UBV CCD Photometry of Intermedaite Age Open Cluster M11 I. Staticstical Analysis

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Using a new, wide field CCD data, we presented the color-magnitude diagram(CMD) of more than 24,000 stars in the field of an intermediate age open cluster M11. The morphology of CMD varies strikingly with increasing the radius. From the surface density analysis, we confirmed the mass segregatrion effect - the bright, massive stars are centrally more concentrated than faint, low mass stars. The slope of the field-corrected surface density with respect to magnitude progressively increases as the radius increases, and reaches that of field stars at r ~5′. The most of field stars in or near the cluster main sequence(MS) band and in the bright part of red stars seem to be nearly the same distance as M11, and to be the major component of disk stars in the Sagittarius-Carina arm.

Evolution of Tidally Truncated Globular Clusters with Anisotropy

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We report first numerical integration of two-dimensional Fokker-Planck equation for the evolution of star clusters with tidal truncation. We start with the isotropic Plummer model with tidal cut off. The heating by three-binary is included to obtain the evolution past the core-collapse. The anisotropy in velocity dispersion develops during the pre-collapse phase, but becomes highly depressed during the post-collapse evolution because of rapid depletion of stars with radial orbits. Maximum radial anisotropy decreases slowly as the total mass of the cluster decreases. The structure of the post-collapse cluster can be well fitted to King models because the degree of anisotropy is rather small.