

Jet Energy-Energy Correlators in Deep Inelastic Scatterings

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The jet energy-energy correlator (EEC), which measures angular correlations of energy flow inside jets, provides a sensitive probe of jet substructure and its modification by the nuclear medium. We compute the EEC for jets produced in electron-proton and electron-nucleus deep inelastic scattering, focusing on medium-induced corrections arising from final-state interactions in cold nuclear matter. Working at leading order in the QCD coupling and the jet-medium interaction, we derive an analytical expression for the modification of the jet EEC as a function of the opening angle and show that the modification is strongest at large angles within the jet cone. We further obtain explicit parametric dependencies on the jet energy, path length, and the characteristic scattering power of the nuclear medium, providing a new approach to study cold nuclear matter effects at a future Electron-Ion Collider.

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