[구ST-15] The Presence of Two Distinct Red Giant Branches in the Globular Cluster NGC 1851

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There is a growing body of evidence for the presence of multiple stellar populations in some globular clusters, including NGC 1851. For most of these peculiar globular clusters, however, the evidence for the multiple red giant-branches (RGBs) having different heavy elemental abundances as observed in ω Centauri is hitherto lacking, although spreads in some lighter elements are reported. It is therefore not clear whether they also share the suggested dwarf galaxy origin of ω Cen or not. Here we show from the CTIO 4m UBVI photometry of the globular cluster NGC 1851 that its RGB is clearly split into two in the U - I color. The two distinct RGB populations are also clearly separated in the abundance of heavy elements as traced by Calcium, suggesting that the type II supernovae enrichment is also responsible, in addition to the pollutions of lighter elements by intermediate mass asymptotic giant branch stars or fast-rotating massive stars. The RGB split, however, is not shown in the V - I color, as indicated by previous observations. Our stellar population models show that this and the presence of bimodal horizontal-branch distribution in NGC 1851 can be naturally reproduced if the metal-rich second generation stars are also enhanced in helium.

[구ST-16] Sejong *Cauvby* Survey hits the Jackpot: New Perspective on the Multiple Populations in Globular Clusters and Galaxy Formations

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Sejong Cauvby Survey was initiated in 2006 to investigate the homogeneous metallicity scale for globular clusters and to obtain the complete metallicity distribution function of the Galactic bulge using the hk index. During the last four years, we used about 100 nights of CTIO 1.0-m telescope time and we obtained Ca H&K + Stromgren uvby photometry for about 50 globular clusters. We will discuss the evidence of supernovae enrichment in the globular clusters with multiple populations and the implication of the galaxy formations.