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Nuclear modification of J/ψ in Pb-Pb collisions at LHC energies

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The inclusive J/ψ differential production cross-sections and nuclear modification factor as a function of p_{T} in Pb-Pb collisions at $\sqrt{s_{\mathrm{NN}}}$ = 2.76 TeV have been calculated at forward rapidity ($2.5 < y < 4$) and compared with the results reported by the ALICE Collaborations [arXiv:1506.08804v1]. The calculations have been carried out by estimating the pp cross-sections at $\sqrt{s}$ = 2.76 TeV within the framework of NRQCD [J. Phys. G: Nucl. Part. Phys. 42 065101 (2015)]. The cross-sections have been scaled by the Glauber model for Pb-Pb collisions and convoluted with the survival probability fraction due to color screening [Phys. Rev. D 37, 1851 (1988)]. The feed-down contributions from ψ(2S), χ_c and B mesons to J/ψ have been included to compare the inclusive results from ALICE. The comparison with experimental values shows a good agreement beyond p_{T} = 4 GeV for the three centrality bins namely, 0%−20%, 20%−40% and 40%−90%. These results indicate that the cold nuclear matter and recombination effects on J/ψ production at forward rapidities in Pb-Pb collisions at $\sqrt{s_{\mathrm{NN}}}$ = 2.76 TeV is negligible for $p_{\mathrm{T}} > 4$ GeV. Thus, in the high p_{T} domain ($p_{\mathrm{T}} > 4$ GeV), the observed suppression in the J/ψ yield by ALICE Collaboration can solely be accounted by color screening. Results will also be shown for Pb-Pb collisions at higher energies.

On behalf of collaboration:

NONE

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