[구ST-05] Multi-band Photometry of Globular Cluster System in NGC 1399

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The color bimodality is one of the most well-known features of globular cluster (GC) systems, and has been believed as a manifestation of two distinct GC sub-populations within individual galaxies. Recently, however, a new explanation is proposed, in which the non-linear color-metallicity relations can produce the color bimodality even from the unimodal metallicity distribution. A crucial test for two different explanations on the origin of color bimodality comes from multi-band photometry. If there exist two GC sub-populations with different metallicities, the number ratio between blue and red GCs will remain the same regardless of the colors used. By contrast, the new hypothesis predicts a systematic variation in the ratio according to the colors used. We have undertaken the multi-band (U-, B-, V-, and I-band) photometry of nearby galaxies using the 4-m Blanco telescope at the Cerro Tololo Inter-American Observatory (CTIO). In this presentation, we report our new result on GC system of NGC 1399, the central giant elliptical galaxy of the Fornax cluster. We discuss the power of the U-band color in selecting genuine GCs and in placing constraints on the origin of color bimodality.

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[포ST-06] The Effects of Helium-Enhanced Populations on Surface Brightness Fluctuations

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Recent studies have suggested that multiple stellar populations in the color-magnitude diagrams of some globular clusters can be explained as due to the presence of helium-enhanced subpopulations. As surface brightness fluctuations (SBFs) are sensitive to luminous contributors, the extreme-horizontal-branch stars that are associated with the helium-enhanced populations can exert considerable influence on observed SBF magnitudes and colors. Using the Yonsei Evolutionary Population Synthesis model, we have confirmed the impact of helium-enhanced populations on SBFs, and quantitatively assessed their influence. We also present theoretical predictions for far-UV through near-IR SBFs of old stellar systems.