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Dielectron Continuum Production from $\sqrt{s_{NN}}$ = 200 GeV pp and Au+Au collisions at STAR

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Dilepton distributions have been proposed as one of the penetrating probes for hot and dense nuclear matter created in high-energy nuclear collisions. Due to their relatively small final-state interaction cross-sections with the hot/dense environment, dileptons bring us direct information of the created matter in such collision. Since dileptons are created over all stages of heavy ion reactions, their sources vary as a function of kinematics. In the low mass region (LMR: mass<1.1GeV/c^2), dileptons are dominated by vector mesons and directed photons, while in the intermediate mass region (IMR: 1.1< mass< 3GeV/c^2) dileptons are dominated by thermal radiation of quark gluon plasma (QGP). In the high mass region (HMR: mass> 3 GeV/c^2), dileptons are mostly contributed by heavy (charm and bottom) quark decays and Drell-Yan processes. As a result, the dilepton distributions, especially in the IMR and HMR, could provide new aspects of early collision dynamics in heavy ion collisions.

With the completion of the full barrel time-of-flight detector, the electron identification has been significantly improved at STAR, especially in low momentum region. In this talk we will present the first STAR results on dielectron production in p+p and Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV. The results will be compared to hadron decay cocktails to search for vector meson in-medium modifications in LMR and the QGP thermal radiation in IMR. A systematic analysis of the transverse mass distributions in IMR region as a function of the mass in Au+Au collisions will be discussed. The results will be compared to those from 200 GeV p+p collisions as well as the results from SPS energies.

Primary author: ZHAO, Jie (SINAP/LBNL)

Presenter: ZHAO, Jie (SINAP/LBNL)

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