

Project Title: Studying exoplanet's interior-atmosphere connection

Project description: Observations of exoplanet atmospheres are showing us the abundances of elements in dozens of exoplanets. Future instrumentation specially designed to observe exoplanet atmospheres (e.g. JWST, ARIEL), will provide even more data, moving us to an era of exoplanet characterisation.

In order to know what information are these abundances telling us about the formation history of the planet we need to know more about their interiors. Are the heavy elements homogeneously distributed (and then the observations in the atmospheres are showing also the mean abundances in the planet)? Or are they more abundant in the interior than in the atmosphere? Do these planets have a core? Understanding the interiors of giant planets is essential to know more about what we can learn from these observations. In this context, the aim of this project is to study interiors of exoplanets analysing the influence of different parameters in their internal structure and evolution and determining which is the most likely structure of these planets and the link with their atmospheres. We will perform models in the context of the upcoming ARIEL (ESA) mission (the advisor is leader of the ARIEL chemistry working group), towards a better interpretation of the atmospheric data.

Supervisor: Yamila Miguel

Selection criteria: Students with background in physics astronomy or geophysics. Knowledge of programming.

Applications:

To apply for this vacancy, please send an email to ymiguel@strw.leidenuniv.nl. Please ensure that you upload the following additional documents quoting the project title:

- Curriculum vitae;
- Bachelor's and master's transcripts;
- (Draft of) MSc thesis.

Deadline: June 1st 2021