

## The 227th HENPIC Seminar Understanding two- and three-body hadronic interactions using femtoscopy Speaker: Prof. Raffaele Del Grande (Czech Tech. U)

中国高能该物理的 HIGH ENERGY NUCLEAR PHYS

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## Abstract:

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-A and p- $\Xi$  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-A correlation measurements became available. Phenomenological calculations indicate that the effect of the three-body forces in the N-N-A correlation function is pronounced, demonstrating that correlation function analyses can be used to access the dynamics of few-body systems. In this seminar, I will discuss the impact of the femtoscopy method on the understanding of the two-and three-body interactions with hadrons.

## About the speaker:

Raffaele Del Grande carned B.S. from U of L'Aquila (2011), M.S. from U of Rome La Sapienza (2014), and Ph.D. from INFN Frascati (2018), studying hadronic physics at DAFNE. As a postdoc in Frascati (2018-2020), he researched kaonic atoms at DAFNE and Pauli-violating atoms at Gran Sasso Lab. In 2020, he joined ALICE group of Tech. U in Munich, focusing on hadronic interaction studies via femtoscopy and coordinating all ALICE femtoscopy analyses (2022-2024). In 2025, he became Asst, Prof. at Czech Tech. U in Prave.



## HENPIC website: https://indico.ihep.ac.cn/event/11115

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