

[PH01] CCD Photometric Study on Second Parameter Globular Clusters

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We carried out relatively wide-field BVI CCD photometric observations of second parameter globular cluster (GC) pairs M3 (NGC 5272) versus M13 (NGC 6205) and M15 (NGC 7078) versus M92 (NGC 6341) using Bohyun Optical Astronomy Observatory 1.8 m telescope in order to investigate whether “deep mixing” is acting as another possible second parameter in these GC pairs. We found significant “extra stars” in the red giant branch (RGB) luminosity function of M13 in the comparison with respect to the theoretical RGB luminosity function of Bergbusch & Vandenberg (2001) and even in the comparison with respect to that of M3, which support the contention that “deep mixing” is acting as another possible second parameter in the GC pair of M3 versus M13. But, we did not find significant “extra stars” in the RGB luminosity functions of M15 and M92 in the comparison with respect to theoretical RGB luminosity function of Bergbusch & Vandenberg (2001). So it is uncertain whether “deep mixing” is acting as second parameter in the GC pair of M15 versus M92 or not.

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[PH02] A photometric survey of the Small Magellanic Cloud

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In order to study the Initial Mass Function (IMF) and star formation history of massive stars, we performed a BVR photometric survey of the Small Magellanic Cloud, chosen for its proximity and low metallicity, and catalogued 0.76 million SMC stars brighter than 18 magnitude in B from total 1.3 millions. Together with spectroscopic data, we investigated the basic parameters of the SMC such as colour excess, reddening and distance modulus, and compared them with other studies. Based on these parameters, we studied the IMF and star formation histories using population synthesis techniques and Bayesian statistic. From model calculations, we found that a continuous star formation model with an IMF slope of -1.6 offers the best representation of the SMC stars. It suggest that our result is one of the implications for the variation of the IMF, at least hot stars.