Source	Uncertainty	Process	Final state	correlated (years)	correlated (Process)
Normalization only					
Luminosity	1–2%	All	All		✓
Electron Id/Isolation/Trigger	3%	All	OSDL+SL		✓
Muon Id/Isolation/Trigger	3%	All	OSDL+SL		✓
Modelling $t\bar{t}$ + HF	4–8%	$t\bar{t} + b\bar{b}$	OSDL+SL	✓	✓
ME-PS matching	+7.5%/-9.6%	$t\bar{t}$	OSDL		
Cross section $t\bar{t}$ +bb	+4.8%/-5.5%	$t\bar{t}$ +bb	OSDL+SL	✓	
Cross section $t\bar{t}$ +light jets	+4.8%/-5.5%	$t\bar{t}$ +light jets	OSDL+SL	✓	
Cross section TOP	4%	TOP	SL	✓	
Cross section $t\bar{t}$ +H	20%	$t\bar{t}$ H	All	✓	
Cross section $t\bar{t}$ +V	50%	$t\bar{t}$ V	OSDL	✓	
Cross section $t\bar{t}$ +rare	50%	$t\bar{t}$ Rare	OSDL	✓	
Cross section EWK	3.8%	EWK	OSDL+SL	✓	
Shape and Normalization					
Prefire	$\pm\sigma$	All	All, 2016+2017 only		
Pileup	$\sigma_{minbias} \pm 4.6\%$	All	All	✓	✓
Jet Energy Scale	$\pm\sigma(p_T, \eta)$	All	All		✓
Jet Energy Resolution	$\pm\sigma(\eta)$	All	All		✓
DeepCSV tagging	$\pm\sigma(p_T)$	All	SL		✓
DeepCSV tagging stats	$\pm\sigma$	All	SL		✓
DeepJet tagging	$\pm\sigma$	All	OSDL, hadronic		✓
DeepJet tagging stats	$\pm\sigma$	All	OSDL, hadronic		✓
resolved t tagging: statistical	$\pm\sigma$	All	SL, hadronic		
resolved t tagging: CS purity	$\pm\sigma(p_T)$	All	SL		
resolved t tagging: closure	$\pm\sigma(N_{jet})$	All	SL		
PDF	$\pm\sigma$	$t\bar{t}$	All	✓	✓
Renorm./Fact. Energy Scale	envelope($\times 2$, $\times 0.5$)	All	SL, hadronic	✓	
Renorm./Fact. Energy Scale	$\times 2$, $\times 0.5$	All	OSDL	✓	
Shape only					
ISR	$\pm\sigma$	All	All	✓	
FSR	$\pm\sigma$	All	All	✓	