

Production of identified charged hadrons in Au+Au collisions at $\sqrt{s_{NN}} = 54.4$ GeV using the STAR detector

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Exploring the QCD phase diagram and searching for the QCD critical point are some of the main goals of the Beam Energy Scan program at RHIC. In 2017, the STAR experiment collected a large dataset of Au+Au collisions at $\sqrt{s_{NN}} = 54.4$ GeV. The identified particle spectra and yields provide information about the bulk properties of the hot medium created in these collisions. The centrality dependence of the freeze-out parameters explores a wide temperature and baryon chemical potential region in the phase diagram facilitating the search for the QCD critical point.

We present the measurements of the production of π^\pm , K^\pm , p, and \bar{p} in 54.4 GeV Au+Au collisions. The results for the transverse momentum spectra, particle yields, average transverse momentum $\langle p_T \rangle$, and particle ratios will be presented for different centrality classes and compared with AMPT and HIJING model calculations. In addition, the extracted freeze-out parameters will be compared to those at other collision energies. The implications of these results will be discussed.