

Uncertainty of channel	SR2L_Top2L	SR2L_SingleTop
Total background expectation	1.17	0.11
Total statistical ( $\sqrt{N_{\text{exp}}}$ )	$\pm 1.08$	$\pm 0.33$
Total background systematic	$\pm 0.60$ [51.18%]	$\pm 0.06$ [51.82%]
alpha_MatrixElement-Top2L	$\pm 0.30$ [26.0%]	$\pm 0.00$ [0.00%]
alpha_JES_Group1	$\pm 0.24$ [20.5%]	$\pm 0.00$ [0.24%]
alpha_ISR-Top2L	$\pm 0.24$ [20.4%]	$\pm 0.00$ [0.00%]
alpha_JES_Group2	$\pm 0.24$ [20.2%]	$\pm 0.00$ [2.5%]
alpha_PartonShower-Top2L	$\pm 0.21$ [17.9%]	$\pm 0.00$ [0.00%]
alpha_JET_Flavor_Response	$\pm 0.19$ [16.5%]	$\pm 0.00$ [2.4%]
gamma_stat_SR2L_cuts_bin_0	$\pm 0.10$ [8.4%]	$\pm 0.01$ [8.4%]
alpha_pileup	$\pm 0.04$ [3.5%]	$\pm 0.00$ [0.00%]
alpha_MET_SoftTrk_ResoPara	$\pm 0.03$ [2.6%]	$\pm 0.00$ [0.00%]
alpha_FSR-Top2L	$\pm 0.03$ [2.2%]	$\pm 0.00$ [0.00%]
alpha_MET_SoftTrk_ResoPerp	$\pm 0.02$ [1.7%]	$\pm 0.00$ [0.00%]
alpha_btag_BT	$\pm 0.02$ [1.5%]	$\pm 0.00$ [0.00%]
alpha_MUON_Trig_sys	$\pm 0.02$ [1.4%]	$\pm 0.00$ [0.00%]
alpha_MET_SoftTrk	$\pm 0.02$ [1.3%]	$\pm 0.00$ [0.00%]
alpha_EG_RESOLUTION_ALL	$\pm 0.02$ [1.3%]	$\pm 0.00$ [0.00%]
alpha_MUON_MS	$\pm 0.01$ [1.0%]	$\pm 0.00$ [0.00%]
alpha_MUON_SCALE	$\pm 0.01$ [0.78%]	$\pm 0.00$ [0.00%]
alpha_JVT	$\pm 0.01$ [0.74%]	$\pm 0.00$ [0.00%]
alpha_MUON_ID	$\pm 0.01$ [0.71%]	$\pm 0.00$ [0.00%]
alpha_EG_Eff	$\pm 0.01$ [0.60%]	$\pm 0.00$ [0.00%]
alpha_btag_LightT	$\pm 0.00$ [0.31%]	$\pm 0.00$ [0.00%]
alpha_MUON_Eff_sys	$\pm 0.00$ [0.26%]	$\pm 0.00$ [0.00%]
alpha_EG_SCALE_ALL	$\pm 0.00$ [0.23%]	$\pm 0.00$ [0.00%]
alpha_MUON_Trig_stat	$\pm 0.00$ [0.10%]	$\pm 0.00$ [0.00%]
alpha_EG_Reco	$\pm 0.00$ [0.09%]	$\pm 0.00$ [0.00%]
alpha_btag_CT	$\pm 0.00$ [0.07%]	$\pm 0.00$ [0.00%]
alpha_EG_Trig	$\pm 0.00$ [0.07%]	$\pm 0.00$ [0.00%]
alpha_MUON_Eff_Iso_sys	$\pm 0.00$ [0.04%]	$\pm 0.00$ [0.00%]
alpha_JES_Group3	$\pm 0.00$ [0.03%]	$\pm 0.00$ [0.00%]
alpha_MUON_Eff_Iso_stat	$\pm 0.00$ [0.02%]	$\pm 0.00$ [0.00%]
alpha_btag_Extra	$\pm 0.00$ [0.02%]	$\pm 0.00$ [0.00%]
alpha_JET_EtaInt_posEta	$\pm 0.00$ [0.02%]	$\pm 0.03$ [29.4%]
alpha_JET_EtaInt_negEta	$\pm 0.00$ [0.01%]	$\pm 0.03$ [29.4%]
mu_tt_2L	$\pm 0.00$ [0.01%]	$\pm 0.00$ [0.00%]
alpha_EG_TrigEff	$\pm 0.00$ [0.01%]	$\pm 0.00$ [0.00%]
alpha_MUON_TTVA_stat	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
gamma_stat_tW2L_CRtt_cuts_bin_0	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_btag_ExtraFromCharm	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_MUON_TTVA_sys	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_JET_EtaInt_highE	$\pm 0.00$ [0.00%]	$\pm 0.03$ [29.4%]
mu_ttV	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_muR_muF_ttV	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
Lumi	$\pm 0.00$ [0.00%]	$\pm 0.00$ [1.7%]
mu_dib	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_fJVT	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_MUON_Eff_stat_lowpt	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_fakesSyst	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_MUON_Eff_sys_lowpt	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_MUON_Eff_stat	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
gamma_stat_tW2L_CRWZ_cuts_bin_0	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_EG_SCALE_AF2	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_JET_RelNonClos_AFII	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_muR_muF-Diboson	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_MUON_Eff_BadMuon_sys	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
alpha_MUON_Eff_BadMuon_stat	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]
gamma_stat_tW2L_CRttZ_cuts_bin_0	$\pm 0.00$ [0.00%]	$\pm 0.00$ [0.00%]

1

Table 1: Breakdown of the dominant systematic uncertainties on background estimates in the various signal regions. Note that the individual uncertainties can be correlated, and do not necessarily add up quadratically to the total background uncertainty. The percentages show the size of the uncertainty relative to the total expected background.