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Measurements of heavy quark production via single leptons in p+p and Au+Au collisions at sqrt(s) = 200 GeV

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The measurement of heavy flavor production at \sqrt{s_{NN}} = 200 GeV in both p+p and Au+Au collisions by the PHENIX Experiment at RHIC provides for complimentary physics exploration in differing collision environments. The measurement of single leptons resulting from the semi-leptonic decay of heavy flavor (charm and bottom) mesons in p+p collisions permits tests of pQCD predictions at \sqrt{s} = 200 GeV, as well as a measurement of a total charm cross section. The measurements for p+p collisions also provide a key baseline against which the analogous single lepton measurements for Au+Au collisions can be quantified. The dense partonic matter produced in Au+Au collisions can be investigated through the simultaneous measurement of the azimuthal anisotropy v2(p_T) and the nuclear modification factor R_{AA}(p_T). In the context of existing predictions, the observed flow and energy loss of heavy quarks, in addition to that already seen for light mesons, suggest that the matter formed in Au +Au collisions at RHIC is a near-perfect fluid. The most recent PHENIX single electron results from p+p and Au+Au collisions for 0.3 < p_T < 9.0 GeV/c at | y |< 0.35 are shown. Additionally, the latest PHENIX results for the measurement of heavy flavor production via single muons at 1.5 < | y | < 1.8 in \sqrt{s} = 200 GeV p+p collisions are presented.

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