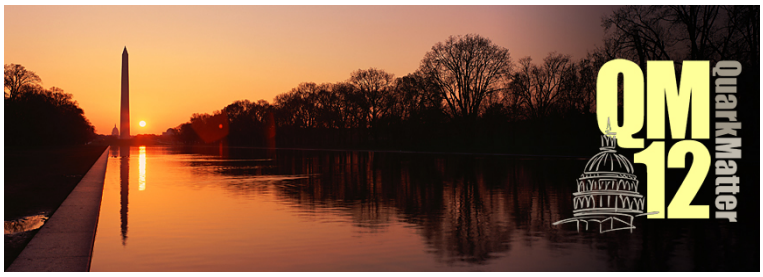

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Meson and baryon femtoscopy in heavy-ion collisions at ALICE

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In heavy-ion collisions produced at the LHC two-particle correlations of mesons and baryons carry important information about the emitting source. At low relative momentum femtoscopic correlations arise, which are sensitive to the homogeneity lengths of the system. Hydrodynamic models predict that these will decrease with increasing transverse mass of the pair. Such decrease is universally reported for pions, also at the LHC. Kaons and baryons, having a much larger mass, allow to significantly extend the range of measured m_T. The femtoscopic results for heavier particles would put a strong constraint on such predictions. Non-identical baryon and meson pairs are also sensitive to emission asymmetries.

Femtoscopic correlations between baryons arise mostly due to the strong interaction, which is not precisely known for some baryon pair types. Most notable example is the lambda-lambda interaction which has an unknown contribution due to the potential existence of the H0 dibaryon. Equally interesting are baryon-antibaryon potentials, which have a significant contribution from annihilation channels. These processes may have an impact on single-particle spectra, and should be investigated as one of the possible sources of the small proton yield at the LHC.

We show the two-particle correlation functions for several pair types (baryon-baryon, baryon-antibaryon and meson-meson), consisting of neutral and charged kaons, protons and lambdas. Femtoscopic analysis is carried out for them, taking into account, when necessary, residual correlations and annihilation channels. Results are presented as a function of transverse mass and event multiplicity, comparing with the pp collisions results when possible. Correlations with lambdas are analyzed both with femtoscopic methods as well as to study the unknown interaction potentials.

Primary author: ALICE, Collaboration (CERN, Geneva, Switzerland)

Co-author: SZYMANSKI, Maciej Pawel (Warsaw University of Technology (PL))

Presenter: SZYMANSKI, Maciej Pawel (Warsaw University of Technology (PL))

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