



Observing Application

Date : Mar, 22 2010
 Proposal ID : VLA/10A-252
 Legacy ID : AQ23
 PI : Keping Qiu
 Type : Rapid Response -
 Exploratory Time
 Category : Galactic
 Total Time : 2.0

Characterizing the First Two-Component Massive Outflow

Abstract:

With the new SMA and CARMA observations we discovered an extremely-collimated outflow in CO (2-1) and SiO (2-1) in the W3(H2O) massive star-forming region. This remarkable outflow suggests a disk-mediated accretion for the central massive star formation, and shows strong evidence for a two-component scenario, i.e., a high-velocity jet-like component surrounded by a bi-conical component. A two-component outflow is often seen in youngest low-mass protostars, but has not been established in massive outflows. While the existing data appear very intriguing, the SiO (2-1) map that shows a cone-shaped structure is of low quality due to limited sensitivity. To establish a two-component massive outflow and to improve our understanding of massive star formation, we request EVLA SiO (1-0) observations. As the SiO (2-1) outflow was discovered after the 2009 October 1st deadline, we did not obtain strong scientific justification for a normal proposal. Provided the scientific significance of this project and a short observation is sufficient to achieve a high S/N ratio, we request exploratory time in the current D configuration.

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Related proposals:

Joint:

Not a Joint Proposal

Observing type(s):

Spectroscopy, Single Pointing(s)

VLA Resources

Name	Conf.	Frontend & Backend	Setup
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Name	Conf.	Frontend & Backend	Setup
TW_SiO	D	Q Band 0.7 cm 40000 - 50000 MHz WIDAR OSRO2: 1 Subband/Dual polz	Rest frequencies: 43364.9 MHz Bandwidth: 32.0 MHz No. of Channels: 256 Poln. products: 2.0 Channel Width: 125.0 kHz

Sources:

Name	Position		Velocity		Group
TW	Coordinate System	Equatorial	Convention	Radio	W3
	Equinox	J2000			
	Right Ascension	02:27:05.0 00:00:00.0	Ref. Frame	LSRK	
	Declination	+61:52:25 00:00:00	Velocity	-50	

Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
TW_SiO	2.00	1	0 day	20:00:00	09:00:00	25

Session Constraints:

Name	Constraints	Comments

Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
TW_SiO	TW	TW_SiO	2.0 hour	1 mJy/bm	

Present for observation: no

Staff support: Consultation

Plan of Dissertation: no