

atlas_1403_4853 CutFlow

ATLAS
 atlas_1403_4853
 ATLAS-SUSY-13-19
 2-leptons + (jets) + etmiss
 Energy: 8 TeV
 Luminosity: 20.3 fb⁻¹
 Montecarlo: MadGraph+Pythia

Signal region	H160: 2 b-jets, 2 SF leptons	
Process	$\tilde{t} \rightarrow b\tilde{\chi}_1^\pm \rightarrow bW^{(*)}\tilde{\chi}_1^0$	
Point	$m(\tilde{t}) = 300 \text{ GeV}, m(\tilde{\chi}_1^\pm) = 150 \text{ GeV}, m(\tilde{\chi}_1^0) = 50 \text{ GeV}$	
Source	ATLAS	CheckMATE
Generated events	157106.0	50000.0
Total Events	157106 ± 0	-
Generator Filter*	100000 ± 190	-
Cleaning Cuts*	990930 ± 0	-
Trigger*	49660 ± 180	-
Two 10 GeV SF leptons	3668.1 ± 60	3670 ± 18
Isolation	2844.6 ± 53	3270 ± 18
opposite sign	2805.2 ± 52	3270 ± 18
$m_{\ell\ell} > 20 \text{ GeV}$	2744.7 ± 52	3150 ± 18
Trigger lepton p_T requirements	2613.5 ± 51	2980 ± 18
2 b-jets	1074.1 ± 33	1190 ± 13
$m_{T2}^{\text{b-jet}} \geq 160 \text{ GeV}$	151.9 ± 12	182 ± 5.4
$m_{T2} \leq 90 \text{ GeV}$	147.6 ± 12	175 ± 5.3
leading lepton $p_T < 60 \text{ GeV}$	75.3 ± 8.7	60.3 ± 3.1

Table 1: Cutflow validation for atlas_1403_4853. Shown are number of Monte-Carlo generated events passing each cut for the experimental collaboration. The CheckMATE result is normalised to the same value. Final error is Monte-Carlo events only.

atlas_1403_4853 CutFlow

Signal region	H160: 2 b-jets, 2 DF leptons	
Process	$\tilde{t} \rightarrow b\tilde{\chi}_1^\pm \rightarrow bW^{(*)}\tilde{\chi}_1^0$	
Point	$m(\tilde{t}) = 300 \text{ GeV}, m(\tilde{\chi}_1^\pm) = 150 \text{ GeV}, m(\tilde{\chi}_1^0) = 50 \text{ GeV}$	
Source	ATLAS	CheckMATE
Generated events	157106.0	50000.0
Total Events	157106 ± 0	-
Generator Filter*	100000 ± 190	-
Cleaning Cuts*	990930 ± 0	-
Trigger*	49660 ± 180	-
Two 10 GeV DF leptons	3460.3 ± 58	3460 ± 17
Isolation	2699.1 ± 52	3020 ± 17
opposite sign	2660.3 ± 51	3010 ± 17
$m_{\ell\ell} > 20 \text{ GeV}$	2591.9 ± 50	2910 ± 17
Trigger lepton p_T requirements	2470.4 ± 49	2730 ± 17
2 b-jets	893.5 ± 30	1090 ± 12
$m_{T2}^{\text{b-jet}} \geq 160 \text{ GeV}$	137.7 ± 12	180 ± 5.3
$m_{T2} \leq 90 \text{ GeV}$	135.0 ± 12	176 ± 5.2
leading lepton $p_T < 60 \text{ GeV}$	58.2 ± 7.6	54.4 ± 2.9

Table 2: Cutflow validation for atlas_1403_4853. Shown are number of Monte-Carlo generated events passing each cut for the experimental collaboration. The CheckMATE result is normalised to the same value. Final error is Monte-Carlo events only.

