

Surface Photometry of NGC 6946

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The late type spiral galaxy, NGC 6946 was scanned to get the physical parameters of this galaxy. From the overall feature of the intensity profile this galaxy was classified as type II according to Freeman's classification. The extrapolated apparent total magnitude was $B_T=8.15$, and this magnitude was in the range of ScI Type.

Photoelectric Observations of Extremely Young Open Clusters*

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During the period between January and November in 1982, *UBV* photometric observations were made for 48 stars in NGC 2264, 66 stars in IC 1805 and 22 stars in IC 348. From these observations, various physical parameters such as distance, mean color excess, total-to-selective extinction ratio and mean age of cluster have been determined. From these parameters, we estimated the star formation rates of IC 348 and NGC 2264. The result shows that the star formation rate depends on both time and stellar mass. The overall formation rate is found to increase rapidly during the period of the active star formation. The age spread ($5 \times 10^6 \sim 10^7$ yrs) of stars in a given cluster appears to be real which occurs in extremely young open clusters. A few peculiar stars in each clusters were observed and their characteristics are discussed.

Photometric Observations of Giant Stars in Extremely Old Open Clusters, M67 & NGC 2420*

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We made *UBV* photoelectric observation for selected bright stars of M 67 and NGC 2420 in order to determine their distance modulus, interstellar reddening, metal abundance and age along with individual masses. Making use of the luminosity functions for 6 open clusters, we examined the stars of blue stragglers and clump stars from an evolutionary point of view. Blue stragglers and clump stars are found to be horizontal branch stars or asymptotic giant branch stars.

Mass Functions of Open Clusters

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We derived the luminosity functions (LF) and the mass functions (MF) of eleven open clusters

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