DIS 2015
XXIII International Workshop on
Deep-Inelastic Scattering and
Related Subjects

Dallas, Texas
April 27 – May 1, 2015

Contribution ID: **222** Type: **not specified**

Single Top quark production cross section measurements using the ATLAS and CMS detectors at the LHC

Wednesday, 29 April 2015 16:15 (25 minutes)

Measurements of single top-quark production in proton proton collisions at 7 and 8 TeV are presented. In the leading order process, a W boson is exchanged in the t-channel. The single top-quark and anti-top total production cross sections, their ratio, as well as a measurement of the inclusive production cross section is presented. In addition, a measurement of the production cross section of a single top quark in association with a W boson is presented. All measurements are compared to state-of-the-art theoretical calculations and the CKM matrix element |Vtb| is determined. In addition, the s-channel production is explored and limits on exotic production in single top quark processes are discussed. This includes the search for flavor changing neutral currents and the search for additional W'bosons or a search for monotops.

Measurements of single top quark production are presented, performed using CMS data collected in 2011 and 2012 at centre-of-mass energies of 7 and 8 TeV. The cross sections for the electroweak production of single top quarks in the t-channel and in association with W-bosons is measured and the results are used to place constraints on the CKM matrix element Vtb. In the t-channel the ratio of top and anti-top production cross sections is determined and compared with predictions from different parton density distribution functions. Measurements of top quark properties in single top quark production are also presented. The results include the W-helicity in top quark decay and the searches for s-channel production and for anomalous couplings.

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Session Classification: WG3+WG5 Joint Session

Track Classification: WG5 Heavy Flavours