

Specific Frequency of Globular Clusters in Different Galaxy Types

Authors : Ahmed H. Abdullah, Pavel Kroupa

Abstract : Globular clusters (GC) are important objects for tracing the early evolution of a galaxy. We study the correlation between the cluster population and the global properties of the host galaxy. We found that the correlation between cluster population (NGC) and the baryonic mass (Mb) of the host galaxy are best described as $10^{-5.6038} Mb$. In order to understand the origin of the U-shape relation between the GC specific frequency (SN) and Mb (caused by the high value of SN for dwarfs galaxies and giant ellipticals and a minimum SN for intermediate mass galaxies $\approx 10^{10} M_{\odot}$), we derive a theoretical model for the specific frequency (SNth). The theoretical model for SNth is based on the slope of the power-law embedded cluster mass function (β) and different time scale (Δt) of the forming galaxy. Our results show a good agreement between the observation and the model at a certain β and Δt . The model seems able to reproduce higher value of SNth of $\beta = 1.5$ at the midst formation time scale.

Keywords : galaxies: dwarf, globular cluster: specific frequency, number of globular clusters, formation time scale

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