



Observing Application

Date: Aug 25, 2006
Proposal ID: VLA/06C-261
Legacy ID: AC849
PI: Jeffrey Carlin
Type: Rapid Response
Exploratory Time
Category: Extragalactic
Total time: 4.0 hour

Exploring the Outburst History of NGC 533

Abstract:

We propose a short exploratory 20 cm observation of the radio structure in the central regions of the X-ray bright elliptical galaxy NGC 533. Chandra X-ray observations show complex structure at the center of this group-center cD galaxy which partially corresponds with our 4.8 GHz B configuration observations. The 4.8 GHz radio emission fills the inner X-ray cavities and shows a slight extension south of the western lobe toward the SW cavity. We propose a short 1.4 GHz observation to probe the emission beyond the central lobes into the SW cavity. This cavity may represent a buoyant lobe from a previous outburst and the 1.4 GHz data can be used to constrain the synchrotron pressure and synchrotron age in the cavity. The presence of multiple cavities is relatively rare in sparse group environments such as this thus these studies of the radio data in this system will allow us to compare NGC 533 with the more luminous cDs in rich clusters, several of which show multiple radio bubbles, and with fainter individual non-group-center elliptical galaxies.

Authors:

Name	Institution	Email	Status
Jeffrey Carlin	Virginia, University of	jc4qn@mail.astro.virginia.edu	Graduate Student Year: 2008 Thesis: No
Craig Sarazin	University of Virginia	cls7i@coma.astro.virginia.edu	
Gregory Sivakoff	University of Virginia	grs8g@virginia.edu	
Tracy Clarke	Naval Research Laboratory	tracy.clarke@nrl.navy.mil	

Principal Investigator: Jeffrey Carlin

Contact author: Tracy Clarke

Telephone: 202 404-4297

Email: tracy.clarke@nrl.navy.mil

Related proposals:

AC848

Joint:

Not a Joint Proposal

Observing type(s):

Continuum, Spectroscopy, *

Resources:

Resource name	Tele. Conf.	Frontend & Backend	Set up
VLS_L_B	VLA B	L Band 20 cm 1240 - 1700 MHz VLA Correlator - Multi-Channel	IF mode: 4 Bandwidth: 25 MHz Number of channels: 8 Spectral resolution: 3125.0 kHz Rest frequencies: 1435.0,1365.0 MHz

Sources:

Source name	RA / RA Range	DEC / DEC Range	System	Velocity/z	Group name
NGC533	01:25:31.4 00:00:00.0	+01:45:32 00:00:00	J2000	z = 0.01851	N533_1

Sessions:

Session Name	Session Time	Repeat	Separation	LST Minimum	LST Maximum	Elevation Minimum
N533_b_l	2.0 hours	2	0 day	00:00:00	00:00:00	15

Session Constraints:

Session Name	Constraint	Comments
N533_b_l	Observations would be preferred in a single 4 hour block but are separated into 2 x two hours blocks to simplify scheduling constraints.	

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit
N533_b_l	NGC533/N533_1	VLS_L_B	2.0 hour	0.03mJy/bm