

A MOPRA CS(1-0) demonstration survey of the Galactic plane
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(ATNF)

All dust continuum galactic plane surveys (SCUBA-2, ATLASGAL, HI-GAL, etc...) will need i) distance measurements and ii) probes of conditions in sources

Need of a dense gas tracer at ~arcminute resolution to map and resolve star-forming regions

Need of a strong tracer easily detectable

Need of a tracer present a early stages as well as at later stages in the process of the formation of a star

- Run on MOPRA in October 2008 by G. Fuller & L. Quinn: A blind survey for Class I methanol masers. Imaged a square degree of the galactic plane: CS(1-0) observed too

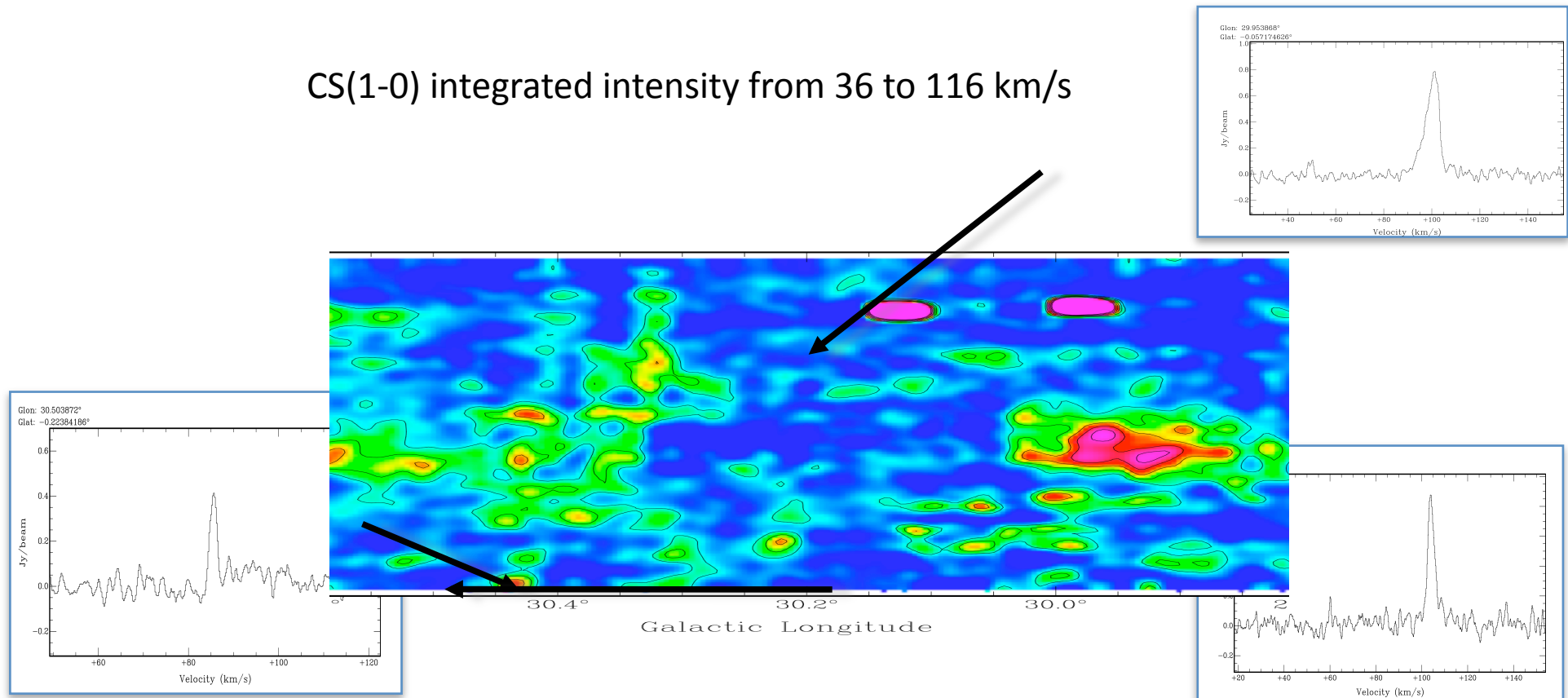
→ Serendipitous first test of CS(1-0) as probe for a molecular line galactic plane survey with MOPRA

