Measuring QGP temperature with thermal dielectrons with STAR BES-II data

Zhen Wang
for the STAR collaboration

According to Quantum Chromodynamics (QCD) prediction, there exists a phase transition from hadronic matter to Quark Gluon Plasma (QGP) at extreme high temperatures and/or baryon densities. Thermal dielectrons provide a unique probe to study the properties of the hot QCD medium created in relativistic heavy ion collisions. They can be emitted during all the evolution stages of the medium and do not interact strongly with the medium. The invariant mass distribution of thermal dielectrons in different mass regions enables us to extract the temperature of the hot QCD medium in different phases.

In this talk, measurements of the dielectron invariant mass spectra in Au+Au collisions at $\sqrt{s_{\rm NN}} = 27$ and 54.4 GeV with the STAR experiment will be presented. The temperature extracted from different centralities and collision energies will also be discussed.