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Typ: Talk

Impact of fully coherent energy loss for nPDF extractions

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Nuclear Parton Distribution Functions (nPDF) are an essential tool to predict hard QCD processes in nuclear collisions. Recently various nPDF sets have been extracted using heavy flavour data (D mesons, quarkonia) in pA collisions in the global fits. However, these measurements should be affected by fully coherent energy loss (FCEL) in nuclear matter, which entails a careful treatment in the nPDF determination. As a case study, we evaluate the impact of J/psi suppression data in pA collisions on gluon nPDF using Bayesian reweighing methods, with and without including FCEL. We show that these measurements dramatically shrink the uncertainty of gluon densities, as mentioned in earlier studies. The magnitude of gluon shadowing at small-x, however, is significantly reduced, by about factor of two, when FCEL is taken into account. This result highlights the importance of a careful separation between nPDF effects and energy loss processes and motivates future studies of global nPDF fits with a proper implementation of FCEL.

Experiment/Theory

Theory/Phenomenology

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