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Overview of Recent Heavy Flavor Results from PHENIX at RHIC

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Heavy flavor production is an ideal tool to study the properties of the QCD medium created at the Relativistic Heavy Ion Collider (RHIC) and the Large Hadron Collider (LHC). The kinematic coverage and production mechanisms of the heavy flavor are different between RHIC and LHC. The PHENIX experiment has a comprehensive physics program which studies open heavy flavor and quarkonium production in relativistic heavy-ion collisions. It is critical to measure both open heavy flavor and quarkonium in different collision systems to disentangle cold (initial state) and hot nuclear medium (final) effects. The heavy quarks (charm and beauty) are predominantly produced in the early stage of the collisions via hard partonic scattering processes. Therefore, they experience the full evolution of the nuclear medium.

The recent PHENIX results on heavy flavor and quarkonium production measured in p+p, p+Al, p+Au, He+Au, and Au+Au collisions as a function of centrality, rapidity, and transverse momentum will be presented, and interpretation of the results with respect to the current theoretical understanding will be discussed in this talk.

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