Validation Cut-Flow Tables

Contents

1 ATLAS_2013_CONF_2013_024

1.1 $\tilde{t}_L\tilde{t}_L^* \to t\tilde{\chi}_1^0\bar{t}\tilde{\chi}_1^0$ (ATLAS_CONF_2013_024)

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	No cut	100.0	100.0							
1	μ veto	75.34 ± 0.17	80.61 ± 0.18	1.07	21.27	0	0.75 ± 0.0	0.81 ± 0.0	1.07	21.27
2	e veto	57.62 ± 0.15	56.11 ± 0.22	0.97	−5.62	1	0.76 ± 0.0	0.7 ± 0.0	0.91	−20.15
3	MET > 130	53.24 ± 0.15	48.51 ± 0.22	0.91	−17.73	2	0.92 ± 0.0	0.86 ± 0.0	0.94	−12.59
4	N_{jets} and p_T	18.17 ± 0.09	43.62 ± 0.22	2.4	107.09	3	0.34 ± 0.0	0.9 ± 0.0	2.63	115.15
5	$\text{MET}_{\text{track}} > 30$	17.84 ± 0.08	43.45 ± 0.22	2.44	107.97	4	0.98 ± 0.0	1.0 ± 0.01	1.01	2.12
6	$\Delta\phi(\text{MET}, \text{MET}_{\text{track}}) < \pi/3$	16.62 ± 0.08	42.82 ± 0.22	2.58	111.12	5	0.93 ± 0.0	0.99 ± 0.01	1.06	7.89
7	$\Delta\phi(\text{jet}, \text{MET}) < \pi/5$	14.19 ± 0.08	39.59 ± 0.22	2.79	109.81	6	0.85 ± 0.0	0.92 ± 0.01	1.08	10.33
8	τ veto	12.2 ± 0.07	37.47 ± 0.22	3.07	111.08	7	0.86 ± 0.0	0.95 ± 0.01	1.1	11.77
9	$\geq$ 2-bjets	6.21 ± 0.05	15.36 ± 0.16	2.47	54.21	8	0.51 ± 0.0	0.41 ± 0.0	0.81	−16.68
10	$m_T(\text{bjet}, \text{MET}) > 175$	4.65 ± 0.04	11.82 ± 0.14	2.54	47.56	9	0.75 ± 0.01	0.77 ± 0.01	1.03	1.74
11	$80 < m^0_{jjj} < 270$	4.02 ± 0.04	8.04 ± 0.12	2.0	31.37	10	0.86 ± 0.01	0.68 ± 0.01	0.79	−13.73
12	$80 < m^1_{jjj} < 270$	2.35 ± 0.03	1.91 ± 0.06	0.82	−6.3	11	0.58 ± 0.01	0.24 ± 0.01	0.41	−32.03
13	SR1: MET > 200	2.21 ± 0.03	1.77 ± 0.06	0.8	−6.66	12	0.94 ± 0.01	0.92 ± 0.03	0.98	−0.52
14	SR1: MET > 300	1.64 ± 0.03	1.29 ± 0.05	0.79	−6.16	13	0.74 ± 0.01	0.73 ± 0.03	0.98	−0.41
15	SR1: MET > 350	1.3 ± 0.02	1.03 ± 0.05	0.79	−5.31	14	0.8 ± 0.01	0.8 ± 0.04	1.01	0.16

Table 1: The cut-flow table for the $\tilde{t}_L\tilde{t}_L^* \to t\tilde{\chi}_1^0\bar{t}\tilde{\chi}_1^0$ process. The masses are set at $m_{\tilde{t}_L} = 600$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV. The Atom efficeincies are calculated using 10^4 events generated by `Herwig++ 2.5.2`.

