

# *Irradiation and impact of stellar variability on exoplanetary atmospheres*

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27-28/09/2021

kick-off CELS meeting



# About me



- Bachelor in Physics and Master in Astronomy and Astrophysics at La Sapienza University, Rome
- Master thesis UAB
- Astrophysics and Planetary Science Marie Curie PhD fellow at the Niels Bohr Institute, University of Copenhagen

# Scientific interests

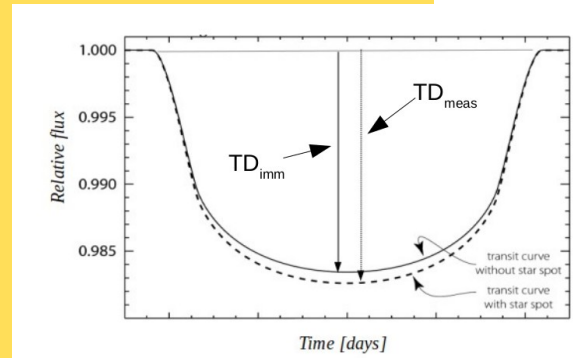
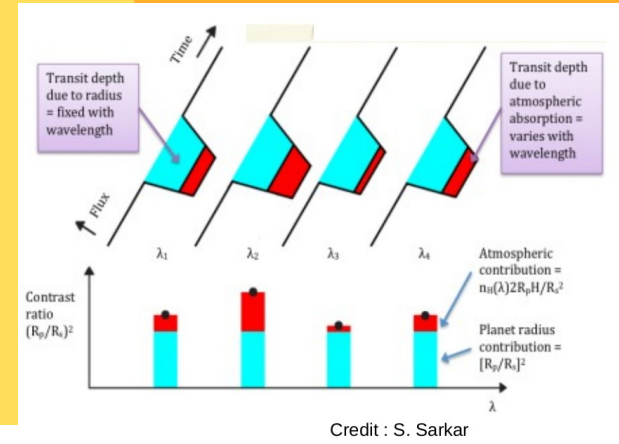
- Exoplanetary atmospheres
- Stellar activity and influence on exoplanetary spectra
- Hot Jupiters modelling

# Previous work

- Lab project: *'Prediction of the targets's observability and noise for measures of exoplanets's phase curves at Dome C observatory in Antarctica, with telescope ASTEP 400'*
- Master thesis : *'Study of stellar activity impact on spectroscopic measurements of transiting exoplanets with ARIEL'*, supervisors E. Pascale and I. Ribas

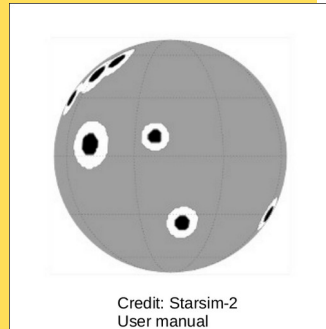
# Master thesis: modelling impact of spots on the transit depth

- Transmission spectra given by the modulation of the transit depth at different wavelength
- Spots on the star make it appear 'colder' on average



# Master thesis: modelling impact of spots on the transit depth

- Modelling typical M dwarf's activity
- Using ARIEL space mission photometric filters to compute the Transit Depth Variation induced by the presence of spots

