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Strong interaction studies in Λ-hadron systems up to S=-3 with ALICE

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The study of the strong interaction among stable and unstable hadrons is a fundamental question in nuclear physics and it is a key ingredient for the determination of the Equation of State of dense stellar objects, such as neutron stars. Two-particle correlation measurements are a prominent tool to probe the strong interaction with high precision even in the multi-strangeness sector, where traditional measurements, including scattering and hypernuclei experiments, are insufficient to provide strong constraints to the theoretical modeling. The ALICE Collaboration has demonstrated that high-multiplicity pp collisions are particularly well suited for these correlation measurements due to the enhanced production of strangeness in such collisions. Combined with the excellent tracking and particle identification capabilities of the ALICE detector, the laboratory for precision studies of the strong interaction among strange hadrons is set up. Λ-hadron systems are of great interest because the absence of Coulomb interaction allows to focus exclusively on the strong interaction. In this contribution, the latest ALICE results on the study of the two-body interactions in four different strangeness systems, namely $p-\Lambda$ (S=-1), $\Lambda-K^-$ and $\Lambda-\Lambda$ (S=-2), and $\Lambda-\Xi^-$ (S=-3), will be presented and their interpretation in the context of the available theoretical predictions will be discussed.

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