**Quantum corrections to effective potentials of simplest**

**𝜶-attractors**

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The formalism of effective potentials has long been firmly established in quantum field theory and has served as a significant boost for understanding various interactions. The pioneering work of Coleman-Weinberg became a driver for the study of the mechanisms of spontaneous symmetry breaking and found applications in elementary particle physics, cosmology, and condensed matter physics. However, in spite of significant simplicity of the Coleman-Weinberg formalism, the area of its applicability was limited only by renormalisable potentials.

Nevertheless, it turns out that the Bogoliubov-Parasyuk theorem allows us to extend the scope of the study of scalar models and, in general, to study scalar potentials of arbitrary kind (even non renormalisable).

Due to the application of the generalised renormalisation group (RG), it is possible to look a little further into quantum theory, which gives excellent opportunities for studying the effective potentials in various fields of physics.

We have constructed quantum eﬀective potentials and used them to study slow-roll inﬂationary cosmology. We derived the generalised renormalization group equation for the eﬀective potential in the leading logarithmic approximation and applied it to evaluate the potentials of the simplest alpha-attractor models, which are often used in modern models of slow-roll inﬂation. We found that while the one-loop correction strongly aﬀects the potential, breaking its original symmetry, the contribution of higher loops smoothes the behaviour of the potential. However, unlike the $φ^{4}$ - case, we found that the eﬀective potentials preserve spontaneous symmetry breaking when summing all the leading corrections.

**References**

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