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(I) Spectrum of Cuscuton Bounce

Tuesday, June 8, 2021 4:10 PM (25 minutes)

I will argue why we need to remain objective about the physics of the early universe and explore different scenarios. In particular, I will present a cosmological bounce model based on Cuscuton gravity that does not have any ghosts or curvature instabilities. I will then discuss if Cuscuton bounce can provide an alternative to inflation for generating near scale-invariant scalar perturbations. While a single field Cuscuton bounce generically produces a strongly blue power spectrum (for a variety of initial/boundary conditions), scale-invariant entropy modes can be generated in a spectator field kinetically coupled to the primary field. Furthermore, this solution has no singularity, nor requires an ad hoc matching condition. Tensor modes (or gravitational waves) in Cuscuton bounce are also stable but similar to most bounce models, the produced spectrum is strongly blue and unobservable.

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