

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

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1 Abstract

Anisotropic flow of the final state particles produced in heavy-ion collisions is one of the important probes to study the properties of the matter produced in the collisions. Elliptic flow (v_2) and triangular flow (v_3) parameters are the second and third order coefficients in the Fourier expansion of azimuthal distributions of the final state particles in the momentum space. v_2 and v_3 are sensitive to the equation of the state (EoS) and transport properties, such as shear viscosity to entropy density ratio (η/s) of the medium produced in the collisions.

Recently, STAR has completed the data taking for 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 $\sqrt{s_{NN}} = 14.6$ and 19.6 GeV. The centrality and rapidity dependence of v_n and number of constituent quark (NCQ) scaling will be presented. Finally, the physics implications of our measurements in the context of partonic collectivity will be discussed.