



# Observing Application

Date : Feb, 29 2012  
 Proposal ID : VLA/12A-456  
 Legacy ID : AC1105  
 PI : John Cannon  
 Type : Director's Discretionary  
 Time - Target of  
 Opportunity  
 Category : Extragalactic Structure  
 Total Time : 15.0

## A New Extremely Low-mass Dwarf Galaxy in the Local Group?

### Abstract:

The ALFALFA survey has discovered a galaxy that may be a new extremely low-mass dwarf member of the Local Group. The radial velocity (264 km/s) and projected position (near the confirmed Local Group dwarf Leo I) strongly support this exciting interpretation. The HI source is detected at high significance (S/N=25) and is spatially coincident with an optical counterpart whose blue stellar population is marginally resolved by SDSS. The HI line width is very narrow (24 km/s); the total flux integral (1.3 Jy km/s) implies a neutral gas mass of less than one million solar masses if the system is within the Local Group. When combined with optical imaging, the proposed EVLA observations will allow us to study the nature of star formation in this extreme galaxy and to perform detailed kinematic analysis that separates the luminous and non-baryonic components. Given the extreme properties of this object and the high discovery potential of the proposed observations, we request Director's Discretionary Time in order to acquire HI spectral line imaging in the current (C) and forthcoming (B) configurations.

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### Related proposals:

### Joint:

Not a Joint Proposal

### Observing type(s):

Spectroscopy

## VLA Resources

Name	Conf.	Frontend & Backend	Setup
OSROHI_C	C	L Band 20 cm 1000 - 2000 MHz WIDAR OSRO, Dual Polarization	Rest frequencies: 1420.40575 MHz Subband Bandwidth: 0.5 MHz No. of Channels: 128 Poln. products: 2.0 Channel Width: 3.906 kHz Total Bandwidth: 8.00 MHz
OSROHI_B	B	L Band 20 cm 1000 - 2000 MHz WIDAR OSRO, Dual Polarization	Rest frequencies: 1420.40575 MHz Subband Bandwidth: 0.5 MHz No. of Channels: 128 Poln. products: 2.0 Channel Width: 3.906 kHz Total Bandwidth: 8.00 MHz

## Sources:

Name	Position		Velocity		Group
HI102144.7+180438	Coordinate System	Equatorial	Convention	Radio	HI1022
	Equinox	J2000			
	Right Ascension	10:21:45.0	Ref. Frame	LSRK	
		00:00:00.0			
Declination	+18:05:16.8	Velocity	264		
	00:00:00.0				

## Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
HI1022_B	5.00	2	0 day	07:30:00	13:30:00	0
HI1022_C	5.00	1	0 day	07:30:00	13:30:00	0

## Session Constraints:

Name	Constraints	Comments

## Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
HI1022_B	HI102144.7+180438	OSROHI_B	5.0 hour	2.4 mJy/bm	
HI1022_C	HI102144.7+180438	OSROHI_C	5.0 hour	3.4 mJy/bm	

Present for observation: no

Staff support: None

Plan of Dissertation: no