



# Observing Application

Date : Apr, 01 2010  
 Proposal ID : VLA/10A-256  
 Legacy ID : AM1039  
 PI : James Miller-Jones  
 Type : Rapid Response - Target  
 of Opportunity  
 Category : Stellar, Galactic  
 Total Time : 3.0

## Hard-state radio emission in the black hole X-ray binary XTE J1752-223

### Abstract:

The black hole candidate X-ray binary XTE J1752-223 recently underwent an outburst during which it made a transition to the soft X-ray state. RXTE observations on 2010 March 27 demonstrated that the source is now making a transition back to the hard X-ray state, in which radio emission from a steady, compact jet is expected. We propose to observe this source for 3 epochs of 1 hour each with the EVLA, simultaneous with Swift observations, to constrain the radio/X-ray correlation at the most luminous part of the hard state, to determine at what X-ray hardness the radio emission switches on and measure its rate of decay, to determine the radio spectral index, and to search for evidence of polarized radio emission. The detection of polarized emission would allow us to determine the likely position angle of the jets in this system, and to search for evidence of (possibly time-variable) Faraday rotation between two widely-spaced sub-bands.

### Authors:

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### Related proposals:

### Joint:

Not a Joint Proposal

### Observing type(s):

Continuum, Polarimetry, Monitoring

### VLA Resources

Name	Conf.	Frontend & Backend	Setup
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Name	Conf.	Frontend & Backend	Setup
Cwide	D	C Band 6 cm 4000-8000 MHz WIDAR OSRO1: 2 Subbands/Full polz	Rest frequencies: 4896.0, 5024.0 MHz Bandwidth: 128.0 MHz No. of Channels: 64 Poln. products: 4.0 Channel Width: 2000.0 kHz

### Sources:

Name	Position		Velocity		Group
XTE J1752-223	Coordinate System	Equatorial	Convention	Radio	XTEJ1752
	Equinox	J2000			
	Right Ascension	17:52:15.1 00:00:00.0	Ref. Frame	LSRK	
	Declination	-22:20:32 00:00:00	Velocity	0.00	

### Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
J1752 C	1.00	3	7 day	14:30:00	22:00:00	10

### Session Constraints:

Name	Constraints	Comments
J1752 C	To be simultaneous within 1d with some of the Swift observations (scheduled for April 2, 7, 11, 15, 19 and 23).	

### Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
J1752 C	XTE J1752-223	Cwide	1.0 hour	0.022 mJy/bm	

Present for observation: yes

Staff support: None

Plan of Dissertation: no