Explore the nuclei deformation with mean transverse momentum and anisotropy flow in heavy-ion collisions CHUNJIAN ZHANG, SHENGLI HUANG, Stony Brook University, STAR COLLABORATION — Collective phenomena in heavy-ion collisions are very sensitive to initial geometry including nuclei deformation effects. Recent hydrodynamic model calculations suggest that such deformation effects can be probed by studying event-by-event mean p_T ($\langle p_T \rangle$) fluctuation and the correlation between mean p_T and harmonic flow. In particular, due to prolate shape of the Uranium nuclei, significant difference between Au+Au and U+U collisions is expected for these observables. This talk presents new measurements as a function of centrality from Au+Au at $\sqrt{s_{NN}} = 200$ GeV and U+U at $\sqrt{s_{NN}} = 193$ GeV collisions with the STAR detector. Results on the high-order cumulants of $\langle p_T \rangle$ fluctuations and Pearson correlation coefficient between $\langle p_T \rangle$ and harmonic flow v_n from these two systems will be presented. The results will be compared with model calculations to constrain initial geometry as well as medium properties and final state effects in these collisions.

Chunjian Zhang
Stony Brook University