

The Shape of the Correlation Function

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Correlation femtoscopy has become a standard technique for measuring and probing the space-time evolution of heavy-ion collisions. Usually, two-particle correlation functions are fitted to a Gaussian form. However, the real shape of the correlation function is often strongly non-Gaussian and better described by a Lévy-stable distribution. A Lévy index much below 2 has recently been observed experimentally. It has been suggested that an even lower value of the Lévy index equal to 0.5 may identify matter produced at the critical endpoint of the QCD phase diagram. Despite this, there are non-critical effects which can also influence the value of the Lévy index significantly, and it is crucial to quantify the magnitudes of these effects before assigning physical significance to a measurement of the Lévy index.

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