

Source	Uncertainty	Samples	Impact (up/down)
$t\bar{t}$ cross section*	$\pm 20\%$	$t\bar{t}$	+5.1 / -5.0%
Single t cross section*	$\pm 30\%$	single t	-4.2 / +4.8%
Luminosity*	$\pm 1.6\%$	$t\bar{t}$ , single t, signal	-1.4 / +1.5%
Top quark $p_T$ reweighting*	Shape	$t\bar{t}$	-5.0 / +5.1%
PDF*	Shape	$t\bar{t}$ , single t, signal	-4.1 / +4.6%
Background estimation (1b)	Shape	non-top (from data)	-5.3 / +6.9%
Background estimation (2b)	Shape	non-top (from data)	-0.3 / -0.4%
Pileup*	Shape	$t\bar{t}$ , single t, signal	-0.4 / +0.5%
JES*	Shape	$t\bar{t}$ , single t, signal	-1.3 / +2.3%
JER*	Shape	$t\bar{t}$ , single t, signal	+0.0 / +0.4%
ECAL trigger timing*	Shape	$t\bar{t}$ , single t, signal	+0.1 / -0.0%
Electron identification	Shape	$t\bar{t}$ , single t, signal	+0.4 / -0.4%
Electron reconstruction	Shape	$t\bar{t}$ , single t, signal	+0.2 / -0.0%
Electron trigger	Shape	$t\bar{t}$ , single t, signal	+0.3 / -0.0%
Muon identification	Shape	$t\bar{t}$ , single t, signal	+0.4 / -0.1%
Muon isolation	Shape	$t\bar{t}$ , single t, signal	+0.3 / -0.1%
Muon trigger	Shape	$t\bar{t}$ , single t, signal	-0.1 / +0.4%
t tagging (fully merged)	Shape	$t\bar{t}$ , single t, signal	-1.2 / +1.5%
t tagging (partially merged)	Shape	$t\bar{t}$ , single t, signal	-0.7 / +0.8%
t tagging (nonmerged)	Shape	$t\bar{t}$ , single t, signal	-0.0 / +0.2%
b tagging (b, c)	Shape	$t\bar{t}$ , single t, signal	-3.6 / +4.0%
b tagging (u, d, s, g)	Shape	$t\bar{t}$ , single t, signal	+0.7 / -0.6%