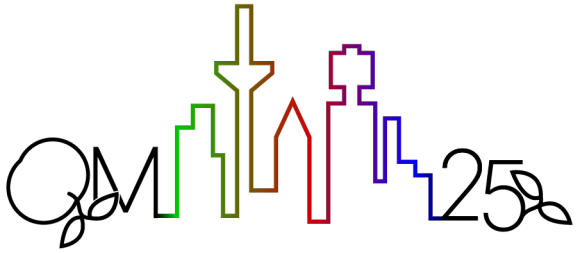

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Quarkonium production in pp collisions at $\sqrt{s}$ = 13.6 TeV with ALICE

The study of quarkonium production in high-energy proton-proton (pp) collisions allows the investigations of both perturbative and non-perturbative aspects of quantum chromodynamics (QCD). Charmonia states, which are bound states of charm and anti-charm quarks, are produced via a process that can be factorized into two distinct stages: the generation of heavy quarks, followed by the formation of the bound state. The initial stage, governed by hard parton-parton scatterings at substantial momentum transfer, is effectively described by perturbative QCD. In contrast, the second stage, which involves large spatial separations and low momentum scales, is intrinsically non-perturbative. Precise measurements of quarkonium production cross sections in pp collisions are essential for enhancing the understanding of charmonium production mechanisms and for testing various theoretical models. Moreover, these measurements provide fundamental benchmarks for investigating the properties of the quark-gluon plasma produced in nucleus-nucleus collisions and for evaluating cold nuclear matter effects in proton-nucleus collisions. In this contribution, preliminary results on the double ratio of $\psi(2S)$-to-J/ψ as well as on the inclusive quarkonium yields in pp collisions at $\sqrt{s}$ = 13.6 TeV, measured by the ALICE Collaboration, will be presented and compared with current theoretical model predictions. Additionally, preliminary results from ALICE's ongoing measurements of the exotic particle X(3872) for the same collision system and energy will also be discussed.

Category

Experiment

Collaboration (if applicable)

ALICE

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