

Scale-dependent FLRW Cosmology

Thursday, 29 November 2018 16:30 (15 minutes)

In the present work, we investigate the scale-dependence of the FLRW cosmology at the level of the effective action in the presence of a cosmological constant. We promote the classical parameters of the theory, $\{G_0, (\cdots)_0\}$, to scale-dependent couplings, $\{G_k, (\cdots)_k\}$, and then we solve the corresponding effective Einstein's field equations. To close the system of equations we impose the "null energy condition". Furthermore, perfect-fluid like parameters are induced via the scale-dependent gravitational coupling. Finally, to exemplify the effect of the running of the couplings on the properties of the scale-dependent FLRW solution in the underlying theory, we present a few concrete examples.

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Session Classification: Parallel Talks B

Track Classification: Cosmology