

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

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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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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