

QUALITATIVE ANALYSIS OF THE STELLAR CONTENT IN LMC CLUSTERS AND FIELDS USING OBJECTIVE PRISM SCHMIDT PLATES

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The distribution of spectral types in 64 LMC globular clusters and their adjoining fields have been studied.

Spectral classification of stars in star clusters and their fields provide significant information on the stellar content and evolution of their parent galaxy. The LMC was found to contain a very large number of intermediate age populous globular clusters which are not found in our galaxy. Apart from the intermediate age clusters, there is a large number of young and old globulars with ages 8×10^6 - 10^{10} yr. The study of the distribution of spectral types in these age groups helps in understanding the content of the LMC stellar system and comparing them with those of other galaxies.

The spectral classification of stars brighter than $B \approx 18.5$ mag was carried out on objective prism plates taken with the 1.2 m UK Schmidt Telescope in Australia. All stars located within the tidal radii of the clusters have been classified and stars in adjoining fields to each cluster were also studied.

The selected clusters cover all the evolutionary ages and the derived spectral type distributions show that the clusters and the fields can be divided into five age categories from $\approx 10^7$ to $> 10^9$ yr (Kontizas et al. 1987; Kontizas et al. 1993, in preparation).

The spatial distribution of spectral types for the various age groups of the studied LMC clusters and fields has shown that:

- a) the central area of the LMC contains young, intermediate and a small number of old clusters whereas the fields contain young and intermediate stellar population;
- b) the outer northern part of the LMC shows from intermediate to old age stellar population in both clusters and fields; and
- c) the outer southern part of the galaxy contains only old-age clusters and fields.

So, it was found that the old stellar population (system I) is distributed all over the LMC whereas the young clusters and fields (system II with ages $< 2 \times 10^7$ yr) are located only in the central area of the LMC.

It has been concluded that the two star clusters subsystem found in the LMC by Kontizas et al. (1990) belong to the two systems presented here i.e. system I, the old stellar population, and

system II, the young stellar population.

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