

Particle multiplicities in high-energy hadronic collisions at RHIC/LHC from CGC with local rcBK evolution

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A color glass condensate (CGC) model for particle productions at collider energies is confronted with the data at RHIC and LHC. When applying the CGC picture to high-energy scatterings at LHC (or higher) energies, we need to include the effects of the running coupling and the transverse expansion of the colliding hadrons. These two are appropriately incorporated here. Main features of our model include

- 1) fluctuations of the transverse positions of the nucleons in the projectile,
- 2) the Gaussian shape for the transverse profile of a nucleon to account for the transverse expansion of the nucleon with increasing energy, and
- 3) the x -evolution of the unintegrated gluon distribution by the running-coupling Balitsky-Kovchegov (rcBK) equation which is applied locally in the impact parameter space. We study the influence of initial condition for rcBK equation on particle production in high energy hadronic collisions. Specifically, the initial conditions provided by i) the naive McLerran-Venugopalan (MV) model and ii) the running coupling MV model with adjustable

parameters are examined. The use of running-coupling MV model as the initial condition is necessary for the consistency with the evolution equation which includes the effects of the running coupling.

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