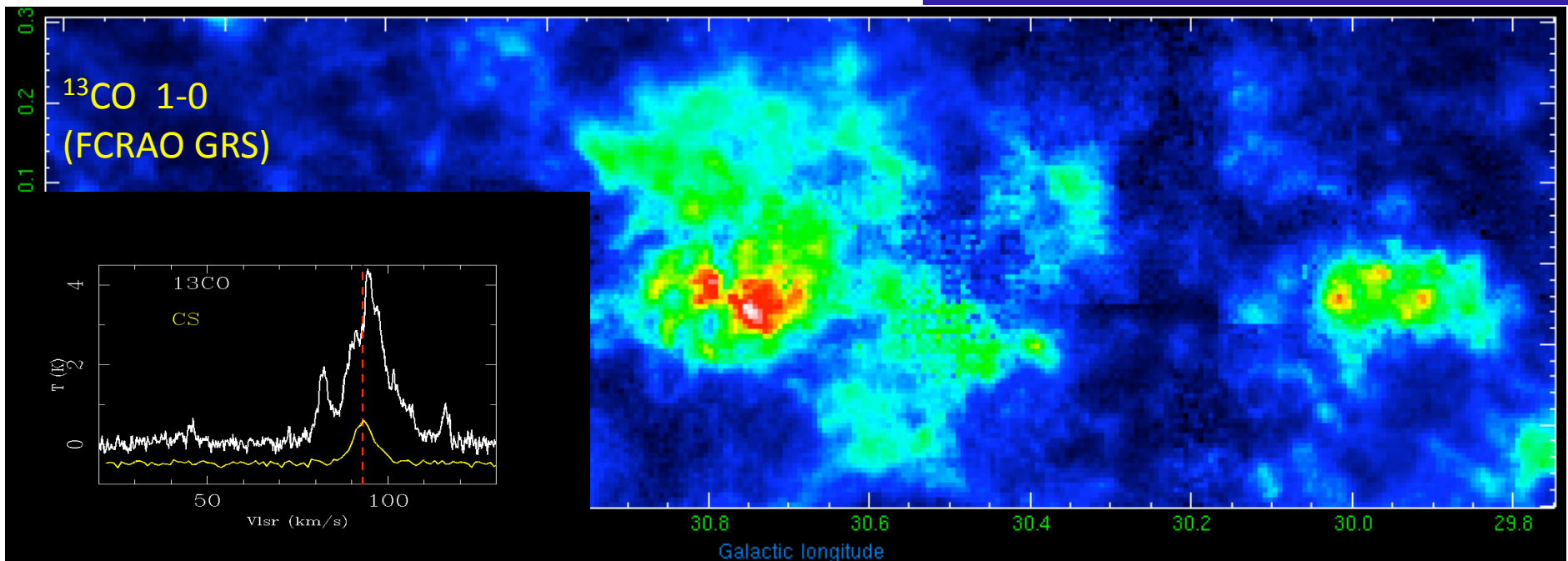
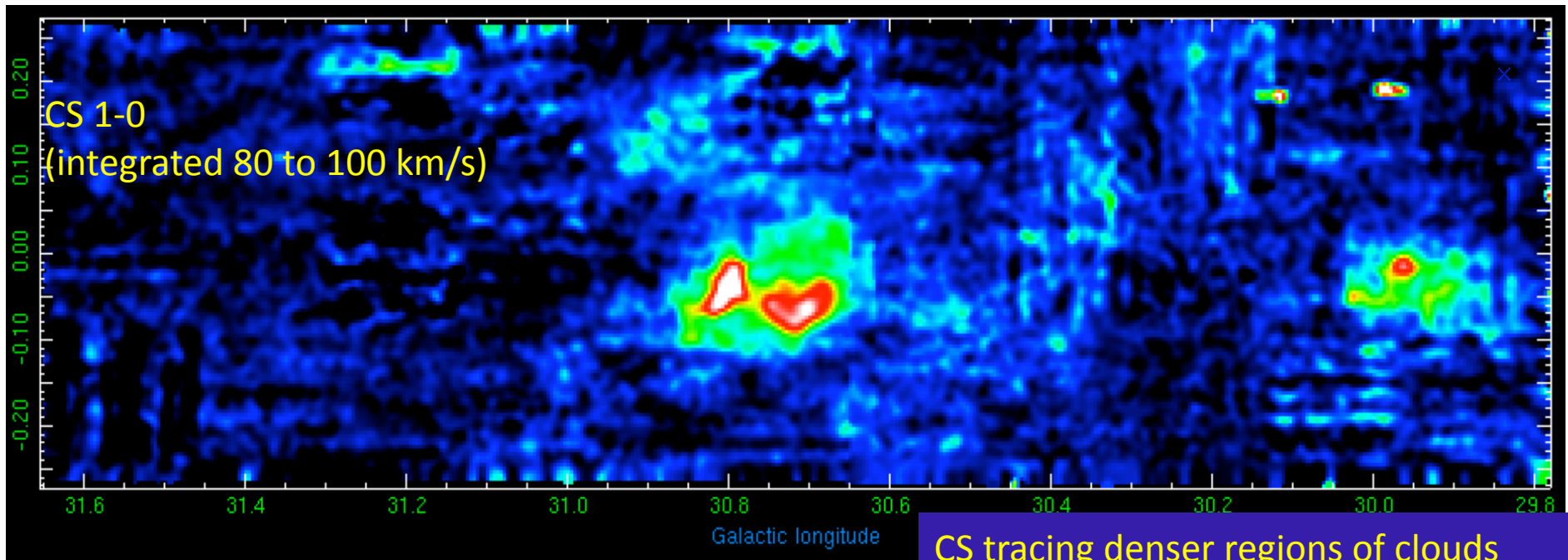
October run on MOPRA

