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Using femtoscopy to probe the strong interaction for mesons and baryons and their anti-particles in pp and Pb-Pb collisions with ALICE

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Understanding the strong interaction between particles is one of the most fundamental problems in nuclear physics. Parameters of this interactions are well-known only for a limited set of particle pairs. Little is known about the cross section of baryon-anti-baryon scattering as well as about the interaction of mesons and baryons with Λ or Ξ hyperons.

The ALICE detector has excellent tracking and particle identification capabilities over a broad momentum range which makes a variety of different measurements possible. Femtoscopy, the technique of measuring short-range two-particle correlations as a function of relative momentum, which is traditionally utilized to measure the size of the QGP fireball created in relativistic heavy-ion collisions, can be also used to probe the strong interaction for different meson and baryon pairs.

In this talk we present the results of the femtoscopic analysis of baryon-baryon and baryon-anti-baryon pairs, namely pp, p, and \bar{p} pairs in pp collisions at 7 and 13 TeV, as well as pp, p, and $\Lambda\bar{\Lambda}$ in Pb-Pb collisions at 2.76 and 5.02 TeV. Correlations of Λ and Ξ hyperons with charged kaons in Pb-Pb collisions at 2.76 TeV are also discussed. For all studied pairs the strong interaction cross section parameters are extracted and compared to available world data.

Content type

Experiment

Collaboration

ALICE

Centralised submission by Collaboration

Presenter name already specified

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