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Non-Photonic Electron Measurement With STAR Experiment

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Non-Photonic Electron Measurement With STAR Experiment

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Heavy quarks, primarily produced in initial hard scattering processes at the Relativistic Heavy Ion Collider (RHIC), are important tools for understanding the properties of the Quark-Gluon Plasma (QGP). The heavy quark interaction with the QGP can be studied through non-photonic electrons (NPE), which are produced from semi-leptonic decays of heavy flavor hadrons. In p+p collisions measurements of heavy flavor production serve as a test of the pQCD framework and are used as a baseline in comparison with measurements in heavy ion collisions. In Au+Au and d+Au the hot and cold nuclear matter effects can be quantified through the nuclear modification factors (R_{AA} , R_{dA}). The energy dependence of R_{AA} and elliptic flow v_2 can be used to further probe the interaction between heavy quarks and the medium.

In this talk, we will present a new measurement of NPE production in p+p collisions at $\sqrt{s}=200$ GeV in a broad transverse momentum range of 0.5 - 8 GeV/c. We will discuss the energy dependence of NPE production and azimuthal anisotropy measurements in Au+Au collisions at $\sqrt{s_{NN}}=39, 62.4$ and 200 GeV. Nuclear modification factors R_{AA} in Au+Au collisions and R_{dA} in d+Au collisions at $\sqrt{s_{NN}}=200$ GeV will be presented too.

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