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Bottomonium measurements at forward rapidity in Pb-Pb and p-Pb collisions with ALICE at LHC

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The production of heavy quarkonia is an important observable to study the properties of the nuclear matter created in high-energy heavy-ion collisions. Lattice QCD calculations predict a phase transition of the hadronic matter to a deconfined medium of quarks and gluons, the Quark Gluon Plasma (QGP), at extreme energy densities. The bottomonium bound states while passing through the deconfined medium are dissociated into quark-antiquark pair due to color screening. This is visible in data as a suppression of Υ resonances with respect to the proton-proton results scaled by the number of binary collisions. However, the cold nuclear matter effects can also lead to the suppression of Υ resonances in heavy-ion collisions. Cold nuclear effects are studied in p-Pb collisions since the QGP is not expected to be produced. ALICE measures the bottomonium down to zero transverse momentum via the dimuon decay channel at forward rapidity ($2.5y4$).

In this presentation, the final results on the nuclear modification factor of Υ measured in Pb–Pb collisions at $\sqrt{s_{\rm NN}}$ = 5.02 TeV will be shown as a function of centrality, transverse momentum and rapidity. The results will be compared with the existing theoretical models. In this context, the Υ measurements in p-Pb collisions at $\sqrt{s_{\rm NN}}$ = 5.02 TeV will be discussed as well. Finally, the ALICE results will be compared to results from other experiments.

Preferred Track

Quarkonia

Collaboration

ALICE

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