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Jets and Single Charm Production at RHIC

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Heavy quarks are powerful probes that are being used to characterize the state of matter created in heavy ion collisions at RHIC. The behavior of the charm and beauty quarks in HI collisions has been predicted to be quite different than that of the light quarks. The charm quark energy loss was expected to be smaller than that for light quarks, due to its heavy mass. Azimuthal anisotropy of the charmed hadrons was also expected to be less than that for the hadrons made of light quarks due to the limited thermalization of heavy quarks. Experiments at RHIC are conducting systematic studies of transverse momentum spectra of open charm, azimuthal anisotropy of heavy flavor hadrons and correlations between single leptons and jets from charm in A+A collisions. In addition measurements of heavy quark production in p+p and d+Au collisions have been carried out at RHIC to address the separation of physics associated with the hot, dense medium created in RHIC A+A collisions from non-pQCD processes such as cold nuclear effects. We present results from heavy quark studies covering particle production, transverse momentum distributions vs centrality, azimuthal anisotropy and jet correlations in p+p, d+Au and Au+Au collisions at RHIC.