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Pursuing event activity dependence of Heavy flavor and Quarkonium production in small collision systems

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Open heavy flavor and quarkonium are valuable probes to identify the underlying QCD dynamics behind high multiplicity events at RHIC and LHC. In previous studies [1,2], we explored D -meson and J/ψ production vs. charged hadron multiplicity in $p + p$ and $p + A$ collisions in the CGC framework; we modeled an initial state effect in terms of the fluctuation of gluon saturation scale, Q_s . In this presentation, we will pursue further this initial state fluctuation effect at different impact parameters in small collision systems in the impact parameter dependent saturation model. We discuss a systematic analysis of the high multiplicity $p + p$ collisions and centrality biased $p + A$ collisions [3]. We will then discuss how those events could clarify the production mechanism of J/ψ 's in high multiplicity events. In particular, we will explore whether the initial state fluctuation effect is capable of changing relative contributions of different intermediate states of heavy quark pairs produced at short distance.

[1] Y. Q. Ma, P. Tribedy, R. Venugopalan, and K. Watanabe, Phys.Rev.D98, 074025 (2018).

[2] Y. Q. Ma, P. Tribedy, R. Venugopalan, and K. Watanabe, Nucl.Phys.A982, 747 (2019)

[3] Y. Q. Ma, T. Stebel, R. Venugopalan, and K. Watanabe, in preparation.

Collaboration (if applicable)

Track

Heavy Flavor and Quarkonia

Contribution type

Contributed Talk

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