



Observing Application

Date : May, 05 2011
 Proposal ID : VLA/11A-266
 Legacy ID : AZ197
 PI : Bevin Zauderer
 Type : Director's Discretionary
 Time - Target of Opportunity
 Category : Energetic Transients and Pulsars
 Total Time : 25.5

The Birth of a Relativistic Outflow from Transient Accretion onto an SMBH

Abstract:

The recent gamma-ray transient Swift J164449.3+573451 is a unique event in over three decades of gamma-ray observations. Our previous observations at 1-350 GHz led to the discovery of associated cm/mm transient emission in coincidence with the nucleus of a previously quiescent galaxy at $z=0.354$. Equally important, these observations provided direct evidence for the birth of a relativistic outflow, most likely from the tidal disruption of a star by a dormant super-massive black hole. A paper describing our results was submitted to Nature. Here we request EVLA time to continue observations of this exciting event, designed to stem the gap until the next regular proposal cycle begins (27 January 2012). These observations will exploit this unique event by (i) studying the environment surrounding a previously-dormant SMBH on sub-parsec scales; (ii) determining the total energy release, and thereby the initial jet collimation; (iii) tracing the evolution of a newly-formed relativistic outflow from an SMBH, a process that cannot be observed in steady-state AGN; and (iv) using the long-term radio evolution to inform future discoveries of such events based on off-axis radio emission alone.

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Related proposals:

AB1323, AK634, AK681, AK706, AK718, AK730, 10C-145, 11A-262

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
Kband	Any	K Band 1.3 cm 18000 - 26500 MHz WIDAR RSRO	Comments: null
Cband	Any	C Band 6 cm 4000-8000 MHz WIDAR RSRO	Comments: null
Qband	Any	Q Band 0.7 cm 40000 - 50000 MHz WIDAR RSRO	Comments: null

Sources:

Name	Position		Velocity		Group
GRB110328A	Coordinate System	Equatorial	Convention	Radio	GRB110328A / Swift J164449.3+573451
	Equinox	J2000			
	Right Ascension	16:44:49.93 00:00:00.0	Ref. Frame	LSRK	
	Declination	+57:34:59.7 00:00:00.0	Velocity	0.00	

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
multiband	1.50	17	14 day	11:00:00	22:00:00	30

Session Constraints:

Name	Constraints	Comments
multiband	Q band, weather permitting	We request monitoring every 2 weeks until the next proposal cycle begins on 27 January 2012. Each of the 17 bi-weekly session will be 1.5 hours in duration, for a total requested time of 25.5 hours. When source is no longer detectable, observations will cease. Extra half hour is for overhead of reference pointing, observations of bandpass calibrator and slewing.

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
multiband	GRB110328A	Kband	0.6 hour	0.034 mJy/bm	
multiband	GRB110328A	Cband	0.5 hour	0.02 mJy/bm	
multiband	GRB110328A	Qband	0.4 hour	0.13 mJy/bm	

Present for observation: no

Staff support: None

Plan of Dissertation: no