

QCD effects and search for new physics in $t \rightarrow bW$

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The most general new physics effective operators in the decay of an unpolarized top quark into a bottom quark and a W gauge boson are considered at next-to-leading order in QCD. We find that the dipole operator O_{LR} contribution to the transverse-plus W helicity fraction F_+ is significantly enhanced compared to the leading order result at non-vanishing bottom quark mass. Nonetheless, presently the most sensitive observable to direct O_{LR} contributions is the longitudinal W helicity fraction F_L . In particular, the most recent CDF measurement of F_L already provides the most stringent upper bound on O_{LR} contributions, even when compared with indirect bounds from the rare decay $B \rightarrow X_s \gamma$.

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