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Photoproduction results from ALICE in ultra-peripheral collisions at the LHC

Vector meson photoproduction is studied at the LHC with the ALICE detector in pA and AA ultra-peripheral collisions (UPCs), where the ions act as powerful sources of quasi-real photons. Measurements of vector meson photoproduction off hadrons shed light on the initial state of QCD matter inside the targets and provides important constraints to the initial conditions used in models of heavy ion collisions.

The first measurement at the LHC of dissociative photoproduction of J/ψ off protons is presented. This process is sensitive to quantum fluctuations of the structure of the target at the subnucleon level. In addition, cross sections for the exclusive channel and continuum dimuon production at small masses were obtained. This latter process probes our understanding of the photon flux coming off protons and off lead ions in a new kinematic region. The transverse momentum dependence of J/ψ photoproduction on lead targets in Pb–Pb collisions, which is sensitive to the gluonic structure of Pb in the impact-parameter plane, is also presented.

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