

Study of Ultraperipheral processes in $\sqrt{s_{NN}}=2.76$ Pb+Pb collisions with the ATLAS detector at the LHC

Besides the study of strongly-coupled matter, heavy ion collisions at the LHC provide opportunities to study photon-nucleus and two-photon reactions in a hitherto unexplored energy regime. Photoproduction of vector mesons off of the strong electromagnetic fields generated by the highly Lorentz-contracted nuclei provides a tool to study the interactions of quark-antiquark dipoles with strong gluon fields. This talk presents a first study of these large impact parameter “ultraperipheral” collisions (UPC), with a data set corresponding to up to $9 \mu\text{b}^{-1}$ of lead-lead collisions at a nucleon-nucleon center-of-mass energy of 2.76 GeV, recorded by the ATLAS Detector at the LHC. Two-prong events are selected with essentially no other activity registered in the rest of the detector, except for forward neutrons measured by the ATLAS zero degree calorimeters. Results on di-muon decays into J/ψ and other channels will be presented.

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