

1 Strange hadrons production in Au+Au collisions at
2 $\sqrt{s_{NN}} = 19.6$ GeV from STAR

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5 November 4, 2024

6 **Abstract**

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