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Predictions for Inclusive Charm Photoproduction in Ultraperipheral Collisions at the LHC Using FONLL

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Abstract: We present theoretical predictions for the inclusive D0 production cross section in ultraperipheral Pb–Pb collisions at the LHC, as a function of transverse momentum and rapidity. The calculations are performed within the Fixed-Order Next-to-Leading Logarithm (FONLL) framework, which is validated using Dˆ* photoproduction cross sections measured in electron–proton collisions at HERA. The pQCD predictions are folded with the latest estimates of the flux of quasi-real photons, including an electromagnetic dissociation factor to describe nuclear breakup. We investigate the sensitivity of these predictions to various nuclear parton distribution functions, fragmentation functions, and to variations of the renormalization and factorization scales. Finally, the results are compared with the first CMS measurements of Dˆ0production in ultraperipheral Pb–Pb collis!
ions at LHC energies.

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