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Isolated photon production in proton-nucleus collisions at forward rapidity

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We calculate isolated photon production at forward rapidities in proton-nucleus collisions in the Color Glass Condensate framework [1]. Our calculation uses dipole cross sections solved from the running coupling Balitsky-Kovchegov equation with an initial condition fit to deep inelastic scattering data and extended to nuclei with an optical Glauber procedure that introduces no additional parameters beyond the basic nuclear geometry. We present predictions for future forward RHIC and LHC measurements. The predictions are also compared to updated results for the nuclear modification factors for pion production, Drell-Yan dileptons and J/Psi mesons in the same forward kinematics, consistently calculated in the same theoretical framework. We find that leading order, running coupling high energy evolution in the CGC picture leads to a significant nuclear suppression at forward rapidities. This nuclear suppression is stronger for photons than for pions. We also discuss how this might change with next-to-leading order high energy evolution.

[1] Isolated photon production in proton-nucleus collisions at forward rapidity, B. Ducloué, T. Lappi, H. Mäntysaari, arXiv:1710.02206 [hep-ph]

Content type

Theory

Collaboration

Centralised submission by Collaboration

Presenter name already specified

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