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First measurement of properties of strong interaction between (anti-)deuterons and charged kaons in Pb–Pb collisions with ALICE

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The interaction between charged kaons and (anti-)deuterons has been a missing piece of information in the field of the low-energy (anti-)kaon-nucleon interactions for more than 40 years. So far, the only experimental studies of the strong interaction have come from scattering experiments that provided the scattering cross sections at intermediate momenta. Specific information on the strong interaction can be accessed also via kaonic deuterium X-ray spectroscopy but such measurements are challenging due to the available detection efficiency. Moreover, the theoretical description of the strong interaction of the system is also not well understood. Therefore, predictions of f_0 value for K^-d have been made based on an input from kaonic hydrogen measurements, while there are no published predictions for K^+d .

In this talk, the first measurements of the scattering lengths of K^+d and K^-d particle pairs are presented. The values of the scattering parameters were obtained using a femtoscopy technique, which is excellent for studying interactions between two particles with low relative momenta.

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