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Top quark cross section measurements with CMS

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Measurements of the inclusive and differential top quark pair production cross section at 7 TeV, 8 TeV and 13 TeV are presented, performed using CMS data collected in 2011, 2012 and 2015. The total cross section is measured in the lepton+jets, dilepton and fully hadronic channels, including the tau-dilepton and tau+jets modes. Indirect constraints on both the top quark mass and α_s are obtained through their relation to the inclusive cross section. First measurements of top quark pair production with additional b-quarks in the final state are also presented. Differential cross sections are measured and are given as functions of various kinematic observables, including the transverse momentum and rapidity of the (anti)top quark and the top-antitop system and the jets and leptons of the event final state. Multiplicity and kinematic distributions of the jets produced in addition to the top pair are also investigated. The results are combined and confronted with precise theory calculations.

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