Título/Title:
Chromospheric emission as a proxy for stellar activity: a tool for the detection of exoplanets

Orientadores/Supervisors:
João J. G. Lima and Pedro Figueira (IA-Porto) jlima@astro.up.pt, Pedro.Figueira@astro.up.pt

Descrição/Description:
On our Sun, the activity level is related to the chromospheric emission of the Ca II K line. The study of activity is key to separating parasite signals from real ones and as such detect the lowest-mass planets by radial velocity. The goal of this project is to model the stellar chromospheric emission in non-resolved stars in order to disentangle its signal from the signal associated with the presence of exoplanets around those stars.

In the first part, the student should start by investigating the relation between chromospheric emission and solar activity, using solar data. In the second part, this chromospheric emission should be modeled using a very simple description and integrated in the SOAP (Spot, Oscillation and Planet) software tool.

This study will push forward our ability to detect the lightest planets using state-of-the-art instruments such as the ESPRESSO planet-hunter.

Requisitos/Requirements:
The candidate should have some experience in programming in C and/or Python, the languages used in SOAP.