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Gluon shadowing in nuclei and the role of the $c\bar{c}g$ state in the coherent photoproduction of J/ψ in nucleus-nucleus collisions

We studied the diffractive photoproduction of J/ψ mesons at the highest available energies.The data from ultraperipheral collisions (UPCs) are well described at high energies/small-x after including additional shadowing from the $c\bar{c}g$ Fock state.
We confront our results on diffractive photoproduction of J/ψ mesons with the putative gluon shadowing ratio defined as $R_g = \sqrt{\sigma(\gamma A \to J/\psi A)/\sigma_{\rm IA.}}$, where $\sigma_{\rm IA}$ is the result in impulse approximation.
Building on our earlier description of the process in the color-dipole approach, where we took into account the rescattering of $c\bar{c}$ states only, we demonstrate that the inclusion of $c\bar{c}g$-Fock states improves the description at small x commonly associated with gluon shadowing. The results are published in Phys.Lett.B 856 (2024) 138917.

Secondary track

T04 - Ultra-relativistic Nuclear Collisions

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