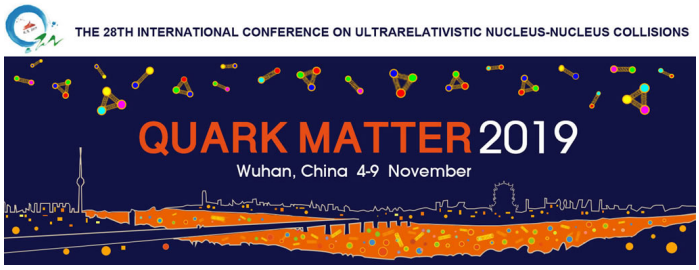

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Beam-energy and collision-system dependence of the linear and mode-coupled flow harmonics from STAR

Wednesday, 6 November 2019 09:40 (20 minutes)

Recent measurements and hydrodynamic model calculations suggest that the higher-order flow coefficients, v_n (n $>$ 3), have two contributions: a linear contribution driven by the initial-state eccentricities, ϵ_n, and a mode-coupled contribution derived from the lower-order eccentricity coefficients ϵ_2 and ϵ_3. Measurement of these two contributions to v_n provides crucial insights to discern initial-state models and to constrain the temperature-dependent specific shear viscosity, $\eta/s(T)$, of the plasma produced in heavy-ion collisions. In this work, we have employed the traditional, two- and three-subevents cumulant techniques to provide the first beam-energy and collision-system dependence of the linear and mode-coupled contributions to the higher-order flow harmonics and the associated correlations between different flow symmetry planes. Our results will be presented and discussed for several transverse momenta selections, particle species, and centrality intervals for U+U collisions at $\sqrt{s_{NN}}$= 193 GeV, Au+Au collisions at $\sqrt{s_{NN}}$=200, 54.4, 39 and 27 GeV and Cu+Au collisions at $\sqrt{s_{NN}}$=200 GeV. The results are compared with similar studies performed by ALICE/CMS/ATLAS experiments at LHC. The measurements will also be compared to several viscous hydrodynamic calculations to pin down the respective influence of initial-state fluctuations, mixed harmonic correlations, system-size, shape (ε) and $\eta/s(T)$ on v_n.

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