Strangeness production in Au+Au collisions at $\sqrt{s_{NN}} = 19.6$ GeV from STAR at RHIC

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Abstract

The main motivation of the Beam Energy Scan (BES) program at RHIC is to search for and study structures in the QCD phase diagram such as the conjectured critical end point, the predicted first order phase transition between hadronic and partonic matter and the chiral phase transition. Strangeness production has been suggested as a sensitive probe to the early dynamics of the deconfined matter created in heavy-ion collisions. Measurements from the BES phase I (BES-I) have already shown hints for increasing dominance of hadronic interactions and the gradual turn-off of the signatures of quark-gluon plasma with decreasing collision energy. However, the data precision from BES-I is not sufficient to draw definite conclusions. The BES-II program, with high statistics sample and detector upgrades, especially the iTPC, allows us to improve and extend measurements from mid-rapidity to larger rapidity range for $\sqrt{s_{NN}} \leq$ 19.6 GeV. The production of strange hadrons (K^0_s, Λ, $\overline{\Lambda}$, Ξ^-, $\overline{\Xi}^+$, Ω^-, $\overline{\Omega}^+$) in Au+Au collisions at $\sqrt{s_{NN}}$=19.6 GeV will be presented in this talk, including transverse momentum spectra, rapidity spectra, nuclear modification factors, and particle ratios.