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Direct virtual photon production in Au+Au collisions with STAR BES-II data

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As electromagnetic probes, photons have the advantage of escaping unimpeded from their emission source. Consequently, photons can carry valuable information about the properties and dynamics of the hot QCD medium created in heavy-ion collisions. Particularly, the transverse momentum distribution of direct virtual photons emitted from the hot QCD medium exhibits sensitivity to the system temperature. As a result, it offers an effective means of measuring the temperature of the medium.

The STAR experiment has recorded large datasets of Au+Au collisions in the Beam Energy Scan Phase-II (BES-II) program, spanning center-of-mass energies $\sqrt{s_{\rm NN}}$ = 3 - 54.4 GeV. In this talk, preliminary results of the direct virtual photon measurement in Au+Au collisions at $\sqrt{s_{\rm NN}}$ = 27 and 54.4 GeV will be presented, including p_T-differential invariant yields and total yields in different centrality bin. Furthermore, the effective temperature extracted from the p_T spectra and the physics implications will be discussed.

Collaboration

STAR

Category

Experiment

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