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Measurement of single top quark production in pp collisions at CMS

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Result of abstract merging:

Measurements are presented of t-channel single top quark production in proton-proton collisions at the LHC at centre-of-mass energies of 7 and 8 TeV, using data collected with the CMS experiment during the years 2011 and 2012. The analyses consider decay channels where the W from the top decays into electron-neutrino or muon-neutrino, and makes use of kinematic characteristics of electroweak single top production for the separation of signal from backgrounds using multivariate methods. The results are compared with the most precise standard model theory predictions. Measurements of top/antitop cross section ratio and of various differential single top quark production cross sections are also presented.

Measurements of single top quark production in the tW-channel in pp collisions are presented. In the tW-channel a top quark is produced in association with a W boson. The data were collected in the years 2011 and 2012 at centre-of-mass energies of 7 and 8 TeV. The experimental signature is similar to top pair production, and there is interference at higher orders between the two processes. The measurements are performed using final states in which the associated W boson as well as the one originating from the top quark decay leptonically. Multivariate methods are used to extract the cross section. The result is compared with current standard model theory predictions. Furthermore, a search for s-channel single top production at 8 TeV is presented.

The ratio of single-top t-channel events with a positive or negative lepton final state was measured. This measurement is made at a center-of-mass energy of 8 TeV. The measured ratio of top- to anti-top quark production is compared with predictions from different parton density distribution functions.

Summary

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