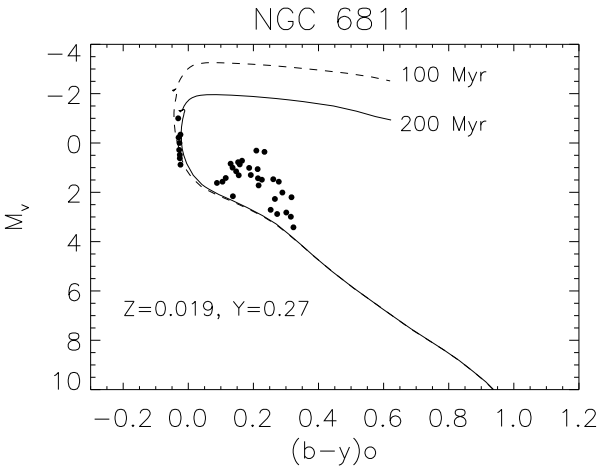

Fig. 4. Color-magnitude diagram of the NGC 6811 cluster considering only the cluster members. The target stars are represented by filled circles. Theoretical isochrones for 100 Myr (dashed line) and 200 Myr (solid line) computed with $Z = 0.019$ are shown.

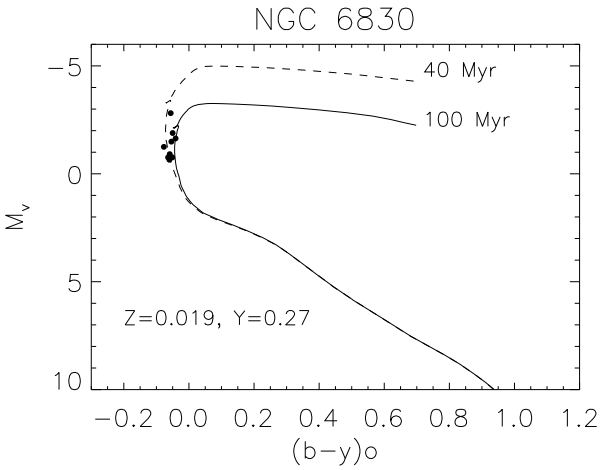

Fig. 5. Color-magnitude diagram of the NGC 6830 cluster considering only the cluster members. The target stars are represented by filled circles. Theoretical isochrones for 40 Myr (dashed line) and 100 Myr (solid line) computed with $Z = 0.019$ are shown.

field-of-view. In particular, Luo et al. (2009) discovered variability in V10–V18; four of them (V10, V12, V15, V16) had been just reported as suspected variables by Rose & Hintz (2007), while the variability of V1–V7 was discovered by van Cauteren et al. (2005). On the other hand, nine stars reported as variables by Rose & Hintz (2007) were not confirmed by Luo et al. (2009). One explanation provided for this inconsistency was that the amplitude of light variations was too low to be detected. Luo et al. 2009 also determined the membership probabilities of twelve variables (V1–V5 and V10–V16) through the proper-motion membership probabilities (PMP) listed by Sanders (1971). From these values they claim that with high probability all of the twelve stars (V1–V3, V5, V10–V16) are cluster members, except for V4. For the the stars without PMP data, namely V6, V7, V17 and V18, based on their position in the CMD diagram, they concluded that the first two are most likely members of the cluster whereas the last two are probably field stars.

On the night of August 6, 2010 (UT) we carried out a very short span of observations in differential photometric mode. The variables we considered were chosen due to their nearness and were, in the notation of Luo et al. (2009): V2, V4, V11 and V14 with W5 and W99 as reference and check stars. Although the time span we observed was too short to detect long period variation, the only star which showed a clear variation was V4, with two clearly discernible peaks of relatively large amplitude of variation, 0.188 mag, and a period of 0.025 d.

From our cluster membership determinations on a star-to-star basis, the conclusion we reach is slightly different from the previous assertions regarding variability. Memberships are determined for V1, V3, V4, V5, V10, V11, V13 and V16. Marginal membership for V12 and V14, non-membership for V15 and we were unable to determine membership for the remaining stars mainly because they do not belong to the spectral classes B, A or F but belong to a latter spectral type which makes them unlikely to be δ Scuti type variables. From the location of these variables in the theoretical grids of LGK86, Figures 6 and 7, we determine their temperatures.

6. CONFIDENCE OF THE RESULTS

As has been said in previous sections, the high accuracy of each observed star was attained by multiply observing each star in sequences of five 10 sec integrations. Hence, mean values and standard deviations were calculated to determine the signal/noise ratio. In all cases, enough star counts were secured to attain a signal to noise ratio large enough to achieve an accuracy better than 0.01 mag. Nevertheless, it is obvious that the brighter stars were more accurately observed than the fainter ones. Quoting Nissen (1988) "as expected from photon statistics considerations the average mean errors increase as we go to fainter magnitudes". Unfortunately, since the aim of this project was to observe as many stars as possible, most of them were observed only twice, and a few, only once. The uncertainties of the season were determined from the differences between