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Simple-graduated dark energy and spatial curvature: Do the simplest negative energy densities alleviate the H0 tension?

Wednesday 8 September 2021 14:30 (20 minutes)

In the first part of this talk, I will review the Hubble tension and then describe some theoretical efforts to alleviate it—as well as the discrepancy with the BAO Lyman-α data —via the dark energy models that yield negative density values in the past. I will then discuss a recent work with two minimal extensions of the ΛCDM model, together or separately, can realize such a scenario: (i) The spatial curvature, which, in the case of spatially closed universe, mimics a negative density source, (ii) Simple-graduated dark energy, which promotes the null inertial mass density of the usual vacuum energy to an arbitrary constant —if negative, the corresponding energy density decreases with redshift similar to the phantom models, but unlike them crosses below zero at a certain redshift. I will close the talk by presenting the results when these are constrained using the latest observational data.

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