The outflow source S140 is located at the south edge of the 7 km s^{-1} cloud, which is the highest column density region in L1204. The elongation of the -9 km s^{-1} cloud is probably ascribed to the ionization due to the B0 star. The -11 km s^{-1} cloud consists of two dense cores whose density is probably more than 10^4 cm^{-3} as judged from the detection of HCN(J = 1-0). We suggest that these cores are potential sites of star formation and deserve further study, because they contain several IRAS sources.

CO OBSERVATIONS OF B361 AND ITS ENVIRONMENT

N. Hirano, T. Hasegawa, O. Kameya, K. Takakubo
Astronomical Institute, Tohoku University, Sendai, Japan
M. Seki
College of General Education, Tohoku University, Sendai, Japan

Extensive mapping of the CO and ^{13}CO (J = 1-0) emission of the Bok globule, B361, is reported. The observations were made with the 4-m millimeter-wave telescope of Nagoya University. The mapped area extends over 60'×40' which includes some filamentary dark clouds: L967,L964,L961, and L960, located to the west of B361.

Our observational results are summarized as follows:

1) The CO outer envelope of B361 extends continuously toward the filamentary dark clouds (Figure 1). Almost all the mass(80 $M_\odot$) of this whole system is concentrated in B361, a region of about 1 pc in radius. On the other hand, the filamentary Lynds' clouds have only a mass of 10 $M_\odot$ in total.

2) In the core region (r < 0.4 pc) of B361, there is a systematic velocity gradient in the NW-SE direction, which is also reported by Milman (1977), Clark and Johnson (1982), and Arquilla and Goldsmith (1985). This velocity gradient was interpreted as the rotation of the B361 core.

3) In Figure 2, ^{13}CO spectra are shown for positions along a NS line. The shape of the spectrum changes appreciably over angular distances of 2 arcmin. This suggests that B361 contains two clumps at least.

4) Figure 3 shows that the core region of B361 can be divided into two components; one of which has the velocity higher than 2 km/s,the other has the velocity lower than 2 km/s.

The characteristics of the line profiles (item 3) and the existence of the two velocity components (item 4) provide an idea that the central region of B361 is composed of two distinct cloud components having different line-of-sight velocities. The masses of these components derived from the column density distribution are 13 $M_\odot$ (low velocity component) and 20 $M_\odot$ (high velocity one), respectively. The velocity gradient (item 2) is interpreted as due to the two cloud components or-

https://doi.org/10.1017/S0074180900094973 Published online by Cambridge University Press

biting around each other. These cloud components may be the fragments formed by the collapse of a rotating parent cloud.

The authors would like to thank Drs. K. Kawabata and Y. Fukui for support and assistance.

