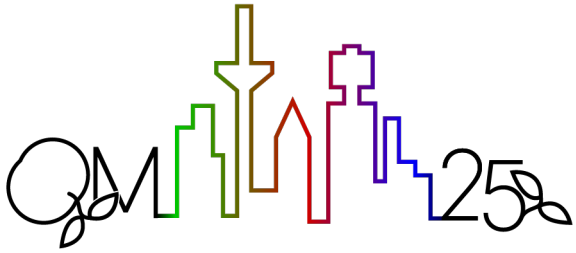

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Event-by-event mean transverse momentum fluctuations of identified particles in pp collisions at $\sqrt{s}$ = 13.6 TeV with ALICE at the LHC in Run 3 data

Mean transverse momentum ($\langle p_{\mathrm{T}} \rangle$) fluctuations are dynamic indicators of system properties, arising from correlations among the transverse momenta of final-state particles, such as those due to resonance decays and jets. Consequently, event-by-event $\langle p_{\mathrm{T}} \rangle$ fluctuations in pp collisions serve as a model-independent baseline to explore non-trivial fluctuations in heavy-ion collisions. Studying these fluctuations for identified particles (pions, kaons, and protons) provides insights into the production mechanisms and dynamics. Pions and kaons are mesons with kaons containing strange quarks, and both differ in quark composition from protons, which are baryons. The strength of the correlator will be compared among these particles.

In this contribution, the event-by-event $\langle p_{\mathrm{T}} \rangle$ fluctuations of identified particles produced in pp collisions at $\sqrt{s}$ = 13.6 TeV are measured as a function of the charged-particle multiplicity using the ALICE detector at the LHC with Run 3 data. Non-statistical fluctuations are observed in pp collision systems, indicating correlated particle emission. A significant reduction in dynamical fluctuations is noted with increasing multiplicity for both inclusive charged particles and identified particles.

Category

Experiment

Collaboration (if applicable)

ALICE

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