



Observing Application

Date : Mar, 09 2010
 Proposal ID : VLA/10A-248
 Legacy ID : AM1038
 PI : Joshua Marvil
 Type : Rapid Response -
 Exploratory Time
 Category : Extragalactic
 Total Time : 10.0

A sensitive, multi-frequency continuum study of M82 and NGC2146

Abstract:

We ask for 2x5 hour tracks with the EVLA in D-configuration to observe M82 and NGC 2146 at 41 GHz, using the full WIDAR bandwidths to achieve unprecedented sensitivity. From these data we will produce continuum images, which will be combined with images at other frequencies and analyzed for J. Marvil's thesis. With this full set of images, we will create high-resolution spectra to investigate the astrophysics on ~100 pc scales, and determine how different regions in the galaxy sum to form the spatially-integrated spectrum. This thesis will test the spectral predictions made by models of the Radio/Far-Infrared relation, cosmic ray propagation, spectral aging, and free-free absorption, to a level of accuracy that has only just now become possible with the enhanced sensitivity and improved frequency coverage of the EVLA. Our full observational program will use all available EVLA bands (L,C,K,Ka, and Q) and will test almost all aspects of EVLA continuum calibration and imaging.

Authors:

Name	Institution	Email	Status
Joshua Marvil	National Radio Astronomy Observatory	jmarvil@aac.nrao.edu	Graduating: 2012 Thesis: true
Frazer Owen	National Radio Astronomy Observatory	fowen@nrao.edu	
Jean Eilek	National Radio Astronomy Observatory	jeilek@aac.nrao.edu	

Principal Investigator: Joshua Marvil
 Contact: Joshua Marvil
 Telephone: 575 418 0952
 Email: jmarvil@aac.nrao.edu

Related proposals:

AM1002, AM1013, AM1032

Joint:

Not a Joint Proposal

Observing type(s):

Continuum

VLA Resources

Name	Conf.	Frontend & Backend	Setup
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Name	Conf.	Frontend & Backend	Setup
Q-ECSO	D	Q Band 0.7 cm 40000 - 50000 MHz WIDAR ECSO	Comments: We will observe using 2 x 1 GHz wide IFs, placed adjacent to one another (centered at 40.5 and 41.5, respectively), to cover the entire 40-42 GHz range. We will use 16 sub-band pairs with 64 channels per sub-band pair, and 4 polarization products.

Sources:

Name	Position		Velocity		Group
M 82	Coordinate System	Equatorial	Convention	Redshift	M82
	Equinox	J2000			
	Right Ascension	09:55:52.7	Ref. Frame	LSRK	
		00:00:00			
Declination	+69:40:46	Redshift	0.000677		
	00:00:00				
NGC 2146	Coordinate System	Equatorial	Convention	Redshift	NGC2146
	Equinox	J2000			
	Right Ascension	06:18:37.7	Ref. Frame	LSRK	
		00:00:00			
Declination	+78:21:25	Redshift	0.002979		
	00:00:00				

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
M82	5.00	1	0 day	04:00:00	16:00:00	35
NGC2146	5.00	1	0 day	00:00:00	12:00:00	35

Session Constraints:

Name	Constraints	Comments
M82		Sensitivity calculations are based on 27 antennas, 20% overhead, and robust weighting.
NGC2146		Sensitivity calculations are based on 27 antennas, 20% overhead, and robust weighting.

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
M82	M 82	Q-ECSO	5.0 hour	0.006 mJy/bm	
NGC2146	NGC 2146	Q-ECSO	5.0 hour	0.006 mJy/bm	

Present for observation: yes

Staff support: None

Plan of Dissertation: yes