

Monte-Carlo Simulation to the Color Distribution within Galactic Globular Clusters

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Abstract

According to the CCD photometric studies, the color distributions of globular clusters with collapsed cores, which are characterized by a power law cusp in their surface brightness profile, become bluer toward their centers, but this is not the case in the flat core clusters which are fit by the King model. To test the statistical implication of the color distribution within globular clusters, we built the sample clusters which follows the surface brightness profile of the King model and power law cusp profile with the Sandage's standard luminosity function for M3 and the Salpeter's initial mass functions. On the results from simulations based on the uniform random number generation, the color gradients within globular clusters may be not likely to come from the statistical random distributions of stars but from the dynamical process on the cluster evolution.