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Direct virtual photon production in Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV at STAR

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A primary goal of heavy ion physics is to study the fundamental properties of the hot and dense medium created in the ultra-relativistic heavy-ion collisions. The hot, dense medium is expected to emit thermal radiation in the form of direct photons and dileptons. Once produced, photons traverse the medium with minimum interactions. This makes photons an ideal probe of the medium evolution by selecting different kinematics.

The Time-of-Flight detector, which was fully installed in 2010, enables clean electron identification from low to intermediate transverse momenta (p_T). The Barrel ElectroMagnetic Calorimeter allows electron trigger and identification at high p_T. In this talk, we will present the direct virtual photon production for 1<p_T<3 GeV/c and 5<p_T<10 GeV/c. This measurement is derived from dielectron continuum in the dielectron invariant mass region 0.1<M_{ee}<0.28 GeV/c^2 from one billion $\sqrt{s_{NN}}$ = 200 GeV Au+Au events taken in 2010 and 2011. The centrality dependence of direct virtual photon production will be discussed. Comparisons with model calculations including hadronic and partonic thermal radiation will be shown for the direct virtual photon production in Au+Au collisions.

Summary

Presentation type

Oral

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