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High Precision Measurement of the differential vector boson cross-sections with the ATLAS detector

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Measurements of the Drell-Yan production of W and Z/γ bosons at the LHC provide a benchmark of our understanding of perturbative QCD and probe the proton structure in a unique way. The ATLAS collaboration has performed new high precision measurements at center-of-mass energies of 7. The measurements are performed for W^+ , W^- and Z/γ bosons integrated and as a function of the boson or lepton rapidity and the Z/γ mass. Unprecedented precision is reached and strong constraints on Parton Distribution functions, in particular the strange density are found.

Z cross sections are also measured at center-of-mass energies of 8 eV and 13TeV, and cross-section ratios to the top-quark pair production have been derived. This ratio measurement leads to a cancellation of systematic effects and allows for a high precision comparison to the theory predictions.

The cross section of single W events has also been measured precisely at center-of-mass energies of 8TeV and 13TeV and the W charge asymmetry has been determined.

Experimental Collaboration

ATLAS

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