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Heavy quark pair production and parton saturation in pA collisions at the LHC

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Understanding of the initial state effects on heavy ion collisions is indispensable for quantifying the subsequent hot medium effects in the observables.

Heavy quark pair production in proton-nucleus (pA) collisions provides us with a unique opportunity to probe the gluons at small Bjorken's x in the heavy target nucleus, where the so-called parton saturation effect becomes important for particle production.

We have studied heavy quark pair production in pA collisions within the color glass condensate (CGC) framework [1] by adopting numerical solutions for gluon distributions obtained from the Balitsky-Kovchegov equation with running coupling corrections [2, 3].

We report our numerical results on J/ψ and D productions in pA collisions at the RHIC and LHC energies [4, 5], and discuss possible extension our calculation in light of recent experimental data.

References:

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