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Inclusive and diffractive dijet photoproduction in ultraperipheral heavy ion collisions at the LHC

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We present results of our calculations of cross sections of inclusive and diffractive dijet photoproduction in ultraperipheral collisions (UPCs) of heavy ions at the CERN Large Hadron Collider using next-to-leading order perturbative QCD. We demonstrate that our approach provides a good description of the dijet cross section measured by the ATLAS Collaboration, which exhibits 10-20% nuclear modifications. We study the role of this data on nuclear parton distribution functions (nPDFs) using the Bayesian reweighting technique and find that the measurements of dijet photoproduction in heavy-ion UPCs at the LHC can reduce current uncertainties of nPDFs at small x by a factor of 2. We also quantify the potential of diffractive dijet photoproduction in UPCs to shed light on the disputed mechanism of factorization breaking for the resolved-photon contribution.

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