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Galaxy open clusters and associations: study of stellar population

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Abstract. Some results of Galaxy star clusters and associations observation are presented.

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The star clusters and associations, especially the compact ones with real diameters up to ten arcmins, are suitable targets to search for light variability and to carry out a simultaneous CCD-photometry for all their member stars. In close collaboration with colleagues from IoA/NCU (Taiwan) at Maidanak observatory (Uzbekistan) which is notable for quite nice seeing conditions (see, for example, Frogel, 2002) we have observed the young open cluster NGC 6823 embedded in a bright HII nebula NGC 6820 (Hojaev *et al.* 2003). The cluster itself is in the core of OB association Vul OB1. 8 new and 43 suspected PMS stars of small and intermediate masses (TTS and HAeBeS) have been found. The 2MASS NIR data was used to identify young stars by the criteria described in Lee & Chen (2002). For all 8 new PMS stars the spectra recorded with 2.16 m telescope of Beijing Astrophysical observatory showed a strong Hα line emission. These PMS stars most probably form a new T-association which is closely connected with Vul OB1 association. The narrow-band images of 1×1 sq.degree area centered on NGC 6823 core were obtained with the 60/90 Schmidt telescope of the Beijing Astrophysical observatory (in the framework of BATC collaboration) with a large-format CCD camera in t band (near Hα), i band ($\lambda 6660\AA$) and o band ($\lambda 9100\AA$) and show the complex structure of the entire nebula NGC 6820. The o÷o-i CMD has been plotted and analysed for cluster and association stars. Afterwards 7 other compact open clusters in the Milky Way (NGC 7801, King1, King 13, King18, King20, Berkeley 55, IC 4996) were monitored for stellar variability in 2003. A homogeneous photometry has been made for NGC 7801, King 13, King20. The resulted time-series master catalogues have been prepared and analysed for stars in each of these clusters. A few interesting variables have been discovered and dozens were suspected for variability to the moment in these clusters for the first time.

References

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