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# Hare&Hounds Exercise for Stellar Ages and Masses in the Context of FGK Stars with and without Asteroseismology.

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## Abstract

Accurate and precise determination of the global properties, such as ages and masses of stars, is a fundamental step in order to characterize the host-planet systems. The advanced techniques offered by Asteroseismology have given us fundamental additional constraints that enormously increased our ability to model those stars. However the derived quantities are usually presented in literature case-by-case (i.e. once a planet candidate is detected). This results in a non-homogeneous census of stars, caused by the use of different optimization methods coupled with several input physics adopted in stellar models. Therefore many tests have been performed with the aim of identifying and assessing the impact on the derived stellar properties of several pipelines. Nevertheless many of the targets in the PLATO mission will not benefit from the advantage of having asteroseismic data. In this talk we present the team effort by the Stellar Age-Mass-Radius sub-WG of the Ariel Consortium for evaluating the accuracy of FGK stars on mass and age using several pipelines to estimate stellar properties, by data comparison with pre-computed grids of evolutionary tracks. A forward modeling hare-and-hounds (H&H) exercise was conducted using 5 optimizations pipelines (BASTA, CLES-on-the-fly, Isochrone Placement, PARAM, AIMS/SPinS) and 5 different stellar evolution grids (BaSTI, CLES, GARSTEC, MESA, PARSEC), deriving stellar properties from sets of observational constraints with and without seismology. This will in turn allow us to evaluate the accuracy of the results and reliability of the associated error bars. A benchmarking exercise and the release of consolidated stellar properties was also conducted.

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