

# Leading all-loop quantum contribution to the effective potential in the inflationary cosmology

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In this paper, 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  $T^2$  and  $T^4$ -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  $\phi^4$ -case, we found that the effective potentials preserve spontaneous symmetry breaking when summing all the leading corrections. We calculated the spectral indices  $n_s$  and  $r$  for the effective potentials of both models and found that they are consistent with the observational data for a wide range of parameters of the models.