



Observing Application

Date : Aug, 26 2009
Proposal ID : VLA/09B-211
Legacy ID : AS1000
PI : Anuj Sarma
Type : Rapid Response -
Exploratory Time
Category : Galactic
Total Time : 4.0

The discovery of the Zeeman Effect in M8E. Follow up to detect 44 GHz Methanol

Abstract:

Magnetic fields are known to play an important role in star formation. The Zeeman Effect allows for the measurement of magnetic field strengths in a variety of environments. The Zeeman Effect in nonthermal maser lines allows magnetic field strengths to be observed with high angular resolution, due to the compactness of maser sources. We request 4 hrs in the C-configuration with 22 EVLA antennas to observe the Zeeman Effect in the Class I 44 GHz methanol maser line toward M8E, in order to follow up and complement our recent discovery of the Zeeman effect in the 36 GHz methanol maser line toward this source, which constitutes the first detection of the Zeeman effect in the 36 GHz methanol maser line. Our proposed observations will be yet another demonstrator for the EVLA's capabilities and will be the first detection of the Zeeman effect in the 44 GHz methanol maser line, opening up yet another new method of probing magnetic fields in the very early stages of star forming regions.

Authors:

Name	Institution	Email	Status
Anuj Sarma	DePaul University	asarma@depaul.edu	
Emmanuel Momjian	National Radio Astronomy Observatory	emomjian@nrao.edu	

Principal Investigator: Anuj Sarma
Contact: Emmanuel Momjian
Telephone: 505-835-7452
Email: emomjian@nrao.edu

Related proposals:

Joint:

Not a Joint Proposal

Observing type(s):

Spectroscopy

VLA Resources

Name	Conf.	Frontend & Backend	Setup
EVLA_Q	C	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: 2 No. of Channels: 256

Sources:

Name	RA / RA Range	Dec / Dec Range	Epoch	Velocity / z	Group
M8E	18:04:53.3 00:00:00.0	-24:26:42 00:00:00	J2000	Velocity : 11.2	M8E 44GHz

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
M8E_44	2.00	2	0 day	15:00:00	21:00:00	15

Session Constraints:

Name	Constraints	Comments
M8E_44		The rms after two 2 hour sessions is 18 mJy/beam.

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
M8E_44	M8E	EVLA_Q	2.0 hour	26 mJy/bm	

Present for observation: yes

Staff support: None

Plan of Dissertation: no