



## Cosmological Inflation and the Standard Model of Particle Physics

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Condition: New. Publisher/Verlag: LAP Lambert Academic Publishing | Inflation provides a solution for a number of problems in cosmology but the nature of the inflaton is not yet known | Inflation is the idea that in the early history of the Universe a local Lorentz invariant energy density (an effective cosmological term) dominated the equation of state, causing exponential expansion. It solves a great deal of problems in cosmology while introducing others. One of these additional problems is the origin of the inflaton field that produced the inflation. Extrapolating the Standard Model of Cosmology and the gauge theory of electroweak and strong interactions to very early times and therefore to extremely high energies, we can make verifiable predictions about certain observables. One option is to look for inflationary dynamics based on degrees of freedom already present in the Standard Model of Elementary Physics as it has been shown that such minimal classical Lagrangians can support inflation driven by an interesting interplay between the quartic term and the non-minimal coupling term, the so-called running inflation. Solving the renormalization group equations up to the Planck energy scale, cosmological parameters are found to be dependent on the top quark and Higgs boson...



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