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Effect of a Hubble-expanding random field on the strength of multi-particle quantumstatistical correlation functions

Quantum statistical correlation measurements represent an important tool to obtain information about the space-time structure of the particle emitting source. There are several final state effects which may modify the measured femtoscopic correlation functions and hence they have to be considered. One of these is the Coulomb-interaction (in case of charged particles), another (in case of protons) is the strong interaction. An other important effect may be the interaction of the investigated particles with the expanding cloud or fireball of the other final state particles. This may cause the trajectory of the particles to be modified. This effect could be interpreted as an Aharonov–Bohm-like effect in the sense the possible paths of pair represent a closed loop with an internally present field. In my talk I present the possible role of this effect in heavy ion experiments with an analytical calculation and a toy model simulation. We investigate the modification of the strength of the Bose–Einstein correlation functions and propose a measurable quantity from the toy model, sensitive to this effect.

List of tracks

Femtoscopy in A+A, p+p , p+A and e+-e- collisions at relativistic, intermediate and low energies

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