

Elliptic and triangular flow of (multi-)strange hadrons and ϕ mesons in BES-II energies at STAR

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Elliptic flow coefficient, v_2 , is sensitive to the dynamics at the early stages of the system evolution in heavy-ion collisions and equation of state of the medium.

Triangular flow v_3 is particularly sensitive to the initial geometry fluctuations.

The hadronic interaction cross sections of multi-strange hadrons and ϕ mesons are expected to be small. Hence, anisotropic flow of these hadrons provides information primarily from the early stages of the high energy collisions.

From the measurements based on the first phase of the RHIC beam energy scan (BES-I), number-of-constituent-quark (NCQ) scaled elliptic flow for ϕ mesons shows about 2σ deviations from other particles [1,2]. The apparent violation of NCQ scaling may indicate the dominance of hadronic interactions over partonic interactions at and below $\sqrt{s_{NN}} = 11.5$ GeV. In this talk, with the enhanced statistics from the second phase of the RHIC beam energy scan (BES-II) program, we will present measurements with improved precision of v_2 and v_3 for K^\pm , K_S^0 , ϕ , Λ , $\bar{\Lambda}$, Ξ^- , $\bar{\Xi}^+$, Ω^- , and $\bar{\Omega}^+$ in Au+Au collisions at $\sqrt{s_{NN}} = 3 - 19.6$ GeV from STAR. A test of the NCQ scaling of v_2 and v_3 will be revisited with high statistics data. Implications of these measurements in the context of QCD phase structure at high baryon density region will be discussed.

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[1] L. Adamczyk et al. (STAR), Phys. Rev. Lett. **110**, 142301 (2013)

[2] L. Adamczyk et al. (STAR), Phys. Rev. C **88**, 014902 (2013)

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Author: LIU, Like

Presenter: LIU, Like

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