

Carbon Line Emission along the G300-G307 Sightline: Searching for Molecular Clouds in Our Galaxy

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We present spectral data cubes of the [CI] 809 GHz, ¹²CO 115 GHz, ¹³CO 110 GHz, 112 GHz C¹⁷O, 109 GHz C¹⁸O and HI 1.4 GHz line emission from seven square degrees region along the $l = 300\text{-}307^\circ$ and latitude $b = \pm 0.5^\circ$ of the southern Galactic plane. The CO and HI data sets, respectively, come from the Mopra and Parkes/ATCA telescopes. The [CI] data comes from the High Elevation Antarctic Terahertz (HEAT) telescope, on the summit of the Antarctic plateau where the precipitable water vapor falls into the lowest values found on the surface of the Earth.

We describe the motivation of survey and observing techniques, following by data reductions being applied. We identify some molecular clouds and calculate column densities for the three emitting species of carbon monoxide. From some emission lines, we suggest that it may represent molecular clouds after formation, or perhaps still in the process of star formation.

Keywords: molecular clouds, carbon, carbon monoxide, Interstellar Medium (ISM)