

# Charged $\pi$ , $K$ , $p$ Production and Thermodynamics from $\sqrt{s_{NN}} = 27$ GeV Au+Au Collisions at STAR

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## Abstract

The first beam energy scan I (BES-I) at the Relativistic Heavy Ion Collider (RHIC) scanned a range of energies from  $\sqrt{s_{NN}} = 7.7$  to 62.4 GeV, which ended in 2014. The success of the BES-I results justified a new energy scan (BES-II) with higher statistics and detector upgrades. The first collider energy from BES-II, 27 GeV, was run in 2018. This analysis will address the spectra and yields of  $\pi$ ,  $K$ , and  $p$  as a function of rapidity and centrality. Only mid-rapidity spectra for  $\pi$ ,  $K$ , and  $p$  have been published from the BES-I energies. The transverse mass spectra of these particles are crucial to pin down the collision's location on the QCD phase diagram. A look into the relative particle yields as a function of rapidity shows how the chemical freeze-out temperature and chemical potentials vary with rapidity. These measurements that extend beyond mid-rapidity are compared to experimental results extracted from previous mid-rapidity particle yields.