Observing Application

Date:Apr 9, 2007
Proposal ID:VLA/07B-265
Legacy ID:AM915
PI: Korinne McDonnell
Type:Rapid Response
Exploratory Time
Category: Stellar, Galactic
Total time: 16.0 hour

A search for OH 6049 MHz emission towards supernova remnants

Abstract:

The 6049 MHz transition within the first excited rotational state of OH is the analogue of the 1720 MHz transition in the ground rotational state. It is inverted by collisions under similar densities and temperatures, but requires larger OH column densities to give significant amplification. It is potentially a complementary indicator of supernova remnant - molecular cloud interactions. We propose to search for emission in this transition from supernova remnants that show evidence of cloud interactions.

Authors:

Name	Institution	Email	Status
Korinne McDonnell	Unknown	korin-nem@physics.mq.edu.au	Graduate Student Year: 2009 Thesis: Yes
Mark Wardle	Macquarie University	wardle@physics.mq.edu.au	
Alan Vaughan	Macquarie University	alanv@physics.mq.edu.au	
Jack Hewitt	Northwestern University	j-hewitt@northwestern.edu	Graduate Student Year: 2008 Thesis: No
Farhad Yusef-Zadeh	Northwestern University	zadeh@northwestern.edu	

Principal Investigator: Korinne McDonnell

Contact author: Korinne McDonnell

Telephone: +61 2 9850 4171

Email: korinnem@physics.mq.edu.au

Joint:

Not a Joint Proposal

Observing type(s):

Single Pointing(s), Spectroscopy, *

Resources:

Resource name	Tele. Conf.	Frontend & Backend	Set up
D configuration - 6049	VLA D	C Band 6 cm 4500 - 5000 MHz VLA Correlator - Spectral Line	IF mode: 4 Bandwidth: 0.78125 MHz Number of channels: 128 Spectral resolution: 6.104 kHz Rest frequencies: 6049.084 MHz
D configuration - 1667	VLA D	L Band 20 cm 1200 - 2000 MHz VLA Correlator - Spectral Line	IF mode: 4 Bandwidth: 0.78125 MHz Number of channels: 128 Spectral resolution: 6.104 kHz Rest frequencies: 1667.359 MHz

Sources:

Source name	RA / RA Range	DEC / DEC Range	System	Velocity/z	Group name
IC 443 - clump G	06:18:02.7 00:00:00.0	+22:39:36 00:00:00	J2000	-5 km/s	group_1
IC 443 - clump D	06:18:00.0 00:00:00.0	+22:39:00 00:00:00	J2000	-5 km/s	group_1
IC 443 - clump B	06:18:00.0 00:00:00.0	+22:39:00 00:00:00	J2000	-5 km/s	group_1
3C391	18:49:22.4 00:00:00.0	-00:55:21 00:00:00	J2000	105 km/s	group_2
W44 - clump A	18:56:08.3 00:00:00.0	+01:17:57 00:00:00	J2000	45 km/s	group_2
W44 - clump B	18:56:08.3 00:00:00.0	+01:17:57 00:00:00	J2000	45 km/s	group_2
W44 - clump C	18:56:08.3 00:00:00.0	+01:17:57 00:00:00	J2000	45 km/s	group_2
W44 - clump D	18:56:08.3 00:00:00.0	+01:17:57 00:00:00	J2000	45 km/s	group_2
W44 - clump E, F	18:56:08.3 00:00:00.0	+01:17:57 00:00:00	J2000	45 km/s	group_2
Kes 78 - pointing 1	18:51:28.0 00:00:00.0	-00:09:24 00:00:00	J2000	+86 km/s	group_2
Kes 78 - pointing 2	18:51:28.0 00:00:00.0	-00:09:24 00:00:00	J2000	+86 km/s	group_2
Kes 78 - pointing 3	18:51:00.0 00:00:00.0	-00:09:00 00:00:00	J2000	+86 km/s	group_2

Sessions:

Session Name	Session Time	Repeat	Separation	LST Minimum	LST Maximum	Elevation Minimum
group 2 - 6049 and 1667	12.0 hours	1	0 day	00:00:00	24:00:00	0
group 1 - 6049 and 1667	4.0 hours	1	0 day	00:00:00	24:00:00	0

Session Constraints:

