

## Exclusive $J/\psi$ photoproduction in ultraperipheral Pb+Pb collisions to NLO pQCD

Wednesday 4 May 2022 12:50 (20 minutes)

Coherent exclusive  $J/\psi$  photoproduction in heavy-ion ultraperipheral collisions (UPCs) at the LHC,  $Pb+Pb \rightarrow Pb+J/\psi+Pb$ , has traditionally been suggested as an efficient probe of the gluon distributions. We show, by approximating the GPDs involved in this process with collinear PDFs, that this is indeed the case in the leading order pQCD but at NLO the situation changes rather dramatically. We present the first NLO study of this process in heavy-ion collisions [1], building our numerical code on the NLO calculation of Ref. [2]. We quantify the NLO contributions in the cross section, show the interplay between the real and the imaginary parts of the amplitude and inspect the uncertainties due to the scale choice and PDFs. We compare our calculations for the rapidity-differential cross section with ALICE, CMS and LHCb  $J/\psi$  data in Pb+Pb UPCs. The scale dependence is significant but we find a scale choice which adequately reproduces the UPC data for both Run 1 and Run 2 LHC data.

[1] K.J. Eskola, C.A. Flett, V. Guzey, T. Loytainen and H. Paukkunen, work in progress.

[2] D.Yu. Ivanov, A. Schafer, L. Szymanowski, G. Krasnikov, Eur. Phys. J. C 34 (2004) 297.

### Submitted on behalf of a Collaboration?

No

**Authors:** FLETT, Chris; PAUKKUNEN, Hannu; ESKOLA, Kari J.; LÖYTÄINEN, Topi (University of Jyväskylä); GUZEY, Vadim (NRC Kurchatov Institute PNPI (RU))

**Presenter:** FLETT, Chris

**Session Classification:** WG2: Small-x, Diffraction and Vector Mesons

**Track Classification:** WG2: Small-x, Diffraction and Vector Mesons