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From the Desert into the Savanna: a trek across the exo-Neptunian landscape

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Close-in exoplanets are shaped by complex atmospheric and dynamical processes, to which exo-Neptunes appear to be particularly sensitive. While atmospheric erosion played a major role in forming the Neptunian "Desert" (a dearth of hot Neptunes at short orbital periods), it is not clear how far into the "Savanna" (a milder deficit of warm Neptunes at longer periods) this process is active and when in a planet life it occurs. Determining the fraction of planets brought close-in by early disk-driven or late high-eccentricity migration is thus essential to understand their overall evolution. This is the main goal of ATREIDES, a large collaboration bringing together observers and theoreticians experts in stars, planets, and their atmospheric and dynamical evolution, to exploit high-resolution transit spectroscopy and photometry of more than 60 close-in Neptunes. I will present the orbital architectures derived from the homogeneous analysis of Rossiter-McLaughlin signals measured with the VLT/ESPRESSO, and how their interpretation using secular evolutionary simulations brings constraints of the origins of the Neptunian "Ridge", an overdensity of planets recently found to separate the Desert and Savanna.

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