DIRECT VIRTUAL PHOTON PRODUCTION IN Au+Au COLLISIONS AT $\sqrt{s_{NN}}$ = 200 GeV AT STAR

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

The fully installed Time-of-Flight Detector in 2010 enables clean electron identification from low to intermediate transverse momenta (p_T). 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 made for the direct virtual photon production in Au+Au collisions.