

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

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