

Medium resolution spectroscopy and chemical composition of Galactic globular clusters

Khamidullina D., Sharina M., Shimansky V., Davoust E.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

We used integrated-light medium-resolution spectra of six Galactic globular clusters and model stellar atmospheres to carry out population synthesis and to derive chemical composition and age of the clusters. We used medium-resolution spectra of globular clusters published by Schiavon et al. (2005), as well as our long-slit observations with the 1.93 m telescope of the Haute Provence Observatory. The observed spectra were fitted to the theoretical ones interactively. As an initial approach, we used masses, radii and $\log g$ of stars in the clusters corresponding to the best fitting isochrones in the observed color-magnitude diagrams. The computed synthetic blanketed spectra of stars were summed according to the Chabrier mass function. To improve the determination of age and helium content, the shape and depth of the Balmer absorption lines was analysed. The abundances of Mg, Ca, C and several other elements were derived. A reasonable agreement with the literature data both in chemical composition and in age of the clusters is found. Our method might be useful for the development of stellar population models and for a better understanding of extragalactic star clusters.

Keywords

Abundances, Galaxy, Globular clusters, Individual, NGC 104, NGC 6121, NGC 6205, NGC 6218, NGC 6838, NGC 7078 - Galaxy