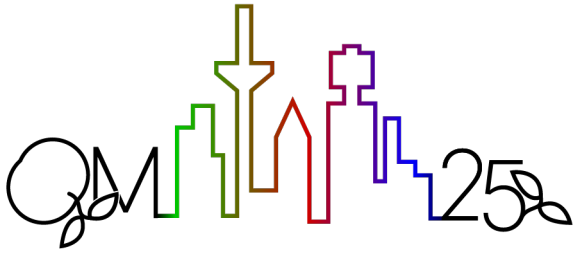

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Event-by-event investigation of the kaon and pion pair-source function with EPOS

In high-energy collisions, by measuring the two-particle Bose–Einstein correlation function and considering its relationship with the phase-space density of the particle-emitting source, we can obtain information about the source function. While a Gaussian shape is commonly assumed, anomalous diffusion suggests Lévy-stable distributions, as observed in the PHENIX experiment for kaon-kaon and pion-pion pair-source functions. Event generators like EPOS allow direct investigation of freeze-out coordinates, facilitating the analysis of the source function. EPOS, a Monte Carlo-based model, simulates high-energy nuclear and particle collisions, integrating Parton-Based Gribov-Regge theory for initial evolution, subsequent hydrodynamic evolution, and hadronization. In this talk, I will present an event-by-event analysis of the kaon-kaon and pion-pion source function in $\sqrt{s_{\mathrm{NN}}}$ = 200 GeV Au+Au collisions using the EPOS model. Through comparing the results, we can determine the factors contributing to deviations from the Gaussian shape.

Category

Theory

Collaboration (if applicable)

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