

Quark Matter 2019 - the XXVIIIth International Conference on Ultra-relativistic Nucleus-Nucleus Collisions



Contribution ID: 329

Type: **Poster Presentation**

Dielectron production in Au+Au collisions at $\sqrt{s_{NN}} = 54$ GeV at STAR

Monday 4 November 2019 17:40 (20 minutes)

Dielectrons are excellent probes of the Quark-Gluon Plasma (QGP) created in high-energy heavy-ion collisions. Because they can be produced at all stages of the collision system evolution and do not interact with the medium strongly, dielectrons carry the information from the initial stage to the final stage. In the low mass region (LMR, $M_{ee} < M_\phi$), the mass spectra of vector mesons will be modified by the hot and dense medium which is related to the chiral symmetry restoration in the medium. In the intermediate mass region (IMR, $M_\phi < M_{ee} < M_{J/\psi}$), QGP thermal radiation can be used as a QGP thermometer. However, it is hard to measure the QGP thermal radiation because of the heavy flavor semi-leptonic decay contributions.

In this poster, we will present the dielectron production in Au+Au collisions at $\sqrt{s_{NN}} = 54$ GeV at STAR. With a 10 times larger data sample than that at 62 GeV from the first phase of the STAR Beam Energy Scan (BES-I) program, in-medium ρ modification can be studied with better precision and compared to different theoretical predictions. With lower heavy flavor semi-leptonic decay contributions compared to those at RHIC top energies, QGP thermal radiation in the IMR will be discussed. Furthermore, physics implications of these measurements will be discussed.

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Session Classification: Poster Session

Track Classification: Electromagnetic probes