



# Observing Application

Date: Aug 16, 2006  
 Proposal ID: VLA/06C-260  
**Legacy ID: AC848**  
 PI: Jeffrey Carlin  
 Type: Rapid Response  
 Exploratory Time  
 Category: Extragalactic  
 Total time: 4.0 hour

## Exploring the Radio Outburst in NGC 533

### Abstract:

We propose a short exploratory 6 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 roughly corresponds to existing short VLA A array 20 cm and C array 6 cm data. We will compare the radio data to the Chandra X-ray structures in the galaxy core to explore the morphology of the holes and/or shock fronts. Detailed characterization of the radio and X-ray features may provide evidence for a feedback process that prevents large amounts of cooling gas from depositing in the centers of cooling core galaxies. This same feedback process may limit the growth of massive ellipticals as required by comparison of the luminosity function of galaxies to the predicted shape of the mass function from dark matter haloes in simulations. The radio data will allow us to compare NGC 533 with the more luminous cDs in rich clusters, many of which show 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

### Joint:

Not a Joint Proposal

**Observing type(s):**

Continuum

**Resources:**

Resource name	Tele. Conf.	Frontend & Backend	Set up
VLA_B_C	VLA B	C Band 6 cm 4500 - 5000 MHz VLA Correlator - Single Channel Continuum	Bandwidth: 50 MHz  Rest frequencies: 4885.1,4835.1 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	

**Sessions:**

Session Name	Session Time	Repeat	Separation	LST Minimum	LST Maximum	Elevation Minimum
NGC533_b_l	4.0 hours	1	0 day	00:00:00	00:00:00	15

**Session Constraints:**

Session Name	Constraint	Comments
NGC533_b_l		

**Session Source/Resource Pairs:**

Session Name	Source	Resource	Time	Figure of Merit
NGC533_b_l	NGC533/	VLA_B_C	4.0 hour	0.015mJy/bm

Present for observation: no Staff support: None