

Título/Title:

Spectroscopic characterization of solar-type stars

Orientador/Supervisor:

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Descrição/Description:

The characterization of stars is a crucial step in many Astrophysics topics, going from the study of individual stars, or the understanding of specific types of stars, passing by the full characterization of new planetary systems up to even the study and understanding of our galaxy. In this project we will use spectroscopy as a tool for the characterization of solar types stars. More specifically we want to explore one of the spectroscopic analysis methods, line-ratios, considered to be one of most precise methods to derive effective temperatures.

This method has been applied before in many works (e.g. Teixeira et al. 2016 A&A, 595, 15T), and has been reinvented to also be able to estimate the stellar metallicities through the use of calibrations using real high quality spectra, but limited to a specific range in the stellar parameter space. In this project we want to use stellar atmosphere models (e.g. Kurucz) to fine-tune the line-ratio calibrations and increase its application to a wider parameter space.

Requisitos/Requirements:

The candidate is expected to have some knowledge of numerical methods and basic knowledge of computer programming (preference for Python). It is expected that the candidate will be able to run some codes, and analyze the data to identify new line ratios that could be used in the spectroscopic characterization of stars.