Measuring temperature with thermal dielectrons in Au+Au collisions at $\sqrt{s_{\rm NN}} = 27$ and 54.4 GeV at STAR

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According to Quantum Chromodynamics (QCD) prediction, there exists a phase transition from hadronic matter to Quark Gluon Plasma (QGP) at certain high temperatures and/or baryon densities (μ_B). In the laboratory, QGP can be produced in relativistic heavy ion collisions. Since dielectrons can be produced at all stages of the system evolution and do not interact with the medium strongly, they are excellent electromagnetic probes of the QGP properties. For example, dielectrons from the QGP thermal radiation can be used as a QGP thermometer.

In this talk, we will present 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. The extraction of temperature at different centralities and collision energies will be discussed.