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Electroweak-boson production in pp, p-Pb and Pb-Pb collisions with ALICE

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Electroweak-boson production in hadronic processes is a clean tool for the investigation of the parton distribution functions (PDFs). This is especially true in heavy-ion collisions at the LHC, where the initial state is still poorly constrained by measurements and important for the interpretation of the system evolution. The ALICE experiment can measure W and Z bosons via their leptonic decays in the electron channel at midrapidity ($|\eta_{\text{lab}}| < 0.8$) and in the muon channel at forward rapidity ($2.5 < \eta_{\text{lab}} < 4$). The observations at large η_{lab} are especially important investigating a phase space region that is largely unconstrained by heavy-ion experiments.

This contribution will present the recent ALICE results on electroweak boson measurements in p-Pb collisions at $\sqrt{s_{\text{NN}}} = 8.16$ TeV and Pb-Pb collisions at $\sqrt{s_{\text{NN}}} = 5.02$ TeV. They include production yields and nuclear modification factors as a function of rapidity and collision centrality. The results are compared to pQCD calculations; those showing a clear evidence of nuclear modification of the PDFs will be highlighted. Finally, the status and progress of the analysis on W boson production in pp collisions at $\sqrt{s} = 13$ TeV will be presented.

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