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Non-Prompt J/ψ Measurements with the STAR experiment

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Because of their large masses and long lifetimes, heavy quarks are dominantly produced from initial hard parton scattering processes and can experience the whole evolution of the Quark Gluon Plasma (QGP) created in high-energy heavy-ion collisions. Therefore heavy quarks have been suggested as excellent probes to study the properties of the QGP. Measurements of non-prompt J/ψ produced from B hadron decays are very interesting because they may provide an opportunity to access bottom quark production in heavy-ion collisions at the Relativistic Heavy Ion Collider. Such measurements have become possible with the installation of the Heavy Flavor Tracker (HFT) and Muon Telescope Detector (MTD) into the STAR experiment in 2014. The HFT can precisely measure track impact parameters, and thus allows a separation between prompt and non-prompt J/ψ through measuring their decay lengths. The MTD enables J/ψ reconstruction in the dimuon channel at STAR for the first time, which is important for J/ψ measurements at transverse momentum $p_T < 5$ GeV/c and complementary to those in the dielectron channel at higher p_T . In this poster, we will discuss the current status and prospect of non-prompt J/ψ measurements in both the dielectron and the dimuon channels using the p+p, p+Au and Au+Au data at $\sqrt{s_{NN}} = 200$ GeV taken in 2014-2016 with the STAR experiment.

On behalf of collaboration:

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