

# J/ψ polarization measurement in pp collisions at 13.6 TeV

Thursday, 30 October 2025 14:40 (20 minutes)

Quarkonia production in high-energy proton-proton (pp) collisions serves as an important probe for studying quantum chromodynamics (QCD) in vacuum. Understanding the production mechanism of the J/ψ, a bound state of a charm and anticharm quark, is essential for constraining both perturbative and non-perturbative aspects of QCD calculations. The polarization of quarkonia in pp collisions is a powerful observable for distinguishing between various QCD-based models of quarkonium production. Furthermore, J/ψ polarization measurements in pp collisions provide a valuable reference for investigating the behavior of charmonium in the quark-gluon plasma formed in nucleus nucleus collisions.

In this contribution, we will present the first preliminary results of the inclusive J/ψ polarization measurement via the dielectron decay channel at midrapidity ( $|y| < 0.9$ ) in pp collisions at  $\sqrt{s} = 13.6$  TeV. This analysis is based on data collected by the upgraded ALICE detector and benefits from the high luminosity collected during the first three years of LHC Run 3. It offers significantly higher statistics compared to the one available from previous pp data collected during the Run 2 of LHC, allowing for the first J/ψ polarization measurement at midrapidity. This analysis will be discussed together with previous J/ψ measurements in pp collisions from ALICE based on Run 2 data.

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**Session Classification:** Parallel 3

**Track Classification:** ALICE