

Inclusive back-to-back dijet in DIS: Sudakov vs high-energy resummation of the WW TMD

Monday 15 January 2024 15:00 (30 minutes)

In this talk, I will present a recent computation of the back-to-back dijet cross-section in deep inelastic scattering (DIS) at small x to next-to-leading order (NLO) in the Color Glass Condensate effective field theory [1]. I will show that the result can be factorized into a convolution of the Weizsäcker-Williams gluon transverse momentum dependent distribution function (WW gluon TMD) with a universal soft factor and an NLO coefficient function. The soft factor includes both double and single logarithms in the ratio of the relative transverse momentum P_{\perp} of the dijet pair to the dijet momentum imbalance q_{\perp} . Likewise, the WW TMD obeys a nonlinear RG equation in x that is kinematically constrained to satisfy both lifetime and rapidity ordering of the projectile. Exact analytical expressions are obtained for the NLO coefficient function of transversely and longitudinally polarized photons. Our results allow for a quantitative separation of the dynamics of Sudakov suppression from that of gluon saturation.

[1] Caucal, Salazar, Schenke, Stebel, Venugopalan, arXiv:2308.00022

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