Receiver and backend configuration: 7mm receiver, 44GHz,
MOPS zoom mode (16 lines: CH₃OH, CS, HC₃N, SiO ...)

Number of hours observed: 36h weather conditions: up to 33 mm
wv, Tsys ~ 150 K, RMS reached: 0.13 K

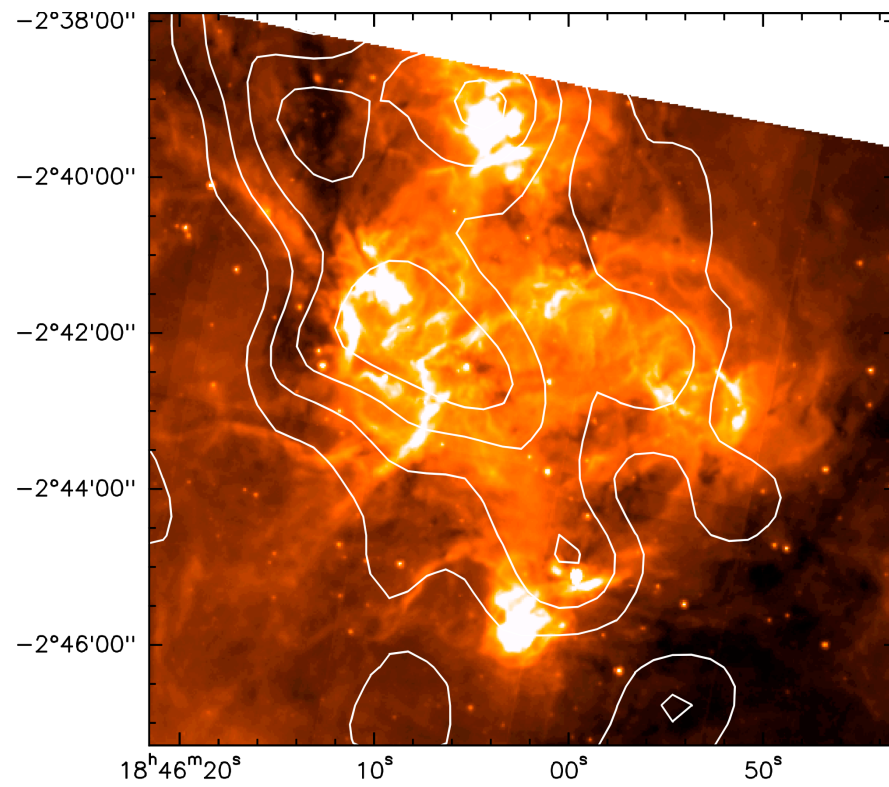
CS(1-0) integrated intensity from 36 to 116 km/s





