

Measurement of $W^\pm Z$ production in proton-proton collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector

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Abstract

A study of $W^{(\pm)}Z$ production in proton-proton collisions at $\sqrt{s} = 7$ TeV is presented using data corresponding to an integrated luminosity of 4.6 fb^{-1} collected with the ATLAS detector at the Large Hadron Collider in 2011. In total, 317 candidates, with a background expectation of 68 ± 10 events, are observed in double-leptonic decay final states with electrons, muons and missing transverse momentum. The total cross-section is determined to be $\sigma_{\text{tot}}(WZ) = 19.0(-1.3)(+1.4)(\text{stat.}) \pm 0.9(\text{syst.}) \pm 0.4(\text{lumi.}) \text{ pb}$, consistent with the Standard Model expectation of $17.6(-1.0)(+1.1) \text{ pb}$. Limits on anomalous triple gauge boson couplings are derived using the transverse momentum spectrum of Z bosons in the selected events. The cross-section is also presented as a function of Z boson transverse momentum and diboson invariant mass..