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Low-energy effective field theory below the electroweak scale: one-loop renormalization in the 't Hooft-Veltman scheme

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We perform the one-loop renormalization of the low-energy effective field theory (LEFT) in the 't Hooft-Veltman (HV) scheme for γ_5 . We extend the LEFT operator basis by the required set of evanescent operators. Instead of using a pure $\overline{\text{MS}}$ procedure, we renormalize physical operators such that they absorb the finite effects from insertions of evanescent operators as well as finite chiral-symmetry-breaking terms. Our results can be applied to one-loop LEFT calculations in the HV scheme: using our renormalization scheme instead of pure $\overline{\text{MS}}$ leads to results that are manifestly free of spurious chiral-symmetry-breaking terms.

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