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Dissociative charmonia photoproduction as a signal of gluon saturation at LHC

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We have developed a model in which we treat photoproduction of charmonia via the color dipole approach taking into account the quantum fluctuations of the proton structure. These fluctuations are characterized by hot spots, randomly generated in the transverse plane, whose number grows with decreasing Bjorken- x . Our model successfully reproduces the $F_2(x, Q^2)$ data from HERA at the relevant scale, as well as the exclusive and dissociative J/Ψ photoproduction data from H1 and ALICE. Our model predicts that once the proton is fully populated by hot spots the dissociative J/Ψ cross section reaches a maximum and then decreases steeply with energy. Our prediction provides a clear signature for gluon saturation at LHC energies.

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