

Connecting QCD to neutrino nucleus scattering

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The energy spectrum of neutrinos at DUNE is peaked in the few GeV region, where quantifying nuclear model uncertainties arising from nonperturbative quantum chromodynamics (QCD) effects is particularly challenging. A coherent set of theoretical frameworks is required to describe neutrino interactions with nuclei with the level of accuracy needed for the success of DUNE and other precision neutrino oscillation experiments. We envision developments in lattice and perturbative QCD, nuclear effective field theory, and many-body methods that will be incorporated in neutrino event generators to significantly improve the accuracy of neutrino event reconstruction. I will discuss strategies for interfacing between these frameworks and constructing a pipeline for robustly connecting the neutrino-nucleus cross-sections relevant for neutrino-oscillation experiments to QCD.

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