

Three dimensional imaging in Nuclei

Wednesday, June 21, 2023 12:00 PM (30 minutes)

In this talk, I'll discuss our recent work where we perform the first simultaneous global QCD extraction of the transverse momentum dependent (TMD) parton distribution functions and the TMD fragmentation functions in nuclei. We have considered the world set of data from semi-inclusive electron-nucleus deep inelastic scattering and Drell-Yan di-lepton production. In total, this data set consists of 90 data points from HERMES, Fermilab, RHIC and LHC. Working at next-to-leading order and next-to-next-to-leading logarithmic accuracy, we achieve a $\chi^2/dof = 1.196$. In this analysis, we perform the first extraction of nuclear modified TMDs and compare these to those in free nucleons. We also make predictions for the ongoing JLab 12 GeV program and future EIC measurements.

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