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Beauty production in pp collisions at 13.6 TeV with ALICE

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Charmonium, a bound state of a charm and an anticharm quarks, represents a valuable tool to investigate the properties of the quantum chromo-dynamics (QCD). In particular, charmonium production mechanism involves both perturbative (heavy quark pair production) and non-perturbative (hadronization into the final quarkonium state) aspects, making it an important test ground for the theoretical models. In addition, charmonia production is separated into two parts, the prompt component, from the hadronization of the $c\bar{c}$ pair, and the non-prompt component from the decay of beauty hadrons. Their separation is crucial for the comparison with the various theoretical models currently used in the quarkonia sector.
Thanks to the ALICE upgrade, more precise measurements of the charmonia non-prompt fraction (f_B) have been performed at midrapidity (|y| < 0.8), and the installation of the Muon Forward Tracker (MFT) allowed to perform the first measurement of f_B at forward rapidity (2.5 < y < 3.6).
The new data-taking paradigm of Run 3 (continuous readout) allowed also to collect a sizable data sample, giving the access to the reconstruction of new beauty hadrons with respect to Run 2, as the $B^{\pm}$ in the J/ψ + $K^{\pm}$ decay channel down to low p_T at midrapidity.
In this presentation, the first prompt/non-prompt J/ψ fraction measurement at forward rapidity will be presented, as well as the improved results at midrapidity and the first measurement of $B_{\pm}$ meson production in pp collisions at $\sqrt{s} = 13.6$ TeV.

Author: BARREAU, Emilie (Subatech, Plasma Group)

Presenter: BARREAU, Emilie (Subatech, Plasma Group)

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