

**Título/Title:**

What is the best way to characterize your exoplanet ?

**Área/Area:**

Exoplanets

**Orientador/Supervisor:**

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**Local do Estágio/Host Place:**

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**Descrição/Description:**

Thousands of extra-solar planets have been found (see: <http://exoplanet.eu/catalog/>). Most of these planets have been discovered by staring at a star hoping to witness the small influence of a planet. When the hint of a planet is detected, the next step is to characterize it: Measure its mass and radius. This characterization is done by comparing the observations to a model. The parameters of the model are tuned to find the best fit to the observations.

These parameters include the mass and radius of the planet and when the best fit is found, the mass and radius are known.

Exoplanet sciences thus rely on our capacity to find the best fit. As a consequence over the last years, fitting algorithms have received a lot of attention.

The objective of this project is to compare two of the algorithms used for exoplanet data analysis: Monte Carlo Markov Chains and Nested Sampling.

The student will apply the two algorithms to the same datasets and compare their performances providing the first comparison of this kind.

All the software and models required for this project will be provided by the supervisors.

**Requisitos/Requirements:**

The project does not require prior knowledge of astronomy and/or exoplanets. The candidate is expected to have working knowledge of the computer programming language Python.