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Type: **Parallel Talk**

# Charmonium photoproduction in ultraperipheral and peripheral Pb-Pb collisions with ALICE at the LHC

*Monday, May 14, 2018 6:10 PM (20 minutes)*

The electromagnetic field of relativistic heavy ions can be described by a flux of virtual photons. In ultraperipheral collisions (UPC), where the impact parameter is larger than the sum of nuclei radii, the interaction of these photons with the nucleus can provide insight into its structure and allow us to probe nuclear shadowing via photoproduction of charmonia.

Extensive efforts on this subject have been made by the ALICE collaboration and led to published measurements of J/Psi and Psi(2S) photoproduction in LHC Run 1 at forward (J/Psi) and at mid-rapidity. In addition, ALICE has reported a large excess of J/Psi at very low transverse momentum in peripheral Pb-Pb collisions, which is suggestive of coherent J/Psi photoproduction in collisions with nuclear overlap.

A substantially larger data set was recorded in LHC Run 2, allowing differential measurements in rapidity and in transverse momentum. In particular, the increased energy in Run 2 means that the Bjorken-x value probed in Pb-Pb UPC at midrapidity decreases from  $10^{-3}$  to  $5 \cdot 10^{-4}$ , and in collisions with nuclear overlap the measurement of the coherent J/Psi component becomes sensitive to its polarization and to the shape of its transverse momentum spectrum. At forward rapidity, the Run-2 dataset extends the measurement of photoproduced J/Psi beyond 50% in centrality, imposing strong constraints on initial-state models.

In this talk we will present the latest results on charmonium production in UPCs, final results on the J/Psi coherent photoproduction cross-section in Pb-Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV with nuclear overlap at mid rapidity and new results at forward rapidity in the same system. The discussion will include comparisons to the ultraperipheral measurements and to theoretical model calculations. Perspectives for these measurements in LHC Run-3 and Run-4 will also be shown.

## Content type

Experiment

## Collaboration

ALICE

## Centralised submission by Collaboration

Presenter name already specified

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