Collision energy dependence of mean transverse momentum fluctuations in Au+Au collisions at STAR

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Event-by-event measurements play a crucial role in understanding the high-energy nuclear interaction dynamics and the properties of hot and dense medium. Fluctuations of the event-wise average transverse momentum $\langle p_T \rangle$ are related to event-by-event fluctuations of the size and entropy of the initial source. In this poster, we present the first multi-particle cumulant of p_T correlations of its mean, variance, skewness, and kurtosis as a function of event centrality for Au+Au collisions in $\sqrt{s_{\rm NN}}$ = 7.7, 9.1, 11.5, 14.5, 19.6, 27, 39, and 54.4 GeV at high statistics of the first and second phase of RHIC Beam Energy Scan. These results are useful as a constraint on the magnitude of fluctuations in the initial conditions of the hot medium and the fluctuations of the early-time thermodynamic quantities across different collision energies.