Contribution ID: **6** Type: **not specified**

Nuclear suppression in diffractive vector meson production within the color glass condensate framework

Tuesday 10 June 2025 11:00 (20 minutes)

Diffractive vector meson production is a golden channel in the search for gluon saturation. The color glass condensate (CGC) framework has been successfully applied to describe diffractive vector meson production in $e+p$ collisions at HERA. Predictions for $\gamma+Pb$ collisions realized in ultraperipheral collisions at the LHC are however overestimating the experimental data at large center of mass energy, implying that the calculated saturation effects are not strong enough to describe the nuclear suppression. In this work we perform a combined Bayesian analysis of J/ψ production data from both $\gamma+p$ and $\gamma+Pb$ collisions within the CGC framework based on an impact parameter dependent McLerran-Venugopalan model combined with JIMWLK evolution to describe the center of mass energy dependence. The combined fit confirms the challenges of the framework to describe both $\gamma+p$ and $\gamma+Pb$ data simultaneously hinting at shortcomings of the framework. We discuss major sources of uncertainty and suggest possible solutions including model extensions. We further present predictions for intermediate systems such as $\gamma+O$ collisions whose measurement in UPCs could provide further insight into the A dependence of the J/ψ production cross section.

Authors: SCHENKE, Bjoern (Brookhaven National Lab); SHEN, Chun (Wayne State University); Dr MÄNTYSAARI, Heikki (University of Jyväskylä); Dr ROCH, Hendrik (Wayne State University); ZHAO, Wenbin (Wayne State University)

Presenter: Dr ROCH, Hendrik (Wayne State University)

Session Classification: Exclusive processes and small-x physics

Track Classification: Exclusive processes and small-x physics