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Baryon number transport at LHC energies with the ALICE experiment

Particle yields along with the ratios of particle production in hadronic interactions are important indicators of the collision dynamics. In particular, the detailed analysis of the baryon spectra as well as that of $\bar{p}/p$ and $\bar{\Lambda}/\Lambda$ ratios are of great importance since they allow to determine the carrier of the baryon number (BN): is the BN carried by the valence quarks or by the gluonic field?

The Large Hadron Collider (LHC) will provide p+p collisions up to a center-of-mass energy of $\sqrt{s} = 14$ TeV and Pb+Pb collisions up to $\sqrt{s_{NN}} = 5.5$ TeV. The ALICE experiment, due to its particle identification capabilities, will allow us to study several baryon species (p, $\bar{p}$, Λ, $\bar{\Lambda}$, Ξ, Ω) at mid-rapidity ($|y| < 1.0$) with a wide transverse momentum coverage ($0.3 \approx\leq P_T \approx\leq 5$ GeV/c) and high precision.

Since the two dominant transport mechanisms for the BN produce only small differences in the observed baryon ratios, it is mandatory to understand in great detail the sources of the systematical uncertainties of these measurements. In this presentation, the expected performance of the ALICE detector setup regarding the baryon spectra, the rapidity, transverse momentum and energy dependence of the $\bar{p}/p$ and $\bar{\Lambda}/\Lambda$ will be discussed and the limits for the systematical uncertainties of these measurements will be given.

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