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COLD NUCLEAR MATTER EFFECTS ON NON-PHOTONIC ELECTRON PRODUCTION MEASURED IN p+Au COLLISIONS BY THE STAR EXPERIMENT

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Due to their large masses, heavy flavor quarks are dominantly produced in initial hard parton scattering processes in high-energy heavy-ion collisions. They experience the full evolution of the strongly interacting Quark-Gluon Plasma (QGP) created in such collisions. Thus, heavy quarks have been suggested as excellent probes of the properties of the QGP. To study how heavy flavor quarks interact with the QGP, initial-state effects upon heavy flavor production due to the presence of the heavy ions must be understood. These initial-state effects, also known as Cold Nuclear Matter (CNM) effects, need to be studied in collision systems that include a heavy ion but are not expected to produce a QGP, such as p+Au collisions. Non-Photonic Electrons (NPE) from semi-leptonic decays of open heavy flavor hadrons can serve as a proxy for heavy flavor quarks, and be used to measure CNM effects on heavy flavor production.

In this poster, we will present the first measurement of inclusive NPE production in p+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV with the STAR experiment. Data were triggered by large energy deposition in the Barrel Electromagnetic Calorimeter, corresponding to integrated luminosities of 140-410 nb^{-1} depending on the trigger threshold, from the 2015 run at the Relativistic Heavy Ion Collider (RHIC). The nuclear modification factor R_{pA}, which is a measure of CNM effects on NPE production, will be reported, and its implications for NPE production in Au+Au collisions will be discussed.

Preferred Track

Initial State Physics and Approach to Equilibrium

Collaboration

STAR

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