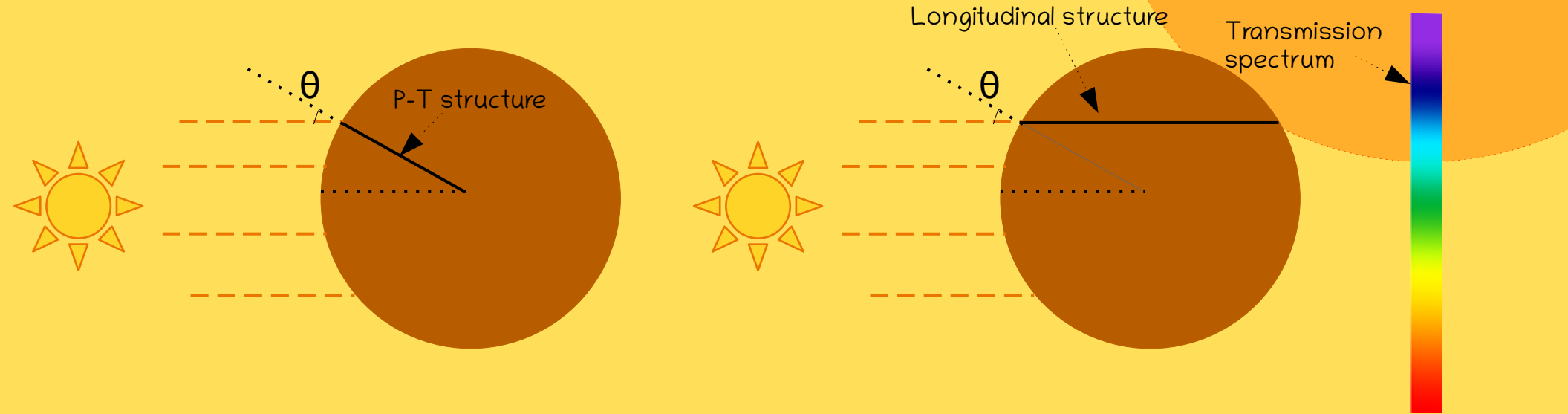




# PhD project

- Modelling Hot Jupiters atmospheres and transmission spectra
- Investigate the influence of the host star irradiation on the chemical and thermodynamical equilibrium
- Study the impact of stellar activity on said structure

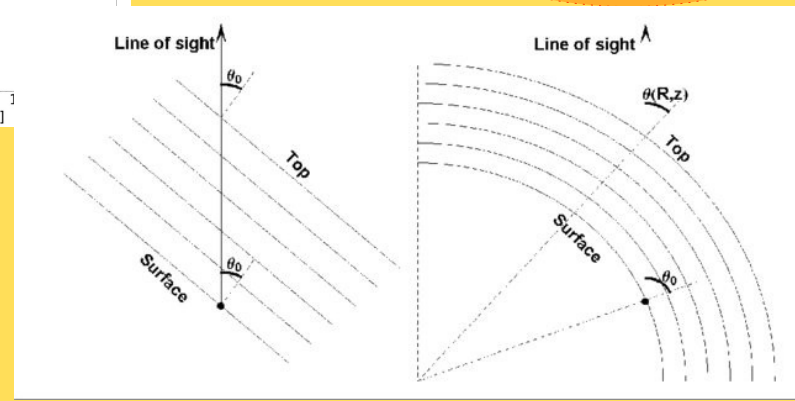
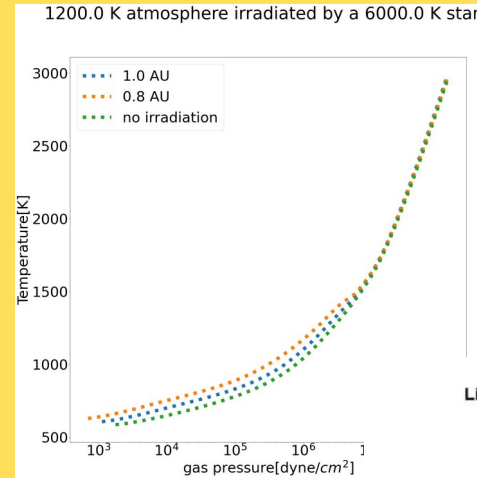
# How does the irradiation from the host star influence the atmospheric structure of exoplanets?





# Methods

- MARCS code (Gustafson et al, 2008) + GGchem (Woitke et al 2018)
- Compute the transmission spectrum from the PT structure.





Thank you for the attention

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