Session Name	Constraint	Comments
group 2 - 6049 and 1667	The time is for each source group, and will be divided into 6 blocks for each source over one synthesis.	Resource D configuration - 6049 will use a 7-9 EVLA antenna subarray, with the rest (approximately 16 VLA antennas) deployed simultaneously to a subarray of resource D configuration - 1667.
group 1 - 6049 and 1667	The time is for each source group, and will be divided into 6 time blocks for each source over one synthesis. A setting of 2 IFs (2AC for the Resource D configuration -6049 subarray, 2BD for the Resource D configuration - 1667 subarray) would be preferred for both groups to 4 mode if possible. Reasons and settings are detailed in the scientific justification.	Resource D configuration - 6049 will use a 7-9 antenna subarray of EVLA antennas while Resource D configuration - 1667 will use the rest (approximately 16 antennas) as a subarray simultaneously.

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit
group 2 - 6049 and 1667	3C391/group_2	D configuration - 6049	1.3333333 hour	14mJy/bm
group 2 - 6049 and 1667	W44 - clump A/ group_2	D configuration - 6049	1.3333333 hour	14mJy/bm
group 2 - 6049 and 1667	W44 - clump B/ group_2	D configuration - 6049	1.3333333 hour	14mJy/bm
group 2 - 6049 and 1667	W44 - clump C/ group_2	D configuration - 6049	1.3333333 hour	14mJy/bm
group 2 - 6049 and 1667	W44 - clump D/ group_2	D configuration - 6049	1.3333333 hour	14mJy/bm
group 2 - 6049 and 1667	W44 - clump E, F/ group_2	D configuration - 6049	1.3333333 hour	14mJy/bm
group 2 - 6049 and 1667	Kes 78 - pointing 1/group_2	D configuration - 6049	1.3333333 hour	14mJy/bm
group 2 - 6049 and 1667	Kes 78 - pointing 2/group_2	D configuration - 6049	1.3333333 hour	14mJy/bm
group 2 - 6049 and 1667	Kes 78 - pointing 3/group_2	D configuration - 6049	1.3333333 hour	14mJy/bm
group 2 - 6049 and 1667	3C391/group_2	D configuration - 1667	1.3333333 hour	6mJy/bm
group 2 - 6049 and 1667	W44 - clump A/ group_2	D configuration - 1667	1.3333333 hour	6mJy/bm
group 2 - 6049 and 1667	W44 - clump B/ group_2	D configuration - 1667	1.3333333 hour	6mJy/bm
group 2 - 6049 and 1667	W44 - clump C/ group_2	D configuration - 1667	1.3333333 hour	6mJy/bm
group 2 - 6049 and 1667	W44 - clump D/ group_2	D configuration - 1667	1.3333333 hour	6mJy/bm
group 2 - 6049 and 1667	W44 - clump E, F/ group_2	D configuration - 1667	1.3333333 hour	6mJy/bm
group 2 - 6049 and 1667	Kes 78 - pointing 1/group_2	D configuration - 1667	1.3333333 hour	6mJy/bm
group 2 - 6049 and 1667	Kes 78 - pointing 2/group_2	D configuration - 1667	1.3333333 hour	6mJy/bm
group 2 - 6049 and 1667	Kes 78 - pointing 3/group_2	D configuration - 1667	1.3333333 hour	6mJy/bm
group 1 - 6049 and 1667	IC 443 - clump G/ group_1	D configuration - 6049	1.3333334 hour	14mJy/bm
group 1 - 6049 and 1667	IC 443 - clump D/ group_1	D configuration - 6049	1.3333334 hour	14mJy/bm
group 1 - 6049 and 1667	IC 443 - clump B/ group_1	D configuration - 6049	1.3333334 hour	14mJy/bm
group 1 - 6049 and 1667	IC 443 - clump G/ group_1	D configuration - 1667	1.3333334 hour	6mJy/bm

group 1 - 6049 and 1667	IC 443 - clump D/ group_1	D configuration - 1667	1.3333334 hour	6mJy/bm
group 1 - 6049 and 1667	IC 443 - clump B/ group_1	D configuration - 1667	1.3333334 hour	6mJy/bm

Total Time per Configuration:

Configuration	Total Time
D	16.0

Present for observation: no Staff support: Friend