

Baryon Stopping and Associated Production of Mesons in Au+Au Collisions at $\sqrt{s_{NN}} = 3.0$ GeV at STAR

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Abstract

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2 Charged particles in heavy-ion collisions have various production mechanisms, such as
3 thermal and associated production, and the importance of each changes with the collision
4 energy. Studying the yields of charged particles provides a way to investigate the properties
5 of the produced QCD matter in heavy-ion collisions and the various production mechanisms.
6 The RHIC Beam Energy Scan (BES) programs cover a wide range of energies, including the
7 transition from a hadronic dominated medium to a partonic dominated medium. The recently
8 completed BES-II program was designed to improve and extend upon the results from the BES-
9 I program. Of particular interest is the high baryon density region which is accessible through
10 the STAR fixed-target program, extending the energy reach from $\sqrt{s_{NN}} = 7.7$ GeV down to
11 $\sqrt{s_{NN}} = 3.0$ GeV. This presentation reports on measurements of charged particle production
12 in Au+Au collisions at the lowest end of the STAR fixed-target program: $\sqrt{s_{NN}} = 3.0$ GeV.
13 Measurements of the proton stopping will be presented in addition to measurements of the
14 production of K^+ in association with the Λ baryon. Invariant yields and rapidity density
15 distributions of π^\pm , K^\pm , and p will also be presented, which will help to unravel the relative
16 importance of the different particle production mechanisms.