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Σ^0 and $\bar{\Sigma}^0$ Production in pp Collisions at $\sqrt{s} = 7$ TeV

The first measurements of Σ^0 and $\bar{\Sigma}^0$ baryons transverse momentum (p_T) spectra, integrated yields and mean p_T in pp collisions at $\sqrt{s} = 7$ TeV at the LHC are presented. The Σ^0 ($\bar{\Sigma}^0$) signal is reconstructed via the Λ ($\bar{\Lambda}$) + γ decay channel by invariant mass analysis. The Λ ($\bar{\Lambda}$) baryon is reconstructed in its decay into $p + \pi^-$ ($\bar{p} + \pi^+$), while the photon is detected exploiting the unique capability of the ALICE detector to measure low energy photons via conversion into e^+e^- pairs.

The yield of Σ^0 is compared to that of the Λ baryon, which has the same quark content but different isospin. These data contribute to the understanding of hadron production mechanisms and provide a reference for constraining QCD-inspired models and tuning Monte Carlo event generators such as PYTHIA.

Summary

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