Observing Application

Date :	Mar, 10 2012
Proposal ID :	VLA/12A-458
Legacy ID :	AS1184
PI :	Alicia Soderberg
Type :	Director's Discretionary Time - Target of Opportunity
Category :	Energetic Transients and Pulsars
Total Time :	12.0

The broad-lined type Ic relativistic supernova, SN2012ap

Abstract:

With the recent discovery of radio bright relativistic outflow from the Type Ic SN2009bb came the understanding that there may be a continuum of ejecta properties spanning ordinary supernovae and long-duration gamma-ray bursts, both marking the catastrophic death of massive stars. Despite this progress and the growing number of theoretical and observational papers aimed at understanding SN2009bb, these results are based on just one event. After three years of searching, we have finally uncovered a second relativistic Type Ic supernova through our dedicated EVLA follow-up of optically discovered local SNe. Our preliminary radio study of SN2012ap indicate a radio bright outflow with speed, v > 0.5c, and an energy of E~3e48 erg. Here we request EVLA follow-up observations of this new, radio bright SN to monitor the deceleration of the ejecta, measure the mass loss history of the environment, and constrain the shock partition fractions. Combined with data from our on-going optical campaign, our approved Chandra ToO, and GMRT data, we aim to shed additional light on the nature of SN2012ap and the class of relativistic supernovae.

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Related proposals:

11B-197

Joint:

Not a Joint Proposal

Observing type(s):

Continuum

VLA Resources

Name	Conf.	Frontend & Backend	Setup
S-band	Any	S Band 10 cm 2000 - 4000 MHz WIDAR OSRO, Full Polarization	Rest frequencies: 2500.0,3500.0 MHz Subband Bandwidth: 128.0 MHz No. of Channels: 64 Poln. products: 4.0 Channel Width: 2000.0 kHz Total Bandwidth: 2,048.00 MHz
C-band	Any	C Band 6 cm 4000-8000 MHz WIDAR OSRO, Full Polarization	Rest frequencies: 5000.0,6000.0 MHz Subband Bandwidth: 128.0 MHz No. of Channels: 64 Poln. products: 4.0 Channel Width: 2000.0 kHz Total Bandwidth: 2,048.00 MHz
X-band	Any	X Band 3.6 cm 8000 - 12000 MHz WIDAR OSRO, Full Polarization	Rest frequencies: 8500.0,9500.0 MHz Subband Bandwidth: 128.0 MHz No. of Channels: 64 Poln. products: 4.0 Channel Width: 2000.0 kHz Total Bandwidth: 2,048.00 MHz

Sources:

Name	Position		Velocity		Group
SN2012ap	**Coordinate System**	Equatorial	**Convention**	Radio	SN
	Equinox	J2000			
	Right Ascension	05:00:13.72	**Ref. Frame**	LSRK	
		00:00:00.0			
	Declination	-3:20:51.2	**Velocity**	0.00	
		00:00:00.0			

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
Observe	1.00	12	14 day	01:00:00	08:00:00	0

Session Constraints:

Name	Constraints	Comments

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
Observe	SN2012ap	S-band	0.33 hour	0.05 mJy/bm	
Observe	SN2012ap	C-band	0.33 hour	0.015 mJy/bm	
Observe	SN2012ap	X-band	0.34 hour	0.03 mJy/bm	