

Source of Uncertainty	Rate	Shape	Processes affected
Jet energy scale	0–8%	X	all
Initial and final state radiation	0–6%	X	single top, $t\bar{t}$
Parton distribution functions	0–1%	X	single top, $t\bar{t}$
Acceptance and efficiency scale	1–7%		single top, $t\bar{t}$, diboson, Z/γ^* +jets
Luminosity	6%		single top, $t\bar{t}$, diboson, Z/γ^* +jets
Jet flavor separator		X	all
Mistag model		X	W +light
Non- W model		X	Non- W
Factorization and renormalizatio		X	$Wb\bar{b}$
Jet η and ΔR distribution		X	W +light
Non- W normalization	40%		Non- W
$Wb\bar{b}$ and $Wc\bar{c}$ norm	30%		$Wb\bar{b}$, $Wc\bar{c}$
Wc normalization	30%		Wc
Mistag normalization	10–20%		W +light
$t\bar{t}$ normalization	8%		$t\bar{t}$
Monte Carlo generator	3–7%		single top, $t\bar{t}$
Single top normalization	7%		single top
Top mass	2-12%	X	single top, $t\bar{t}$

* X indicates the sources of uncertainty from shape variation

* Sources listed below double line are used only in $|V_{tb}|$ measurement