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Dark dimension boundary or shiny bulk? - Modular Quintessence

Thursday 10 July 2025 09:00 (30 minutes)

The latest DESI DR2 results, when combined with other independent cosmological data on the Cosmic Microwave Background and supernovas, suggest a preference for dynamical dark energy.
I the talk a will present a cosmological scenario, which features two distinct scalar fields.
One governs the magnitude of the present-day dark energy density and is related to the size of extra-dimensions. Accounting for the observed smallness of this energy density requires the scalar to reside near the boundary of field space.
The second field, responsible for the time evolution of dark energy and associated with the string coupling, must instead lie in the bulk to remain consistent with the non-observation of light string states. We show that a natural candidate for such dark energy dynamics is a quintessence modular-invariant potential, in which the second scalar field rolls down a negatively curved slope, starting from a self-dual critical point. We find that this scenario is in good agreement with the latest findings by DESI.

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