



Observing Application

Date : Apr, 30 2009
Proposal ID : VLA/09A-197
Legacy ID : AM994
PI : Juan Manuel Mayen Gijon

Type : Rapid Response -
Exploratory Time
Category : Galactic
Total Time : 2.0

Continuum emission in G31

Abstract:

We submitted a proposal, AM981, to observe in B configuration 4 ammonia inversion transitions: (2,2), (3,3), (5,5), (6,6) in the G31.41+031 Hot Molecular Core. These observations were carried out on 2nd and 3rd of March 2009. Our goal was to study in detail the spatial distribution of the emission and the variation of the physical parameters through the HMC. The ultimate purpose was to test the Osorio et al. (2009) model, which suggests that this object is one of the few known examples of an O type massive protostar. We have calibrated and imaged the data and we have found that the line emission is much more extended in frequency than we expected. As a result, we do not have enough line-free channels to subtract the continuum emission, which is significant at this frequency. Therefore we propose to carry out a short B-configuration VLA observation in order to image the continuum and to subtract it from the line database. We consider important to carry out this observation before the end of the current configuration, so that we have a similar technical setup, and to avoid problems of variability of the source.

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Related proposals:

AM981

Joint:

Not a Joint Proposal

Observing type(s):

Spectroscopy

VLA Resources

| Name | Conf. | Frontend & Backend | Setup |
|---------------------|-------|---|---|
| G31.41+0.31HMC | B | K Band 1.3 cm 18000 - 26500 MHz VLA Correlator - Spectral Line | Rest frequencies: 23722.63,23870.13 MHz Bandwidth: 25 MHz Spectral resolution: 3125.0 kHz IF Mode: 4 No. of Channels: 8 |
| G31.41+0.31HMC(5,5) | B | K Band 1.3 cm 18000 - 26500 MHz VLA Correlator - Spectral Line | Rest frequencies: 24532.9887,25056.0250 MHz Bandwidth: 25 MHz Spectral resolution: 3125.0 kHz IF Mode: 4 No. of Channels: 8 |

Sources:

| Name | RA / RA Range | Dec / Dec Range | Epoch | Velocity / z | Group |
|----------------|--------------------------|----------------------|-------|--------------------|------------|
| G31.41+0.31HMC | 18:47:34.5 00:00:00.0 | -1:12:43 00:00:00 | J2000 | Velocity : +333.80 | ammoniaG31 |

Sessions:

| Name | Session Time (hours) | Repeat | Separation | LST minimum | LST maximum | Elevation Minimum |
|-----------------|----------------------|--------|------------|-------------|-------------|-------------------|
| line(2,2)-(3,3) | 1.00 | 1 | 0 day | 00:00:00 | 24:00:00 | 0 |
| line(5,5)-(6,6) | 1.00 | 1 | 0 day | 00:00:00 | 24:00:00 | 0 |

Session Constraints:

| Name | Constraints | Comments |
|------|-------------|----------|
| | | |

Session Source/Resource Pairs:

| Session Name | Source | Resource | Time | Figure of Merit | Subarray |
|-----------------|----------------|---------------------|----------|-----------------|----------|
| line(2,2)-(3,3) | G31.41+0.31HMC | G31.41+0.31HMC | 1.0 hour | 0.1 mJy/bm | |
| line(5,5)-(6,6) | G31.41+0.31HMC | G31.41+0.31HMC(5,5) | 1.0 hour | 0.14 mJy/bm | |

Present for observation: no

Staff support: Consultation

Plan of Dissertation: yes