

Single Inclusive Particle Production in CGC: Beyond Eikonal Order

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Studying high-energy hadronic scattering processes to understand the structure of nuclei has been the focus of experimental and theoretical studies for more than three decades now. The Color Glass Condensate (CGC) effective theory has been developed and used to study high-energy proton-nucleus collisions in particular. One of the main approximations adopted in the Color Glass Condensate is the so-called eikonal approximation, which amounts to neglecting power-suppressed corrections in the high-energy limit. This approximation is well justified for asymptotically high energies. However, corrections to it might be sizable in practice, in particular at the Relativistic Heavy Ion Collider and the upcoming Electron-Ion Collider. Therefore, we need to bring precision in theory to analyze the upcoming data from the colliders. For this, we have to compute observables like scattering cross sections beyond the leading order of energy. Single-inclusive particle production is one of the promising channels to study CGC beyond eikonal order.

In my talk, I will briefly review the eikonal approximation and how to go beyond eikonal order. Furthermore, I will present its application to single-inclusive particle production in proton-nucleus collisions.

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