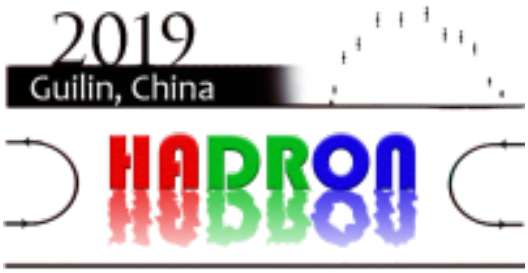

Contribution ID: **131** Type: **Leading parallel**

Precise tests of the hadron-hadron strong interaction via femtoscopy with ALICE.

Sunday, 18 August 2019 14:00 (25 minutes)

Our experimental knowledge on hadron-hadron interactions is based mostly on scattering data and, in the case of systems with strangeness, the characterization of hypernuclei. The femtoscopy technique, by measuring the correlations between particle pairs with low relative momentum, has been used to measure the size of the QGP fireball created in relativistic heavy-ion collisions. Now we show how femtoscopy can be used to study the effects of the strong interaction between particle pairs, delivering complementary and, in general, more precise information when compared to the traditional measurements.

Small collision systems, like pp and p-Pb, with source sizes of the order of 1 fm, prove to be particularly sensitive to the short-ranged strong potentials. Using an analytical solver for the Schrödinger equation, femtoscopy can be used to test the potentials of the interaction between different kind of hadrons.

In this contribution, we present measurements performed using ALICE data from pp collisions at √s=7 and 13 TeV and p–Pb collisions at √s_{NN}=5.02 TeV. The proton-proton correlation function is used to constrain the size and shape of the particle emitting source and results from baryon-hyperon (p-Λ, p-Σˆ0, p-Ξˆ- and p-Ωˆ-), hyperon-hyperon (Λ-Λ) and baryon-meson (p-Kˆ-) correlations are shown. The high precision of the data allow us to test with high sensitivity the predictions from the most recent models of such interactions, including chiral, meson exchange models, and Lattice QCD calculations. The consequences for the equation of state for neutron-rich matter including hyperons and for the possible existence of exotic di-baryons are discussed.

Primary author: VAZQUEZ DOCE, Oton (T)

Presenter: VAZQUEZ DOCE, Oton (T)

Session Classification: Session 7: Hadrons in hot and nuclear environment including hypernuclei

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