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

Arushi Dhamija (for the STAR Collaboration)

Panjab University, Chandigarh, India

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. Furthermore, the rapidity dependence study is essential for exploring the boost-invariant regions of the system.

We present the measurements of the production of $\pi^{\pm}$, $\mathrm{K}^{\pm}$, p, and $\bar{p}$ in various centralities and rapidity intervals. The results for the transverse momentum spectra, particle yields $\mathrm{d}N/\mathrm{d}y$, average transverse momentum $\langle \mathrm{p}_T \rangle$, and particle ratios will be presented for different centrality classes and rapidity intervals. The kinetic freeze-out parameters will be obtained for different rapidity intervals and the results will be compared to similar measurements at other energies. The physics implications of the results will be discussed.