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Jet interactions in cold nuclear matter from eHIJING

Deep inelastic scatterings (DIS) of heavy nuclei at future electron-ion colliders start an exciting new era for precision measurement of the partonic structures of the cold nuclear matter. The transverse-momentum dependent (TMD) parton distributions in heavy nuclei can be uniquely studied from nuclear modifications of jet fragmentation and hadron production in semi-inclusive DIS. In the eHIJING event generator, sources of multiple jet-medium collision are sampled from saturation-based models of TMD gluon distribution, which then induces higher-twist corrections to the development of parton shower and hadronization. We perform a systematic analysis of single and double hadron fragmentation functions at various beam energies at CLAS, HERMES, and EMC experiments, and discuss how these observables can be exploited to understand the cold nuclear matter in the EIC era.

Submitted on behalf of a Collaboration?

No

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