**Atmospheres on rocky exoplanets : TRAPPIST-1b**

A new window opens to study the family of rocky planets and super-Earths with the launch of JWST. They are expected to have a wide range of properties ranging from no atmosphere to extended ones, hazes and clouds, and various compositions.
The objective of my thesis is to focus on modelling the atmosphere of these planets, measuring the abundances of atmospheric molecules, temperature profiles, and identifying the presence and nature of clouds and hazes.

In this talk, after briefly presenting the TRAPPIST-1 system, I will present my current investigation of the possibility of an atmosphere on TRAPPIST1b that would be compatible with the recent mesurement of its thermal emission1 using the F1500W filter of the MIRI instrument on JWST. The two investigations I consider are: 1. Can thin atmospheres (composed of CO2 or any other molecule) be compatible with observations? If so, are they stable regarding atmospheric collapse? 2. Can thick atmospheres (depleted in CO2) be compatible with observations? If so, for which range of atmospheric compositions?

*1. Greene, T.P., Bell, T.J., Ducrot, E. et al. Thermal Emission from the Earth-sized Exoplanet TRAPPIST-1 b using JWST. Nature (2023). https://doi.org/10.1038/s41586-023-05951-7*