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Anfiteatro de Física, Escola de Ciências, Campus de
Gualtar

Resolving the Hubble Tension with New Early Dark Energy

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Image: NASA, ESA, CSA, STScI

Abstract: The Hubble tension is a discrepancy between different observations of the expansion rate of the universe. It offers what appears to be a unique opportunity for particle cosmology: While a zoo of different models can explain primordial inflation and dark matter, we are struggling to find a single convincing solution to the Hubble tension. This implies that any proposed solution is bound to be testable and falsifiable in the near future and to provide illuminating, strong constraints on the dark sector microphysics. I will discuss what characterises the most promising class of solutions, how it is pointing us towards a new phase of dark energy (New Early Dark Energy), and how the new microphysics explaining the Hubble tension might also be related to recent anomalies in the baryonic acoustic oscillations of the matter power spectrum of large-scale structure, which have shown up in the DESI DR2 dataset, and sometimes, perhaps wrongly, interpreted as late-time evolving dark energy.