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Improving Neutrino Interaction Modeling with Electron Scattering Measurements in LDMX

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Long-baseline neutrino experiments, like DUNE, aim to make precise measurements of neutrino oscillations to further understand neutrinos and their impact on the matter/anti-matter asymmetry in the universe. These measurements require a good understanding of neutrino interactions on heavy nuclei, which are complicated to model and need input from data. The proposed LDMX experiment can increase understanding neutrino-nucleus scattering by studying analogous processes in electron-nucleus scattering. In this talk we present studies using the GENIE neutrino event generator to study how electron scattering measurements in LDMX could be sensitive to hadronic final state interactions (FSI) with measurements of the outgoing lepton and hadron kinematics, and highlight regions of the measurement phase space of interest for constraining FSI systematic uncertainties. We discuss how this study of electron nucleus scattering, using GENIE and LDMX, complements ongoing neutrino-nucleus scattering studies to better understand neutrinos interactions which will ultimately improve the sensitivity of neutrino experiments.

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