



# Observing Application

Date: Jul 28, 2006  
 Proposal ID: VLA/06C-257  
 Legacy ID: AJ329  
 Type: Rapid Response Target of Opportunity  
 Joint: Not a Joint Proposal  
 Category: Extragalactic  
 Total time: 22.5 hour

## The Radio Supernova in the Ultra-Low Metallicity Galaxy SBS0335-052

### Abstract:

We have detected a supernova in the extreme low metallicity galaxy SBS0335-052. The source appeared in 7mm observations in August of 2005 with a flux density of ~0.4 mJy, but was not previously detected in observations at any other wavelength. We verified the radio supernova (RSN) with "Target of Opportunity" observations in late June and early July of 2006, making this the first known example of a SN exploding in an extremely metal poor galaxy. Thus, we have an golden opportunity to study the best analog to a high-redshift RSN to date. The recent ToO observations indicate that this RSN appears to be similar in some respects to previously studied RSNe. However, the RSN in SBS0335-052 also differs radically from other known RSNe; despite being strongly detected at 6cm in recent ToO observations, it is astonishingly undetected at 3.6cm in observations taken within three weeks of the 6cm observations. Our primary goals are (1) confirm the apparently unique relative flux density at 3.6cm and 6cm, (2) to measure for the first time the light curve of an extremely low-metallicity SN, and how it changes with frequency, and (3) assess the importance of density in SN evolution.

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### Related proposals:

AJ328

### Observing type(s):

Continuum, Monitoring

## Resources:

Resource name	Tele. Conf.	Frontend & Backend	Set up
X-band, B-array	VLA B	X Band 3.6 cm 8080 - 8750 MHz VLA Correlator - Single Channel Continuum	Bandwidth: 50 MHz  Rest frequencies: 8435.1,8485.1 MHz
C-band, B-array	VLA B	C Band 6 cm 4500 - 5000 MHz VLA Correlator - Single Channel Continuum	Bandwidth: 50 MHz  Rest frequencies: 4885.1,4835.1 MHz
L-band, B-array	VLA B	L Band 20 cm 1240 - 1700 MHz VLA Correlator - Single Channel Continuum	Bandwidth: 50 MHz  Rest frequencies: 1464.9,1385.1 MHz
X-band, C-array	VLA C	X Band 3.6 cm 8080 - 8750 MHz VLA Correlator - Single Channel Continuum	Bandwidth: 50 MHz  Rest frequencies: 8435.1,8485.1 MHz
C-band, C-array	VLA C	C Band 6 cm 4500 - 5000 MHz VLA Correlator - Single Channel Continuum	Bandwidth: 50 MHz  Rest frequencies: 4885.1,4835.1 MHz
L-band, C-array	VLA C	L Band 20 cm 1240 - 1700 MHz VLA Correlator - Single Channel Continuum	Bandwidth: 50 MHz  Rest frequencies: 1464.9,1385.1 MHz

## Sources:

Source name	RA	DEC	System	RA range	DEC range	Velocity/z	Group name
SBS0335-052	03:37:44.5	-05:02:38	J2000	00:00:00.0	00:00:00	0 Km/s	

## Sessions:

Session Name	Session Time	Repeat	Separation	LST Minimum	LST Maximum	Elevation Minimum
SBS, C-array	4.5 hours	3	40 days	01:00:00	06:00:00	0
SBS, B-array	4.5 hours	2	30 days	01:00:00	06:00:00	0

### Session Constraints:

Session Name	Constraint	Comments
SBS, C-array		
SBS, B-array		

### Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit
SBS, C-array	SBS0335-052	X-band, C-array	1.5 hour	0.02mJy/bm
SBS, C-array	SBS0335-052	C-band, C-array	1.5 hour	0.02mJy/bm
SBS, C-array	SBS0335-052	L-band, C-array	1.5 hour	0.02mJy/bm
SBS, B-array	SBS0335-052	X-band, B-array	1.5 hour	0.02mJy/bm
SBS, B-array	SBS0335-052	C-band, B-array	1.5 hour	0.02mJy/bm
SBS, B-array	SBS0335-052	L-band, B-array	1.5 hour	0.02mJy/bm

### Session Resource/Source Constraints:

Session/Source/Resource	Comments
SBS, C-array/SBS0335-052/X-band, C-array	
SBS, C-array/SBS0335-052/C-band, C-array	
SBS, C-array/SBS0335-052/L-band, C-array	
SBS, B-array/SBS0335-052/X-band, B-array	
SBS, B-array/SBS0335-052/C-band, B-array	
SBS, B-array/SBS0335-052/L-band, B-array	

Present for observation: no Staff support: None