

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

The main goal of the Beam Energy Scan (BES) program at RHIC is to search for and study key features in the QCD phase diagram such as the conjectured critical point, the expected first order phase transition between hadronic and partonic matter, and the chiral phase transition. Strangeness production is considered a sensitive probe of the early dynamics in the deconfined matter created during heavy-ion collisions. Results from BES phase I (BES-I) have shown indications of increased hadronic interactions and a weakening of the quark-gluon plasma signatures with decreasing collision energies. However, the data from BES-I do not provide the precision needed for conclusive findings. The BES-II program, which provides data samples with enhanced statistics and featured upgrades like the iTPC, enables improved measurements with broader rapidity range from mid-rapidity ($|y| < 0.5$) to a larger rapidity range ($|y| < 1.5$) at $\sqrt{s_{NN}} \leq 19.6$ GeV. In this presentation, we will discuss new STAR measurements of strange hadrons (K_s^0 , Λ , $\bar{\Lambda}$, Ξ^- , $\bar{\Xi}^+$, Ω^- , $\bar{\Omega}^+$) production in Au+Au collisions at $\sqrt{s_{NN}} = 19.6$ GeV from BES-II. We will show transverse momentum and rapidity spectra at extended rapidity, nuclear modification factors, antibaryon-to-baryon ratios, and baryon-to-meson ratios. These measurements offer new insights into the collision dynamics at this energy.

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