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< 研究 論文 >

PMS Objects and Star Formation Efficiency in Dark Clouds within Taurus Complex

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Using the 1m telescope of Agematsu Infrared Observatory, we have carried out an infrared (J, K) survey in three dense portions of the Taurus dark cloud complex, and detected 328 sources in total. For each source detected in the survey, we also conducted a photometry in the J, H and K bands. A discrimination between pre-main sequence objects and field stars was attempted in a two color ($J-H, H-K$) diagram. From the analysis of our survey together with the IRAS survey, 27 pre-main sequence (PMS) candidates have been newly identified, which increases the amount of stellar mass in the clouds significantly. The cloud mass in the survey regions was estimated from extinction of the field stars. We derived the mass ratios of PMS objects to the clouds to be 5~6% for all these clumps. These values are slightly larger than previously estimated ones but still far smaller than the lower limit to make a gravitationally bound stellar system. The star formation in the Taurus dark cloud complex appears to from unbound stellar groups.

Time Monitoring of 19 SiO Maser Sources

Bong-Gyu Kim and Duk-Gyoo Roh

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We monitored SiO $v=1, J=1\rightarrow 0$ maser line for well known 19 sources with 14m radio telescope at Daeduk from April 1989 to March 1990.

The observed sources include of 13 Mira type variables, 3 semi-regular variables, 2 irregular supergiants and Orion A.

We compared the line profile and the intergrated flux of Mira type variables with those of irregular supergiants. The variation characteristics of the observed line profiles and the integrated flux of the maser lines through visual phase are discussed. And the missing maxima of the maser lines of the Mira type variables at visual phase $\phi=0.2$ are also discussed.

From the variation of line profiles and the missing maxima for the Mira variables, we presented the possibility of the correlation between the maser emission and the effects of the shock from the central star.

Spectroscopic Study of the Long Period Eclipsing Binary Epsilon Aurigae

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From the study of a spectroscopic plate of ϵ Aurigae, we can measure the radial velocity and the relative abundance for this eclipsing binary. Calculated radial velocity is -37 ± 4 km/s and the abundance of [Fe] is estimated as -1.5 .

On the Gegenschein and Symmetry Plane

Seung-Soo Hong and Suk-Minn Kwon

(Department of Astronomy, Seoul National University)

Extensive model calculations are made for the distribution of zodiacal light brightness over an extended area near anti-solar point. We let a linear sum of three Henyey-Greenstein functions describe the scattering phase function of zodiacal dust particles. For the distribution of particles in the symmetry plane, we adopted the usual power-law relation of the heliocentric distance measured along the plane; while for the distribution perpendicular to the plane, we employed the fan, modified-fan and ellipsoid models. By systematically changing inclination and ascending node of the symmetry plane, we carefully examined how the varying geometrical aspects of the plane with respect to the sun and observer would modify the morphology of the Gegenschein brightness distribution. Comparison of the calculated brightness distribution with our newly reduced Gegenschein observations will locate the symmetry plane in terms of the inclination and ascending node, and also differentiate the three competing models of density distribution.

Fine Resolution Brightness Distribution of the Visible Zodiacal Light

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(Space Astronomy Laboratory, University of Florida)

In order to obtain an accurate brightness distribution of the visible zodiacal light, we developed a new method for making a time-dependent correction of the atmospheric diffuse light. Applying this method to a set of observations, we were able to reduce the uncertainties involved in reduction