[P-037/ST-1] A Photometric Study of Unstudied Open Clusters Berkeley 49 & 84 in the SDSS

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We present a study of two open clusters Berkeley 49 and Berkeley 84 based on ugriz images of the Sloan Digital Sky Survey (SDSS). These objects were listed in the open cluster candidates (Ruprecht, 1966, BAIC, 17, 33.), but only their coordinates and sizes were known. We derive the photometry of bright stars in these objects using DAOPHOT. We find they are genuine open clusters from the surface number density profiles and Color-Magnitude Diagrams (CMDs) of stars. We derive physical parameters of these clusters using the isochrone fit with the PADOVA models: reddening E(B-V)=1.2±0.1mag for Berkeley 49, and E(B-V)=0.6±0.1mag for Berkeley 84. These two clusters have similar ages of t=700±100Myrs and distances of d=2.6±0.2kpc.

[P-038/ST-2] MULTIBAND PHOTOMETRY OF NGC 1399 GLOBULAR CLUSTER SYSTEM - A CRUCIAL TEST FOR THE ORIGIN OF COLOR BIMODALITY

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The bimodal color distribution is one of the most conspicuous features of extragalactic globular cluster (GC) systems. It has been commonly accepted that the color bimodality comes from two GC sub-populations with different mean metallicities within individual galaxies. However, a new explanation is proposed recently, in which the non-linear color-metallicity relations can produce the color bimodality even from the unimodal metallicity distribution. In this study, we use multi-band (U, B, V and I) photometry of NGC 1399 GCs obtained with the CTIO 4-m telescope to test the hypothesis that color bimodality arises from a metallicity-to-color "projection effect". After carefully selecting GC candidates, we show that different sets of colors (e.g., B-I versus U-B) for the same GC sample exhibit considerably different blue-to-red GC number ratios. We find that these observed results are well reproduced by our Monte Carlo simulations when a unimodal (rather than a bimodal) metallicity distribution and the new theoretical color-metallicity relations are used. We discuss the advantage of using U-band both in selecting GC candidates and in placing constraints on the physical origin of GC color bimodality.

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