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Phenomenology: Scalar-tensor theories to tackle cosmological tensions

Tuesday, September 5, 2023 2:00 PM (30 minutes)

We investigate different extended scalar-tensor theories of gravity. Particularly, we study the theory in the Jordan frame with different non-minimal coupling, with a standard and non-standard kinetic term, and the impact of a cubic interaction term. The nonminimally coupled scalar field, regulating the gravitational strength, moves around recombination because of its coupling to pressureless matter. This mechanism induces a degeneracy between the non-minimal coupling parameters and the value of the Hubble constant \boxtimes 0. Depending on the evolution of the scalar field, regulated by the sign of the kinetic term and by the presence of the Galileon term, these models can lead to a larger or lower value of \boxtimes 0 compared to the standard \land CDM model and to different value of \boxtimes 8. We explore the joint constraints with publicly available cosmological data, and we forecast the constraints expected by future cosmological observations.

Presenter: BALLARDINI, Mario (University of Ferrara) **Session Classification:** Parallel Sessions