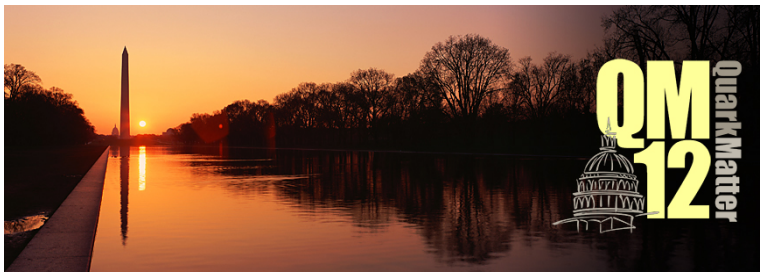

Contribution ID: **153** Type: **Poster**

Centrality and pT dependence study of Dielectron Production in $\sqrt{s_{NN}}$ = 200 GeV Au+Au collisions at STAR

Thursday, August 16, 2012 4:00 PM (2 hours)

Dilepton production has been proposed to serve as a penetrating probe for the hot and dense medium created in high-energy nuclear collisions. Their small final-state interaction cross sections, let dileptons escape the interaction region undistorted. Since dileptons originate from all stages of a heavy ion reaction, their sources vary with the kinematic phase space under consideration: In the low mass region (LMR: mass<1.1GeV/c^2), vector mesons and direct photons are the dominating source, while dileptons in the intermediate mass region (IMR:1.1<mass<3GeV/c^2) primarily stem from QGP thermal radiation at RHIC energy and semileptonic decays of charmed mesons. In the high mass region (HMR: mass>3 GeV/c^2), heavy quark decays and Drell-Yan processes contribute the most to the dilepton spectrum. Due to the time-energy correlation, the higher the dilepton pair mass, the earlier the production. Therefore the dilepton distributions, especially in the IMR and HMR, provide information on early collision dynamics in heavy ion collisions.

In this talk we will present a systematic study of dielectron production in $\sqrt{s_{NN}}$ = 200 GeV Au+Au collisions at STAR experiment. The datasets used are nearly one billion Au+Au minibias events collected in RHIC runs year 2010 and 2011. The dielectron pair transverse momentum and centrality dependence of the invariant mass distribution will be discussed. The results will be compared to hadron decay cocktails as well as theoretical calculations on vector meson in-medium modifications and the QGP thermal radiation.

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Session Classification: Poster Session Reception

Track Classification: Electroweak probes