

## **A candidate non-transiting hot Neptune around a *Kepler* solar-type star**

Close-in low-mass planets experience dramatic atmospheric escape under the action of stellar irradiation, resulting in the existence of a depleted region in the mass-radius diagram referred as the Neptune desert, populated only by a few planetary objects. In this talk, combining *Kepler*, TESS and HARPS-N observation, I will present evidence that KIC9139163, a well characterised solar-type star, hosts the first non-transiting exoplanet detected in the Neptunian desert. We carry out a first attempt at characterising the properties of the candidate planet. In particular, we argue that the phase difference observed in the signal between the *Kepler* and TESS phase curves can be interpreted as a signature of decadal atmospheric variability. If definitely confirmed, this candidate would represent a privileged target to study the atmospheric dynamics in hot Neptunes.