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Testing CPT symmetry with multistrange baryons mass precision measurements with ALICE

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In any relativistic quantum field theory such as Quantum Chromodynamics or Electroweak theory, the interactions are invariant under the combined operation of Charge conjugation (C), Parity transformation (P) and Time reversal (T). One of the consequences of this (CPT) symmetry is that particles and their corresponding antiparticles must have exactly same mass. While the mass difference bewteen proton and antiproton has been measured to very high precision, the extension to (multi-)strange baryons domain still lacks precise measurements.
The ALICE detector is optimized to reconstruct decays of multistrange baryons (Ξ and Ω). The collected data in pp at $\sqrt{s}$ = 13 TeV during the LHC Run 2 (almost two billion events) together with the particle identification capabilities of the ALICE detector allow to measure the mass of the multistrange hyperons and antihyperons with very high precision. In this contribution, the mass differences between Ξ^- and $\overline{\Xi}^+$ and between Ω^- and $\overline{\Omega}^+$ will be presented, sensibly improving the precision obtained by averaging the results from previous experiments.

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