

Looking for a healthy nonsingular bounce

Wednesday, 27 May 2020 10:00 (50 minutes)

In this talk I plan to review the cosmological paradigm of nonsingular bounces, which is often regarded as an alternative to inflation in describing the very early universe. Such a scenario, while can avoid the big bang spacetime singularity, often suffers from conceptual challenges, namely, the dangerous growth of anisotropic stress, the possibly existence of ghosts, gradient instabilities or even superluminal propagation of primordial perturbations. I will introduce how these issues can be addressed in turn, which push the study on nonsingular bounce towards a possibly healthy version. Recently, a novel nonsingular bounce model was proposed based on the most generic scalar tensor theory dubbed the DHOST theory, which can mostly resolve the aforementioned conceptual challenges within a covariant form. This new cosmology shall inspire a series of follow-up studies from theoretical, phenomenological and observational perspectives.

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