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Investigating the two-particle source function in heavy-ion collisions with EPOS

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Exploring the shape of the pair-source function for particles such as pions or kaons has been an important goal of heavy-ion physics, and substantial effort has been made in order to understand the underlying physics behind the experimental observations of non-Gaussian behavior. In experiments, since no direct measurement is possible, femtoscopic (momentum) correlations are utilized to gain information about the space-time geometry of the particle emitting source. Event generators such as the EPOS model, however, provide direct access to the freeze-out coordinates of particles, and thus the source function can be constructed and investigated. The EPOS model has already proven to be successful in describing many different experimental observations for systems characterized by baryon chemical potential close to zero, but so far the source shape has not been explored in detail. On this poster an event-by-event analysis will be presented, focusing on the two-particle source function measured in $\sqrt{s_{NN}}$ = 200 GeV Au+Au collisions generated by the EPOS model. The emergence of the non-Gaussian behavior at different phases of the model as well as a detailed centrality and average transverse momentum dependence of the extracted source parameters will be discussed.

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