



Observing Application

Date : Sep, 24 2009
 Proposal ID : VLA/09B-217
 Legacy ID : AS1004
 PI : Anuj Sarma
 Type : Rapid Response -
 Exploratory Time
 Category : Galactic
 Total Time : 7.0

25 GHz and 44 GHz Class I Methanol Maser Zeeman Effect

Abstract:

We request time to detect the Zeeman effect in the 44 GHz Class I methanol maser line toward OMC-2 (2 x 2 hr) and the 25 GHz Class I methanol maser line toward OMC-1 (3 hr). This is a follow-up to our recent discovery of the Zeeman effect in the 36 GHz Class I methanol maser line, which was obtained via a peer-reviewed proposal (AS 979; Feb 2009). We are requesting exploratory time in order to enable us to apply for Zeeman surveys on a larger number of sources at 44 GHz and 25 GHz in the Feb 2009 deadline for the C-configuration. If successful, the current proposal will also allow us to extend our recent EVLA detection at 36 GHz to two other Class I methanol maser lines with a nominal amount of EVLA time, allow significant insight into the star formation activity of OMC-2 and OMC-1, and provide useful inputs for the theory of methanol masers, about which a lot remains to be understood.

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Related proposals:

AS979, AS1000

Joint:

Not a Joint Proposal

Observing type(s):

Spectroscopy

VLA Resources

Name	Conf.	Frontend & Backend	Setup
OMC_K	D	K Band 1.3 cm 18000 - 26500 MHz VLA Correlator - Spectral Line	Rest frequencies: 24959.079 MHz Bandwidth: 1.5625 MHz Spectral resolution: 6.104 kHz IF Mode: null No. of Channels: 256

Name	Conf.	Frontend & Backend	Setup
OMC_Q	D	Q Band 0.7 cm 40000 - 50000 MHz VLA Correlator - Spectral Line	Rest frequencies: 44069.488 MHz Bandwidth: 1.5625 MHz Spectral resolution: 6.104 kHz IF Mode: null No. of Channels: 256

Sources:

Name	RA / RA Range	Dec / Dec Range	Epoch	Velocity / z	Group
OMC1	05:35:14.0 00:00:00.0	-5:22:30 00:00:00	J2000	Velocity : 8.3	OMC-1
OMC2	05:35:27.6 00:00:00.0	-5:09:39 00:00:00	J2000	Velocity : 11.2	OMC-2

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
OMC2-Q	2.00	2	0 day	02:00:00	09:00:00	25
OMC1-K	3.00	1	0 day	02:00:00	09:00:00	25

Session Constraints:

Name	Constraints	Comments
OMC2-Q		The rms after two 2 hour sessions is 18 mJy/beam.
OMC1-K		

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
OMC2-Q	OMC2	OMC_Q	2.0 hour	26 mJy/bm	
OMC1-K	OMC1	OMC_K	3.0 hour	8 mJy/bm	

Present for observation: yes

Staff support: None

Plan of Dissertation: no