

Allgemeines Physikalisches Kolloquium

Donnerstag, 07.04.2022 um 16 Uhr c.t.

Prof. Fredrick Olness

Southern Methodist University,
Dallas



The nCTEQ Project: revealing the fundamental character of the strong force

Science is entering a new era in the investigation of nuclear matter, driven by a wealth of precision data from the JLab, HERA, RHIC, & LHC experiments. The nCTEQ project employs advanced theoretical techniques to analyze these data sets comprehensively. While this analysis is performed within the framework of the QCD parton model, we leverage methods and results from Lattice QCD, Machine Learning, as well as other techniques. This work also forms the foundation for discoveries at the future Electron-Ion Collider (EIC), which will address fundamental questions about nuclei's mass, spin, and internal structure. The culmination of these efforts will produce the most detailed picture to date of nuclei, and advance the opportunity to possibly “solve” the underlying QCD theory of strong interactions.