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Top quark pair-production cross-section measurements in the di-lepton channel with the ATLAS detector

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Measurements of the total and differential top-quark pair production cross sections in proton-proton collisions at 13 TeV with the ATLAS detector at the Large Hadron Collider are presented. The inclusive measurement reaches a precision of 2.4 %, well below the uncertainty of predictions at next-to-next-to-leading order in QCD. The measurement is performed in the di-lepton channel, requiring a high- p_T electron and muon. The experimental uncertainties due to the identification of b-quark jets are constrained in-situ by data. The total cross-section is compared to predictions by different sets of parton distribution functions (PDFs) and is used to determine the top-quark mass. Differential measurements of the kinematic properties of the two leptons are also performed. The high sensitivity of some distributions to PDFs is demonstrated. The distributions are also compared to predictions by several Monte Carlo event generator setups.

Primary authors: RIU, Imma; HAWKINGS, Richard

Presenter: HAWKINGS, Richard

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