Observing Application

Date :	Aug, 13 2012
Proposal ID :	VLA/12B-372
Legacy ID :	AH1106
PI :	Assaf Horesh
Type :	Director's Discretionary Time - Target of Opportunity
Category :	Energetic Transients and Pulsars
Total Time :	7.5

Exploring the nature of a "fast" radio supernova

Abstract:

A connection has now been established between Type Ic supernova and Gamma-ray bursts. Two events, the archetypical low luminosity gamma-ray burst GRB 980425 associated
with SN 1998bw and the mildly relativistic SN2009bb, define a nice continuum stretching all the way to "classical" long duration GRBs. The Palomar Transient Factory has recently discovered a peculiar Ic supernova, PTF12gzk. This SN is exceedingly rare in two ways. First, its optical spectra show a very high velocity of 35,000 km/s, which is sustained over the first 10 days after explosion. Moreover, we detected radio emission from this SN at a frequency of 6.1GHz which quickly faded away in less than 10 days. The combination of these properties may suggest that this is a unique, relativistic event. In order to measure the true mean velocity of this supernova, the shockwave total energy and therefore understand its nature we request followup observations at a lower frequency of 1.4GHz.

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Related proposals:

Joint:

Not a Joint Proposal

Observing type(s):

Continuum

VLA Resources

Name	Conf.	Frontend & Backend	Setup
L_band	B	L Band 20 cm 1000 - 2000 MHz WIDAR OSRO, Full Polarization	Rest frequencies: 1250.0,1750.0 MHz Subband Bandwidth: 64.0 MHz No. of Channels: 64 Poln. products: 4.0 Channel Width: 1000.0 kHz Total Bandwidth: 1,024.00 MHz

Testing Resource Images

Sources:

Name	Position		Velocity		Group
PTF12gzk	**Coordinate System**	Equatorial	**Convention**	Radio	Supernova
	Equinox	J2000			
	Right Ascension	22:12:41.0	**Ref. Frame**	LSRK	
		00:00:00.0			
	Declination	+00:30:43.0	**Velocity**	0.00	
		00:00:00.0			

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
Followup	2.50	3	3 day	21:30:00	23:30:00	30

Session Constraints:

Name	Constraints	Comments

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
Followup	PTF12gzk	L_band	2.5 hour	0.01 mJy/bm	

Present for observation: no Staff support: None Plan of Dissertation: no