Numerical Evaluation of a Two-Loop Diagram in the Cutoff Regularization

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Abstract: The sunset diagram of $\lambda\Phi^4$ theory is evaluated numerically in cutoff scheme and a nonzero finite term (in accordance with dimensional regularization (DR) result) is found in contrast to published calculations. This finding dramatically reduces the critical couplings for symmetry breaking in the two-loop effective potential discussed in our previous work.

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