



Observing Application

Date : Jul, 20 2012
 Proposal ID : VLA/12A-488
 Legacy ID : AH1088
 PI : Assaf Horesh
 Type : Director's Discretionary
 Time - Exploratory Time
 Category : Energetic Transients and
 Pulsars
 Total Time : 4.0

A search for collisions less shocks in recent nearby type IIIn supernovae

Abstract:

A key question in astronomy is the identification of supernova (SN) progenitors of different types. Studying the circum stellar matter (CSM) around the progenitor can provide important information on its mass-loss history and therefore on its final stages of stellar evolution and on its nature. Radio observations of SNe play an important role in such studies. The interaction of the SN shockwave with the CSM can produce synchrotron radio emission in addition to X-ray emission. However, in very dense CSM environments of type IIIn SNe, the early radio emission is predicted to be suppressed. Despite that, recent studies by Katz et al. (2011) and Ofek et al. (2012) suggest that radio and X-ray emission will turn on at late times (months-years) in these type of SNe. Given the rarity of such nearby SNe, we propose late-time observations of four unique nearby type IIIn SNe that have been discovered by the Palomar Transient Factory.

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Related proposals:

Joint:

Not a Joint Proposal

Observing type(s):

Continuum

VLA Resources

Name	Conf.	Frontend & Backend	Setup
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Name	Conf.	Frontend & Backend	Setup
lIn_Kband	Any	K Band 1.3 cm 18000 - 26500 MHz WIDAR OSRO, Full Polarization	Rest frequencies: 21500.0,22500.0 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

Testing Resource Images

Sources:

Name	Position		Velocity		Group
PTF10aazn	Coordinate System	Equatorial	Convention	Radio	SN-1
	Equinox	J2000			
	Right Ascension	02:06:52.26 00:00:00.0	Ref. Frame	LSRK	
	Declination	+44:34:17.6 00:00:00.0	Velocity	0.00	
PTF11iqb	Coordinate System	Equatorial	Convention	Radio	SN-2
	Equinox	J2000			
	Right Ascension	00:34:04.84 00:00:00.0	Ref. Frame	LSRK	
	Declination	-9:42:17.9 00:00:00.0	Velocity	0.00	
PTF12csy	Coordinate System	Equatorial	Convention	Radio	SN-3
	Equinox	J2000			
	Right Ascension	06:58:32.74 00:00:00.0	Ref. Frame	LSRK	
	Declination	+17:15:44.4 00:00:00.0	Velocity	0.00	
PTF10tel	Coordinate System	Equatorial	Convention	Radio	SN-4
	Equinox	J2000			
	Right Ascension	17:21:30.68 00:00:00.0	Ref. Frame	LSRK	
	Declination	+48:07:47.4 00:00:00.0	Velocity	0.00	

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
PTF10aazn	0.50	2	90 day	00:00:00	04:00:00	30
PTF11iqb	0.50	2	90 day	23:00:00	02:00:00	30
PTF12csy	0.50	2	90 day	05:00:00	09:00:00	30
PTF10tel	0.50	2	90 day	15:30:00	19:30:00	30

Session Constraints:

Name	Constraints	Comments

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
PTF10aazn	PTF10aazn	lIn_Kband	0.5 hour	0.03 mJy/bm	