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Promoting gluon saturation to higher precision with dijets at the EIC

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The search for gluon saturation is one of the main pillars for the scientific program of the future Electron-Ion Collider (EIC). In recent years, significant progress has been made in advancing saturation physics to a precision science as we prepare for the EIC era. We contribute to these efforts by performing the first complete next-to-leading order (NLO) computation of inclusive dijet production in deeply inelastic electron-nucleus scattering at small-x within the Color Glass Condensate (CGC).

I will highlight three aspects of our computation: the cancellation of ultra-violet divergences, the JIMWLK factorization of the rapidity logarithms, and the cancellation of infrared and collinear singularities within the small-cone approximation. Furthermore, I will discuss the applicability of our results in the back-to-back regime and the emergence of Sudakov logarithms. I will conclude by outlining further extensions of our work that are relevant for the search of gluon saturation at the EIC.

P. Caucal, FS, R. Venugopalan. Dijet impact factor in DIS at next-to-leading order in the Color Glass Condensate. arXiv:2108.06347 [hep-ph]. JHEP 11 (2021) 222

P. Caucal, FS, B. Schenke, R. Venugopalan. Back-to-back dijet production in DIS at next-to-leading order in the Color Glass Condensate. (In progress)

Submitted on behalf of a Collaboration?

No

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