Signal region	H160: 2 b-jets, 2 SF leptons	
Process	$\tilde{t} \rightarrow b\tilde{\chi}_1^\pm \rightarrow bW^{(*)}\tilde{\chi}_1^0$	
Point	$m(\tilde{t}) = 250 \text{ GeV}, m(\tilde{\chi}_1^\pm) = 106 \text{ GeV}, m(\tilde{\chi}_1^0) = 60 \text{ GeV}$	
Source	ATLAS	CheckMATE
Generated events	179256.0	50000.0
Total Events	179256 ± 0	-
Generator Filter*	100000 ± 210	-
Cleaning Cuts*	98657 ± 210	-
Trigger*	35834 ± 170	-
Two 10 GeV SF leptons	2212.9 ± 47	2210 ± 11
Isolation	1646.1 ± 40	1950 ± 11
opposite sign	1594.0 ± 40	1940 ± 11
$m_{\ell\ell} > 20 \text{ GeV}$	1506.0 ± 39	1780 ± 11
Trigger lepton p_T requirements	1319.0 ± 36	1410 ± 10
2 b-jets	529.9 ± 23	532 ± 7
$m_{T2}^{\text{b-jet}} \geq 160 \text{ GeV}$	42.3 ± 6.5	55 ± 2.4
$m_{T2} \leq 90 \text{ GeV}$	42.3 ± 6.5	55 ± 2.4
leading lepton $p_T < 60 \text{ GeV}$	29.9 ± 5.5	40.8 ± 2

Table 3: Cutflow validation for atlas_1403_4853. Shown are number of Monte-Carlo generated events passing each cut for the experimental collaboration. The CheckMATE result is normalised to the same value. Final error is Monte-Carlo events only.

Signal region	H160: 2 b-jets, 2 DF leptons	
Process	$\tilde{t} \rightarrow b\tilde{\chi}_1^\pm \rightarrow bW^{(*)}\tilde{\chi}_1^0$	
Point	$m(\tilde{t}) = 250 \text{ GeV}, m(\tilde{\chi}_1^\pm) = 106 \text{ GeV}, m(\tilde{\chi}_1^0) = 60 \text{ GeV}$	
Source	ATLAS	CheckMATE
Generated events	179256.0	50000.0
Total Events	179256 ± 0	-
Generator Filter*	100000 ± 210	-
Cleaning Cuts*	98657 ± 210	-
Trigger*	35834 ± 170	-
Two 10 GeV DF leptons	2148.1 ± 46	2150 ± 11
Isolation	1594.4 ± 40	1820 ± 11
opposite sign	1550.8 ± 39	1810 ± 11
$m_{\ell\ell} > 20 \text{ GeV}$	1455.0 ± 38	1670 ± 11
Trigger lepton p_T requirements	1231.1 ± 35	1330 ± 10
2 b-jets	461.1 ± 21	528 ± 7
$m_{T2}^{\text{b-jet}} \geq 160 \text{ GeV}$	47.9 ± 6.9	55.6 ± 2.4
$m_{T2} \leq 90 \text{ GeV}$	47.9 ± 6.9	55.6 ± 2.4
leading lepton $p_T < 60 \text{ GeV}$	36.7 ± 6.1	37.6 ± 2

Table 4: Cutflow validation for atlas_1403_4853. Shown are number of Monte-Carlo generated events passing each cut for the experimental collaboration. The CheckMATE result is normalised to the same value. Final error is Monte-Carlo events only.

Signal region	L90, L100, L110, L120: 2 SF leptons	
Process	$\tilde{t} \rightarrow b\tilde{\chi}_1^\pm \rightarrow bW^{(*)}\tilde{\chi}_1^0$	
Point	$m(\tilde{t}) = 300 \text{ GeV}, m(\tilde{\chi}_1^\pm) = 150 \text{ GeV}, m(\tilde{\chi}_1^0) = 1 \text{ GeV}$	
Source	ATLAS	CheckMATE
Generated events	156495.0	100000.0
Total Events	156495 ± 0	-
Generator Filter*	100000 ± 190	-
Trigger*	50196 ± 180	-
Cleaning Cuts*	49331 ± 180	-
Two 10 GeV SF leptons	3390 ± 58	3390 ± 20
Isolation	2625 ± 51	3130 ± 19
opposite sign	2582 ± 50	3120 ± 19
$m_{\ell\ell} > 20 \text{ GeV}$	2532 ± 50	3030 ± 19
Trigger lepton p_T requirements	2439.9 ± 49	2980 ± 19
Z veto	1731.5 ± 41	2150 ± 17
$\Delta\phi_j > 1$	928.9 ± 30	1260 ± 13
$\Delta\phi_b < 1.5$	901.9 ± 30	1180 ± 13
$m_{T2} > 90 \text{ GeV}$	58.0 ± 7.6	61.7 ± 3.1
$m_{T2} > 120 \text{ GeV}$	8.7 ± 2.9	8.04 ± 1.1
$m_{T2} > 100 \text{ GeV}, 2 \text{ jets } p_T > 100, 50 \text{ GeV}$	24.8 ± 5	15.2 ± 1.5
$m_{T2} > 110 \text{ GeV}, 2 \text{ jets } p_T > 20 \text{ GeV}$	19.9 ± 4.5	13 ± 1.4

