Contribution ID: **78** Type: **Plenary**

Theoretical approach to correlation functions of strange hadrons at accelerator experiments and search for exotic bound states

Wednesday, 19 May 2021 16:45 (30 minutes)

Hadron-hadron interactions are the basic inputs to discuss hadronic molecules and hadronic nuclei. Flavored hadron interactions, however, are generally difficult to access in standard scattering experiments. Recent research activities on hadron-hadron correlation functions open a systematic way to access flavored hadron interactions such as ΩN, ΞN, $\bar{K}N$ and even DN ($\bar{D}N$). SInce the correlation function is given as the average of the wave function squared with the normalized source function weight, it contains the information of the hadron-hadron interaction. In this talk, I first give a brief review of femtoscopic studies of hadron-hadron interactions based on the correlation functions obtained mainly by the RHIC-STAR and LHC-ALICE collaborations. I also discuss how to diagnose the existence of the bound state by using correlation functions. Specifically, I argue that the STAR and ALICE data of the $p\Omega$ correlation function suggest the existence of a $N\Omega$ bound state. Also, the pK^- correlation function from pp, pA and heavy-ion collisions may further elucidate the $\bar{K}N$ bound state nature of the $\Lambda(1405)$.

Collaboration

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Session Classification: Plenary Session