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PHENIX Levy analysis of Bose-Einstein correlation functions

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Bose-Einstein or HBT correlations of identified charged particles provide insight into the space-time structure of particle emitting sources in heavy-ion collisions. The two-pion HBT correlation function strength (intercept parameter) and especially the transverse mass dependence of it (together with similar information from higher order correlation functions) may carry information on the core-halo structure of the source as well as on the possible coherent particle production. For a robust measurement of the intercept parameter, a source model beyond that of a Gaussian needs to be applied: we utilize Levy distributions, whose index of stability α may also yield information on the nature of the phase transition. The PHENIX experiment at RHIC collected data from $\sqrt{s_{NN}} = 200$ GeV Au+Au collisions in the 2010 running period. We present the latest status of the PHENIX measurement of two-pion Bose-Einstein correlations in this dataset, and the analysis of the Levy source parameters as a function of transverse momentum.

Author: KINCSES, Dániel (Eötvös Loránd University, PHENIX collaboration)

Presenter: KINCSES, Dániel (Eötvös Loránd University, PHENIX collaboration)

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