

## **Characterising Hot-Jupiters' atmospheres with observations and modelling**

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Exoplanet transit photometry and spectroscopy are currently the best techniques to probe the atmospheres of extrasolar worlds. The best targets to be observed with these methods, are the planets that orbit very close to their parent star, both because their probability to transit grows and their atmospheres are warmer and more expanded, hence easier to probe. These characteristics are met by the so called Hot-Jupiters, massive low-density gaseous planets orbiting very close-in. Phase-curves allow to observe the change in brightness in the combined light of the planet-star system, also for non-transiting exoplanets.

We review here the most crucial observations performed with the Hubble and Spitzer Space Telescopes at multiple wavelengths, and the most successful models proposed in the literature to plan and interpret those observations. In particular we will focus on most recent observations and modelling claiming the detection of water vapour in the atmospheres of these planets. Further into the future, the James Webb Space Telescope will allow to probe the atmospheres of smaller size-planets with the same techniques. We briefly report here the results expected for hot and warm Neptunes, or transiting terrestrial planets.