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Charmonium production in Pb-Pb collisions at $\sqrt{(s_{NN})} = 2.76$ and 5.02 TeV with ALICE

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The production of charmonium states, as the J/ψ and $\psi(2S)$, in heavy-ion collisions, is an important probe to investigate the formation of a plasma of quarks and gluons (QGP). In a hot and deconfined medium, quarkonium production is, indeed, expected to be significantly modified, with respect to the pp yields scaled by the number of binary nucleon-nucleon collisions, due to a balance of color screening and charm quark (re)combination mechanisms.

The ALICE Collaboration at the LHC, has measured charmonium production in Pb-Pb collisions at two center of mass energies, $\sqrt{(s_{NN})} = 2.76$ and 5.02

TeV. The nuclear modification factor of inclusive J/ψ , evaluated at both mid ($|y| < 0.8$) and forward ($2.5 < y < 4$) rapidities, is measured as a function of the centrality of the collision and of the J/ψ kinematic variables as transverse momentum and rapidity.

In this presentation, we will report on the final results on J/ψ and $\psi(2S)$ production at $\sqrt{(s_{NN})} = 2.76$ TeV and on the new J/ψ results, obtained at forward rapidity, at $\sqrt{(s_{NN})} = 5.02$ TeV. These new results will be compared with the J/ψ nuclear modification factor obtained at lower energy and with the available theoretical predictions.

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