



# Observing Application

Date : Sep, 16 2008  
 Proposal ID : VLA/08C-239  
 Legacy ID : AK712  
 PI : Kirsten Knudsen  
 Type : Rapid Response -  
 Exploratory Time  
 Category : Extragalactic  
 Total Time : 4.5

## The enigmatic quasar SMMJ04135+10277 - starburst or AGN?

### Abstract:

Previous studies of high redshift quasars and starburst show that these galaxies follow a similar radio-far-infrared relation as nearby starburst galaxies. The SMMJ04135+10277 ( $z=2.846$ ) is an enigmatic quasar, which has a rather peculiar spectral energy distribution at radio wavelengths. The far-infrared SED, the far-infrared to mid-infrared luminosity ratio, and a very bright CO detection, point toward a starburst dominated system at long wavelength. However, while the C-band detections seem to follow the radio-far-infrared relation of starbursts, the observed L- and X-band flux densities are much lower than expected. We had a recent confirmation that SMMJ04135 is indeed detected in C-band. In this exploratory proposal we request additional X-band and C-band observations where the aim of these observations is to confirm the previous C-band result and to provide deeper X-band data.

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### Related proposals:

AK685

### 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
X-SMMJ04	A	X Band 3.6 cm 8080 - 8750 MHz VLA Correlator - Single Channel Continuum	Rest frequencies: 8435.1,8485.1 MHz Bandwidth: 50 MHz
C-SMMJ04	A	C Band 6 cm 4200-7700 MHz VLA Correlator - Single Channel Continuum	Rest frequencies: 4885.1,4835.1 MHz Bandwidth: 50 MHz

### Sources:

Name	RA / RA Range	Dec / Dec Range	Epoch	Velocity / z	Group
SMMJ04135	04:13:27.2 00:00:00.0	+10:27:40 00:00:00	J2000	Redshift : 2.846	SMMJ04

### Sessions:

Name	Session Time (hours)	Repeat	Separation	LST minimum	LST maximum	Elevation Minimum
SMM04	4.50	1	0 day	00:00:00	09:00:00	10

### Session Constraints:

Name	Constraints	Comments
SMM04		To get the most reliable spectral index information, we request that the X- and C-band observations are scheduled together, in case of a variable contribution of the AGN.

### Session Source/Resource Pairs:

Session Name	Source	Resource	Time	Figure of Merit	Subarray
SMM04	SMMJ04135	X-SMMJ04	3.2 hour	0.013 mJy/bm	
SMM04	SMMJ04135	C-SMMJ04	1.3 hour	0.024 mJy/bm	

Present for observation: no

Staff support: None

Plan of Dissertation: no