UBV CALIBRATION OF PHOTOELECTRIC PHOTOMETRY AT SOBAEKSAN OBSERVING STATION

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Three color photoelectric photometry of 25 standard stars was performed with the 61cm reflector at Sobaeksan Observing Station of the National Astronomical Observatory from March to late November, 1979. We have made 390 observations to establish correlations between our system and the UBV system defined by Johnson and Morgan(1953). We obtained tentatively the transformation equations for the UBV system as follows;

$$V = v_0 - 0.113(B-V) + 5.489$$
$$B - V = 1.040(b-v)_0 + 0.818$$
$$U - B = 1.019(u-b)_0 - 1.203$$

HI SELF ABSORPTION IN THE RHO OPHIUCHUS DARK CLOUD

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The ρ Ophiuchus dark cloud has been mapped in the 1.4204 GHz H line by observing 113 positions. The visual extinction in the region has been measured by the method of star counts. The cold HI is found to be distributed over the area beyond the visual extinction of 2 mag. The maximum column density of the cold HI, $N(HI) = 5.8 \times 10^{19}$ atoms cm^{-2}, is located at a position $\alpha = 16^h 21^m 15^s$, $\delta = -24° 00'$ (1950) which is about 33' west of the extinction peak. The correlation between the cold HI column density and extinction is not very good in general. The ratio of cold HI and extinction, $N(HI)/Av$, at the peak of $N(HI)$ is 1.3×10^{19} atomas cm^{-2} mag^{-1}. The column density of cold HI seems to be increasing with A_v at high extinction region, but remains almost constant at low A_v region. The column density ratios between various kinds of molecules and cold HI at the same position range from the order of 10^{-7} for CN and H_2CO, to 10^{-3} for ^{12}CO.

The HI cloud in the region appears to be rotating from north-west to south-east directions. The velocity gradient is ~ 0.5km s^{-1} pc^{-1}. Then, the rotational angular velocity and the period of rotation are 1.5×10^{-4} rad s^{-1} and 1.3×10^7 years, respectively. The velocity differences between cold HI and most other molecular species and recombination lines are less than 1km s^{-1}.