

Globular clusters in NGC147, 185, and 205

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Abstract. Studying the chemical compositions and color-magnitude diagrams of globular clusters in the nearby low-mass galaxies is critical to compare properties of these long-living objects situated in galaxies of different type and mass, and to establish the role of dwarf galaxies as building blocks of massive early-type and spiral galaxies. We present measurements of ages, metallicities and $[\alpha/Fe]$ ratios for 16 globular clusters (GC) in NGC147, NGC185, and NGC205 and for the central regions of the diffuse galaxy light in NGC185, and NGC205, based on measurements of absorption line indices as defined by the Lick standard system in spectra obtained with the SCORPIO multi-slit spectrograph at the 6-m telescope of the Russian Academy of Sciences. We include in our analysis high-quality HST/WFPC2 photometry of individual stars in the GCs to investigate the influence of their horizontal branch (HB) morphology on the spectroscopic analysis. The HB morphologies for our sample GCs follow the same behavior with metallicity as younger halo Galactic globular clusters. We show that it is unlikely that they bias our spectroscopic age estimates based on Balmer absorption-line indices. Almost all our sample GCs appear to be old ($T > 8$ Gyr) and metal-poor ($[Z/H] < -1.1$). We find that most of the GCs in the studied galaxies are weakly or not α -enhanced, in contrast to the population of GCs in nearby early-type galaxies, and to the halo population of GCs in M31 and Milky Way.

Keywords. galaxies: star clusters – galaxies: individual (NGC147, NGC185, NGC205)

Distributions of the GCs according to the obtained age, metallicity and $[\alpha/Fe]$ are shown in Fig.1. Figure 4 in Sharina *et al.* (2006) shows the Lick index measurements for the metal-sensitive absorption index $[MgFe]'$ versus age-sensitive Balmer line indices H_{β} , $H_{\gamma A}$, and $H_{\gamma F}$, for GCs and diffuse-light fields in NGC205, 185, and 147. Almost all our sample GCs appear to be old and metal-poor, except for the GCs Hubble V in NGC 205 ($T = 1.2 \pm 0.6$ Gyr, $[Z/H] = -0.6 \pm 0.2$), Hubble VI in NGC 205 ($T = 4 \pm 2$ Gyr, $[Z/H] = -0.8 \pm 0.2$), and FJJVII in NGC 185 ($T = 7 \pm 3$ Gyr, $[Z/H] = -0.8 \pm 0.2$).

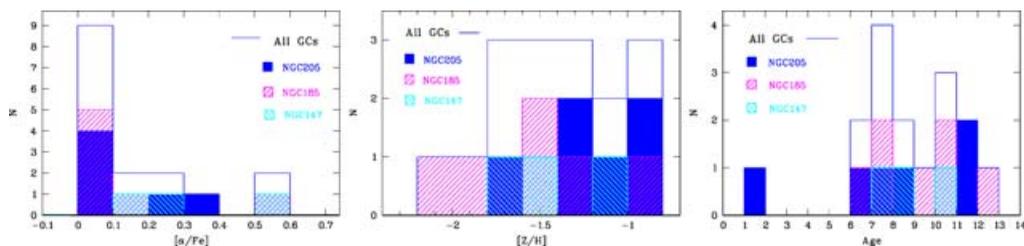


Figure 1. Age, $[Z/H]$, and $[\alpha/Fe]$ distributions of globular clusters in NGC 147, 185, and 205.

References

Sharina M.E., Afanasiev V.L. & Puzia T.H. 2006, *MNRAS* 372, 1259