Measurement of triangular flow of identified hadrons in Au+Au collisions from the RHIC Beam Energy Scan program with STAR

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November 2025

1 Abstract

The triangular flow coefficient (v_3) is the third term in the Fourier expansion of the azimuthal distribution of particles produced in heavy-ion collisions. A non-zero v_3 arises from event-by-event fluctuations in the positions of participant nucleons within the collision zone. Higher order flow coefficients, particularly v_3 and higher harmonics, exhibit enhanced sensitivity to the transport properties of the created medium, including the shear viscosity-to-entropy density ratio (η/s) [1].

In this talk, we present the measurement of v_3 for identified hadrons in Au+Au collisions from the RHIC Beam Energy Scan (BES) by the STAR experiment, covering $\sqrt{s_{NN}} = 7.7$ to 62.4 GeV. We will show the transverse momentum (p_T), centrality, and collision energy dependence of v_3, which serve as important observables for constraining the η/s of the medium. Additionally, we will present the number-of-constituent-quark (NCQ) scaling and the coalescence sum rule for v_3, which may provide insight into the properties of the medium and the possible onset or disappearance of partonic collectivity.

References

[1] Björn Schenke, Sangyong Jeon and Charles Gale, Phys. Rev. C. 85, 024901 (2012).