THE LINEARLY POLARIZED EMISSION OF THE CO MOLECULE TOWARDS OMC-1

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Radiative transfer models of molecular clouds and extended envelopes of AGB stars predict that the rotational line emission of molecules should exhibit a small amount of linear polarization [a]. However, for a long time, unambiguously detections of this linear polarization emission has been elusive, with upper limits for the polarized emission down to 0.5% [b]. In the last two years, the first detections of the linear polarization has been reported from observations of CS and CO toward the extended envelope of the AGB star IRC +10216 and toward the Sgr A* molecular cloud respectively [c d]. We have carried out spectropolarimetry observations with the Berkeley-Illinois-Maryland Association (BIMA) millimeter array, which provides high angular and spectral resolution and high sensitivity, necessary tomap the polarized emission, and therefore to trace the magnetic field direction.Here, we present the first maps ever made of the linearly polarized emission of a molecular rotational line, the CO J=1$\rightarrow$0, towards the dense molecular cloud associated with the Orion KL/IRc2 region.

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