

Directed flow of pions, Kaons and protons in Au+Au collisions at $\sqrt{s_{NN}} = 17.3$ GeV from STAR

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1 Quantum Chromodynamics (QCD) predicts that hadronic matter transitions to a
2 deconfined state called the Quark-Gluon Plasma (QGP) at extremely high temperatures
3 and densities. Heavy-ion collisions create these extreme conditions, enabling studies of
4 the nuclear matter phase diagram, QGP properties, and the QCD phase transition. The
5 directed flow (v_1), which is the first harmonic coefficient in the Fourier expansion of the
6 azimuthal distribution of produced particles relative to the collision reaction plane, is
7 sensitive to the equation of state of the produced matter and may provide information
8 about the QGP phase transition.

9 In this poster, we will present measurements of the directed flow of pions, Kaons and
10 protons in Au+Au collisions at $\sqrt{s_{NN}} = 17.3$ GeV from the Beam Energy Scan Phase II
11 by RHIC-STAR. We will discuss the rapidity and centrality dependence of the directed
12 flow measurements. By comparing the results with those at other collision energies, we
13 will discuss the physical implications of these measurements.