

Functional determinants and lifetime of the Standard Model

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We revisit the computation of the electroweak vacuum decay rate in the Standard Model, incorporating the full one-loop prefactor and focusing on the gauge degrees of freedom. Using group theoretical arguments, we derive the correct degeneracy factors in the functional determinant and identify an overcounting of transverse modes in previous calculations. The new result modifies the gauge fields' contribution by 6% and leads to a slight decrease of the previously predicted lifetime of the electroweak vacuum.

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