THE TEMPERATURE SCALE FOR A-G SUPERGIANTS FROM 13-COLOR PHOTOMETRY

H. Bravo Alfaro
Instituto Nacional de Astrofísica, Optica y Electrónica
México
and
A. Arellano Ferro and W.J. Schuster
Instituto de Astronomía
Universidad Nacional Autónoma de México

Photoelectric photometry in the 13-color system was obtained for a sample of 71 supergiant stars of spectral types A to G. The process of unreddening this photometry is based on two empirical calibrations previously obtained. Two independent estimates of the effective temperature are considered: *(a)* A calibration effective temperature –intrinsic color, which leads to a temperature estimate for all the stars in our sample; *(b)* the stellar energy distribution from 13-color observations are compared with theoretical distributions and the temperature and superficial gravity are obtained. Intrinsic color temperatures and energy distribution temperatures are found to be in good agreement.

METALLICITIES OF METAL-RICH STARS

S. Castro and B. Barbuy
Instituto Astronômico e Geofísico
Universidade de São Paulo, Brazil

We have applied synthetic spectra calculations to low resolution spectra of metal-rich stars observed by Pickles (1985, ApJS, 59, 33), for two bulge stars (Castro et al. 1992, IAU Symposium 153) and one star in the bulge globular cluster NGC 6553 (Barbuy et al. 1992, A&A, 259, 607), in order to derive their metallicities. The observations were obtained by A. Pickles at the 3.6-m, by T. Richtler at the 1.5-m and by ourselves at the 3.6-m at ESO. The calculations are applied at the Mg triplet region covering the wavelength range $\lambda\lambda$490–540 nm.

For this first sample of stars studied the metallicities are nearly solar, therefore we find no evidences for super-metallicity up to now.

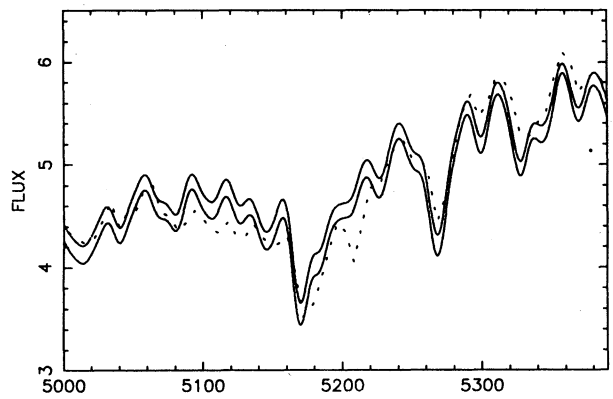

Fig. 1. Observed spectrum (dotted line) and synthetic spectrum (solid line) computed with [Fe/H] = −0.2 and 0.0 of the list by Pickles.

THE SANDAGE PERIOD-SHIFT EFFECT FOR GALACTIC GLOBULAR CLUSTERS: AN ANALYSIS OF EVOLUTIONARY PREDICTIONS

M. Catelan
Instituto Astronômico e Geofísico
Universidade de São Paulo, Brazil

Based upon detailed synthetic horizontal-branch (SHB) models, we analyze how different choices of HB evolutionary tracks can affect the predicted period shift values for the RR Lyrae stars in galactic globular clusters. Previous suggestions by Catelan (1992, A&, 261, 457; 1993, A&AS, in press) that choosing Sweigart's (1987, ApJS, 65, 95) models leads to a decrease in the predicted period shifts between Oosterhoff type I and II clusters with respect to those obtained through use of Lee & Demarque's (1990, ApJS, 73, 709) tracks, thus casting doubt on the Lee, Demarque, & Zinn (1990, ApJ, 350, 155) scenario for the Sandage period-shift effect, are confirmed and quantified. For OoII clusters with not-too-blue HB morphologies (i.e., M15-like), we find that the increase in predicted period-shift values which results from the inclusion of the final 5–10% of HB evolution in the evolutionary tracks [$\simeq$ 10–35% in $\Delta\log P(T_{eff})$] is clearly not sufficient to overcome the decrease which results from the adoption of the former tracks instead of the latter (Lee & Demarque's models lead to larger period-shift values for such clusters, in comparison with the case where Sweigart's tracks are employed, by $\simeq$ 25–50%). Our calculations show that the choice of Sweigart's models leads to a smaller slope for the evolutionary $\Delta\log P(T_{eff})$–[Fe/H] relation by $\simeq$ 0.010 (with respect to the Lee et al. value)–thus further increasing the discrepancy between observational results and theoretical predictions