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A unified picture for dilute-dense dynamics in QCD medium

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QCD multiple scattering plays an essential role in explaining the observed nontrivial phenomena in high energy nuclear collisions. In cold nuclear medium, there are two extensively used theoretical frameworks for describing QCD multiple scatterings, i.e. the high-twist approach and the color glass condensate (gluon saturation) framework that resums multiple eikonal scattering. In this talk, we explore for the first time the relation between these two well-known formalisms. In particular, we use direct photon production in proton-nucleus collisions as an example to show the consistency between these two formalisms.

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