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Multiplicity dependence of Ξ_{C}^{+} baryon production in pp collisions at $\sqrt{s}$ = 13 TeV with ALICE

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Recent measurements of the baryon-to-meson production yield ratios between charm baryons (Λ_{c}^{+}, $\Sigma_{\mathrm{c}}^{0,++}$, $\Xi_{\mathrm{c}}^{0,+}$, Ω_{c}^{0}) and D mesons (D^{0}) in small collision systems show a significant enhancement with respect to the measurements performed in $e^{+}e^{-}$ collisions. These results were compared with various models implementing a modified hadronization of charm quarks in hadronic collisions, which enhance the production of baryons. The models can describe the measurements of Λ_{c}^{+} and $\Sigma_{\mathrm{c}}^{0,++}$, that don't contain the strange quark, but the description of $\Xi_{\mathrm{c}}^{0,+}$ and Ω_{c}^{0} measurements, which contain both charm and strange quarks, is still challenging. Therefore further investigation is needed to unveil the hadronization of $\Xi_{\mathrm{c}}^{0,+}$ and Ω_{c}^{0}.

The multiplicity dependence of Ξ_{c}^{+} production will be studied, reconstructing the Ξ_{c}^{+} via the hadronic decay channel $\Xi_{\mathrm{c}}^{+} \rightarrow \Xi^{-}\pi^{+}\pi^{+}$ at midrapidity in pp collisions at $\sqrt{s}$ = 13 TeV.

In this poster, the invariant-mass distributions of Ξ_{c}^{+} in different multiplicity bins using minimum bias and high multiplicity triggered data recorded by the ALICE detector will be shown.
The yield extraction procedure, using a machine learning model based on Boosted Decision Tree algorithms, will be briefly introduced as well.
Furthermore, the strategy for the measurement of the Ξ_{c}^{+} production cross section as a function of multiplicity will be discussed.

Theory / experiment

Experiment

Group or collaboration name

ALICE

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