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Charmonium and $e+e-$ pair photoproduction in ultra peripheral Pb-Pb collisions at $\sqrt{s_{NN}}=2.76$ TeV

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Ultra-relativistic heavy ions generate strong electromagnetic fields which offer the possibility to study gamma-gamma and gamma-nucleus interactions at the LHC in the so called ultra-peripheral collisions (UPC). The J/ψ photoproduction in UPC events is sensitive to the gluon distribution of the interacting nuclei, providing information on the nuclear gluon shadowing at Bjorken- x ranging from 10^{-5} to 10^{-3} .

Here we report on ALICE results of J/ψ photoproduction measured in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ where the J/ψ has been measured in the muon decay channel with the

Alice Muon Spectrometer in the rapidity range $-3.6 < y < -2.6$; at midrapidity ($|y| < 0.9$) both the leptonic decay channels (ee , $\mu\mu$) were used. The cross sections are compared with the predictions provided by several event generators.

In addition the cross section for the $\gamma\gamma \rightarrow ee$ process was studied and compared with the theoretical model expectations.

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