

numbers in %	fiducial phase space				
	$\Delta\sigma_{\text{tt}\bar{c}\bar{c}}$	$\Delta\sigma_{\text{tt}\bar{b}\bar{b}}$	$\Delta\sigma_{\text{ttLF}}$	ΔR_c	ΔR_b
Jet energy scale	7.3	3.3	5.7	3.2	3.4
Jet energy resolution	1.4	0.3	1.2	2.1	1.2
c-tagging calibration	6.7	6.9	2.2	6.9	7.4
Lepton id and isolation	1.3	1.2	1.2	0.2	0.1
Trigger	2.0	2.0	2.0	< 0.1	< 0.1
Pileup	1.2	0.8	0.7	1.6	0.4
Total integrated luminosity	2.4	2.3	2.3	< 0.1	< 0.1
μ_R and μ_F scales in ME	4.3	2.4	0.8	4.1	2.7
Parton shower scale	0.4	1.0	0.1	0.4	0.9
PDF α_s	0.5	< 0.1	0.1	0.4	0.1
Matching ME-PS (hdamp)	6.5	4.9	3.1	2.9	1.4
Underlying event	1.2	1.3	0.7	0.3	0.4
$\text{tt}\bar{b}\text{L}(\text{cL})/\text{tt}\bar{b}\bar{b}(\text{c}\bar{c})$ and $\text{tt}+\text{other}/\text{ttLF}$	2.4	1.7	1.2	2.0	1.5
Efficiency (theoretical)	2.0	2.0	2.0	< 0.1	< 0.1
Simulated sample size	4.3	2.7	1.1	4.2	2.7
Background normalisation	0.7	0.1	0.5	0.2	0.5