



Contribution ID: 549

Type: Poster

## Drell-Yan process at sPHENIX: a golden probe to study Cold Nuclear Matter effects

*Tuesday 5 September 2023 17:30 (2h 10m)*

The nuclear modification factor related to the Drell-Yan (DY) production cross-section is an excellent probe of the cold nuclear matter (CNM) properties. The acceptance of the sPHENIX detector allows detection of DY events in the dielectron channel for  $p_{\perp} \gtrsim M$ , where  $p_{\perp}$  is the dilepton transverse momentum and  $M$  its invariant mass. In this kinematic region, the DY cross-section is dominated by NLO gluon Compton scattering allowing access to the gluon density of the nucleus,  $xG(x)$ . The DY events extraction requires a precise knowledge of the QCD background contributing to the dilepton invariant mass spectrum. A fit to the latter one is carried out including opencharm (OC), open-bottom (OB), charmonium ( $\psi$ ) and bottomonium ( $\Upsilon$ ) simulations. The CNM effects are investigated via the rapidity and  $p_{\perp}$  distributions of the DY lepton pair, and the possible impact of sPHENIX DY data on the  $xG(x)$  extraction is discussed. In addition, energy loss and broadening calculations based on Landau-Pomeranchuk-Migdal (LPM) model are shown.

### Category

Experiment

### Collaboration (if applicable)

**Primary author:** Mr NAÏM, Charles-Joseph (Université Paris-Saclay (FR))

**Presenter:** Mr NAÏM, Charles-Joseph (Université Paris-Saclay (FR))

**Session Classification:** Poster Session

**Track Classification:** Spin/EIC physics