Table 5: Cutflow validation for atlas_1403_4853. Shown are number of Monte-Carlo generated events passing each cut for the experimental collaboration. The CheckMATE result is normalised to the same value. Final error is Monte-Carlo events only.

Signal region	L90, L100, L110, L120: 2 DF leptons	
Process	$\tilde{t} \rightarrow b\tilde{\chi}_1^\pm \rightarrow bW^{(*)}\tilde{\chi}_1^0$	
Point	$m(\tilde{t}) = 300 \text{ GeV}, m(\tilde{\chi}_1^\pm) = 150 \text{ GeV}, m(\tilde{\chi}_1^0) = 1 \text{ GeV}$	
Source	ATLAS	CheckMATE
Generated events	156495.0	100000.0
Total Events	156495 ± 0	-
Generator Filter*	100000 ± 190	-
Trigger*	50196 ± 180	-
Cleaning Cuts*	49331 ± 180	-
Two 10 GeV DF leptons	3441 ± 58	3440 ± 20
Isolation	2615 ± 51	3080 ± 19
opposite sign	2560 ± 50	3080 ± 19
$m_{\ell\ell} > 20 \text{ GeV}$	2507 ± 50	2990 ± 19
Trigger lepton p_T requirements	2560.7 ± 50	2960 ± 19
$\Delta\phi_j > 1$	1315.3 ± 36	1820 ± 16
$\Delta\phi_b < 1.5$	1274.0 ± 36	1740 ± 15
$m_{T2} > 90 \text{ GeV}$	77.1 ± 8.8	82.2 ± 3.5
$m_{T2} > 120 \text{ GeV}$	9.4 ± 3.1	8.53 ± 1.1
$m_{T2} > 100 \text{ GeV}, 2 \text{ jets } p_T > 100, 50 \text{ GeV}$	15.5 ± 3.9	25.1 ± 2
$m_{T2} > 110 \text{ GeV}, 2 \text{ jets } p_T > 20 \text{ GeV}$	16.5 ± 4.1	18.9 ± 1.7

Table 6: Cutflow validation for atlas_1403_4853. Shown are number of Monte-Carlo generated events passing each cut for the experimental collaboration. The CheckMATE result is normalised to the same value. Final error is Monte-Carlo events only.

Signal region	L90, L100, L110, L120: 2 SF leptons	
Process	$\tilde{t} \rightarrow b\tilde{\chi}_1^\pm \rightarrow bW^{(*)}\tilde{\chi}_1^0$	
Point	$m(\tilde{t}) = 400 \text{ GeV}, m(\tilde{\chi}_1^\pm) = 390 \text{ GeV}, m(\tilde{\chi}_1^0) = 195 \text{ GeV}$	
Source	ATLAS	CheckMATE
Generated events	165631.0	50000.0
Total Events	165631 ± 0	-
Generator Filter*	80000 ± 200	-
Trigger*	53955 ± 190	-
Cleaning Cuts*	53147 ± 190	-
Two 10 GeV SF leptons	3811 ± 61	3810 ± 20
Isolation	3197 ± 56	3470 ± 19
opposite sign	3167 ± 56	3470 ± 19
$m_{\ell\ell} > 20 \text{ GeV}$	3144 ± 56	3390 ± 19
Trigger lepton p_T requirements	3253.5 ± 56	3250 ± 19
Z veto	2463.6 ± 49	2500 ± 18
$\Delta\phi_j > 1$	1834.9 ± 43	2140 ± 17
$\Delta\phi_b < 1.5$	1402.8 ± 37	1610 ± 15
$m_{T2} > 90 \text{ GeV}$	396.5 ± 20	437 ± 8.6
$m_{T2} > 120 \text{ GeV}$	211.8 ± 15	236 ± 6.4
$m_{T2} > 100 \text{ GeV}, 2 \text{ jets } p_T > 100, 50 \text{ GeV}$	21.7 ± 4.7	19.8 ± 1.9
$m_{T2} > 110 \text{ GeV}, 2 \text{ jets } p_T > 20 \text{ GeV}$	86.0 ± 9.3	61.9 ± 3.3

