



# A search for FCNC in top quark decays with a final state of 1 lepton + 3 b-jets

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# Baseline selection

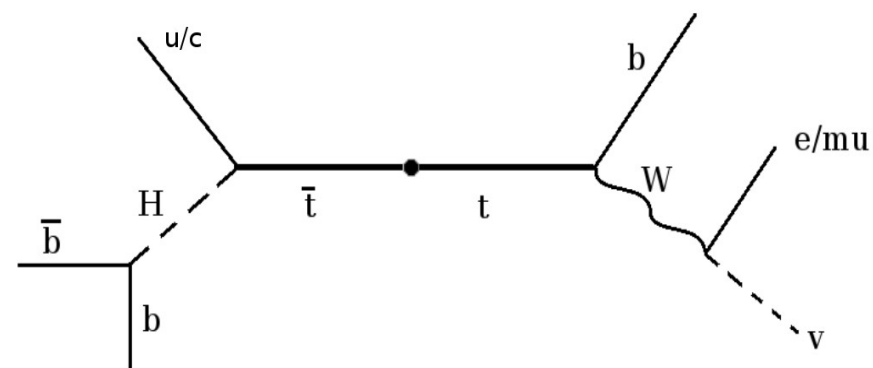
(1) = 1 lepton ( $e/\mu$ ,  $P_T > 30$  GeV,  $|\eta| < 2.5$  (2.4))

+ veto on loose leptons ( $10$  GeV  $< P_T < 30$  GeV)

(2)  $M_T(\text{lep}, \text{MET}) \geq 50$  GeV

(3)  $\geq 4$  jets ( $P_T > 40$  GeV,  $|\eta| < 2.4$ )

(4)  $\geq 3$  CSV Medium(\*) b-tagged jets



????

	initial	== 1 lepton	$M_T(\text{lep}, \text{MET}) > 50$ GeV	$\geq 4$ jets	$\geq 3$ CSVM jets
TTtoLHtoBB-Kappa-hct (Sbg)	$1.36\text{e}+05 \pm 64.8$	$4.4\text{e}+04 \pm 36.1$	$2.65\text{e}+04 \pm 28.2$	$7.2\text{e}+03 \pm 14.6$	$251 \pm 2.74$
TTtoLHtoBB-Kappa-hut (Sbg)	$1.36\text{e}+05 \pm 65.5$	$4.39\text{e}+04 \pm 36.4$	$2.65\text{e}+04 \pm 28.5$	$7.16\text{e}+03 \pm 14.7$	$124 \pm 1.94$
TT-Kappa-Hct-Htobb (Gregory)	$4.37\text{e}+05 \pm 637$	$8.11\text{e}+04 \pm 275$	$4.9\text{e}+04 \pm 213$	$1.48\text{e}+04 \pm 117$	$747 \pm 26.4$
TT-Kappa-Hut-Htobb (Kevin)	$4.37\text{e}+05 \pm 637$	$8.25\text{e}+04 \pm 277$	$5.57\text{e}+04 \pm 228$	$1.13\text{e}+04 \pm 103$	$257 \pm 15.5$
tHToBB-Kappa-hct	$2.14\text{e}+04 \pm 27.6$	$2.83\text{e}+03 \pm 10$	$1.75\text{e}+03 \pm 7.89$	$132 \pm 2.17$	$4.63 \pm 0.406$
tHToBB-Kappa-hut	$1.72\text{e}+05 \pm 206$	$2.22\text{e}+04 \pm 74$	$1.4\text{e}+04 \pm 58.8$	$850 \pm 14.5$	$24.6 \pm 2.46$
TT+jets	$3.91\text{e}+07 \pm 8.15\text{e}+03$	$1.19\text{e}+07 \pm 4.64\text{e}+03$	$7.53\text{e}+06 \pm 3.7\text{e}+03$	$1.48\text{e}+06 \pm 1.65\text{e}+03$	$1.23\text{e}+04 \pm 151$
W+jets	$8.18\text{e}+07 \pm 1.77\text{e}+04$	$1.94\text{e}+07 \pm 9.04\text{e}+03$	$1.34\text{e}+07 \pm 7.4\text{e}+03$	$5.57\text{e}+05 \pm 1.67\text{e}+03$	$85.6 \pm 20.8$
T+jets	$2.78\text{e}+07 \pm 2.47\text{e}+04$	$3.16\text{e}+06 \pm 7.69\text{e}+03$	$2.2\text{e}+06 \pm 6.49\text{e}+03$	$3.23\text{e}+04 \pm 331$	$30.2 \pm 5.26$
TTH	$1.44\text{e}+04 \pm 13.9$	$4.77\text{e}+03 \pm 7.97$	$3.03\text{e}+03 \pm 6.34$	$2.13\text{e}+03 \pm 5.46$	$141 \pm 1.41$
ZToLL	$3.27\text{e}+07 \pm 1.5\text{e}+04$	$3.08\text{e}+06 \pm 3.46\text{e}+03$	$7.72\text{e}+05 \pm 1.39\text{e}+03$	$5.15\text{e}+04 \pm 243$	$13.1 \pm 3.64$
TT+V+jets	$1.41\text{e}+04 \pm 25.7$	$3.36\text{e}+03 \pm 12.3$	$2.08\text{e}+03 \pm 9.78$	$724 \pm 6.06$	$6.86 \pm 0.599$
VV+jets	$9.17\text{e}+05 \pm 1.07\text{e}+03$	$1.28\text{e}+05 \pm 400$	$9.08\text{e}+04 \pm 338$	$4.59\text{e}+03 \pm 76$	$7.55 \pm 3.08$
THqToBB	$1.84\text{e}+04 \pm 8.11$	$6.01\text{e}+03 \pm 4.58$	$3.86\text{e}+03 \pm 3.65$	$560 \pm 1.39$	$36.4 \pm 0.355$

- **Sbg (XsectionSignalExtractor):**

- Xsec(TTtoLHtoBB-kappa-hut)

$$= \text{TTxsection} * \text{BR\_TToWB} * 2 * ( \text{BR\_TToWB} * \text{BR\_WToLNu} ) * \text{BR\_HtoBB}$$

$$= 1.41 \text{ pb}$$

- **Bxl:**

- TT\_Kappa\_Hct\_Htobb"

$$= \text{TTxsection} * ( \text{BR\_TtoWB} * \text{BR\_T2cH\_Limit\_tcH} ) * \text{BR\_HtoBB}^2$$

$$= 4.36 \text{ pb}$$