

Accelerating Universe and Decaying Vacuum Cosmology

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Summary

The current accelerating cosmological model still lacks a framework in which the early inflationary phase of the universe smoothly matches the radiation epoch and evolves to the present 'quasi' de Sitter space-time. No less intriguing is that the value of the effective vacuum energy density nowadays is vastly smaller than the value that triggered inflation at the very early Universe

In my talk, after discuss the success and problems behind the standard Λ CDM model (constant Λ), I will focus on a class of phenomenological dynamical Λ -models or decaying vacuum cosmologies. It will be argued that such scenario provides a complete cosmological picture powered by the same ingredient, and also shed some light on the theoretical problems plaguing the present cosmic concordance cosmology.

The upshot is a Universe model evolving continuously between two extreme phases driven by the decaying cosmic vacuum state, more precisely, from de Sitter to de Sitter.