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Radiative corrections to neutrino-nucleon scattering in effective field theory

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Neutrino-nucleon charged-current quasielastic scattering is one of the main ingredients for neutrino-nucleus interaction models. Precise knowledge of this process is crucial for the successful measurements of neutrino oscillation parameters at accelerator-based facilities. Exploiting effective field theory, we factorize neutrino-nucleon quasielastic cross sections into soft, collinear, and hard functions. We evaluate soft and collinear functions from QED and provide a model for hard contributions. Performing resummation, we properly account for large logarithms and provide QED radiative corrections at order ⊠ quantifying the resulting error. We discuss the relevance of radiative corrections depending on conditions of modern and future accelerator-based neutrino experiments.

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