1.2 $\tilde{t}_R\tilde{t}_R^* \to t\tilde{\chi}_1^0\bar{t}\tilde{\chi}_1^0$ (ATLAS_CONF_2013_024)

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	No cut	100.0	100.0							
1	μ veto	75.14 ± 0.17	82.07 ± 1.93	1.09	3.58	0	0.75 ± 0.0	0.82 ± 0.02	1.09	3.58
2	e veto	56.0 ± 0.15	55.05 ± 2.5	0.98	-0.38	1	0.75 ± 0.0	0.67 ± 0.03	0.9	-2.44
3	MET > 130	51.86 ± 0.14	47.47 ± 2.51	0.92	-1.75	2	0.93 ± 0.0	0.86 ± 0.05	0.93	-1.4
4	N_{jets} and p_T	19.18 ± 0.09	42.17 ± 2.48	2.2	9.26	3	0.37 ± 0.0	0.89 ± 0.05	2.4	9.91
5	$\text{MET}_{\text{track}} > 30$	18.98 ± 0.09	41.92 ± 2.48	2.21	9.24	4	0.99 ± 0.0	0.99 ± 0.06	1.0	0.07
6	$\Delta\phi(\text{MET}, \text{MET}_{\text{track}}) < \pi/3$	17.8 ± 0.08	41.16 ± 2.47	2.31	9.44	5	0.94 ± 0.0	0.98 ± 0.06	1.05	0.75
7	$\Delta\phi(\text{jet}, \text{MET}) > \pi/5$	15.2 ± 0.08	37.63 ± 2.43	2.48	9.21	6	0.85 ± 0.0	0.91 ± 0.06	1.07	1.02
8	τ veto	13.29 ± 0.07	36.62 ± 2.42	2.76	9.63	7	0.87 ± 0.0	0.97 ± 0.06	1.11	1.53
9	$\geq$ 2-bjets	5.82 ± 0.05	13.13 ± 1.7	2.26	4.31	8	0.44 ± 0.0	0.36 ± 0.05	0.82	-1.7
10	$m_T(\text{bjet}, \text{MET}) > 175$	3.98 ± 0.04	10.86 ± 1.56	2.73	4.4	9	0.68 ± 0.01	0.83 ± 0.12	1.21	1.19
11	$80 < m^0_{jjj} < 270$	3.51 ± 0.04	7.83 ± 1.35	2.23	3.2	10	0.88 ± 0.01	0.72 ± 0.12	0.82	-1.29
12	$80 < m^1_{jjj} < 270$	2.15 ± 0.03	1.01 ± 0.5	0.47	-2.26	11	0.61 ± 0.01	0.13 ± 0.06	0.21	-7.47
13	SR1: MET > 200	2.03 ± 0.03	1.01 ± 0.5	0.5	-2.03	12	0.94 ± 0.01	1.0 ± 0.5	1.06	0.11
14	SR2: MET > 300	1.54 ± 0.02	0.76 ± 0.44	0.49	-1.79	13	0.76 ± 0.01	0.75 ± 0.43	0.99	-0.02
15	SR3: MET > 350	1.2 ± 0.02	0.76 ± 0.44	0.63	-1.02	14	0.78 ± 0.01	1.0 ± 0.58	1.28	0.38

Table 2: The cut-flow table for the $\tilde{t}_R\tilde{t}_R^* \to t\tilde{\chi}_1^0\bar{t}\tilde{\chi}_1^0$ process. The masses are set at $m_{\tilde{t}_R} = 600$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV. The Atom efficeincies are calculated using 10^4 events generated by `Herwig++ 2.5.2`.

2 ATLAS_2013_CONF_2013_035

2.1 SR noZa: (ATLAS_CONF_2013_035)

- Process: $pp \to \tilde{\chi}_1^{\pm}\tilde{\chi}_2^0 \to (\ell^{\pm}\nu\tilde{\chi}_1^0)(\ell^+\ell^-\tilde{\chi}_1^0)$ via an on-shell $\tilde{\ell}_L$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = m_{\tilde{\chi}_2^0} = 192.5$ GeV, $m_{\tilde{\ell}_L} = 175$ GeV, $m_{\tilde{\chi}_1^0} = 157.5$ GeV.
- The number of events: 10^3.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	Lepton multiplicity	100.0	100.0							
1	SFOS requirement	99.85 ± 3.08	90.48 ± 14.4	0.91	-0.64	0	1.0 ± 0.03	0.9 ± 0.14	0.91	-0.64
2	b-jet veto	91.42 ± 2.95	85.71 ± 14.03	0.94	-0.4	1	0.92 ± 0.03	0.95 ± 0.16	1.03	0.2
3	Z veto	88.68 ± 2.91	85.71 ± 14.03	0.97	-0.21	2	0.97 ± 0.03	1.0 ± 0.16	1.03	0.18
4	SRnoZa: MET > 50	30.01 ± 1.69	28.57 ± 8.2	0.95	-0.17	3	0.34 ± 0.02	0.33 ± 0.1	0.98	-0.05
5	SRnoZa: mSFOS < 60	26.29 ± 1.58	21.43 ± 7.11	0.82	-0.67	4	0.88 ± 0.05	0.75 ± 0.25	0.86	-0.5
6	SRnoZa: SRnoZc veto	26.29 ± 1.58	21.43 ± 7.11	0.82	-0.67	5	1.0 ± 0.06	1.0 ± 0.33	1.0	0.0

Table 3: The cut-flow table for the noZa signal region.

