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## Probing Parton Distribution Functions with DUNE

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Neutrinos are a valuable probe for measuring Parton Distribution Functions (PDFs) due to the flavor-dependent nature of their interactions with quarks. Recent comparisons between neutrino-nucleon and charged lepton-nucleon deep inelastic scattering (DIS) data show emerging tensions, which may lead to neutrino exclusive nuclear physics. However, previous neutrino studies have been hindered, in part, by low statistics. Recent advances in neutrino experiments open the door for a new era of high-statistics, good final-state reconstruction, neutrino-nucleus interactions measurements. The Deep Underground Neutrino Experiment (DUNE) is a prime example. This work is a first step to investigate the capability of DUNE to determine PDFs in high Bjorken  $x$  and low  $Q^2$  regions. We find that DUNE may be able to constrain and reduce the error of PDFs in these regions, that currently are in mild tension among different datasets. Moreover, we have conducted an analysis with similar results for charm-tagged events, which show potential to improve the understanding of the strange quark content of nuclei.

### Abstract

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