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Single-Inclusive Particle Production from pA Collision at Next-to-Leading Order

Tuesday, 28 March 2023 11:10 (20 minutes)

We study the single-inclusive particle production from proton-nucleus collisions in the dilute-dense framework of the color glass condensate (CGC) at next-to-leading order (NLO) accuracy. In this regime, the cross section factorizes into hard impact factors and dipole-target scattering amplitude describing the eikonal interaction of the partons in the target color field. We combine, for the first time, the NLO impact factors with the dipole amplitude evolved consistently using the next-to-leading order Balitsky-Kovchegov (BK) equation. Preliminary results in the quark-quark ($q \to q$) channel show that it is crucial to include all ingredients consistently at NLO accuracy in order to get a nuclear modification factor that is qualitatively compatible with the LHCb data. In particular, the NLO evolution coupled to leading order impact factor is shown to produce a large Cronin peak that is not visible in the LHC data. Further results in the $g \to g$, $q \to g$ and $g \to q$ channels are similar and will also be discussed, among with the importance of a proper choice of running coupling prescription.

Submitted on behalf of a Collaboration?

No

Participate in poster competition?

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