

Título/Title:

Development of a new method for the determination of the ages of stars (part 1: diagnostics of the stellar cores)

Orientador/Supervisor:

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Descrição/Description:

The determination of the stellar ages is of fundamental importance in a diversity of areas of astrophysics, including the formation and evolution of exoplanetary systems, the history of our Galaxy, and the theory of stellar evolution. With the development and launch of space missions from NASA and ESA dedicated to the detection of exoplanets and the study of their host stars, the determination of stellar ages became even more important.

In this project the student will address the development of a new method for the determination of stellar ages. This new method is based on the combination of observations that sense particular regions of the star. In particular, the student will:

- 1) Starting from a sample of stellar models, compute diagnostics based on the frequencies of stellar oscillations that relate directly with the innermost layers of the star.
- 2) Analyse, in a systematic manner, the dependence of these diagnostics on stellar age.
- 3) Time allowing, apply the method to real data of stars.