



Contribution ID: 603

Type: Poster

Measurements of weak boson production via electrons in pp collisions at 13 TeV with ALICE

Measurements of weak bosons, W^\pm and Z^0 , are powerful tools to study quantum chromodynamics (QCD). Due to their large masses, they are predominantly produced via quark-antiquark annihilation in the early stage of pp and heavy-ion collisions.

Therefore, their production can be described by the perturbative QCD (pQCD) and is sensitive to the parton distribution function in nucleon and nucleus.

Recently, some results indicate quark-gluon plasma (QGP) like signals even in small collision systems such as pp and p-Pb collisions, and understanding particle production in these systems has become important for understanding the QGP production mechanism. Since weak bosons do not interact with QGP constituents by the strong force, the measurements are also important to understand the dynamics in the small system.

In this poster, final results of the production cross section of W^\pm bosons, reconstructed via their leptonic decays, and of Z^0 bosons, reconstructed by electron-positron pairs, at midrapidity ($|\eta| < 0.6$) in pp collisions at $\sqrt{s} = 13$ TeV collected during the LHC Run 2 are presented. The results will be compared with pQCD calculations using different sets of parton distribution functions. In addition, the performance of weak-boson identification based on their electronic decays at midrapidity in Run 3 will be shown.

Category

Experiment

Collaboration (if applicable)

ALICE

Author: ITO, Subaru (University of Tsukuba (JP))

Presenter: ITO, Subaru (University of Tsukuba (JP))

Session Classification: Poster session 2

Track Classification: Electromagnetic probes