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J/ψ photoproduction and exclusive dimuon production in p-Pb collisions at $\sqrt{s_{\mathrm{NN}}}$=8.16 TeV at the LHC with the ALICE experiment

Dienstag, 28. März 2023 18:15 (2 Stunden)

Photonuclear interactions are studied in ultra-peripheral p-Pb collisions with the ALICE experiment, where the photon radiated by a Pb nucleus probes the gluon density of the proton at low Bjorken-x. The exclusive J/ψ photoproduction cross section $\sigma(\gamma + \mathrm{p} \rightarrow \mathrm{J}/\psi + \mathrm{p})$ is expected to follow a power law trend as x decreases, but it should deviate from this trend at low x due to gluon saturation. In addition, gluon saturation effects are also expected to be visible when studying the dissociative J/ψ photoproduction cross section $\sigma(\gamma + \mathrm{p} \rightarrow \mathrm{J}/\psi + \mathrm{X})$ because of reduced quantum fluctuations of the substructure of the proton in the saturation regime. The ALICE collaboration has measured both processes. In this talk, the first measurement of the dissociative J/ψ photoproduction at the LHC will be presented. Finally, we will present the study of dimuon events produced in two-photon interactions. First results for low-mass dimuons will be discussed. Such measurements complement the studies of J/ψ photoproduction and contribute to a better understanding of the photon fluxes generated by the lead nucleus.

Experiment/Theory

ALICE

Affiliation

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