QCD@LHC2022
28 November 2022 to 2 December 2022
IJCLab Orsay, France

Contribution ID: **51** Type: **not specified**

# Exclusive J/psi photoproduction in nucleus-nucleus UPCs at the LHC in NLO QCD

*Wednesday 30 November 2022 16:40 (15 minutes)*

We present the first study of coherent exclusive J/psi photoproduction in ultraperipheral collisions (UPCs) of heavy and intermediate ions at the LHC in the framework of collinear factorization and next-to-leading order (NLO) perturbative QCD and make predictions for the J/psi rapidity distributions for the cases of lead (Pb) and oxygen (O) beams. We confirm the general expectation of a dramatic role of NLO corrections, quantify the significant uncertainties associated with used nuclear PDFs and the choice of hard scale, and determine an "optimal scale" allowing for a simultaneously good description of all available Run 1 and Run 2 LHC data on J/psi photoproduction in Pb-Pb UPCs. One of the major results of our study is the counter-intuitive observation that at central rapidities,
the cross section is dominated by the quark contribution since the gluon one largely cancels in the sum of the (leading-order) LO and the NLO terms. To better control the theoretical uncertainties, we advocate the use of the ratio of UPC cross sections on oxygen and lead, for which we make detailed predictions.

## Declaration

I certify that I have checked that I am authorised to submit the abstract with the listed co-authors with their current affiliations

## Change of Speaker

I understand that change of speaker is allowed provided that no participant gives more than one talk. Otherwise, we will ask the speaker to choose between one or the other abstract to be presented.

**Author:** GUZEY, Vadim (University of Jyvaskyla)

**Co-authors:** FLETT, Chris (University of Jyväskylä); PAUKKUNEN, Hannu; Prof. ESKOLA, Kari J. (University of Jyväskylä (FI)); LÖYTÄINEN, Topi

**Presenter:** GUZEY, Vadim (University of Jyvaskyla)

**Session Classification:** Parallel A - WG2,4,6&7

**Track Classification:** WG4: Heavy-quark and Quarkonium Physics