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Measurements of Open Heavy flavor production at RHIC

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Heavy quarks are unique probes to study the strongly coupled Quark-Gluon Plasma created at RHIC. Unlike light quarks, heavy quark masses come mostly from spontaneous symmetry breaking, which makes them ideal for studying the medium's QCD properties. Due to their large masses, they are produced early in the collisions and are expected to interact with the medium quite differently from that of light quarks. As for heavy quarkonia, detailed studies of the open heavy flavor mesons production in heavy-ion collisions and the baseline $p + p$ and $d + A$ collisions provide crucial information in understanding the medium's properties. With the current detector configurations and future silicon detector and luminosity upgrade, RHIC experiments have or will have the capability to measure open heavy flavors production in all different directions with high precision. In this talk, I will review the current status as well as the future perspectives on the studies of open heavy flavor production at RHIC.