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Femtoscopy with lambda baryons in Pb-Pb collisions with ALICE at the LHC

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For two-particle systems with a well known interaction, ranging from pion-pion to proton-lambda, femtoscopy is used to measure the space-time characteristics of the fireball created in heavy-ion collisions at kinetic freeze-out. For less known systems, femtoscopy can be used to extract nuclear scattering information for the particles being studied. In particular, the scattering length and effective range of interaction can be extracted from fits of femtoscopic correlation functions. This technique has applications in the study of hyperon-hyperon interactions, where precise scattering measurements are still needed. However, there are non-trivial complications due to the possible residual correlations introduced by feed-down from other hyperons when studying lambda particles.

We present measurements of baryon-baryon, antibaryon-antibaryon, and baryon-antibaryon correlation functions involving lambda particles in Pb-Pb $\sqrt{s_{\mathrm{NN}}} = 2.76$ TeV collisions with ALICE. The results are compared to femtoscopic measurements from other analyses, as well as to model predictions. We also present our methodology for quantifying the correlations from feed-down.

On behalf of collaboration:

ALICE

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