2.2 SR noZb: (ATLAS_CONF_2013_035)

- Process: $pp \to \tilde{\chi}_1^{\pm}\tilde{\chi}_2^0 \to (W^{\pm}\chi_1^0)(Z\tilde{\chi}_1^0)$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = m_{\tilde{\chi}_2^0} = 150$ GeV, $m_{\tilde{\chi}_1^0} = 75$ GeV.
- The number of events: $5 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	Lepton multiplicity	100.0	100.0							
1	SFOS requirement	99.65 ± 9.27	98.28 ± 12.98	0.99	−0.09	0	1.0 ± 0.09	0.98 ± 0.13	0.99	−0.09
2	b-jet veto	92.83 ± 8.95	93.1 ± 12.64	1.0	0.02	1	0.93 ± 0.09	0.95 ± 0.13	1.02	0.1
3	Z veto	86.49 ± 8.64	87.93 ± 12.28	1.02	0.1	2	0.93 ± 0.09	0.94 ± 0.13	1.01	0.08
4	SRnoZb: MET > 75	23.67 ± 4.52	22.41 ± 6.21	0.95	−0.16	3	0.27 ± 0.05	0.25 ± 0.07	0.93	−0.21
5	SRnoZb: mSFOS 60-81	11.92 ± 3.21	13.79 ± 4.87	1.16	0.32	4	0.5 ± 0.14	0.62 ± 0.22	1.22	0.44
6	SRnoZb: SRnoZc veto	11.57 ± 3.16	13.79 ± 4.87	1.19	0.38	5	0.97 ± 0.26	1.0 ± 0.35	1.03	0.07

Table 4: The cut-flow table for the noZb signal region.

2.3 SR noZc: (ATLAS_CONF_2013_035)

- Process: $pp \to \tilde{\chi}_1^{\pm}\tilde{\chi}_2^0 \to (\ell^{\pm}\nu\tilde{\chi}_1^0)(\ell^+\ell^-\tilde{\chi}_1^0)$ via an on-shell $\tilde{\ell}_L$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = m_{\tilde{\chi}_2^0} = 500$ GeV, $m_{\tilde{\ell}_L} = 250$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: $5 \cdot 10^3$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	Lepton multiplicity	100.0	100.0							
1	SFOS requirement	98.6 ± 1.33	98.41 ± 3.5	1.0	−0.05	0	0.99 ± 0.01	0.98 ± 0.04	1.0	−0.05
2	b-jet veto	87.37 ± 1.26	92.2 ± 3.41	1.06	1.33	1	0.89 ± 0.01	0.94 ± 0.03	1.06	1.37
3	Z veto	84.56 ± 1.24	87.57 ± 3.33	1.04	0.85	2	0.97 ± 0.01	0.95 ± 0.04	0.98	−0.46
4	SRnoZc: MET > 75	77.54 ± 1.18	78.18 ± 3.17	1.01	0.19	3	0.92 ± 0.01	0.89 ± 0.04	0.97	−0.62
5	SRnoZc: $m_T > 110$	67.37 ± 1.1	67.77 ± 2.98	1.01	0.13	4	0.87 ± 0.01	0.87 ± 0.04	1.0	−0.05
6	SRnoZc: $p_T(\ell_3) > 30$	64.56 ± 1.08	64.74 ± 2.92	1.0	0.06	5	0.96 ± 0.02	0.96 ± 0.04	1.0	−0.07

Table 5: The cut-flow table for the noZc signal region.

