



Contribution ID: 366

Type: Oral Presentation

Measurement of W and Z boson production in p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV in ALICE

Tuesday, 4 July 2017 15:20 (20 minutes)

The production of electroweak W^{\pm} and Z^0 bosons is extensively studied at the CERN Large Hadron Collider (LHC) because they are important benchmarks of the Standard Model. Due to their masses, they are produced in hard scattering processes occurring at the early stage of a collision and they interact weakly, therefore, they are not affected by the strong interaction. Therefore, they can be used as a reference for medium induced effects. In p-Pb collisions, their production can be used to study the modification of parton distribution functions in the nucleus and to test the validity of binary collision scaling while in pp collisions their cross sections are known with a precision limited by the parton distribution function (PDF) uncertainties. The production of W and Z bosons is one of the best-understood processes and the hard scattering cross sections have been calculated up to the next-to-next-to-leading order (NNLO) approximation.

In ALICE the measurements of W and Z boson production are performed via the muonic decay channel in p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV at forward ($2.03 < y_{cms} < 3.53$) and backward ($-4.46 < y_{cms} < -2.96$) rapidities. The measured cross sections will be presented and they will be compared to perturbative Quantum Chromodynamics calculations at next-to-leading order. In addition, an outlook study of W boson production in Pb-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV will be discussed.

Apply to be considered for a student award (Yes / No)?

NO

Level for award (Hons, MSc, PhD, N/A)?

N/A

Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

Yes

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Session Classification: Nuclear, Particle and Radiation Physics 2

Track Classification: Track B - Nuclear, Particle and Radiation Physics