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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 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

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