

Why stellar characterisation (and homogeneity) matter for planetary systems ?

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The interpretation of exoplanetary systems fundamentally relies on our knowledge of their host stars. Simply put, understanding planets begins with understanding their stars. In this talk, I will present the latest results from the Ariel Stellar Characterisation Working Group, focusing on the homogeneous determination of Ariel host stars parameters. I will discuss how systematic differences in stellar characterisation can bias our understanding of planetary populations and hinder meaningful comparisons between planetary systems. Homogeneous stellar characterisation provides the foundation for comparison planetology, enabling reliable investigations of planetary architectures, compositions, and demographics. Beyond the stars themselves, the Galactic environment in which planetary systems form and evolve also plays an important role in shaping the nature of planets and the architectures of planetary systems. Accurate and homogeneous stellar parameters are therefore essential for linking planetary atmospheres to their stellar and Galactic origins. I will highlight how these measurements allow us to place planetary systems into their proper evolutionary context and to trace the formation and evolution of planets in a statistically robust way.