Contribution ID: **380** Type: **Invited Presentation**

Understanding two- and three-body hadronic interactions using femtoscopy

Monday 22 September 2025 14:50 (25 minutes)

The femtoscopy technique at the Large Hadron Collider has proven capable of providing unprecedented precision information on the low-energy interaction between nucleons and strange hadrons. The experimental methodology exploits the emission of particle pairs at the femtometer scale in the collisions and analyzes the momentum correlation induced by free scattering of the produced hadrons. The measurements of the p-Λ and p-Ξ- correlation functions by the ALICE collaboration have been used to challenge effective field theory results and to test for the first time lattice QCD calculations. Recently, the same experimental technique has been used to access the dynamics of three hadrons and three-nucleon (N-N-N) as well as N-N-Λ correlation measurements became available. Phenomenological calculations indicate that the effect of the three-body forces in the N-N-Λ correlation function is pronounced, demonstrating that correlation function analyses can be used to access the dynamics of few-body systems. In this contribution, I will discuss the impact of the femtoscopy method on the understanding of the two- and three-body interactions with hadrons.

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Session Classification: Few-Body Systems

Track Classification: Few-Body Systems