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Differential measurements of the particle-emitting source via proton-proton femtoscopy in pp and Pb-Pb collisions in LHC Run 3 with ALICE

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Correlation femtoscopy is a well-known tool used in nucleus-nucleus collision experiments for studying space-time properties of the particle-emitting source via momentum correlations based on the laws of quantum statistics, Coulomb and strong interactions. In this talk, the most recent results of femtoscopic analysis of identical proton pairs measured by ALICE in various collision systems (pp at $\sqrt{s_{NN}} = 0.9$ and 13.6 TeV, Pb-Pb at $\sqrt{s_{NN}} = 5.36$ TeV) using Run 3 LHC data are presented.

Indeed, the large datasets collected by ALICE during the ongoing Run 3 provide an unprecedented opportunity to perform a scan of proton-emitting source from the smallest to largest systems currently available at the LHC. The multiplicity dependence of the extracted source size is discussed as well as the m_T -dependence of the radii.

The measurements are also essential for coalescence models addressing nuclear cluster production and serve as a crucial reference for high-precision studies of interaction potentials in hadron-hadron pairs using ALICE Run 3 data.

Secondary track

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