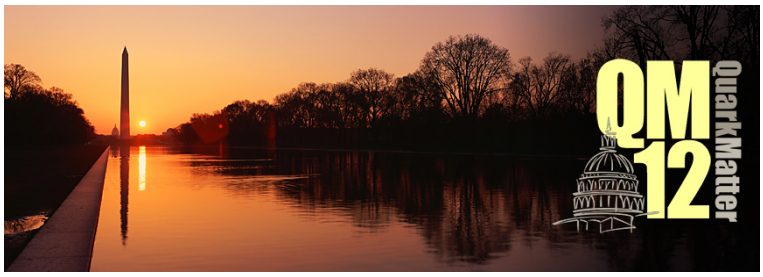

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The NLO inclusive forward hadron production in pA collisions

Friday 17 August 2012 15:00 (20 minutes)

Recently, by performing the complete next-to-leading order calculation, we have demonstrated the one-loop factorization for inclusive hadron productions in pA collisions in the saturation formalism. The differential cross section is written
into a factorization form in the coordinate space at the next-to-leading order, while the naive form of the convolution in the transverse momentum space does not hold. The rapidity divergence with small-x dipole gluon distribution of the nucleus is factorized into the energy evolution of the dipole gluon distribution function, which is known as the Balitsky-Kovchegov equation. Furthermore, the collinear divergences associated with the incoming parton distribution of the nucleon and the outgoing fragmentation
function of the final state hadron are factorized into the splittings of the associated parton distribution and fragmentation functions, which allows us to reproduce the well-known DGLAP equation. The hard coefficient function, which is finite and free
of divergence of any kind, is evaluated at one-loop order. This result is important, not only for the phenomenological applications to the inclusive hadron production in p-A collisions at RHIC and future LHC experiment, but also for theoretically promoting
the rigorous developments towards a complete QCD factorization in small-x physics.

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