Thermal dielectron measurement in Au+Au collisions at $\sqrt{s_{\rm NN}} = 7.7$ GeV with the STAR experiment

Chenliang Jin (Rice University)
for the STAR Collaboration

Due to the minimal interactions with the hot and dense QCD matter created in relativistic heavy-ion collisions, thermal dileptons emitted throughout the medium evolution are suggested as an excellent probe to study the medium properties. In the dilepton invariant mass range from 400 to 800 MeV/c^2, the mass distribution is proportional to the in-medium ρ propagator, which is sensitive to medium's properties including total baryon density and temperature. The systematic measurement of in-medium ρ propagators at different collision environments can be used to study the vector meson interactions with the hot and dense QCD medium.

During the Beam Energy Scan Phase-II (BES-II) program, the STAR experiment recorded large datasets at low center-of-mass energies ($\sqrt{s_{\rm NN}}$) from 3 to 19.6 GeV with detector upgrades. In this poster, we will report the first measurement of the thermal dielectron invariant mass distribution at $\sqrt{s_{\rm NN}} =$ 7.7 GeV. Machine learning techniques are used for suppressing background and increasing signal significance, which is critical for such measurements at low energies.