia supernova caught at early times. The spectra are similar to those of SN 2002bo at 1-2 weeks before maximum light (CBET 393). We have observed many SNe Ia for more than 20 years and have yet to detect one in the radio, most likely due to tenuous circumstellar matter around the SN. But extremely few have been caught this early, when we would expect any radio emission to be detectable. Therefore, we propose to observe SN 2006X as early as possible with the VLA. If not detected, we will be able to place the most stringent constraints for radio non-detections of a Type Ia SN to date and provide information, unavailable from any other waveband, on the nature of their environments and progenitors. We propose two deep 1.25 hours observations at both K and X bands to search for radio emission from this nearby SN (d= 16.8 Mpc) at very early times. Swift X-ray and UV observations are pending as well. We will also test whether SN 2006X could have similar circumstellar matter denser than expected (such as for the unusual Type Ia SNe 2002ic 2005ke; CBET 289).

(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:

(If more than 10 please attach list. If more than 30 give only selection criteria and LST range(s).)

(18) NAME	Coordinates		Conf.	$\lambda$ (cm)	Corr. mode	Band- width per IF (MHz)	Total Flux (Jy)*	LAS	Required rms (mJy/bm)	Required dynamic range	Time request (hr)
	1950 <input type="radio"/> RA hh mm	2000 <input checked="" type="radio"/> Dec. $\pm$ xx.x $^\circ$									
SN 2006X	12 23,	+15.7	A	1.3		50	< 0.0001	0.0	0.02		1.25
SN 2006X	12 23,	+15.7	A	3.5		50	< 0.0001	0.0	0.013		1.25

\*For spectral line, this should be the total flux at the peak of the line

Notes to the table (if any): Rapid Response observations which cannot be specified in advance. See proposal for estimates occurrence rate

(19) Restrictions to elevation (other than hardware limits) or HA range (give reason): None

(20) Preferred range of dates for scheduling (give reason): None

(21) Dates which are not acceptable: None

(22) Special hardware, software, or operating requirements: None

(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).