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Subnuclear fluctuations in vector meson photoproduction: a window to saturation

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We present a model of coherent and incoherent photoproduction of vector mesons off proton and off nuclear targets. The computations are performed within the color-dipole formalism. The targets are described by a profile, in the impact parameter space, including subnucleon degrees of freedom, so-called hot spots. Their positions change event by event. The key aspect of our model is that the number of hot spots grows with energy.

We show that the measurement of dissociative production off protons and incoherent production off nuclear targets at different energies offers new signatures of saturation. These measurements can be performed with current LHC data. This work is based on results presented in Phys.Lett. B766 (2017) 186-191 and arXiv:1711.01855 (accepted by PRC). We will also present new results from our model.

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