

characteristics of a given interstellar cloud. Various rotational laws are adopted for the distribution of rotation velocity from cloud center to boundary, and CO line profiles of different transitions are synthesized for each rotational law. Line synthesis is done according to the model by Leung and Liszt(1976, *Ap. J.*, 208, 732), who treated the line transfer problem in a full non-LTE manner. Validity of the practice of inferring the rotation velocity from the mean velocity of line is critically assessed for the various rotational laws. Particular emphases will be given to the effects of optical depth on renderings of the rotational characteristics.

A Progressive Report on the CO Observations of B361

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In order to study detailed structures of dark globules, we observed Barnard 361, a prototype of Bok globules, in the $^{12}\text{CO}(J=1-0)$ line. Employing the full angular resolution of the DRAO 14m radio telescope, we made maps of the integrated line intensity and the peak velocity V_{max} over the $20' \times 20'$ area centered on the globule. The intensity map clearly delineates sharp boundaries at the south and west edges of the globule; however, towards the north and east, the globule seems to extend much wider area than previously thought. Along with the usual space-velocity diagram, we will utilize the V_{max} -map in testing the possibility of rotation often claimed for the globule.

Preliminary Results on the Observation of IRAS 1629A

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$^{12}\text{CO}(J=1 \rightarrow 0)$ observations of the region around IRAS 1629A in ρ -Oph Cloud complex were carried out to examine the morphology of molecular outflow associated with the protostellar object.

A tentative $20' \times 20'$, ^{12}CO map clearly shows the bipolar structure extended over $8' \times 4'$ region, but no clear evidence of double bipolar as asserted by Walker, et al (1988). This fact may be attributable to the large optical depth of $^{12}\text{CO}(J=1 \rightarrow 0)$, and low resolution of DRAO 14m telescope.

Gravitational Waves from the Black Hole Coalescence Events in Nearby Galactic Nuclei

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We will concentrate on supermassive black hole binaries formed later by merging galaxies whose central holes already have been existed. Since an enormous outburst of gravitational radiation