

Abstract Submitted
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Measurement of the Ratio $q\bar{q}/g\bar{g}$ in the $t\bar{t}$ Production Mechanism using the Dilepton Channel at CDF NAOKI KIMURA, University of Tsukuba

— We present a measurement of the $q\bar{q}$ vs $g\bar{g}$ ratio in $t\bar{t}$ production from $p\bar{p}$ collisions at $\sqrt{s}=1.96$ TeV at the Tevatron using the CDF detector with 1.2 fb^{-1} of data. According to the Standard Model, $t\bar{t}$ pairs are produced by $q\bar{q}$ annihilation 85% of the time, and gluon-gluon fusion 15% of the time. If the observed ratio is very different from prediction, it could be an indication of new physics. We measure the ratio using $t\bar{t}$ events decaying into the dilepton channel ($t\bar{t} \rightarrow WbWb \rightarrow l\nu b l\nu b$). $q\bar{q}$ annihilation and gluon-gluon fusion have different characteristic spin configurations, and this difference manifests itself in the lepton's flight direction. Therefore we can measure this production ratio using a likelihood fit to the distribution of azimuthal angle between the leptons.

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