also consistent with the observations. These include outflow from a more evolved YSO in a T Tauri phase and possible binary models. The low luminosity of WL 16 rules out supergiants and novae which are the only other sources of observed CO emission.

CO, ^{13}CO, AND HCN(J = 1-0) OBSERVATIONS OF L1204(S140)

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We present results of CO, ^{13}CO, and HCN(J = 1-0) observations of L1204 by the 4 m telescope of Nagoya University.

S140 is a small H II region ionized by a B0 V star (HD 211880) and is located at the southwest edge of L1204. S140 is associated with one of the most energetic molecular outflow sources.

We have mapped an area of about one square degree and the distribution of the L1204 cloud has been obtained. We find that L1204 consists of at least three separate elongated clouds (Figure 1). LSR velocities of each cloud are ∿-7, ∿-9, and ∿ -11 km s^{-1}. The size of each cloud is typically ∿ 10 pc in length and ∿ 2 - 3 pc in width, if we assume the distance to be 910 pc (Crampton and Fisher 1974). The mass of each cloud is a few × 10^3 $M_\odot$ and the total mass of L1204 amounts to ∿ 10^4 $M_\odot$.

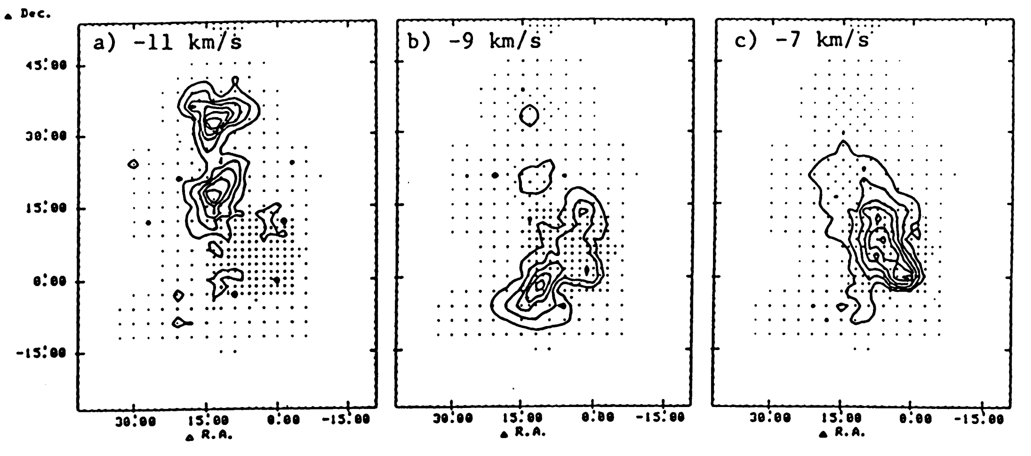

Fig. 1. (a),(b), and (c). Integrated intensity maps of ^{13}CO(J = 1-0). The coordinates are indicated by the offset from R.A. = $22^h17^m41^s$ Dec.= 63°3'49". (a) The integrated range is from -13 to -10 km s^{-1}, and the lowest contour and the contour interval are 1.5 K km s^{-1}. (b) and (c) The integrated ranges are from -10 km s^{-1} to -8 km s^{-1} and from -8 km s^{-1} to -6 km s^{-1} respectively. The lowest contour and the contour interval are 3 K km s^{-1}.

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

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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-

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