

Study of femtoscopic emission sources in AMPT and ALICE experiments

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The measurement of momentum correlations of identical pions serves as a fundamental tool for probing the space-time properties of a particle-emitting source created in high-energy collisions. Recent experimental results have shown that in pp collisions, the size of the one-dimensional primordial source depends on the transverse mass (m_T) of the hadron pairs, following a common scaling behavior similar to that observed in Pb–Pb collisions. In this study, a systematic analysis of the π – π source and correlation functions was performed using the multiphase transport model (AMPT) to understand the properties of the emitting source created in high-multiplicity pp collisions at $\sqrt{s} = 13$ TeV. The m_T -scaling behavior and pion emission source radii measured by the ALICE experiment can be described well by a model with a subnucleon structure. This work sheds new light on the effective size of the π – π emission source and the study of intensity interferometry in small systems using a transport model.

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