

# **Observing Application**

Date : Jul, 28 2010 Proposal ID : VLA/10B-236 Legacy ID : AF496 PI : Maria Ximena Fernandez Type : Rapid Response -Exploratory Time Category : Extragalactic Total Time : 2.0

### Confirmation of a Possible Radio Relic in the Wet Merger Remnant, NGC 34

### Abstract:

We propose D-array follow-up imaging of the radio-continuum emission of the wet merger remnant NGC 34 to verify the detection of a possible radio-relic. NGC 34 is a Luminous Infrared Galaxy (LIRG) that hosts both a starburst and a weak AGN and, hence, is an ideal candidate to study fueling and feedback from both phenomena. Previous D and C-array observations show HI emission from both tidal tails, evidence for an outer disk of HI being formed from the northern tail falling back towards the nucleus, and blue and redshifted HI absorption (over 500 km/s) against the central radio continuum source (< 6 kpc). In addition to this, we detect nuclear (62.4 mJy) and, surprisingly, a very faint, very extended radio "relic" with a surface brightness from 200 to 600 microJy/beam. The extra-nuclear component is very diffuse and in the shape of two radio lobes, spanning 390 kpc overall. We are concerned this radio relic could be an artifact of observing during the transition period between the VLA and EVLA related to the aliasing problem. We propose a short continuum observation in OSRO1 mode to verify the reality of the relic.

#### Authors:

Institution	Email	Status
Columbia University	ximena@astro.columbia.edu	Graduating: N/A
-		Thesis: false
Columbia University	jvangork@astro.columbia.edu	
-		
Carnegie Institute of	schweizer@obs.carnegiescience.edu	
	Institution Columbia University Columbia University Carnegie Institute of	InstitutionEmailColumbia Universityximena@astro.columbia.eduColumbia Universityjvangork@astro.columbia.eduCarnegie Institute of Washingtonschweizer@obs.carnegiescience.edu

Principal Investigator:	Maria Ximena Fernandez
Contact:	Maria Ximena Fernandez
Telephone:	1-212-854-7393
Email:	ximena@astro.columbia.edu

#### **Related proposals:**

10C-198, 09B-172

#### Joint:

Not a Joint Proposal

### Observing type(s):

Continuum

#### VLA Resources

Name	Conf.	Frontend & Backend	Setup

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Lband	D	L Band 20 cm 1000 - 2000 MHz	Rest frequencies: 1328.0,1456.0 MHz Bandwidth: 128.0 MHz
		WIDAR OSRO1: 2 Subbands/Full polz	No. of Channels: 64 Poln. products: 4.0 Channel Width: 2000.0 kHz

# Sources:

Name	Position		Velocity		Group
ngc 34 Rig De	Coordinate System	Equatorial	Convention	Radio	Enter New Group NGC 34
	Equinox	J2000			
	Right Ascension	00:11:06.5	Ref. Frame	LSRK	
		00:00:00.0			
	Declination	-12:06:27	Velocity	5870	
		00:00:00			

## Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
1	2.00	1	0 day	22:40:00	01:40:00	10

# Session Constraints:

Name	Constraints	Comments	

## **Session Source/Resource Pairs:**

Session Name	Source	Resource	Time	Figure of Merit	Subarray
1	ngc 34	Lband	2.0 hour	0.10 mJy/bm	

Present for observation: no

Staff support: None

Plan of Dissertation: no