

Azimuthal anisotropic flow of identified hadrons in Au+Au collisions in BES-II energies

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1 Abstract

The study of anisotropic flow in heavy-ion collisions provides crucial insights into the properties of the produced matter. Elliptic (v_2) and triangular (v_3) flow coefficients, representing second and third order azimuthal anisotropic particle distributions in momentum space, offer sensitivity to the equation of state and transport properties, such as the shear viscosity to entropy density ratio (η/s) of the medium.

Recently, STAR has completed the data taking of Beam Energy Scan phase-II (BES-II) with improved detector conditions and wider rapidity coverage. In this talk, using BES-II data, we will present the high precision measurements of v_2 and v_3 of identified hadrons, $\pi^+(\pi^-)$, $K^+(K^-)$, $p(\bar{p})$, K_S^0 , ϕ , $\Lambda(\bar{\Lambda})$, $\Xi^-(\bar{\Xi}^+)$, and $\Omega^-(\bar{\Omega}^+)$ in Au+Au collisions at $\sqrt{s_{NN}} = 7.7, 14.6$, and 19.6 GeV. We will show the centrality, transverse momentum, rapidity dependence, and the number of constituent quark (NCQ) scaling of v_n . Finally, the physics implications of our measurements in the context of partonic collectivity will be discussed.