**Joint seminar of the NPI of the CAS**

**23. 10. 2025**

**Dr. Raffaele Del Grande, FNSPE CTU Prague: *Femtoscopy for interactions at the LHC***

Abstract:

Correlation techniques at high energy accelerators have proven capable of unveiling many previously unknown aspects of the low-energy hadron dynamics. The experimental methodology exploits the emission of particle pairs at the femtometer scale in ultrarelativistic collisions and analyzes the momentum correlation induced by free scattering of the produced hadrons in the final state. Among the results, the residual strong interaction of strange hadrons with nucleons, including double and triple strangeness systems, has been accessed for the first time thanks to the precise measurements provided by the ALICE Collaboration. One remarkable example is on the low-energy interaction of N-Λ pairs which has been probed with unprecedented precision ever. The next challenge is to employ the same experimental technique to access the dynamics of three hadrons and, recently, three-nucleon N-N-N and N-N-Λ correlation measurements became available. The formalism for three-body measurements is not yet established due to the complexity of the three-body scattering process which depends as well on the nature of the involved hadron species. In this talk I will discuss the so far achieved results in the strangeness sector with a focus on the three-body correlation measurements performed and planned in the near future by ALICE.