Employing the usual LTE analysis, we determined the CO column densities over the area extending 20′×20′. The column density at the globule center is found to be $10^{17}cm^{-2}$. At a distance of 600pc, the globule contains mass amounting $200M_{\odot}$. For the isotopic species, we made the position-velocity map in several directions across the cloud, and also made the velocity centroid map. The map shows that the cloud consists of rigidly rotating core and constantly rotating envelope. The velocity centroid map of ^{12}CO as well as ^{13}CO traces the velocity field fairly well.

CO Observations of a Region in the Perseus arm Containing Hb 12 and its Immediate Vicinity

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High resolution ^{12}CO observations of the region containing the planetary nebula Hb12 were made with the Nobeyama Radio Telescope. These observations reveal that there is no significant CO emission from Hb12 itself. Near Hb12, however, the observed regions show a structure of clustered dark clouds whose physical parameters suggest that these clumps would be further fragmented or collapsed. Also found with the high resolution observations is that a few isolated clumps are located away from the main CO feature extended possibly from the galactic plane. For more detail morphologies and velocity structures of the clumps, especially in relation to the large CO complex to which these are likely to be associated, more observations are substantiated.

IRAS Observations of Dark Globules

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Infrared emission maps are constructed at 12.5, 25, 60 and 100μm for dark globules B5, B34, B133, B134, B361, L134 and L1523 using Infrared Astronoinical Satellite data base. These clouds are selected on the basis of their appearance in Palomar print as dark obsecuring objects with angular sizes in the range of 3 to 30 arcminutes. The short wavelengths (12.5 and 25μm) maps show the embedded infrared sources. These are identified as late type stars, circumstellar envelopes or reddened stars. We found many such sources only in B5, B361 and B34 regions. Diffuse component at 25μm, arising from the schochastically heated small dust grains ($a \lesssim 0.01\mu$m) by interstellar radiation field, is found in B361 and L1523 regions. Such emission is characterized by the limb brightening, which is confirmed L1523 and marginally detected in B361.

Infrared emissions at the long wavelenths(60 and 100μm) are due to cold dusts with temperature less than 20K. The positions at which 60 and 100μm emissions peak generally do not coincide with the optical center or position of point sources. The morphology of these emissions are often clumpy, indicating clumpy nature of dust distribution. The distribution of color index determined between 60 and 100μm emissions implies decrease of dust temperature toward the center. Assuming that the dust grains are assumed to be heated by interstellar radiation field, the thermalization efficiency is found to be close to unity.

IR Continuum and CO Line Observations of Barnard 134

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In order to study detailed structures of dark globules, we have observed Barnard 134 in the ^{12}CO ($J=1-0$) line and analyzed the IRAS images of the globules at 12, 25, 60, and 100μm. From the ratio of 60 to 100μm flux, we determined the dust temperature averaged over line of sight as a function of projected distance from the globule center. Using the temperature, we also determine the dust optical depth at the longer IR wavelengths. Good agreement is found between the IR optical contours and the CO map of integrated antenna temperature. Total mass of the globule was estimated from the IR and extinction contours. Some discussions will be given to internal dynamics of the globule.

Computer Simulation of Three Dimensional Stellar System in Cylindrical Coordinates

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N-body problems in general are classified as no exact solutions avail, and in many present-day applications, these have been greatly aided, both theory and desigen are pushed to the limit, in producing trustworthy resuls through computer simulations. Acknowleding the crucial role of computing time, many computer algorithms have been advanced for reduction of the costly CPU time. In this paper we propose a method, best applicable to stellar systems with good symmetrical properties, employing cylindrical coordinates and the FACR method.