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Femtoscopy of identified particles in Pb-Pb collisions with ALICE at the LHC

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Femtoscopy allows measurements of the space-time characteristics of particle production using correlations resulting from the effects of quantum statistics and final state interactions. We present the results of femtoscopic analyses for different identified particle systems measured by ALICE in Pb-Pb collisions at 2.76 TeV. Hydrodynamic models predict a decrease of the radii with increasing pair transverse m_T due to radial flow. Correlation measurements of heavy particles extend the range over which the transverse mass dependence of the source radii can be studied and thus can serve, as a tool to learn about the dynamics of he deconfined medium. Particularly, we compare the measured 3D kaon radii with a model where the hydrodynamic phase is succeeded by a hadronic rescattering phase and a purely hydrodynamical calculation. The latter predicts an approximate mT scaling of source radii obtained from pion and kaon correlations. This m_{T} scaling appears broken in our data, which indicates strong rescattering in the hadronic phase at LHC energies. The emission duration and the decoupling time of the system are also estimated using the three-dimensional femtoscopic analysis for kaons, and compared with such estimates obtained from pions.

On behalf of collaboration:

ALICE

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