



Entropy Production during Asymptotically Safe Inflation

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The Asymptotic Safety scenario predicts that the deep ultraviolet of Quantum Einstein Gravity is governed by a nontrivial renormalization group fixed point. Analyzing its implications for cosmology using renormalization group improved Einstein equations we find that it can give rise to a phase of inflationary expansion in the early Universe. Inflation is a pure quantum effect here and requires no inflaton field. It is driven by the cosmological constant and ends automatically when the renormalization group evolution has reduced the vacuum energy to the level of the matter energy density. The quantum gravity effects also provide a natural mechanism for the generation of entropy. It could easily account for the entire entropy of the present Universe in the massless sector.

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