Triangular flow of strange and multi-strange hadrons in BES-II energies at RHIC

Prabhupada Dixit (for the STAR collaboration)

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Anisotropic flow of the medium formed in heavy-ion collisions is a sensitive observable to the equation of state and transport properties of the medium. The third order anisotropy known as triangular flow (v_3) arises mainly due to the fluctuations present in the initial stages of the colliding nuclei. The triangular flow is found to be more sensitive to the transport property such as viscosity to entropy density ratio (η/s), compared to the elliptic flow (v_2) [1]. Hence systematic measurements of v_3 at different energies are useful to constraint the temperature dependence of η/s of the produced medium.

STAR has recently finished the data taking for RHIC Beam Energy Scan Phase-II (BES-II) program with higher statistics, improved detector condition, and wider pseudorapidity coverage compared to what was available during BES-I program. In this talk, we will present the measurements of $v_3(p_T)$ of identified hadrons, specifically strange and multi-strange hadrons (K^0_S, Λ, $\bar{\Lambda}$, ϕ, Ξ^-, $\bar{\Xi}^+$, Ω^-, and $\bar{\Omega}^+$) using high statistics BES-II data at mid-rapidity ($|y| < 1.0$) in Au+Au collisions at $\sqrt{s_{NN}}$ = 7.7, 14.5, and 19.6 GeV. The difference in v_3 between baryon to anti-baryons will be shown. A test of the number of constituent quark (NCQ) scaling, centrality dependence, and the collision energy dependence of v_3 will be presented. The results will be compared to v_2 measurements for the same kinematics and to the predictions from a multi-phase transport model. Finally, the physics implications of our measurements in the context of the initial state and transport properties of the medium produced at BES-II energies will be discussed.

References

[1] B. Schenke, S. Jeon, and C. Gale, Phys. Rev. Lett. **106**, 042301 (2011).