Observing Application

Date :	Feb, 10 2012
Proposal ID :	VLA/12A-451
Legacy ID :	AB1437
PI :	Edo Berger
Type :	Director's Discretionary Time - Target of Opportunity
Category :	Solar System, Stars, Planetary Systems
Total Time :	2.0

EVLA Observation of the Coolest Radio Active Brown Dwarf

Abstract:

Short duration radio flares were recently discovered from a T6.5 brown dwarf (2M1047+21) with Arecibo. Several hundred ultracool brown dwarfs have been observed with the VLA by our group, but the coolest brown dwarf with radio emission prior to this discovery was an L3.5 object, making the new discovery quite unexpected. Thus, the newly reported detection of should be followed up rapidly to: (i) confirm the presence of radio flares; (ii) extend the frequency coverage to determine the emission bandwidth (an indicator of the emission mechanism); and (iii) to search for low-level quiescent emission to which Arecibo is not sensitive. We request a single 2-hour C-band observation to achieve all three goals.

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Related proposals:

AM726

Joint:

Not a Joint Proposal

Observing type(s):

Continuum

VLA Resources

Name	Conf.	Frontend & Backend	Setup

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cband	C	C Band 6 cm 4000-8000 MHz WIDAR OSRO, Full Polarization	Rest frequencies: 4900.0,6700.0 MHz Subband Bandwidth: 128.0 MHz No. of Channels: 64 Poln. products: 4.0 Channel Width: 2000.0 kHz Total Bandwidth: 2,048.00 MHz

Sources:

Name	Position		Velocity		Group
2M1047+21	**Coordinate System**	Equatorial	**Convention**	Radio	Brown Dwarf
	Equinox	J2000			
	Right Ascension	10:47:54.0	**Ref. Frame**	LSRK	
		00:00:00.0			
	Declination	+21:24:24.0	**Velocity**	0.00	
		00:00:00.0			

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
2M1047+21	2.00	1	0 day	06:00:00	16:00:00	15

Session Constraints:

Name	Constraints	Comments
2M1047+21		We will obtain an RMS of ~10 uJy/bm in this 2 hr observation. This source flares on timescales of ~100 sec with a flux of 2 mJy. We will obtain an RMS of ~0.2 mJy in each ~20-sec average to resolve the flares.

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
2M1047+21	2M1047+21	cband	2.0 hour	0.2 mJy/bm	

Present for observation: no Staff support: None Plan of Dissertation: no