



# Observing Application

Date : Jun, 16 2011  
Proposal ID : VLA/11A-278  
Legacy ID : AO278  
PI : Frazer Owen  
Type : Director's Discretionary  
Time - Exploratory Time  
Category : High Redshift and Source  
Surveys  
Total Time : 10.0

## Star formation in the Cosmic Eyelash

### Abstract:

The Cosmic Eyelash is a strongly lensed (32x) galaxy at  $z=2.3$ . Recent EVLA observations have detected it in CO(1-0) at 0.3" resolution. This system offers a unique opportunity to study the relation of star-forming regions at high redshift to the molecular gas distribution. Here we propose to observe this system at 0.3" in the 4-8 GHz band corresponding to rest-frame 13-26 GHz and ~100pc resolution in the source plane. Using MSMFS imaging in CASA, these data will yield a continuum and a spectral index image which will allow us to isolate regions dominated by synchrotron or free-free emission. This image will then be compared with the CO molecular gas image and the SMA rest-frame 260-micron image to reveal the relative locations of the relativistic particles, HII regions, molecular gas and dust. These data should give us the best snapshot to date of the star-formation process in a high-redshift galaxy.

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### Related proposals:

### Joint:

Not a Joint Proposal

### Observing type(s):

Continuum

### VLA Resources

Name	Conf.	Frontend & Backend	Setup
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Name	Conf.	Frontend & Backend	Setup
Cband68	A	C Band 6 cm 4000-8000 MHz WIDAR ECSO	Comments: 6-8 GHz, 2 GHz total bandwidth, 16 subbands, 64 channels, 2MHz channel width, full polarization (standard continuum)
Cband46	A	C Band 6 cm 4000-8000 MHz WIDAR ECSO	Comments: 4-6 GHz, 2GHz total bandwidth, 16 subbands, 64 channels, 2 MHz channels, full polarization (standard continuum)

#### Sources:

Name	Position		Velocity		Group
SMMJ2135	Coordinate System	Equatorial	Convention	Radio	SMMJ2135
	Equinox	J2000			
	Right Ascension	21:35:11.6	Ref. Frame	LSRK	
		00:00:00.0			
	Declination	-1:02:52.0	Velocity	2.3271	
00:00:00.0					

#### Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
C46	5.00	1	0 day	17:00:00	02:00:00	20
C68	5.00	1	0 day	17:00:00	02:00:00	20

#### Session Constraints:

Name	Constraints	Comments

#### Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
C46	SMMJ2135	Cband46	5.0 hour	0.0025 mJy/bm	
C68	SMMJ2135	Cband68	5.0 hour	0.0022 mJy/bm	

Present for observation: yes

Staff support: None

Plan of Dissertation: no