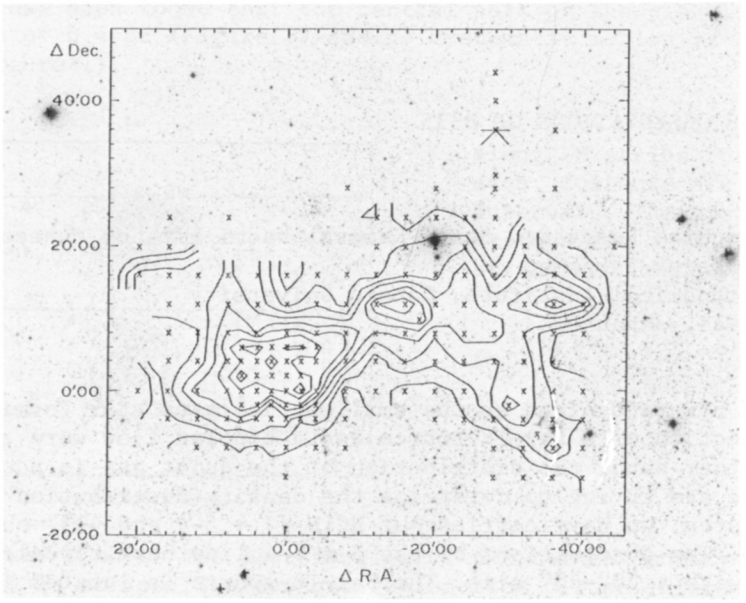

Fig. 1. The dark clouds B361, L967, L964, L961, and L960. Contours of $^{12}CO(J=1-0)$ brightness temperatures T_R, superimposed on the blue print of the National Geographic Society - Palomar Sky Atlas. The origin is the B361 center at $\alpha(1950) = 21^h10^m39.8^s$ and $\delta(1950) = 47°10'28''$.

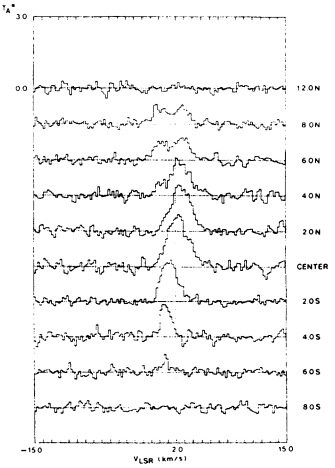

Fig. 2. $^{13}CO(J = 1-0)$ spectra along a NS line.

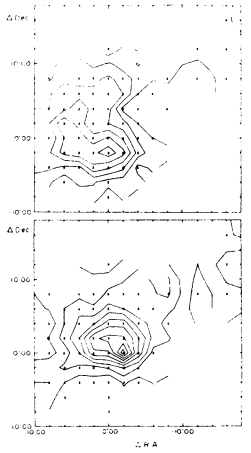

Fig. 3. Maps of T_R integrated over the velocity ranges between -1 and 2 km/s (*upper*) and between 2 and 5 km/s (*lower*).

https://doi.org/10.1017/S0074180900094973 Published online by Cambridge University Press

REFERENCES

Arquilla, R., and Goldsmith, P.F.: 1985, Astrophys. J. 294, 436.
Clark. F.O., and Johnson, D.R.: 1982, Astrophys. J. 263, 160.
Milman, A.S.: 1977, Astrophys. J. 211, 128.

CYANOACETYLENE OBSERVATIONS OF B335

Tatsuhiko Hasegawa, Osamu Kameya, Naomi Hirano, Munezo Seki, and Keiya Takakubo
Astronomical Institute, Tohoku University
Sendai, Japan

B335 is now recognized as the smallest isolated star forming region. The detection of a Far-IR source and a bipolar flow were successful, on the other hand, the distribution of the quiet gas is poorly understood. We are trying to determine the density distribution in B335. As the first step, we have carried out HC_3N (J = 5-4 and 4-3) observations of B335. The observations of the J = 5-4 line have revealed a high density core with a 30"-60" size. The Far-IR source is located just at the center of the core, and the core lies at the center of the bipolar flow. A mean hydrogen molecular density in the core of about 5×10^4 cm^{-3} is derived from the line ratio J - 5-4/4-3.

CO OBSERVATIONS OF A COMETARY GLOBULE IN IC1396

Makoto Nakano, Yoshio Tomita and Hiroshi Ohtani
Department of Astronomy, University of Kyoto, Japan
Katsuo Ogura
Kokugakuin University, Japan
Yoshiaki Sofue
Nobeyama Radio Observatory, Japan

A cometary globule in IC1396 named "comet tail 6" by Osterbrock (1957), has been observed at CO and ^{13}CO (J = 1-0) lines with a high spatial resolution, 14", with the 45-m radio telescope at the Nobeyama Radio Observatory. The resolution corresponds to a linear size of 0.05 pc at the distance of 750 pc (Matthews 1979). Two possible pre-main sequence stars, LkHα 349 and LkHα 349/c (Cohen and Kuhi 1979), associated

https://doi.org/10.1017/S0074180900094973 Published online by Cambridge University Press