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Top quark pair production cross section using the ATLAS detector at the LHC

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Measurements of the inclusive top quark pair production cross sections in proton-proton collisions with the ATLAS detector at the Large Hadron Collider are presented. The measurements are performed requiring one or two electrons or muons in the final state. Various experimental techniques are compared. The most accurate result requires opposite sign electrons and muons achieves a precision of a few percent and is in good agreement to a recent NNLO+NNLL QCD calculation. In addition, a differential measurement of the top transverse momentum and kinematic properties of the top pair system are presented.

This measurement requires one electron or muon in the final state and probes our understanding of top pair production in the TeV regime and is compared to recent Monte Carlo generators implementing LO and NLO matrix elements matched with parton showers and fixed order NLO QCD calculations. The data show sensitivity to parton density functions.

Summary

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