



# Observing Application

Date: Apr 9, 2007  
 Proposal ID: VLA/07B-257  
**Legacy ID: AS911**  
 PI: Lorant Sjouwerman  
 Type: Rapid Response  
 Exploratory Time  
 Category: Galactic, Stellar  
 Total time: 1.5 hour

## The Excited-State OH Masers in NML Cyg

### Abstract:

NML Cyg is a unique cool hypergiant with possible excited-state OH emission, as detected by Zuckerman et al. (1972). An attempt to confirm the detection of 6035 MHz OH masers by Desmurs et al. (2002) failed to detect the strong emission but found a weak (3 sigma) blueshifted feature that may be present in the Zuckerman et al. (1972) spectra. We propose to observe the 6030 and 6035 MHz masers in NML Cyg to confirm these features. With the resolution afforded by A-configuration, a successful redetection would allow us to measure the size of the excited-state emission region, thereby determining whether it is coincident with the 1612 MHz or mainline OH masers (or neither). Since most models of maser excitation in evolved star ejecta indicate that excited-state emission should not be seen, a successful redetection would place very stringent constraints on physical conditions and pumping mechanisms in the region in which they appear,

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### Related proposals:

AC856

### Joint:

Not a Joint Proposal

**Observing type(s):**

Single Pointing(s), Spectroscopy, \*

**Resources:**

Resource name	Tele. Conf.	Frontend & Backend	Set up
OH 6030/6035	VLA A	C Band 6 cm 4500 - 5000 MHz VLA Correlator - Spectral Line	IF mode: 4  Bandwidth: 1.5625 MHz  Number of channels: 128  Spectral resolution: 12.207 kHz  Rest frequencies: 6035.092, 6030.747 MHz

**Sources:**

Source name	RA / RA Range	DEC / DEC Range	System	Velocity/z	Group name
NML Cyg	20:46:25.4 00:00:00.0	+40:06:59.6 00:00:00.0	J2000	0 km/s	

**Sessions:**

Session Name	Session Time	Repeat	Separation	LST Minimum	LST Maximum	Elevation Minimum
NML Cyg in the 6.0 GHz OH Lines	1.5 hours	1	0 day	15:30:00	00:30:00	0

**Session Constraints:**

Session Name	Constraint	Comments
NML Cyg in the 6.0 GHz OH Lines		

**Session Source/Resource Pairs:**

Session Name	Source	Resource	Time	Figure of Merit
NML Cyg in the 6.0 GHz OH Lines	NML Cyg/	OH 6030/6035	1.5 hour	8mJy/bm

**Total Time per Configuration:**

Configuration	Total Time
A	1.5

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Present for observation: no Staff support: None