

Gluon saturation and inclusive hadron production at LHC

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In high density QCD the hadron production stems from decay of mini-jets that have the transverse momenta of the order of the saturation scale. I will show that this idea is able to describe in a unique fashion the first data from the LHC for the inclusive charged-hadron production in pp collisions, the deep inelastic scattering at HERA at small Bjorken- x , and the hadron multiplicities in AA collisions at RHIC. Recently reported data from ALICE, CMS and ATLAS including inclusive charged-hadron transverse-momentum and multiplicity distribution in pp collisions are well described in our approach. I provide quantitative predictions for the rapidity, centrality and energy dependencies of inclusive charged-hadron productions for the LHC in AA collisions based on the idea of gluon saturation in the color-glass condensate framework. I also provide predictions for the nuclear modification factor for pions and direct-photon production in pA collisions at LHC energy.

Author: Dr REZAEIAN, Amir (Universidad Tecnica Federico Santa Maria)

Presenter: Dr REZAEIAN, Amir (Universidad Tecnica Federico Santa Maria)