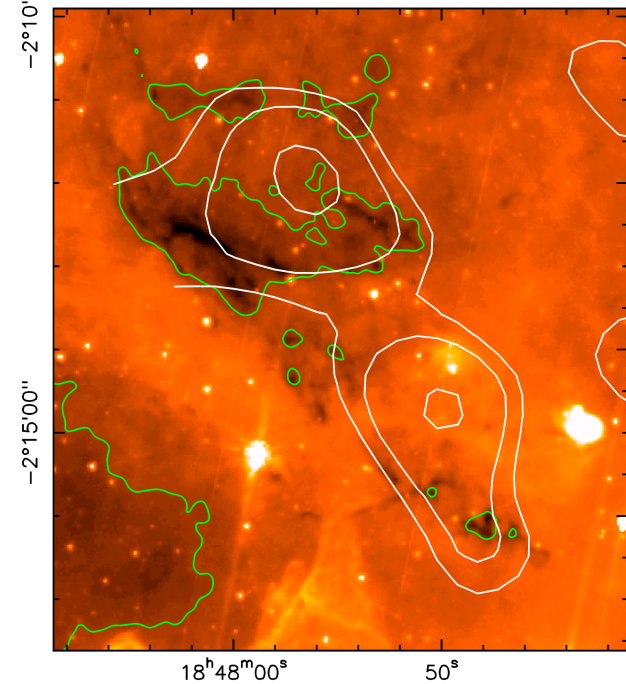
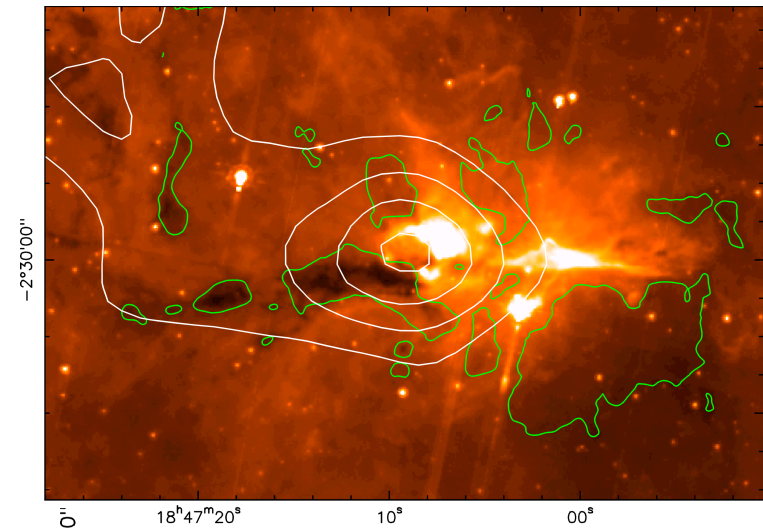
What does CS(1-0) trace ?

Spitzer 8micron (colour)
Integrated CS(1-0) (white contours)
Dark cloud (green contours)



Clearly traces different stages of star formation:

