



Observing Application

Date : Apr, 01 2011
 Proposal ID : VLBA/11A-134
 Legacy ID : BD156
 PI : Jean-Francois Desmurs
 Type : Director's Discretionary
 Time - Target of Opportunity
 Category : Solar System, Stars, Planetary Systems
 Total Time : 6.0

A full polarization study of SiO maser emission in Chi Cyg

Abstract:

During the last observations of SiO maser emission at 7mm in AGB stars with the Onsala telescope, to find good candidates for mapping of the $v=3$ $J=1-0$ SiO maser with the VLBA (project BD154), we found that chi Cyg presents an unusually high degree of circular polarization (up to 50% in some features) in its $v=1$ $J=1-0$ maser emission. Due to the rarity of this phenomenon and its relevance for understanding the pumping mechanism of these lines, we propose to perform a full polarization study of chi Cyg with the VLBA to investigate the distribution of this emission, and by analyzing the correlation between the linear and circular polarization, to give additional constrains on the pumping of the SiO masers.

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Related proposals:

Joint:

Not a Joint Proposal

Observing type(s):

Spectroscopy, Polarimetry

VLBA Resources

Name	Wavelength	Processor	Stations	Observing Parameters	Correlation Parameters

Name	Wavelength	Processor	Stations	Observing Parameters	Correlation Parameters
sio_v=1-2	7 mm	Socorro-DiFX	VLBA <input checked="" type="checkbox"/> Br <input checked="" type="checkbox"/> Fd <input checked="" type="checkbox"/> Hn <input checked="" type="checkbox"/> Kp <input checked="" type="checkbox"/> La <input checked="" type="checkbox"/> Mk <input checked="" type="checkbox"/> Kp <input checked="" type="checkbox"/> Ov <input checked="" type="checkbox"/> Pt <input checked="" type="checkbox"/> Sc <input checked="" type="checkbox"/> <hr/> HSA Ar Ef GBT VLA-Y27 <hr/> VLA-Y1 <hr/> Geodetic	Bandwidth: 4 MHz Baseband Channels 4 Sample Rate (Msample/s) 8 Bits/Sample 2 Polarization Dual Agg. Bit Rate (Mbits/sec) 64	Full Polarization <input checked="" type="checkbox"/> Pulsar Gate Correlator Passes 1 Integration Period (sec) 2.0 Spectral Points /BBC 128 No of Fields 1

Sources:

Name	Position		Velocity		Group
chi Cyg	Coordinate System	Equatorial	Convention	Radio	chi cyg
	Equinox	J2000			
	Right Ascension	19:50:33.92	Ref. Frame	LSRK	
		00:00:00.0			
Declination	+32:54:50.6	Velocity	+10.2		
		00:00:00.0			

Sessions:

Name	Session Time (hours)	Repeat	Separation	GST minimum	GST maximum	Elevation Minimum
chicyg	6.00	1	0 day	22:00:00	08:00:00	0

Session Constraints:

Name	Constraints	Comments
chicyg	target-of-opportunity	Not all VLBA antenna are required

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit
chicyg	chi Cyg	sio_v=1-2	6.0 hour	40 mJy/bm

Staff support: Consultation

Plan of Dissertation: no