



Rome Joint Astrophysics Colloquia

The hot Neptune desert:

Neptunian planet demographics, validation, and PLATO prospects

Hot Neptunian planets, that is Neptune-size planets at short orbital periods, occupy a scarcely populated region in the radius–period plane. The origin of this so-called hot Neptune desert is a key puzzle for theories of planetary formation. I will present recent results on the demographics of Neptunian planets in and around the desert, showing how revised stellar properties and homogeneous vetting of TESS candidates modify the inferred occurrence rates and the desert's structure. I will summarise the validation of short-period Neptunes and the construction of homogeneous catalogues, and outline how irradiation and mass-loss processes sculpt the hot Neptune desert. Finally, I will briefly discuss the prospect for the ESA PLATO mission to obtain new data and deeper insight into this riddle, and our recent work related to PLATO's broader goal of detecting and characterising potentially habitable planets.



Giovanni Covone

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Wednesday 17 December 2025 time 15:30 CET

Join in person at Aula Grassano (Physics Dept. Tor Vergata University of Rome)
or online with the MS Teams App <https://rebrand.ly/JAC-Covone>

If attending IN PERSON, we are organizing a COFFEE BREAK from 15:00

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