2.4 SR Za: (ATLAS_CONF_2013_035)

- Process: $pp \to \tilde{\chi}_1^{\pm}\tilde{\chi}_2^0 \to (W^{\pm}\chi_1^0)(Z\tilde{\chi}_1^0)$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = m_{\tilde{\chi}_2^0} = 100$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: $2 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	Lepton multiplicity	100.0	100.0							
1	SFOS requirement	99.64 ± 10.03	100.0 ± 8.68	1.0	0.03	0	1.0 ± 0.1	1.0 ± 0.09	1.0	0.03
2	b-jet veto	92.35 ± 9.66	94.7 ± 8.44	1.03	0.18	1	0.93 ± 0.1	0.95 ± 0.08	1.02	0.16
3	Z requirement	85.19 ± 9.28	81.82 ± 7.85	0.96	−0.28	2	0.92 ± 0.1	0.86 ± 0.08	0.94	−0.45
4	SRZa: 75 > MET > 120	15.93 ± 4.01	15.15 ± 3.39	0.95	−0.15	3	0.19 ± 0.05	0.19 ± 0.04	0.99	−0.03
5	SRZa: $m_T < 110$	14.87 ± 3.88	15.15 ± 3.39	1.02	0.06	4	0.93 ± 0.24	1.0 ± 0.22	1.07	0.2

Table 6: The cut-flow table for the Za signal region.

2.5 SR Zb: (ATLAS_CONF_2013_035)

- Process: $pp \to \tilde{\chi}_1^{\pm}\tilde{\chi}_2^0 \to (W^{\pm}\chi_1^0)(Z\tilde{\chi}_1^0)$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = m_{\tilde{\chi}_2^0} = 150$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: $3 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	Lepton multiplicity	100.0	100.0							
1	SFOS requirement	99.31 ± 8.59	99.01 ± 6.98	1.0	−0.03	0	0.99 ± 0.09	0.99 ± 0.07	1.0	−0.03
2	b-jet veto	92.38 ± 8.28	92.57 ± 6.75	1.0	0.02	1	0.93 ± 0.08	0.93 ± 0.07	1.01	0.04
3	Z requirement	87.41 ± 8.06	84.65 ± 6.46	0.97	−0.27	2	0.95 ± 0.09	0.91 ± 0.07	0.97	−0.28
4	SRZb: 75 < MET < 120	26.06 ± 4.4	23.76 ± 3.43	0.91	−0.41	3	0.3 ± 0.05	0.28 ± 0.04	0.94	−0.27
5	SRZb: $m_T > 110$	10.7 ± 2.82	9.41 ± 2.16	0.88	−0.36	4	0.41 ± 0.11	0.4 ± 0.09	0.96	−0.1

Table 7: The cut-flow table for the Zb signal region.

2.6 SR Zc: (ATLAS_CONF_2013_035)

- Process: $pp \to \tilde{\chi}_1^{\pm}\tilde{\chi}_2^0 \to (W^{\pm}\chi_1^0)(Z\tilde{\chi}_1^0)$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = m_{\tilde{\chi}_2^0} = 250$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: $5 \cdot 10^3$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	Lepton multiplicity	100.0	100.0							
1	SFOS requirement	99.25 ± 7.34	100.0 ± 14.68	1.01	0.05	0	0.99 ± 0.07	1.0 ± 0.15	1.01	0.05
2	b-jet veto	91.0 ± 7.03	91.3 ± 14.03	1.0	0.02	1	0.92 ± 0.07	0.91 ± 0.14	1.0	−0.02
3	Z requirement	86.0 ± 6.84	89.13 ± 13.86	1.04	0.2	2	0.95 ± 0.08	0.98 ± 0.15	1.03	0.18
4	SRZc: MET ¿ 120	44.25 ± 4.9	43.48 ± 9.7	0.98	−0.07	3	0.51 ± 0.06	0.49 ± 0.11	0.95	−0.22
5	SRZc: $m_T > 110$	30.0 ± 4.04	32.61 ± 8.41	1.09	0.28	4	0.68 ± 0.09	0.75 ± 0.19	1.11	0.34

Table 8: The cut-flow table for the Zc signal region.

