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Top quark production at D0

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We present measurements of the cross sections for the production of top-antitop quark pair production via the strong interaction and for the production of single top quarks via the weak interaction in proton-antiproton collisions at $\sqrt{s}=1.96$ TeV using data corresponding to integrated luminosities of up to 5.4 fb^{-1} . The data were collected with the D0 detector at the Fermilab Tevatron collider. For the top-antitop pair production, measurements are obtained from the study of the kinematic properties and of the b-tagging rates in final states for with either a charged lepton pair accompanied by additional jets and missing transverse momentum, and in final states with one charged lepton, three or more jets and missing transverse momentum. For the single top quark production the measurement is obtained from the final states with one charged lepton, at least two jets and missing transverse momentum, and studies of the relative contributions of different production mechanisms are also presented. Finally we present measurements of the forward-backward asymmetry in the top-antitop quark final states.

Authors: SOUSTRUZNIK, Karel (C); Dr VERZOCCHI, Marco (Albert-Ludwigs-Universitaet Freiburg (DE))

Presenter: SOUSTRUZNIK, Karel (C)

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