Contribution ID: **39** Type: **not specified**

Accessing the coupled-channels dynamics with femtoscopy correlations at LHC

Monday, 8 March 2021 16:10 (30 minutes)

Systems as K–p and baryon–antibaryon (BBbar) are both characterised by the presence, already at the production threshold, of strong inelastic channels which can affect the properties and the formation of bound states and resonances.The Λ(1405), just below the antikaon-nucleon (KbarN) threshold, arises from the interplay between the KbarN and the coupled Σπ channel. This resonance is currently accepted as a molecular state but in order to provide a full description of its nature and properties, experimental constraints on the relative contribution of the Σπ coupled-channel in the strong KbarN interaction are needed. Baryon–antibaryon systems are characterised, as well, by the dominant contribution of several mesonic channels related to the presence of annihilation processes acting below 1 fm. Several predictions on possible baryonia states are present, but currently the possible existence of such bound states is still under debate due to a limited amount of data for the p–p system available, and either scarce or absent experimental data for BBar systems containing strangeness.Recently, the femtoscopy technique, which measures the correlation of particle pairs at low relative momentum, has been used in pp, p–Pb and Pb–Pb collisions at ALICE and provided high precision data on different baryon—baryon pairs indicating a great sensitivity to the underlying strong potential. In femtoscopy, only the final state (KbarN, BBar) is measured and different initial states are allowed. This translates into an extreme sensitivity of the correlation function to the introduction of the different coupled-channels, which affect both shape and magnitude of the femtoscopic signal.In this talk we will present results from pp collisions at$\sqrt{s}$= 13 TeV, separately for data samples obtained with minimum-bias and high-multiplicity triggers. In particular, we will show results on the K–p correlation function which for the first time provide experimental evidence of the opening of the coupled isospin breaking channel K0bar–n and on the Σπchannel contributions. Finally, results from baryon–antibaryon pairs (ppbar, pΛbar and ΛΛbar) will be shown for the first time.The effect of annihilation channels on the correlation function and a quantitative determination of the inelastic contributions in the three different pairs will be discussed.

Presenter: MANTOVANI SARTI, Valentina (TUM)