3 ATLAS_2013_CONF_2013_037

3.1 $\tilde{t}_1(500) \to t\tilde{\chi}_1^0(200)$ (ATLAS_CONF_2013_037)

- Process: $\tilde{t}_1\tilde{t}_1^* \to (t\tilde{\chi}_1^0)(\bar{t}\tilde{\chi}_1^0)$.
- Mass: $m_{\tilde{t}_1} = 500$ GeV, $m_{\tilde{\chi}_1^0} = 200$ GeV.
- The number of events: 10^4.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	[00] No cut	100.0	100.0							
1	[02] Lepton (= 1 signal)	22.81 ± 0.15	22.54 ± 0.42	0.99	−0.61	0	0.23 ± 0.0	0.23 ± 0.0	0.99	−0.61
2	[03] 4jets (80,60,40,25)	12.34 ± 0.11	11.13 ± 0.31	0.9	−3.61	1	0.54 ± 0.0	0.49 ± 0.01	0.91	−3.18
3	[04] >= 1 b in 4 leading jets	10.53 ± 0.1	9.38 ± 0.29	0.89	−3.73	2	0.85 ± 0.01	0.84 ± 0.03	0.99	−0.41
4	[05] MET > 100	8.65 ± 0.09	7.6 ± 0.27	0.88	−3.72	3	0.82 ± 0.01	0.81 ± 0.03	0.99	−0.35
5	[06] MET/$\sqrt{(H_T)} > 5$	8.45 ± 0.09	7.38 ± 0.26	0.87	−3.85	4	0.98 ± 0.01	0.97 ± 0.03	0.99	−0.17
6	[07] $\Delta\phi(j_2, \text{MET}) > 0.8$	7.63 ± 0.09	7.2 ± 0.26	0.94	−1.59	5	0.9 ± 0.01	0.98 ± 0.04	1.08	1.97
7	[SRtN2] MET > 200	4.31 ± 0.07	4.12 ± 0.2	0.96	−0.9	6	0.56 ± 0.01	0.57 ± 0.03	1.01	0.27
8	[SRtN2] MET/$\sqrt{(H_T)} > 13$	2.33 ± 0.05	2.27 ± 0.15	0.97	−0.39	7	0.54 ± 0.01	0.55 ± 0.04	1.02	0.27
9	[SRtN2] $m_T > 140$	1.91 ± 0.04	1.96 ± 0.14	1.03	0.33	8	0.82 ± 0.02	0.86 ± 0.06	1.05	0.68
10	[SRtN3] MET > 275	1.87 ± 0.04	1.69 ± 0.13	0.9	−1.32	6	0.24 ± 0.01	0.23 ± 0.02	0.96	−0.54
11	[SRtN3] $MET/\sqrt{(H_T)} > 11$	1.82 ± 0.04	1.65 ± 0.13	0.91	−1.27	10	0.97 ± 0.02	0.98 ± 0.08	1.0	0.03
12	[SRtN3] $m_T > 200$	1.05 ± 0.03	1.05 ± 0.1	1.0	−0.03	11	0.58 ± 0.02	0.64 ± 0.06	1.1	0.9
13	[SRbC1-3] MET > 150	6.03 ± 0.08	5.29 ± 0.22	0.88	−3.12	6	0.79 ± 0.01	0.73 ± 0.03	0.93	−1.69
14	[SRbC1-3] MET/$\sqrt{(H_T)} > 7$	5.92 ± 0.08	5.14 ± 0.22	0.87	−3.32	13	0.98 ± 0.01	0.97 ± 0.04	0.99	−0.21
15	[SRbC1-3] $m_T > 120$	4.58 ± 0.07	3.9 ± 0.19	0.85	−3.31	14	0.77 ± 0.01	0.76 ± 0.04	0.98	−0.38
16	[SRbC1-3] MET > 160	4.39 ± 0.07	3.79 ± 0.19	0.86	−2.97	15	0.96 ± 0.01	0.97 ± 0.05	1.01	0.25
17	[SRbC1-3] MET/$\sqrt{(H_T)} > 8$	4.26 ± 0.07	3.69 ± 0.19	0.87	−2.86	16	0.97 ± 0.01	0.97 ± 0.05	1.0	0.06
18	[SRbC1-3] $m_{\text{eff}} > 550$	4.01 ± 0.06	3.47 ± 0.18	0.86	−2.81	17	0.94 ± 0.01	0.94 ± 0.05	1.0	−0.04
19	[SRbC1-3] $m_{\text{eff}} > 700$	2.66 ± 0.05	2.23 ± 0.15	0.84	−2.76	18	0.66 ± 0.01	0.64 ± 0.04	0.97	−0.46
20	SRtN2	0.84 ± 0.03	0.76 ± 0.09	0.9	−0.87	9	0.44 ± 0.02	0.39 ± 0.04	0.88	−1.1
21	SRtN3	0.38 ± 0.02	0.41 ± 0.06	1.07	0.42	12	0.36 ± 0.02	0.39 ± 0.06	1.08	0.44
22	SRbC1	3.11 ± 0.06	2.75 ± 0.16	0.88	−2.08	6	0.41 ± 0.01	0.38 ± 0.02	0.94	−1.07
23	SRbC2	0.6 ± 0.02	0.53 ± 0.07	0.89	−0.86	6	0.08 ± 0.0	0.07 ± 0.01	0.94	−0.42
24	SRbC3	0.16 ± 0.01	0.19 ± 0.04	1.19	0.67	6	0.02 ± 0.0	0.03 ± 0.01	1.26	0.87

