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Nuclear effects in coherent photoproduction of heavy quarkonia

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Coherent photoproduction of heavy quarkonia on nuclear targets is studied within the QCD color dipole formalism including several main phenomena:

- i) The higher-twist nuclear shadowing related to the $Q\bar{Q}$ Fock state of the photon;
- ii) The correlation between impact parameter of a collision \vec{b} and dipole orientation \vec{r} ;
- iii) The leading-twist gluon shadowing corresponding to higher Fock components of the photon containing gluons;
- iv) Reduced effects of quantum coherence in a popular Balitsky-Kovchegov equation compared to calculations, which are frequently presented in the literature.

Our calculations of differential cross sections are in good agreement with recent ALICE data on charmonium production in ultra-peripheral nuclear collisions. We present also predictions for coherent photoproduction of other quarkonium states ($\Psi'(2S)$, $\Upsilon(1S)$ and $\Upsilon'(2S)$) that can be verified by future measurements at the LHC.

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