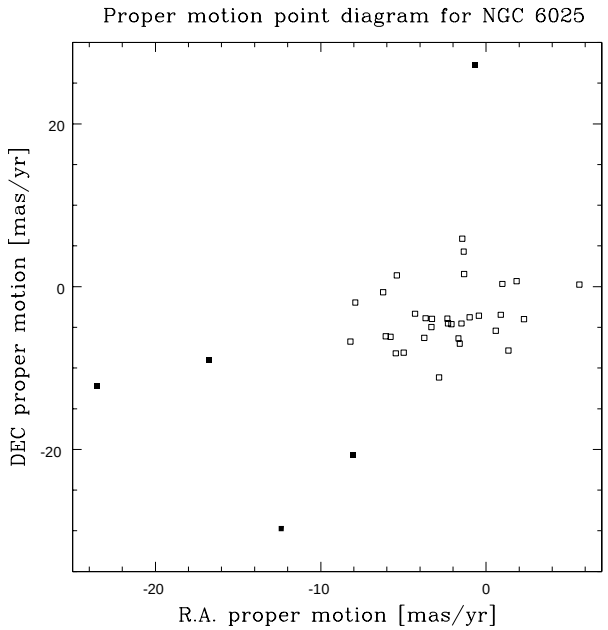

Fig. 2. Proper Motion point diagram for the stars in NGC 6025. Filled squares are non-members according with the 3σ criterium.

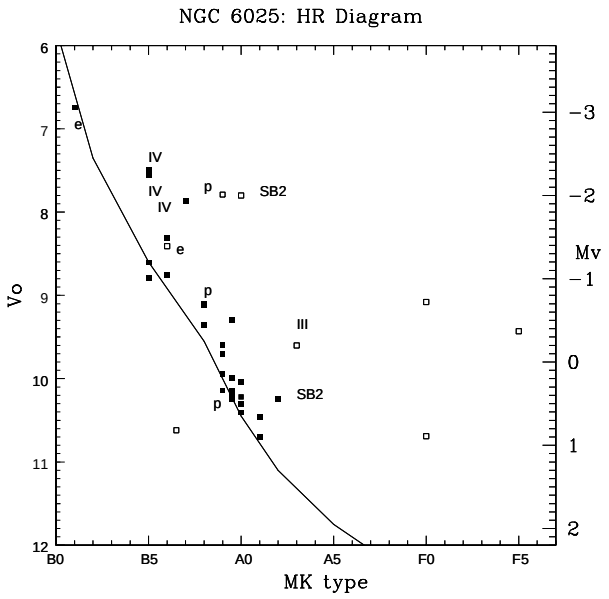

Fig. 3. Observed HR diagram for NGC 6025. Filled squares are probable members while open squares are non-members.

$3.3E(B-V)+0.28(B-V)E(B-V)+0.04E(B-V)^2$ from Allen (2001). Using the calibration between M_v and MK spectral types published by Allen (2001) we derived a true distance modulus for each star and obtained an average true distance modulus for the cluster $(m_v - M_v) = 9.80 \pm 0.06$ (pe of the mean which corresponds to 912 pc) using only the probable members as indicated in Table 1. We have not included neither CP, Be, giants nor binaries in the calculation. It is interesting to note the uncertainties in the Hipparcos parallaxes for stars 1, 2, and 3 that imply distances larger than 1 kpc. The errors in their parallaxes quoted in the Hipparcos catalogue are as large as the parallaxes themselves. We also want to point out a significant difference in the absolute visual magnitude vs MK type calibration between Allen (2001) and Gray & Corbally (2009) for the range B8-A2, which is an important range in this cluster. The visual absolute magnitude difference for the A0 V reaches 0.75 magnitudes, but it is 0.6 magnitudes for A2 V, in the sense that Allen's calibration is brighter than Gray & Corbally's. For late A stars the calibrations agree. To choose one or the other calibration to derive the spectroscopic distance of NGC 6025 is important, because the distance may increase or decrease by almost 50%. We have used Allen (2001) in order to keep consistency with our previous results on open cluster classification. The HR diagram for NGC 6025 is presented in Figure 3 where the absolute magnitude scale was drawn for a distance modulus of 9.8 mag. The main sequence has been taken from Allen (2001). Emission line stars, evolved stars, binaries and Bp-Ap stars were labeled. Probable non-members as indicated in Table 1 were plotted as open squares in Figure 3.

3.2. *Age*

We checked the age, taking into account that the earliest type on the main sequence of the cluster is B6 V. This implies a mass of 5.2 solar masses according to the calibration by Allen (2001). In such a case, the maximum age of the cluster should be 88 million years old using Schaller et al.'s (1992) results. This agrees quite well with the old determination by Kilambi (1975) (90 million years). We also checked the age using the isochrone grids calculated by Girardi et al. (2000). We plotted isochrones for solar composition on a $B-V$ vs Mv HR diagram and the best fit corresponds to log(age) = 7.9 (80 million years). So we have adopted 84 ± 4 million years as the most probable age determined in this paper (log(age) = 7.92).

3.3. *Axial Rotational velocities*

For the determination of the projected rotation velocities we have used as standards those from the Slettebak's system (Slettebak 1975). Calibration curves were constructed between the $fwhm$ of the