

TOP PAIR DIFFERENTIAL CROSS SECTION MEASUREMENT IN THE
MUON + JETS CHANNEL AT $\sqrt{s}=8$ TEV WITH THE COMPACT MUON
SOLENOID

Abstract

by

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The following dissertation describes the measurement of the top pair differential cross section in the semi-leptonic, μ +jets, channel taken with respect to the invariant mass of the top pair system. This measurement was performed using the Compact Muon Solenoid, an experiment at the Large Hadron Collider located at CERN in Geneva, Switzerland. The 2012 dataset was used with a total of 19.44 fb^{-1} of data recorded at a center of mass energy of $\sqrt{s} = 8 \text{ TeV}$. The top pair differential cross section with respect to the invariant mass was found, within uncertainties, to agree well with the leading theoretical models.