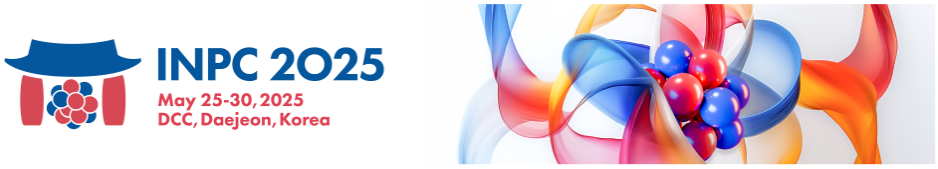

Contribution ID: **473** Type: **Contributed Oral Presentation**

Energy dependence of transverse momentum fluctuations in Au–Au collisions from a multiphase transport model

Friday, 30 May 2025 12:10 (15 minutes)

Event-by-event mean transverse momentum fluctuations (⟨pT ⟩) offer a sensitive probe of initial state overlap area and energy density fluctuations in relativistic heavy-ion collisions. We investigate these fluctuations in Au+Au collisions at 3.0–19.6 GeV, focusing on the centrality and energy dependence using an improved multiphase transport (AMPT) model. A power-law dependence of pT cumulants on centrality is observed, consistent with the independent source picture.
Normalized mean transverse momentum ⟨pT⟩ fluctuations and scaled cumulants are conducted, with variances aligning well with the trends observed in experimental data. Using a two-subevents method, short-range correlations are slightly suppressed compared to the standard approach. These findings potentially establish a robust framework for investigating initial state fluctuations across different energies in heavy-ion collisions.

Primary authors: Prof. ZHANG, Chunjian (Fudan University (CN)); Mr CHEN, Jinhui (Fudan University (CN)); ZHANG, Liuyao (Fudan University (CN))

Presenter: ZHANG, Liuyao (Fudan University (CN))

Session Classification: Parallel Session

Track Classification: Hot and Dense Nuclear Matter