Observing Application

Date: Jul 27, 2006
Proposal ID: VLA/06C-256
Legacy ID: AC845
Type: Rapid Response Exploratory Time
Joint: Not a Joint Proposal
Category: Extragalactic
Total time: 4.0 hour

Exploring NGC507's Southern Tail

Abstract:

We propose to obtain exploratory P-band, B-configuration data on the unusual radio source in NGC507. Our deep 1.4~GHz observations reveal the first evidence of an extended southern tail in this system, tracing the inner edge of the X-ray emission. However, the nature of this radio tail remains uncertain. The Chandra X-ray observations show a sharp drop in the surface brightness of this galaxy group, similar in morphology to that of cold fronts in clusters of galaxies, but this interpretation is unlikely, given the small temperature drop in NGC507. Alternative explanations for this structure are the confinement of the hot thermal gas by a radio relic to the E of the surface brightness drop, or an abundance gradient created by the transport of high abundance gas from the center of the galaxy by the expanding radio lobes. The proposed observations will allow us to compare the P-band morphology to the L-band to better understand the full extent of the source as well as allow us to make a spectral index map across the tail to examine the non-thermal pressure. The results of these comparisons will either reveal the nature of this system or help us plan the next stage of observations.

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Related proposals:

AC785

Observing type(s):

Continuum

Resources:

Resource	Tele.	Frontend & Backend	Set up

name	Conf.		
VLA_B_P	VLA B	P Band 90 cm 305 - 337 MHz VLA Correlator - Multi-Channel	IF mode: 4 Bandwidth: 6.25 MHz Number of channels: 16 Spectral resolution: 390.625 kHz Rest frequencies: 327.5,321.5625 MHz

Sources:

Source name	RA	DEC	System	RA range	DEC range	Velocity/z	Group name
NGC507	01:23:40.0	+33:15:20	J2000	00:00:00.0	00:00:00	0 Km/s	

Sessions:

Session Name	Session Time	Repeat	Separation	LST Minimum	LST Maximum	Elevation Minimum
NGC507_B_P	4.0 hours	1	0 day	00:00:00	00:00:00	20

Session Constraints:

Session Name	Constraint	Comments
NGC507_B_P		

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit
NGC507_B_P	NGC507	VLA_B_P	4.0 hour	0.4mJy/bm

Session Resource/Source Constraints:

Session/Source/Resource	Comments
NGC507_B_P/NGC507/VLA_B_P	

Present for observation: no Staff support: None