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Type: **Parallel Sessions**

Spin correlation in $t\bar{t}b\bar{b}$ production (D0)

Thursday 5 July 2012 16:00 (15 minutes)

We present a measurement of the ratio of events with correlated t and $\bar{t}b\bar{b}$ spins to the total number of $t\bar{t}b\bar{b}$ events. This ratio f is evaluated using a matrix-element-based approach in events with a single lepton (electron or muon) and at least four jets and in events with two leptons (ee , $e\mu$, $\mu\mu$) and at least two jets. We analyze $p\bar{p}$ collisions data corresponding to an integrated luminosity of 5.3-5.4 fb^{-1} collected with the D0 detector at the Fermilab Tevatron collider operating at a center of mass energy $\sqrt{s}=1.96$ TeV. Combining the results of the single lepton and dilepton final states, we find f in agreement with the standard model. In addition, the combination provides evidence for the presence of spin correlation in $t\bar{t}b\bar{b}$ events with a significance of more than three standard deviations.

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