

Top quark production cross-section measurements

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Measurements of the inclusive and differential cross-sections for top-quark pair and single top production cross sections in proton-proton collisions with the ATLAS detector at the Large Hadron Collider are presented at center-of-mass energies of 8 TeV and 13 TeV. The inclusive measurements reach high precision and are compared to the best available theoretical calculations. These measurements, including results using boosted tops, probe our understanding of top-pair production in the TeV regime. The results are compared to Monte Carlo generators implementing LO and NLO matrix elements matched with parton showers and NLO QCD calculations.

For the t-channel single top measurement, the single top-quark and anti-top-quark total production cross-sections, their ratio, as well as differential cross sections are also presented. A measurement of the production cross-section of a single top quark in association with a W boson, the second largest single-top production mode, is also presented. Finally, measurements of the properties of the Wtb vertex allow to set limits on anomalous couplings. All measurements are compared to state-of-the-art theoretical calculations.

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