- dark clouds
- 8micron bright clouds



Measuring distances, linewidths, masses and correlation with other surveys

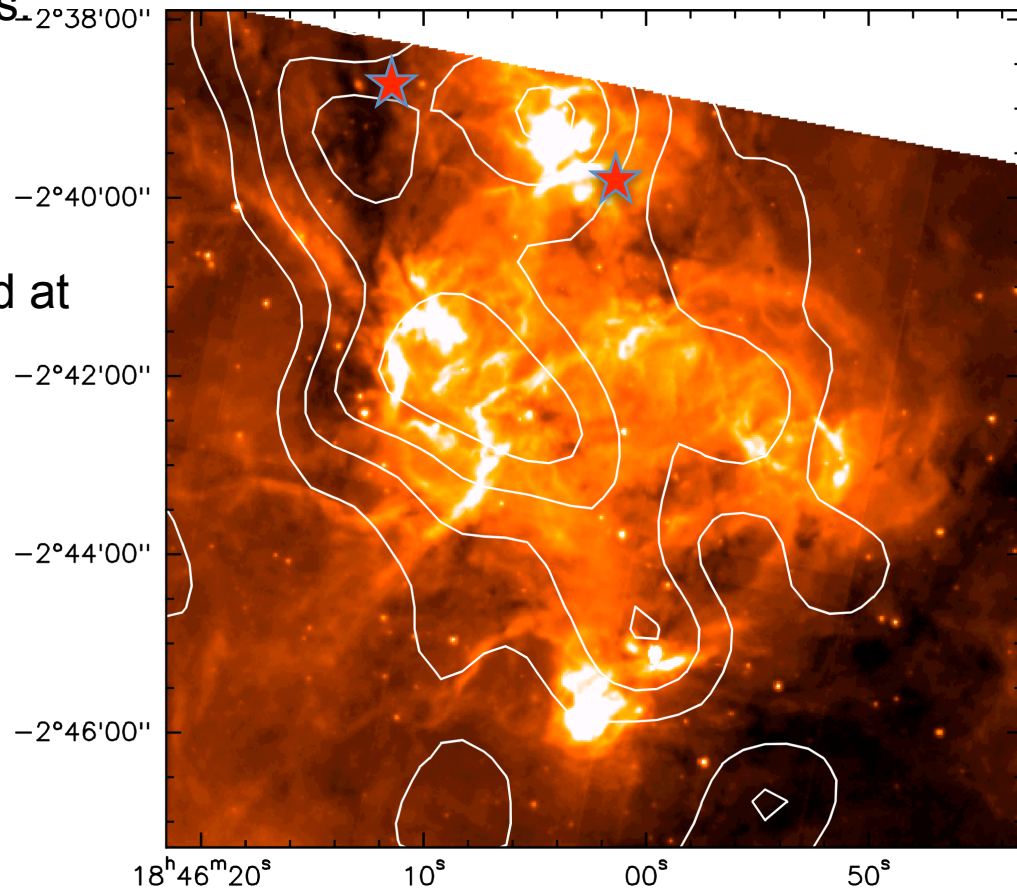
Line fitting: velocity, linewidth -> distance estimate, mass, density, kinetic support of clouds

★ Class II methanol maser

Two surveys which are in progress:

- Maser surveys (MMB) (Green, Caswell, Fuller et al)
 - Identify massive protostars
- IRDC survey (Peretto & Fuller)
 - Dust column densities studied at arcsec resolution

→ databases already exist



Online MMB catalogue

References to deep spectra

Known source so no ATCA observations

Detection survey spectrum

Navigation

- Cone Search 2
- ConePlot
- Search Longitude Range
- Associate Parkes Sources
- Parkes Sources
- ATCA Sources
- Match Parkes Source
- Show column names
- Edit Source Comments
- PlotMXData

Searching for source: G020.083-00.133

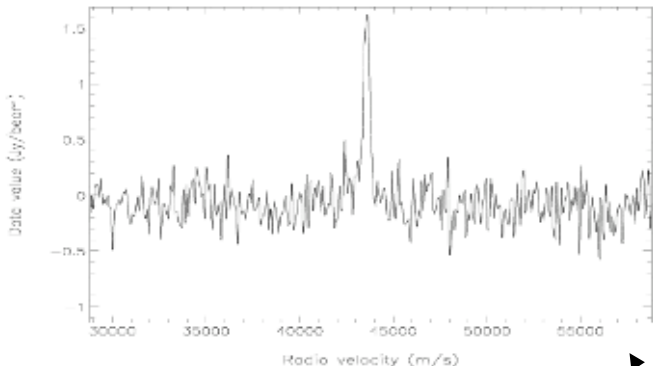
Parkes Source: G020.083-00.133

Galactic:

Equa. (J2000) RA: 18:28:10.12 Dec: -11:28:36.66

Maser

filename: <http://phobos.jb.man.ac.uk/mmb/Spectra/Methano/G020.083-00.133.gif>



Download this spectrum in various formats using these links.

[gif file](#) [postscript file](#) [fits file](#)

Maser Properties

Peak Flux: 1.62 Jy	Status: known
Vpeak: 43.62 km/s	Ref:
Vmin: 42.22 km/s	Observing sessions: i
Vmax: 45.38 km/s	

Note:

Comment:

Final MX ?:

High Resolution Observations

Status: ?

Comment:

Datacube: G020_MEAN.fits

Comments

[Edit comments](#)

Associated Sources

MX Observations

Details	Name	Distance (arcmin)
details	G020.081-00.135	0.169732158376
details	G020.080-00.130	0.254561543293

ATCA Sources

Details	Name	Distance (arcmin)
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