

## Green's function technique for precise calculation of false vacuum decay rate.

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False vacuum decay is an interesting physical process that recently attracted a lot of attention due to the possible metastability of the electroweak vacuum in the Standard Model at large energies. If it is true that the universe will eventually tunnel in some other energy state with other particle masses and possibly other laws of physics.

In this regard, it is useful to study in detail the metastable vacuum decay in high precision. In this work we use the Green's function technique to calculate one and two loop radiative corrections to the false vacuum decay in quantum field theory with a single scalar field. In order to get analytical result we use the thin wall approximation. In this work we use dimensional regularization and in two different renormalization schemes: Coleman-Weinberg and  $\overline{MS}$ .

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