THE STRENGTH OF H BETA INDEX AND THE AGES OF OLD STELLAR SYSTEMS

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We have computed the strength of H beta, Mg line indices for integrated globular cluster spectra. For the first time, we have constructed models that include the systematic horizontal-branch (HB) morphology variations along with metallicity and age. Our models suggest that the strength of H beta line index is significantly affected by the presence of HB stars, especially blue HB stars, in the sense that it does not monotonically decrease as metallicity increases, instead it increases and becomes maximum due to the contributions of HB stars. We have figured out that when the distribution of HB stars centered around 9500K, where H beta line index sensitivity on the temperature peaks, the strength of this line index increases as much as 0.65 A.

We find that our results fit in the observed values of the galactic globular clusters very well. We also present that the relation between H beta line index and Mg line indices of the globular clusters in M87 and in NGC1399 are better reproduced by our models indicating that some of globular clusters in giant elliptical galaxies may be couples of years older than the galactic counterparts.