

Nuclear clusters in dwarf irregular galaxies and their connection to massive galactic clusters

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Abstract. We compare nuclear globular clusters (nGCs) in dwarf galaxies and Galactic GCs with extended (hot) horizontal branches (EHB-GCs) to test the suggested external origin of the latter and the conditions under which GC self-enrichment can operate. We show that the present-day escape velocity (v_{esc}) of stellar ejecta to reach the cluster tidal radius compares with those of EHB-GCs. For EHB-GCs, we find a correlation between the present-day v_{esc} and their metallicity as well as ($V-I$) colour. The similar v_{esc} and ($V-I$) distribution of nGCs and EHB-GCs implies that nGCs could also have complex stellar populations. The $v_{\text{esc}}-[\text{Fe}/\text{H}]$ relation could reflect the known relation of increasing stellar-wind velocity with metallicity, which in turn explains why more metal-poor clusters typically show more peculiarities in their stellar population than more metal-rich clusters of the same mass.

Keywords. galaxies: star clusters, galaxies: dwarf, galaxies: nuclei

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