

Charged Hadron Production from Au+Au Collisions at $\sqrt{s_{NN}} = 27$ GeV at STAR

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Abstract

The Relativistic Heavy Ion Collider (RHIC) beam energy scan I (BES-I) covered a range of energies from $\sqrt{s_{NN}} = 62.4$ to 7.7 GeV and ran from 2010 to 2014. Only mid-rapidity spectra for π , K , and p have been published from those energies. The BES-I results have justified a new beam energy scan (BES-II) with higher statistics and a series of detector upgrades. The first collider energy from BES-II, 27 GeV, was run in 2018. This analysis will address the spectra and yields of π , K , and p as a function of rapidity and centrality from the 27 GeV Au+Au collisions from 2018 at RHIC. The relative yields of the various particle species allow for measurements of the chemical freeze-out temperature and baryon chemical potential. The K^+ to K^- ratio gives insight into associated production as an alternative to thermal production. The p to \bar{p} ratio determines the baryon chemical potential, pinning down the collision's location on the QCD phase diagram. The parameters extracted from the 4π yields in the current analysis are compared to experimental results extracted from previous mid-rapidity particle yields.