COMPOSICION QUIMICA EN LA GALAXIA: DISTRIBUCION DE ELEMENTOS PESADOS EN EL DISCO Y EN EL PLANO

J.J. CLARIA

Observatorio Astronómico, Universidad Nacional de Córdoba

Abstract

Observations on the UBV and DDO photometric systems have been obtained for 182 red evolved stars in 53 open clusters belonging to the disc and the galactic plane. Cluster membership was confirmed for 77% of the stars by using two independent criteria. Interstellar reddening, ultraviolet excesses, and cyanogen anomalies have been determined for the stars. The clusters were ordered by their relative ages in a self-consistent sequence. The variation of [Fe/H] with age and position in the galaxy was analysed. Although the abundance determinations for the youngest clusters are very uncertain, their [Fe/H] values appear to be higher in the mean than the average for solar neighborhood K giants. No evidence for a variation of [Fe/H] with age in the last $\sim 10^9$ years was found. On the other hand, a trend of decreasing metal content with increasing age seems to exist for the disc clusters. An examination of the location of the clusters in the galaxy supports the conclusion that position rather than age could be the dominant factor determining the metal abundance of stars in our galaxy.

EVIDENCIA OBSERVACIONAL ACERCA DE LA PERDIDA DE MASA EN GIGANTES ROJAS DE AGREGADOS ESTELARES

J.J. CLARIA

Observatorio Astronómico, Universidad Nacional de Córdoba

Abstract

Iron abundances, surface gravities, effective temperatures and masses of 14 red giants and 16 stars of the giant brunch clump in three old open clusters have been determined from DDO photometry. The masses derived for stars in the post-helium-flash stages of evolution, are systematically lower than those found for the pre-helium-flash red giants, the average difference in log $(m/m_\odot)$ being -0.44. A second result is that the masses of the clump stars are smaller than the corresponding turnoff point masses. A similar trend between the giants and horizontal branch stars in five globular clusters as well as in the evolved stars of M67 and NGC 7789 has been found from existing DDO photometry. These results are interpreted as demonstrating that the post-helium-flash stars undergo mass loss before reaching their helium core burning phase of evolution. We identify the highest luminosity phase of red giant as that during which mass is lost most rapidly.