

Simultaneous alleviation of major cosmological tensions through Λ

msCDMcosmology

Saturday, September 9, 2023 11:30 AM (1 hour)

In this talk, we will first give a brief introduction to the Λ_s CDM model, which explores the recent conjecture suggesting a rapid transition of the universe from anti-de Sitter vacua to de Sitter vacua, viz., the cosmological constant switches sign from negative to positive at redshift $z_{\dagger} \sim 1.7$, inspired by the graduated dark energy (gDE). And then, we will present the results of its comprehensive observational analysis showing that, predicting $z_{\dagger} \approx 1.7$, Λ_s CDM simultaneously addresses the major cosmological tensions of the standard Λ CDM model, viz., the H_0 , M_B , and S_8 tensions, along with some other less significant tensions such as the BAO Ly- α discrepancy. We will conclude with a theoretical discussion on the possible physical mechanisms from which this scenario may be realized and their implications for our current understanding of the universe.

Presenter: Prof. AKARSU, Ozgur (Istanbul Technical University)