

Proposal for targets located in Field 4 of the extended K2 mission

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The members of the Hyades open cluster define a coherent and homogeneous sample of coeval stars and systems which all share fundamental properties such as age, distance and chemical composition (initial metallicity). Because of its relatively short distance from the Sun (46.34 ± 0.27 pc, Perryman et al. 1998) extensive information is available both with respect to the cluster properties as well as with respect to its individual members. The initial He abundance (Y) equals 0.255 ± 0.013 (Lebreton et al. 2001) and the metal mass fraction (Z) corresponds to 0.020 ± 0.004 . An isochrone of age close to 650 Myr fits very well the members on the main sequence. Membership probabilities are available from a variety of techniques including also trigonometric parallaxes (Perryman et al. '98). Clusters represent a powerful tool for detailed comparative studies of the processes inside stars which have common overall properties but differ in mass and thus evolution. It is therefore important to perform an in-depth study of a few of its more interesting members.

Several bright members are crucial for a deep understanding of the pulsational characteristics in relation to the observed fundamental stellar properties: they consist of three δ Scuti stars, two red giant stars (RG) and one BY Dra type variable star located in the field (cf. Table 1).

Furthermore, binary and multiple star systems are fundamental for providing accurate knowledge about the properties of their components. One ellipsoidal binary system and various spectroscopic and/or interferometric binaries which are highly probable members (cf. Table 2) constitute ideal targets for an intensive monitoring of their flux variations since these results will rely on a combined analysis based on several independent techniques.