

Effective field theory approach for radiative corrections in neutron beta decay

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We study radiative corrections to the neutron beta decay within the top-down effective field theory approach. First, we match the Standard Model to the four-fermion effective field theory specifying the scheme dependence of the Wilson coefficients. To evaluate radiative corrections at scales of the neutron decay, we perform matching to the heavy-baryon chiral perturbation theory for the vector coupling constant. We find an agreement with traditional current-algebra approach at one-loop level and perform detailed evaluation in renormalization-group-improved perturbation theory.

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