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Searching for gluon saturation in forward dijet/dihadron measurements at the EIC

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Inclusive measurements of forward back-to-back dijets/dihadrons in deeply inelastic scattering (DIS) present a promising channel to access signatures of gluon saturation inside nuclear matter at the future Electron-Ion Collider (EIC). Most phenomenological studies employ the transverse momentum dependent (TMD) factorization framework; however, there are important kinematic (perturbative power) and genuine saturation corrections that must be resummed for more controlled phenomenological predictions. The Color Glass Condensate (CGC) is a suitable framework that resums both types of contributions in the small- x regime.

In this talk, I will present our novel results for inclusive diparton production in proton and nuclear DIS from full multi-gluon correlations in the CGC using the Gaussian approximation of high energy correlators and the Balitsky-Kovchegov evolution with running coupling. We compare our numerical results to the TMD framework for a wide range of kinematics accessible at the future EIC. We find that both kinematic and genuine saturation corrections are significant and could be accessed in measurements of azimuthal correlations of dijets and dihadrons.

This talk is based on [1,2].

[1] H. Mäntysaari, N. Mueller, F. Salazar, B. Schenke. Multi-gluon correlations and evidence of saturation from dijet measurements at an Electron-Ion Collider. *Phys. Rev. Lett.* 124, 112301 (2020)

[2] R. Boussarie, H. Mäntysaari, F. Salazar, B. Schenke. Work in preparation.

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