

Cosmic tensions and interactions in the dark sector

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The persistent discrepancy between theoretical predictions of the standard cosmological model and precision measurements from various observational probes remains a significant challenge in modern cosmology. Over the past decade, mounting evidence for persistent discrepancies in the inferred values of cosmological parameters derived from both model-dependent and -independent methodologies has motivated the proposal of alternatives to the standard paradigm. In this talk, I will focus on the exploration of potential missing physics within the standard model, particularly the enigmatic dark sector comprising dark matter and dark energy, and any potential interactions between them. Leveraging on phenomenology considerations and fluid approximations for the physical nature of the dark sector and its underlying dynamics, we assess the viability of various models in reconciling the observed cosmological tensions.

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