

# Electroweak boson production measurements in p–Pb and Pb–Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV with ALICE

Wednesday 8 February 2017 08:50 (20 minutes)

W and Z bosons are massive weakly interacting probes; insensitive to the strong interaction, they are clean observables of the initial state of heavy-ion collisions. Despite their low production rates, their relatively clean signatures in the leptonic decay channels allow their study in heavy-ion collisions at the LHC. Their measurement in p–Pb and Pb–Pb collisions provides constraints on the nuclear parton distribution functions (nPDFs). In particular, the W and Z rapidity-differential production cross sections and the decay lepton charge asymmetry as a function of rapidity provide stringent tests of nPDFs. Electroweak boson measurements in heavy-ion collisions also constitute a tool to validate the binary scaling of hard processes as well as a reference for medium-induced effects on other probes.

The measurement of electroweak boson production in p–Pb and Pb–Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV with ALICE will be presented. The ALICE muon spectrometer capabilities to detect high  $p_T$  muons will be exploited to reconstruct electroweak bosons at large rapidity ( $2.5 < y_{lab} < 4.0$ ). These measurements are complementary to the ATLAS and CMS ones at central rapidity, and more precise than LHCb ones with a similar rapidity coverage. Rapidity-differential measurements of W and Z, as well as of the charge asymmetry of W-decay leptons, in p–Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV will be discussed. First measurements of Z production cross section in Pb–Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV will be shown. Results will be compared with model calculations including nPDFs. In addition, the centrality dependence of W yields in p–Pb collisions and of Z production in Pb–Pb collisions will be discussed as a test of binary scaling.

## Preferred Track

Electromagnetic Probes

## Collaboration

ALICE

**Author:** STOCCO, Diego (Centre National de la Recherche Scientifique (FR))

**Presenter:** STOCCO, Diego (Centre National de la Recherche Scientifique (FR))

**Session Classification:** Parallel Session 5.2: Initial State Physics and Approach to Equilibrium (III)

**Track Classification:** Electromagnetic Probes