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## Charm and Bottom Measurements as Precision Probes of QCD Medium at RHIC

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Hadrons carrying heavy quarks, i.e. charm or bottom, are important probes of the hot and dense medium created in relativistic heavy-ion collisions. Heavy quark-antiquark pairs are mainly produced in initial hard scattering processes of partons. While some of the produced pairs form bound quarkonia, the vast majority hadronize into open heavy flavor particles. RHIC experiments carry out a comprehensive physics program which studies open heavy flavor and quarkonium production in relativistic heavy-ion collisions. The discovery at RHIC of large high- $p_T$  suppression and flow of electrons from heavy quarks flavors have altered our view of the hot and dense matter formed in central Au+Au collisions at 200 GeV. These results suggest a large energy loss and flow of heavy quarks in the hot, dense matter. In recent years, the RHIC experiments installed silicon vertex trackers both in central rapidity and in forward rapidity regions, and has collected large data samples. These silicon trackers enhance the capability of heavy flavor measurements via precision tracking.

This talk summarizes the latest RHIC experiments' results concerning open and closed charm and beauty heavy quark production measured through their semileptonic decays in  $p+p$ ,  $p/d + Au$  and  $Au+Au$  collisions as a function of rapidity and energy, and their interpretation with respect to the current theoretical understanding on this topic.

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