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Measurement of thermal dielectron production in O+O collisions at $\sqrt{s_{\rm NN}} = 200$ GeV with the STAR experiment

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Thermal dielectrons serve as an ideal thermometer to probe the average temperature of the hot and dense QCD medium created in heavy-ion collisions. Previous measurements over a wide range of collision energies and collision systems exhibit consistent temperature trends, indicating significant contributions from the quark-gluon plasma (QGP). Oxygen-oxygen (O+O) collisions, with an effective system size comparable to that of d+Au collisions, could bridge the understanding between small and large collision systems, and provide a new opportunity to investigate the existence and properties of QGP matter in small collision systems.

In this talk, we will present the first measurement of thermal dielectron production in O+O collisions at $\sqrt{s_{\rm NN}} = 200$ GeV with the STAR experiment. The results will include the invariant mass spectra, excess yields, and the extracted average temperature. Comparisons with results from other collision energies and systems will be shown, and the physics implications will also be discussed.

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