



# Observing Application

Date : Jan, 16 2008  
 Proposal ID : VLA/08A-233  
 Legacy ID : AR676  
 PI : Kazi Rygl  
 Type : Rapid Response -  
 Exploratory Time  
 Category : Galactic  
 Total Time : 3.0

## Calibrator search near water masers

### Abstract:

The process of massive star formation is still highly unknown, in particular the initial phases that occur so deeply embedded in molecular clouds.

We currently study cold clumps in massive molecular clouds, that are believed to be the precursors of massive star formation sites, covering the galactic longitudes between 12 and 54 degrees. To understand the nature of these clumps and their possible evolution, we need to know their intrinsic sizes, luminosities and especially their masses. To accomplish this, an accurate distance determination is crucial.

The trigonometric parallax of water maser emission is the most efficient and accurate method to study the distances in the dusty galactic arms. Kinematic distances are highly uncertain and inaccurate. Using VLBI we can determine accurate distances with error bars of 20% within 10 kpc.

We propose for a calibrator search for sources close to one of the 22 GHz watermasers that will be used to measure the parallax with the VERA array. The use of nearby calibrators will reduce the systematic errors from the ionosphere/troposphere.

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### Related proposals:

Distances to galactic water masers (VERA)

### Joint:

Not a Joint Proposal

### Observing type(s):

Continuum

## VLA Resources

Name	Conf.	Frontend & Backend	Setup
maser	CnB	K Band 1.3 cm 18000 - 26500 MHz VLA Correlator - Spectral Line	Rest frequencies: 22235.0800 MHz Bandwidth: 6.25 MHz Spectral resolution: 48.828 kHz IF Mode: 1 No. of Channels: 128
calibrator-X	CnB	X Band 3.6 cm 8080 - 8750 MHz VLA Correlator - Single Channel Continuum	Rest frequencies: 8435.1,8485.1 MHz Bandwidth: 50 MHz
calibrator-K	CnB	K Band 1.3 cm 18000 - 26500 MHz VLA Correlator - Single Channel Continuum	Rest frequencies: 22235.0800 MHz Bandwidth: 50 MHz

## Sources:

Name	RA / RA Range	Dec / Dec Range	Epoch	Velocity / z	Group
184230-021839	18:42:30.18 00:00:00	-02:18:39.9 00:00:00	J2000	Velocity : 101	calibrators
182313-083743	18:23:13.86 00:00:00	-08:37:43.5 00:00:00	J2000	Velocity : 51	calibrators
182505-103440	18:25:05.64 00:00:00	-10:34:40.3 00:00:00	J2000	Velocity : 51	calibrators
182606-080620	18:26:06.66 00:00:00	-08:06:20.1 00:00:00	J2000	Velocity : 51	calibrators
182830-103420	18:28:30.80 00:00:00	-10:34:20.2 00:00:00	J2000	Velocity : 51	calibrators
184236-031108	18:42:36.02 00:00:00	-03:11:8.4 00:00:00	J2000	Velocity : 101	calibrators
184353-013415	18:43:53.04 00:00:00	-01:34:15.9 00:00:00	J2000	Velocity : 101	calibrators
184351-012914	18:43:51.3 00:00:00.0	-1:29:14 00:00:00	J2000	Velocity : 101	calibrators
G30.90	18:47:47.00 00:00:00	-01:54:35.1 00:00:00	J2000	Velocity : 101	water masers
G14.63	18:19:14.73 00:00:00	-16:30:06.2 00:00:00	J2000	Velocity : 26	water masers
G22.06	18:30:34.71 00:00:00	-09:34:45.3 00:00:00	J2000	Velocity : 51	water masers

## Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
continuum	0.29	8	0 day	15:00:00	21:30:00	20
waterline	0.23	3	0 day	15:00:00	21:30:00	20

**Session Constraints:**

Name	Constraints	Comments

**Session Source/Resource Pairs:**

Session Name	Source	Resource	Time	Figure of Merit
continuum	184230-021839 182313-083743 182505-103440 182606-080620 182830-103420 184236-031108 184353-013415 184351-012914	calibrator-X	0.05 hour	0.18 mJy/bm
continuum	184230-021839 182313-083743 182505-103440 182606-080620 182830-103420 184236-031108 184353-013415 184351-012914	calibrator-K	0.24 hour	0.17 mJy/bm
waterline	G30.90 G14.63 G22.06	maser	0.23 hour	5.19 mJy/bm

Present for observation: no

Staff support: None

Plan of Dissertation: yes