

Sub-Gyr Ages of Globular Cluster using Infrared Photometry: New Breakthroughs and Future Prospects

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Recently, a new feature has been observed in several HST WFC3-IR color-magnitude diagrams (CMDs) of nearby Globular Clusters (GCs). At low stellar masses, the stellar main sequence in an infrared (IR) CMD exhibits a sharp “kink” (due to opacity effects in M dwarfs), such that lower mass and cooler dwarfs become bluer in the F110W - F160W color baseline and not redder. In this context, I will present the results obtained from the analysis of HST WFC3-IR archival observations of four GCs (47Tuc, M4, NGC2808, and NGC6752) and of new HST/WFC3 IR observations of the old metal-poor GC NGC6397. These works allowed us to estimate the best-fit GC parameters, quantify the correlations among them and derive their individual uncertainties. Our overall results show that observing the near-IR main sequence kink offers a new venue to push the absolute age of GCs to sub-Gyr statistical accuracy. I will discuss the importance of such studies in the context of the next generation near-IR telescopes.

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