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Dielectron Production in $\sqrt{s_{NN}}$ = 200 GeV Au+Au collisions at STAR

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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 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 STAR results on dielectron production in Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV. 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. A systematic analysis of transverse mass distributions in the IMR region as a function of pair invariant mass will be discussed.

Primary author: ZHAO, Jie (Shanghai Institute of Applied Physics/ Lawrence Berkeley National Lab)

Presenter: ZHAO, Jie (Shanghai Institute of Applied Physics/ Lawrence Berkeley National Lab)

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