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Measurement of top quark polarization in $t\bar{t}$ lepton+jets final states at D0

We present a measurement of top quark polarization in $t\bar{t}$ pair production in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV using data corresponding to 9.7 fb^{-1} of integrated luminosity recorded with the D0 detector at the Fermilab Tevatron Collider. We consider the final state containing a lepton and at least three jets. The polarization is measured through the distribution of lepton angles along three axes: the beam axis, the helicity axis, and the transverse axis normal to the $t\bar{t}$ production plane. This is the first measurement of top quark polarization at Tevatron using lepton+jet final state and the first measurement of the transverse polarization in $t\bar{t}$ production. The observed distributions are consistent with standard model predictions of nearly no polarization.

Summary

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