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Investigation of the linear and mode-coupled flow harmonics in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV

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The elliptic and triangular flow coefficients, v_2 and v_3 , are expected to be driven by the initial anisotropy coefficients of the same order, ϵ_2 and ϵ_3 , respectively. However, the higher order flow coefficients, v_n ($n > 3$), are comprised of linear contributions driven by ϵ_n , as well as mode-coupled contributions derived from the lower order coefficients. The study of these disparate contributions to v_n can give important insight to discern initial-state models and to constrain the temperature-dependent specific shear viscosity, $\frac{\eta}{s}(T)$. In recent work, we have made detailed measurements of both the linear and the mode-coupled coefficients, v_n ($n=4,5$), in Au+Au collisions ($\sqrt{s_{NN}}=200$ GeV) using 2- and multi-particle correlations based on the standard and subevent cumulant methods. These measurements will be presented as a function of centrality, p_T and particle species. The comparisons to the LHC measurements and different theoretical calculations will be presented. The implications of these comparisons for initial-state models and $\frac{\eta}{s}(T)$ will be discussed.

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