Impact of the NLO Hadronic Effects on the Lepton-Nucleon Scattering

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Please give a brief summary of your poster

Multi-loop effects in electroweak interactions play a crucial role in tests of the Standard Model, and require careful theoretical evaluation. We extended computational packages such as FeynArts and FormCalc for the evaluation of one-loop electroweak radiative corrections for lepton–nucleon scattering and obtained numerical results in good agreement with the current experimental data. In lepton-nucleon interactions, it is important to include hadronic sector as well. So far, the best candidate for the phenomenological description of low-energy QCD processes has been Chiral Perturbation Theory.

In Chiral Perturbation Theory, determining the range of valid and contributing degrees of freedom to a given problem is still often a challenge. However, the recent developments in the automatization of the Next-to-Leading Order calculations in perturbative field theory gives us the possibility to apply these methods to Chiral Perturbation Theory as well. This paper discusses the computational techniques by using hadronic radiative corrections for lepton-nucleon scattering as an example.

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