Beam-energy and system-size dependence of the high-pT azimuthal anisotropy with the STAR experiment

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Abstract

Studying the quenching of high momentum particles in collision systems of various shapes and sizes provides crucial insights on the initial conditions and the transport properties of the QGP. Such insights can be obtained via investigations of the high transverse momentum (p_T) anisotropy harmonics and their collision energy and system-size dependence. We present the beam-energy and system-size dependence of the elliptic and triangular anisotropy coefficients, v_2, and v_3, for several centrality selections as a function of p_T up to 15-20 GeV/c, from the STAR experiment. Our recent detailed measurements, with different long-range non-flow subtraction techniques, will be presented for U+U at 193 GeV, Cu+Au at 200 GeV, and Au+Au at 200, 54, and 27 GeV. The scaling properties of these data, as well as the comparisons to similar LHC measurements, are expected to provide unique constraints on both the initial-state geometry and the transport coefficient $\widehat{q}/T^3$. The implications of our measurements for a future O+O run at RHIC will also be discussed.