Title Measurements of inclusive and differential single top-quark production cross-sections in association with a W boson with ATLAS at $\sqrt{s} = 13$ TeV

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Abstract

The production of a single top quark in association with a W boson is studied using pp collision data produced by the LHC at $\sqrt{s} = 13$ TeV, collected by the ATLAS detector during 2015 and 2016. The inclusive cross-section is measured using 3.2 fb^{-1} of data. Events containing two charged leptons and one or two jets where at least one b-jet are separated into signal and control regions based on their jet multiplicity and the number of b-jets. The cross-section is extracted by fitting templates to the data distributions, and is measured to be $\sigma_{Wt} = 94 \pm 10$ (stat.) $^{+28}_{-23}$ (syst.) pb. The result is in agreement with the Standard Model prediction. Differential cross-section measurements are also performed using 36.1 fb^{-1} with respect to several particle-level observables. These measurements are normalised to the fiducial cross-section, defined by the presence of two charged leptons and exactly one b-jet, causing several of the main uncertainties to cancel. Results are found to be in good agreement with predictions from several Monte Carlo generators.