ESTIMATION OF MG/FE RATIO IN EARLY-TYPE GALAXIES

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Through computed synthetic spectra for individual stars in the Mg_2 index region where different values of [Mg/Fe] were considered, and observed features Fe5270 and Fe5335 in a sample of 80 stars, we derived relations Mg_2 and $<Fe> = f(T_{eff}, \log g, [Fe/H], [Mg/Fe])$. These relations were used to compute integrated indices for single aged populations, where number counts in colour-magnitude diagrams were used. A multi-population model was then built through a convolution of the single stellar population indices with a metallicity and luminosity distribution for elliptical galaxies, where a chemical evolution model includes enrichment by type II and I supernovae. A grid of 80 multi-population models was computed, by varying the efficiency of star formation rate. In Figure 1 are shown the results for [Mg/Fe] = 0.0, 0.3 and 0.6 compared to observational data by Worthey et al. (1992). An average value of [Mg/Fe] = 0.3 is found for the sample ellipticals.

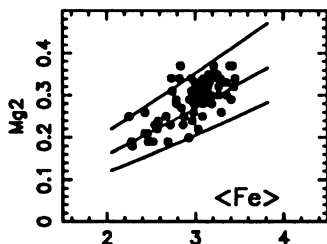Worthey, G. Faber, S.M., Gonzalez, J.J.: 1992, ApJ, 398, 69

Figure 1. Mg_2 vs $<Fe>$ derived for multi-population models computed with [Mg/Fe] = 0.0, 0.3, 0.6 (solid lines) and sample galaxies by Worthey et al. (filled circles)