STAR COMPLEXES IN NEARBY GALAXIES

G. R. Ivanov
Department of Astronomy, Faculty of Physics, St. Kliment Ohridski Sofia University

A method for identification of star complexes in nearby galaxies is applied. The presented method for identification of star complexes was tested for the nearby galaxy M33. The data for stellar associations, HII regions and star clusters were used. These objects have a hierarchical structure both in space and time. We apply a correlation technique to compare different populations in M81. Our results show existence of a strong spatial correlation between OB associations and HII regions, which trace the regions of massive star formation. Stellar associations, HII regions and star clusters probably originate from nearby sites of star formation. We consider this fact as a ground for identification of 35 star complexes in M81. Based on the search algorithm in the Sect. 2 and the data on Cepheids [1], we found 18 star complexes of Milky Way with space (3D) density 5.0σ density peak with an excess of about ten objects. There is a considerable difference between the mean sizes of star complexes in 8 nearby galaxies and in the Milky way.

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[1] L.N. Berdnikov, A.K. Dambis, V.O. Vozyakova 2000, Astron. & Astrophys. Suppl., **143**, 211, "Galactic Cepheids. Catalogue of light-curve parameters and distances"