# Decay Properties

Many of these studies have only partially been explored with the current data sets. They are very statistics limited now and will benefit greatly from the increased event samples of Run II.

Measure of $B_b$

$$B_b = \frac{t \to Wb}{t \to Wq}$$

Measured by examining the rates of no b-tag, single b-tag, and double b-tag events in the lepton plus jet and dilepton channels. The relative rates of these will depend on $B_b$.

Run I: $B_b = 0.94 \pm 0.27(stat) \pm 0.13(sys)$, $\delta B_b/B_b = 30\%$
Run II: $\delta B_b/B_b = 2.8\%$

Measure of $B_W$

$$B_W = \frac{t \to Wb}{t \to Xb} = \frac{9R_\ell}{1 + 3R_\ell}$$

$$R_\ell = \frac{\sigma(t\bar{t} \to \text{ dileptons}) \cdot B}{\sigma(t\bar{t} \to \text{ lepton + jets}) \cdot B}, \quad \text{SM}: \quad R_\ell = 1/6$$

Run I: $B_W = \text{In Prog.}, \quad \delta B_W/B_b = 50\%$
Run II: $\delta B_W/B_W = 9\%$

Note: This is model dependent, if X goes to leptons with the same branching ratio as W's this technique is not sensitive to X.