GLOBULAR CLUSTERS IN THE VILNIUS PHOTOMETRIC SYSTEM

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The Vilnius photometric system was developed for photometric two-dimensional classification of stars and for the determination of interstellar reddening. The system consists of seven magnitudes U, P, X, Y, Z, V and S with mean wavelengths of 345, 375, 405, 466, 516, 544 and 655 nm and half-widths of the order 20 - 30 nm (Straižys 1977). Later on the system was successfully used for the determination of temperatures and the metallicities of halo stars (Bartkevičius and Sperauskas 1983).

A research program concerning globular clusters in the Vilnius photometric system was started in 1978 with observations of their integrated color indices. Thirty nine globular clusters of the Galaxy were observed. The dependence of the integrated color indices with morphological types of the clusters and the interstellar extinction towards the observed globular clusters were studied (Zdanavičius 1983). After 1982, representative stars on the red giant, asymptotic giant and horizontal branches were observed. The metal abundances of the observed giant stars in the clusters, M 4, M 22, M 71 and M 92 were determined (Zdanavičius 1986) using the two-color and reddening-free Q,Q diagrams calibrated in metallicities (Bartkevičius 1983). The mean metal abundance and mean square errors are listed in the following table.

TABLE I

Cluster		Metallicity	Number of Stars
M 4	NGC 6121	-0.96 ±0.12	7
M 22	NGC 6656	-1.50 ±0.25	6
M 71	NGC 6838	-0.44 ±0.10	6
M 92	NGC 6341	-2.22 ±0.06	8

The analysis of different color-magnitude diagrams has shown that here is a possibility of separating the field stars from globular cluster stars which occupy the same area in a V, (B-V) diagram. For

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this several additional color-magnitude diagrams can be used. Various magnitudes respond differently to luminosity, metallicity, temperature and interstellar reddening and thus one can differentiate between the cluster members and the field stars. The separation is better with increasing photometric accuracy, decreasing metal abundance and with the use of ultraviolet magnitudes.

REFERENCES

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