Observing Application

Date :	Jul, 22 2011
Proposal ID :	VLA/11A-290
Legacy ID :	AK766
PI :	Miriam Krauss
Type :	Director's Discretionary Time - Exploratory Time
Category :	Energetic Transients and Pulsars
Total Time :	3.0

Observing the IMBH candidate HLX-1 in the low/hard state with the EVLA

Abstract:

We request EVLA observations of the intermediate-mass black hole (IMBH) candidate ESO 243-49 HLX-1. This object is the most compelling candidate IMBH known, displaying the same characteristics as stellar-mass galactic black hole candidates but with 3 orders of magnitude greater luminosity. Like its galactic counterparts, HLX-1 exhibits spectral state transitions, spending time in "low/hard" and "high/soft" states. A radio detection or sensitive upper limit during the low/hard state, combined with X-ray flux information from Swift/XRT monitoring observations, will provide valuable information about the location of HLX-1 on the "fundamental plane" of radio and X-ray luminosity, and thus an important constraint on the mass of the black hole. Planned ATCA observations to determine this information were unable to be performed, so we propose to observe HLX-1 during its current low/hard state with the EVLA. Our proposed observations will also be necessary for interpreting the upcoming ATCA observations scheduled to occur during the next high/soft state transition. The EVLA observations will determine the baseline low/hard radio flux and therefore allow a measurement of the magnitude of any radio flaring during this upcoming state transition.

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Related proposals:

Joint:

Not a Joint Proposal

Observing type(s):

Continuum

VLA Resources

Name	Conf.	Frontend & Backend	Setup
C-band	A	C Band 6 cm 4000-8000 MHz WIDAR ECSO	Comments: We request 2 x 1 GHz basebands centered at 5.0 and 6.75 GHz.

Sources:

Name	Position		Velocity		Group
ESO 243-49 HLX-1	**Coordinate System**	Equatorial	**Convention**	Radio	HLX-1
	Equinox	J2000			
	Right Ascension	01:10:27.746	**Ref. Frame**	LSRK	
		00:00:00.0			
	Declination	-46:04:27.41	**Velocity**	0.00	
		00:00:00.0			

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
EVLA_C-band	1.50	2	1 day	00:30:00	02:00:00	0

Session Constraints:

Name	Constraints	Comments
EVLA_C-band		Due to its low elevation, our requested observations will need to be split into two SBs to be observed as close as possible in time.

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
EVLA_C-band	ESO 243-49 HLX-1	C-band	1.5 hour	0.008 mJy/bm	

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