Título/Title:

SOAP united

Orientador/Supervisor:

Susana Barros (susana.barros@astro.up.pt)

Sergio Sousa (sergio.sousa@astro.up.pt)

Local do Estágio/Host Place:

IA-Porto (CAUP).

Descrição/Description:

We propose to improve the current implementation of a very specific astrophysics tool entitled SOAP (Spot Oscillation And Planet). The code is basically in Python with interfaces with some specific C libraries. Currently there are already several implementations of SOAP reported in the literature (SOAP3.0 - Akinsanmi et al. 2018); SOAP2 and SOAP-T (Oshagh et al.2013; Dumusque et al. 2014; Boisse et al. 2012). This tool uses a grid based description of the stellar surface to simulate the photometric and RV modulation generated by a planetary transit in front of a rotating spotted stellar disk.

The goal of this project is to first study the current implementation of SOAP, understand its based design and combine the existent implementations of SOAP into a master code. The goal is that the new design will encapsulate all the features that are spread in between the different implementations. To achieve this goal the new design should consider a modular approach to be easy to switch on or off several of the features of the codes.

If there is time the student can explore the optimization of the code or to include a user friendly interface to run the code (e.g. a web interface tool).

Requisitos/Requirements:

The student should be able to program in python and have at least basic knowledge of C.