

Accessing the strong interaction between Λ baryons and kaons with femtoscopy at LHC

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The interaction between Λ baryons and kaons/antikaons is a crucial ingredient for low energies effective models aiming at describing the strangeness $S = 0$ (ΛK) and $S = -2$ (ΛK) sector of the meson-baryon interaction.

Of particular interest is the ΛK interaction, where the presence of the $\Xi(1620)$ resonance close to the threshold should play a significant role. The $\pi\Xi$ decay channel of the $\Xi(1620)$ resonance has been recently observed by the Belle collaboration, providing the first experimental values for its mass and width. However, no measurements are available for the ΛK channel. Delivering high-precision data on the ΛK system can help to shed light into the nature of the $\Xi(1620)$ state and its formation. Experimental data on ΛK , and as well on ΛK , are currently rather scarce, leading to large uncertainties and tensions between the available theoretical predictions. Recently, measurements of two-particle correlations in small colliding systems such as pp collisions at the LHC provided a significant improvement in the knowledge of several hadron-hadron interactions, in particular when strange baryons and mesons are involved.

In this talk, we present ΛK^+ and ΛK^- femtoscopic correlations measured by ALICE in pp collisions at $\sqrt{s} = 13$ TeV, obtained with a high-multiplicity trigger. The measurements indicate a repulsive interaction for ΛK^+ pairs and an attractive interaction for ΛK^- . In particular, we will show the first experimental evidence of the $\Xi(1620)$ decaying into ΛK^- pairs and discuss the effect of the $\Xi(1620)$ state on the ΛK interaction.

Collaboration

ALICE

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