Observing Application

LSI 61 303 and its unusual high-energy outburst of Sept 10, 2008

Abstract:

LSI +61 303 is a high-mass X-ray binary that exhibits bright and variable radio emission with a a 26.5-day period, associated with the orbit of a compact companion in the enshrouding wind of a massive Be star companion. LSI also has bright TeV emission that is also modulated by the binary orbit. The nature of LSI is widely debated - either a pulsar/Be binary or a mircoquasar system, with arguments in favour of both models. On Sept 10th, LSI was detected by the Swift BAT in an outburst lasting 200msec and a peak count rate of 2000 counts/sec. Such a burst characteristics are known to arise in LMXBs and magnetars, but in a system such as LSI with a compact object and a massive companion is quite remarkable and not anticipated in either of the favoured models. We propose three frequency monitoring observations of the flux from the system over 5 days to search for evolution of the spectrum and compare with previously measured spectra of the system. We also propose 2 epochs of VLBA observations at X-band to search for evidence of ejecta or unusual structure that may be associated with the outburst.

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Related proposals:

S1 135

Joint:

Joint with VLBA

Observing type(s):

Continuum, Monitoring

VLA Resources

Name	Conf.	Frontend & Backend	Setup
4800	D=> A	C Band 6 cm 4200-7700 MHz VLA Correlator - Single Channel Continuum	Rest frequencies: 4885.1,4835.1 MHz Bandwidth: 50 MHz
8400	D=> A	X Band 3.6 cm 8080 - 8750 MHz VLA Correlator - Single Channel Continuum	Rest frequencies: 8435.1,8485.1 MHz Bandwidth: 50 MHz
1400	D=> A	L Band 20 cm 1000 - 2000 MHz VLA Correlator - Single Channel Continuum	Rest frequencies: 1464.9,1385.1 MHz Bandwidth: 50 MHz

Sources:

Name	RA / RA Range	Dec / Dec Range	Epoch	Velocity / z	Group
LSI+61303	02:40:31.7 00:00:00.0	+61:13:45 00:00:00	J2000	Velocity : 0.00	LSI61303

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
Cband	0.12	5	1 day	00:00:00	24:00:00	0
Xband	0.12	5	1 day	00:00:00	24:00:00	0
Lband	0.12	5	1 day	00:00:00	24:00:00	0

Session Constraints:

Name	Constraints	Comments

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
Cband	LSI+61303	4800	0.117 hour	1 mJy/bm	
Xband	LSI+61303	8400	0.12 hour	1 mJy/bm	
Lband	LSI+61303	1400	0.12 hour	1 mJy/bm	

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