

Heavy quarkonium coherent photoproduction on nuclei

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The transverse momentum transfer dependence of differential cross sections for coherent photoproduction of heavy quarkonia on nuclei is studied in the framework of the color dipole model.

In our calculations, the higher-twist nuclear shadowing related to the $\bar{Q}Q$ Fock component of the photon includes the correlation between dipole orientation $\vec{r}$ and impact parameter of a collision $\vec{b}$.

For higher Fock components of the photon with additional gluons we included the leading twist gluon shadowing, which represents the main nuclear effect.

The lifetime of such multi-gluon components is very short, even at very high energies, and the corresponding contribution to nuclear shadowing is calculated within a rigorous Green function formalism.

Our results are in good agreement with recent ALICE data on charmonium production in ultra-peripheral nuclear collisions at the LHC. We also present predictions for coherent production of $\psi'(2S)$, Υ and $\Upsilon'(2S)$ quarkonium states adopting different dipole cross section parameterizations that can be verified by ongoing analysis at the LHC.

Submitted on behalf of a Collaboration?

No

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