

Measurement of electroweak-boson production in p-Pb and Pb-Pb collisions with ALICE at the LHC

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W and Z bosons are clean probes of the initial-state effects in hadronic collisions, being formed in the hard scatterings taking place in the initial stages, and being insensitive to the presence of any strongly-interacting medium. This is especially true at the LHC energies, where having a clear picture of the initial state is mandatory to properly interpret the later stages characterising the complex evolution of p-Pb and Pb-Pb collisions. In particular, measurement of W and Z boson production in p-Pb and Pb-Pb collisions at the LHC provides constraints on the nPDFs of the (anti-)quarks in a phase-space region that is poorly constrained by previous experiments.

ALICE measures W and Z boson production in the muonic decay channels at forward rapidities ($2.5 < y_{\text{lab}} < 4$). In this contribution, recent measurements on the Z and W boson production in p-Pb and Pb-Pb collisions at the center-of-mass energies per nucleon pair of $\sqrt{s_{\text{NN}}} = 8.16$ and 5.02 TeV, respectively, are presented. Results, including invariant production yield and nuclear modification factors as a function of rapidity and collision centrality, are compared to calculations obtained with or without including nuclear modifications of the PDFs, as well as to results obtained by other LHC experiments.

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