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Vector meson photoproduction in ultra-peripheral p-Pb and Pb-Pb collisions at the LHC with ALICE

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Vector mesons are plenteously produced in ultra-peripheral collisions where the impact parameter is larger than the sum of the radii of the two projectiles, implying that electromagnetic induced processes become dominant.

Light vector meson photoproduction cross sections can be used to study Glauber-Gribov shadowing effects at the hadronic level while the photoproduction of heavy vector mesons is expected to be sensitive to the poorly known gluon structure function and gluon shadowing effects at low Bjorken x.

The ALICE Collaboration has published the first measurements of the ρ0, J/ψ and ψ(2S) photoproduction cross section in ultra-peripheral Pb-Pb collisions and that for exclusive J/ψ photoproduction off protons in ultra-peripheral proton-lead collisions at the LHC and has obtained a substantially larger data set in 2015-2018 from LHC Run 2, allowing much more detailed studies of the production mechanism to be performed. In particular, the increased energy and more detailed measurements in the forward region in Run 2 give access to lower values of Bjorken-x than in previous studies. In this talk, an overview of the past results from Run 1 and the latest available results from Run 2 will be given. The results are compared to theoretical models.

Summary

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