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Cold Nuclear Matter Effects on J/ψ and Upsilon production in $p+\text{Pb}$ collisions at 5 TeV and $\text{Pb}+\text{Pb}$ collisions at 5.1 TeV

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We make a systematic study of the modifications of J/ψ and $\Upsilon(1S)$ production in $p+\text{Pb}$ collisions at $\sqrt{s_{NN}} = 5$ TeV at the LHC. We compare the uncertainties in the EPS09 shadowing parameterization to the calculated mass and scale uncertainties obtained employing the EPS09 NLO central set. We study the dependence of the results on the proton parton density and the choice of the nuclear modifications. We check whether the results obtained are consistent at leading and next-to-leading order. The calculations are compared to the available ALICE and LHCb data on the nuclear modification factors, $R_{pA}(y)$ and $R_{pA}(p_T)$, as well as the forward-backward asymmetries, $R_{FB}(y)$ and $R_{FB}(p_T)$. Finally, we make predictions for the next $\text{Pb}+\text{Pb}$ run at $\sqrt{s_{NN}} = 5.1$ TeV in Run 2 of the LHC.

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