

CO OBSERVATIONS OF GAS SURROUNDING B335 (IR) and L1551-IRS5

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ABSTRACT. Recent submillimeter observations of infrared sources embedded in dark clouds have uncovered the existence of a few highly compact objects. Two examples of this phenomenon are the infrared sources observed towards B335 and L1551 (Keene et al. (1983), Davidson and Jaffe (1984)). One can estimate for these regions gas masses of approximately one solar mass, densities of at least 10^6 cm^{-3} , and diameters less than 10^{17} cm . Both infrared sources are associated with bipolar outflows observed in CO with mass loss rates of order 10^{-6} solar masses per year. It is reasonable in both cases to suspect the existence of matter in some form of disc around the infrared source.

One might also expect to observe molecular counterparts to the submillimeter compact objects. In an effort to do this, we have mapped the C^{18}O $J = 1 \rightarrow 0$ transition in a small area surrounding the infrared sources in B335 and L1551 using the IRAM 30-m telescope. The beamwidth was 22 arc sec. which corresponds to $5 \cdot 10^{16} \text{ cm}$ at the distance of L1551 and $9 \cdot 10^{16} \text{ cm}$ at the distance of B335. In each case, we do find a compact structure which we believe to be the molecular counterparts of the compact submillimeter sources. We estimate the abundance ratio CO/H_2 to be of order 10^{-4} in L1551 and at least 10^{-5} in B335. Further details of this work are contained in an article submitted to *Astronomy and Astrophysics*.

REFERENCES

- Davidson, J.A., Jaffe, D.T. (1984) *Astrophys. J.* 277, L13
Keene, J. et al. (1983) *Astrophys. J.* 274, L43