

Charmonium production in proton-proton and proton-lead collisions with ALICE

Content

Charmonium production studies in hadronic collisions are a powerful tool for improving our understanding of QCD, the theory of the strong interaction. The production of the charm-quark pair can be described within perturbative QCD, whereas the evolution of this pair into a colorless bound state involves soft scale processes. In addition, multiplicity dependent studies of charmonia in both proton-proton and proton-lead (p-Pb) collisions can shed light on the role of Multiple Parton Interactions (MPI) for heavy-quark production. Furthermore, charmonia in small systems are fundamental to understand the properties of the quark-gluon plasma (QGP) created in heavy-ion collisions. Potential initial-state effects can be constrained using results in proton-lead (p-Pb), while reference measurements in proton-proton (pp) collisions offer a basis for the vacuum production at the same center-of-mass energy.

The ALICE detector has unique capabilities at the LHC for measuring quarkonia down to zero transverse momentum. Measurements are carried out down to zero transverse momentum at both central and forward rapidity, in the dielectron and dimuon decay channel, respectively.

In this contribution an overview of the latest results of charmonium production in pp collisions at several centre-of-mass energies will be presented. These results include inclusive J/ψ and $\psi(2S)$ cross section measurements at forward rapidity, as well as prompt and non-prompt J/ψ production at midrapidity. In addition, recent results on the multiplicity dependence of charmonia at both rapidities will be discussed. Regarding p-Pb collisions, recent nuclear modification factor (R_{pPb}) measurements for charmonia will be presented. Results in both pp and p-Pb collisions will be compared with available theoretical model calculations.

Summary

Primary author(s) : Mr. SÆTRE, Jon-Are (Univeristy of Bergen)

Presenter(s) : Mr. SÆTRE, Jon-Are (Univeristy of Bergen)