Stellar Distribution within Globular Clusters: King-Michie Type and Post-Core-Collapse Clusters

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Recent studies suggest that the occurrence of radial color gradient in globular clusters is closely linked with certain luminosity distributions with post-core-collapse signature. Our CCD surface photometry of a sample of southern globular clusters, however, shows that this is not necessarily the case. We have found convincing color gradient in four King-Michie type clusters as well as three post-core-collapsed clusters. In spite of the large difference in their dynamical properties, all of these clusters have similar features; the central regions are bluer than the outer parts. Our effort to identify the direct cause of color gradient involves population analysis through digital photometry. After the correction of severe crowding effect, the inferred radial distributions of red giants and horizontal branch stars suggest that there is progressive overabundance of horizontal branch stars at smaller distance to the cluster center.