Table 7: Cutflow validation for atlas_1403_4853. Shown are number of Monte-Carlo generated events passing each cut for the experimental collaboration. The CheckMATE result is normalised to the same value. Final error is Monte-Carlo events only.

atlas_1403_4853 CutFlow

Signal region	L90, L100, L110, L120: 2 DF leptons	
Process	$\tilde{t} \rightarrow b\tilde{\chi}_1^\pm \rightarrow bW^{(*)}\tilde{\chi}_1^0$	
Point	$m(\tilde{t}) = 400 \text{ GeV}, m(\tilde{\chi}_1^\pm) = 390 \text{ GeV}, m(\tilde{\chi}_1^0) = 195 \text{ GeV}$	
Source	ATLAS	CheckMATE
Generated events	165631.0	50000.0
Total Events	165631 ± 0	-
Generator Filter*	80000 ± 200	-
Trigger*	53955 ± 190	-
Cleaning Cuts*	53147 ± 190	-
Two 10 GeV DF leptons	3836 ± 61	3840 ± 20
Isolation	3202 ± 56	3410 ± 19
opposite sign	3148 ± 56	3410 ± 19
$m_{\ell\ell} > 20 \text{ GeV}$	3113 ± 55	3330 ± 19
Trigger lepton p_T requirements	3131.4 ± 55	3190 ± 19
$\Delta\phi_j > 1$	2390.1 ± 49	2730 ± 18
$\Delta\phi_b < 1.5$	1800.5 ± 42	2080 ± 17
$m_{T2} > 90 \text{ GeV}$	500 ± 22	594 ± 9.9
$m_{T2} > 120 \text{ GeV}$	248.4 ± 16	315 ± 7.3
$m_{T2} > 100 \text{ GeV}, 2 \text{ jets } p_T > 100, 50 \text{ GeV}$	35.0 ± 5.9	25.7 ± 2.1
$m_{T2} > 110 \text{ GeV}, 2 \text{ jets } p_T > 20 \text{ GeV}$	116.1 ± 11	87 ± 3.9

Table 8: Cutflow validation for atlas_1403_4853. Shown are number of Monte-Carlo generated events passing each cut for the experimental collaboration. The CheckMATE result is normalised to the same value. Final error is Monte-Carlo events only.

Signal region	H160, L90, L100, L110, L120: 2 leptons	
Process	$t\bar{t}$	
Point	validation with expected SM $t\bar{t}$ background	
Source	ATLAS	CheckMATE
Generated events	165631.0	1000000.0
Truth events	523740 ± 0	524000 ± 500
H160	24 ± 8.7	17.3 ± 4.2
$m_{T2} > 90 \text{ GeV}$	190 ± 25	129 ± 11
$m_{T2} > 120 \text{ GeV}$	1.2 ± 1.9	0.524 ± 0.72
$m_{T2} > 100 \text{ GeV}, 2 \text{ jets } p_T > 100, 50 \text{ GeV}$	3.9 ± 3.5	5.76 ± 2.4
$m_{T2} > 110 \text{ GeV}, 2 \text{ jets } p_T > 20 \text{ GeV}$	3.7 ± 3.4	2.62 ± 1.6

Table 9: Cutflow validation for atlas_1403_4853. Shown are number of Monte-Carlo generated events passing each cut for the experimental collaboration. The CheckMATE result is normalised to the same value. Final error is Monte-Carlo events only.