Contribution ID: **136** Type: **Talk**

Constraining the $\overline{\mathrm{K}}$N coupled channel dynamics using femtoscopic correlations with ALICE at the LHC

Tuesday 14 June 2022 15:00 (20 minutes)

The $\overline{\mathrm{K}}$p system is characterised by the presence of several coupled channels, systems like $\overline{\mathrm{K}}^0$n and $\pi\Sigma$ with a similar mass and the same quantum numbers as the K^-p state. The strengths of these couplings to the K^-p system are of crucial importance for the understanding of the nature of the $\Lambda(1405)$ and of the attractive K^-p strong interaction.

In this talk, we will present the measurements of the K^-p and K^0_sp correlation function in relative momentum space obtained in pp collisions at $\sqrt{s}$ = 13 TeV, in p-Pb collisions at $\sqrt{s_{\mathrm{NN}}}$ = 5.02 TeV, and Pb-Pb collisions at $\sqrt{s_{\mathrm{NN}}}$ = 5.02 TeV. The emitting source size varies between 1 and 2 fm for pp, p-Pb and peripheral Pb-Pb, whereas for central Pb-Pb collisions it is between 5 and 9 fm. As the source size increases, the effect of the inelastic contributions is suppressed and the shape of the correlation function is mostly driven by the elastic interaction.

The strength and the effects of the $\overline{\mathrm{K}}^0$n and $\pi\Sigma$ inelastic channels on the measured K^-p correlation function are investigated in the different colliding systems by comparing the data with state-of-the-art models of chiral potentials. Finally, a novel data-driven approach to determine the coupling weights, necessary to quantify the amount of produced inelastic channels in the correlation function, is presented. The comparison of chiral potentials to the measured K^-p interaction indicates that, while the $\pi\Sigma$-K^-p dynamics is well reproduced within the model, the coupling to the $\overline{\mathrm{K}}^0$n channel in the model is currently underestimated.

Present via

Offline

Primary author: KORWIESER, Maximilian (Technische Universitaet Muenchen (DE))

Presenter: KORWIESER, Maximilian (Technische Universitaet Muenchen (DE))

Session Classification: PA-Light-flavor and Strangeness

Track Classification: Light-flavor and Strangeness