Observing Application

Date :	Apr, 19 2012
Proposal ID :	VLA/12A-470
Legacy ID :	AM1175
PI :	Emmanuel Momjian
Type :	Director's Discretionary Time - Exploratory Time
Category :	Interstellar Medium
Total Time :	2.0

Investigating the Zeeman effect detection in the Class I methanol maser in DR21W

Abstract:

We request 2 hours (two 1 hr sessions) of EVLA observations to confirm the Stokes V spectrum of the 36 GHz Class I methanol maser in DR21W. This spectrum was obtained with the EVLA/WIDAR at a time when spectral line observations were affected by disturbing artifacts due to the now well understood (and resolved) spectral splatter phenomenon. Based on various test observations, it was shown that this problem either yielded corrupt Stokes V spectra, or mimicked a Zeeman effect profile. The Stokes V spectrum of the maser in DR21W is the only one published in the EVLA/WIDAR era. Because of its scientific implications, considering that it was reported to have a very large magnetic field value, it is critical to confirm it, and update the literature accordingly.

Authors:

Name	Institution	Email	Status
Emmanuel Momjian	National Radio Astronomy Observatory	emomjian@nrao.edu	
Lorant Sjouwerman	National Radio Astronomy Observatory	lsjouwerman@nrao.edu	
Vincent Fish	Haystack Observatory	vfish@haystack.mit.edu	

Principal Investigator: Emmanuel Momjian
Contact: Emmanuel Momjian
Telephone: 575-835-7452
Email: emomjian@nrao.edu

Related proposals:

Joint:

Not a Joint Proposal

Observing type(s):

Spectroscopy

VLA Resources

Name	Conf.	Frontend & Backend	Setup

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DR21	Any	Ka Band 0.9 cm 26500 - 40000 MHz WIDAR ECSO	Comments: We will use a single 2 MHz of bandwidth and baseline board stacking to get 256 spectral channels (e.g., the old OSRO2 mode). We request C, C=>CnB, CnB, CnB=>B, or B configuration time. We prefer one of the more compact array configurations to avoid over-resolving the maser.

Sources:

Name	Position		Velocity		Group
DR21W	**Coordinate System**	Equatorial	**Convention**	Radio	DR
	Equinox	J2000			
	Right Ascension	20:38:54.92	**Ref. Frame**	LSRK	
		00:00:00.0			
	Declination	+42:19:20.60	**Velocity**	-2.44	
		00:00:00.0			

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
DR21W	1.00	2	0 day	19:00:00	01:00:00	25

Session Constraints:

Name	Constraints	Comments
DR21W		2 x 1 hr sessions will result in about 1 hr of on source time. The final rms noise, including the contribution of self noise, will be ~16 mJy.

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
DR21W	DR21W	DR21	1.0 hour	22 mJy/bm	

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