

Abstract Submitted
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Radiative corrections to anti-neutrino proton scattering¹ FRED MYHRER, UDIT RAHA, KUNIHARU KUBODERA, University of South Carolina — For the low-energy anti-neutrino reaction, $\bar{\nu}_e + p \rightarrow e^+ + n$, which is of great current interest in connection with on-going high-precision neutrino-oscillation experiments, we calculate the differential cross section in a model-independent effective field theory (EFT), taking into account radiative corrections of order α . In our low-energy EFT, the order- α radiative corrections are considered to be of the same order as the nucleon recoil corrections, which include the “weak magnetism” contribution. In EFT, the short-distance radiative corrections are subsumed into well-defined low-energy constants the values of which can in principle be determined from the available neutron beta-decay data. Furthermore, EFT allows for a systematic evaluation of higher order corrections, providing estimates of theoretical uncertainties in our results.

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