CHEMICAL ABUNDANCES IN OLD POPULATIONS

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ABSTRACT. Preliminary single-burst population synthesis models are presented for weak and strong spectral features as a function of metallicity for old populations. Models agree with published globular cluster observations as well as theoretical calibrations. For small ellipticals, the galaxies and model predictions agree well in all indices. For the typical giant E, metallicity-insensitive features (G band, Hβ) continue to match the models, while the behavior of metallicity sensitive features (Fe, CN, Mg, Na D) diverges. In giant Es, with increasing metallicity, the light-element indices deepen relative to the iron-peak features far more rapidly than the models. This effect almost certainly indicates that, in the typical giant E, some light elements are enhanced with respect to the iron-peak elements compared to the solar ratios.

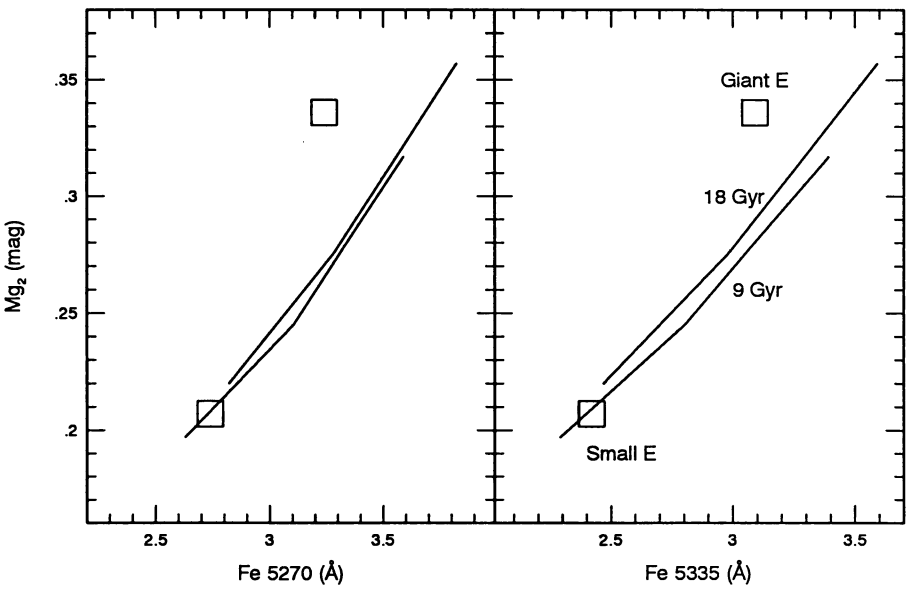

Figure 1. Mg_2 index shown as a function of two Fe indices. Median loci for small and giant ellipticals are shown as squares. Model predictions for burst ages of 9 and 18 Gyr are shown as lines with endpoints at $\pm$ .25 dex in [Fe/H]. No combination of age and metallicity can account for the enhancement of Mg_2 with respect to the iron indices in the giant E galaxies.