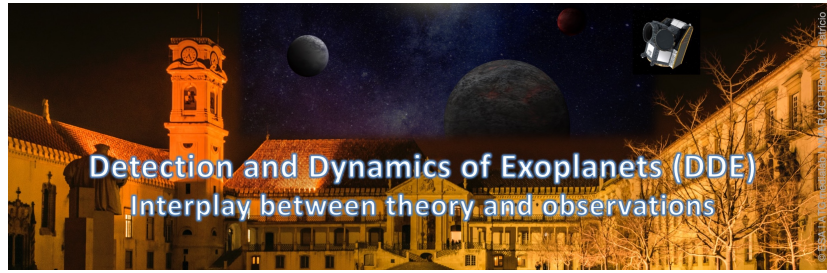


Detection and Dynamics of Exoplanets (DDE): Interplay between theory and observations



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An updated view on the infant multi-planetary system V1298 Tau through dedicated spectroscopic, photometric, and radio follow-up campaigns

Monday, July 7, 2025 10:15 AM (15 minutes)

V1298 Tau is a very young (20 ± 10 Myr) multi-planetary system that represents a benchmark laboratory for studying the early stages of planets' formation and evolution. Mainly due to the high levels of stellar magnetic activity, an undisputed description of the system has remained elusive so far, including the measurements of the planetary masses and densities, and the characterisation of its orbital architecture. With the aim of shedding light on this enigmatic system, we will present preliminary results from intensive spectroscopic and photometric follow-up campaigns, through which we collected almost 400 radial velocity measurements with HARPS-N@TNG, and several additional ground- and space-based transits of the four confirmed planets. These new data and results are expected to provide a significant contribution towards the understanding of the formation and dynamical evolution pathways of V1298 Tau in the first few Myrs, making this a benchmark system among the still limited sample of infant exoplanets detected so far. Additionally, we will report on the first detection of variable radio emission from V1298 Tau, which contributes to the understanding of the stellar magnetic activity properties, and the impact on planetary evolution at the early stages.

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Session Classification: RV-detected multiple systems