

Heavy quark production in pA collisions in the CGC framework - update and decay leptons -

Heavy quark production in proton-nucleus (pA) collisions at RHIC and LHC provides important information on the gluon saturation dynamics at small- x of a heavy nucleus. We report the update of our Color-Glass-Condensate (CGC) calculation of heavy flavor production including quarkoniums, open heavy flavor mesons and decay leptons. Moreover, we will implement more realistic treatment for the initial saturation scale in the target nucleus with the Monte-Carlo (MC) Glauber approach. Within the MC-Glauber approach, we can take into account the initial fluctuation of nucleon distribution and discuss event activity dependence of heavy quark production in pA collisions.

In a series of our papers [1,2,3], we have computed heavy quark production in pA collisions in the CGC framework. Essentially, our calculations have been based on the CGC framework at leading order (LO) with the running coupling Balitsky-Kovchegov equation (rcBK) which includes a subset of next-to-leading order (NLO) correction. A main difference between pp and pA collisions is the choice of the initial saturation scale in the rcBK equation.

We update the evaluation of the nuclear modification factors of J/ψ , D meson productions (Refs. [1,2]) by varying the initial saturation scale more systematically and also by extending the calculation with the MC-Glauber implementation. We find that the R_{pA} is quite sensitive to the initial saturation scale for nucleus. In Ref. [3], we have computed heavy flavor decay leptons l , which should be compared with the new experimental data.

In this talk, we will first review our previous results and then report our update for J/ψ , D , and l productions in pA collisions at the LHC energy.

Refs:

- [1] H.Fujii and K.Watanabe, Nucl.Phys. A915 (2013) 1-23
- [2] H.Fujii and K.Watanabe, Nucl.Phys. A920 (2013) 78-93
- [3] H.Fujii and K.Watanabe, Nucl.Phys. A951 (2016) 45-59

Preferred Track

Open Heavy Flavors

Collaboration

Not applicable

Primary author: WATANABE, Kazuhiro (ODU/JLab)

Presenter: WATANABE, Kazuhiro (ODU/JLab)

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