distance from the center. The inclination of the field lines is turned out to be somewhat higher than we expected. The field distribution over the sunspot(SPO 5007) fits best to the empirical model suggested by Wittmann(1974).

Multicolor CCD Surface Photometry of Globular Clusters

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In order to investigate the radial distributions of color and luminosity in the central regions of globular clusters, we have analyzed a set of UBV CCD images for 10 southern globular clusters, which were obtained from the 40-inch telescope at Siding Spring Observatory in May 15 and August 18, 1991. Among the ten, seven clusters show clear indication of color gradients; NGC 6266, NGC 6584, NGC 6681 with redder centers and NGC 104, NGC 2298, NGC 6637, NGC 7099 with bluer centers. The amplitudes of color variation is typically around 0.1 magnitude for B-V color. We also classify half of our sample clusters at post-core-collapse family based on the power law cusp in their surface brightness profiles. The other half have flat cores which are very well fitted by conventional King's model. In contrast to Djorgovski et al.(1991)'s claim of co-occurance of cusp and bluer cores, we find cases which conflict with such hypothesis. Using the same CCD frames, we have derived accurate color and magnitudes for all resolved stars brighter than V = 18.5 magnitude. Combined with radial profile information, the CM data set is being used to test possible population changes across globular clusters.

Ages of Old Stellar Populations in the Galaxy

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Recent observations suggest that the peak of the metallicity distribution for RR Lyrae variables in the Galactic nuclear bulge is more metal-rich than that found in the halo of the Galaxy. It is shown that this is what one would expect if the radial variation in horizontal-branch morphology observed in the halo continues to the very center of the Galaxy. Interpreted as an age effect, as supported by recent work, this provides evidence, for the first time, that the oldest stellar population (i.e., RR Lyraes) in the Galactic nuclear