Table 9: The cut-flow table for the $\tilde{t}_1(500) \to t\tilde{\chi}_1^0(200)$ model.

3.2 $\tilde{t}_1(650) \to t\tilde{\chi}_1^0(1)$ (ATLAS_CONF_2013_037)

- Process: $\tilde{t}_1\tilde{t}_1^* \to (t\tilde{\chi}_1^0)(\bar{t}\tilde{\chi}_1^0)$.
- Mass: $m_{\tilde{t}_1} = 650$ GeV, $m_{\tilde{\chi}_1^0} = 1$ GeV.
- The number of events: $5 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	[00] No cut	100.0	100.0							
1	[02] Lepton (= 1 signal)	23.57 ± 0.22	22.93 ± 0.19	0.97	−2.22	0	0.24 ± 0.0	0.23 ± 0.0	0.97	−2.22
2	[03] 4jets (80,60,40,25)	15.71 ± 0.18	14.09 ± 0.16	0.9	−6.87	1	0.67 ± 0.01	0.61 ± 0.01	0.92	−5.15
3	[04] >= 1 b in 4 leading jets	13.34 ± 0.16	12.06 ± 0.15	0.9	−5.86	2	0.85 ± 0.01	0.86 ± 0.01	1.01	0.45
4	[05] MET > 100	12.38 ± 0.16	11.18 ± 0.14	0.9	−5.65	3	0.93 ± 0.01	0.93 ± 0.01	1.0	−0.02
5	[06] $\text{MET}/\sqrt{(H_T)} > 5$	12.14 ± 0.16	10.97 ± 0.14	0.9	−5.57	4	0.98 ± 0.01	0.98 ± 0.01	1.0	0.02
6	[07] $\Delta\phi(j_2, \text{MET}) > 0.8$	11.11 ± 0.15	10.72 ± 0.14	0.97	−1.91	5	0.92 ± 0.01	0.98 ± 0.01	1.07	3.52
7	[SRtN2] MET > 200	9.27 ± 0.14	8.85 ± 0.13	0.95	−2.26	6	0.83 ± 0.01	0.83 ± 0.01	0.99	−0.53
8	[SRtN2] $\text{MET}/\sqrt{(H_T)} > 13$	6.75 ± 0.12	6.39 ± 0.11	0.95	−2.26	7	0.73 ± 0.01	0.72 ± 0.01	0.99	−0.35
9	[SRtN2] $m_T > 140$	6.19 ± 0.11	5.7 ± 0.1	0.92	−3.18	8	0.92 ± 0.02	0.89 ± 0.02	0.97	−1.04
10	[SRtN3] MET > 275	7.07 ± 0.12	6.25 ± 0.11	0.88	−5.1	6	0.64 ± 0.01	0.58 ± 0.01	0.92	−3.63
11	[SRtN3] $MET/\sqrt{(H_T)} > 11$	6.98 ± 0.12	6.08 ± 0.11	0.87	−5.66	10	0.99 ± 0.02	0.97 ± 0.02	0.99	−0.62
12	[SRtN3] $m_T > 200$	5.54 ± 0.11	4.77 ± 0.1	0.86	−5.41	11	0.79 ± 0.02	0.78 ± 0.02	0.99	−0.39
13	[SRbC1-3] MET > 150	10.23 ± 0.14	9.08 ± 0.13	0.89	−6.02	6	0.92 ± 0.01	0.85 ± 0.01	0.92	−4.24
14	[SRbC1-3] $\text{MET}/\sqrt{(H_T)} > 7$	10.05 ± 0.14	8.91 ± 0.13	0.89	−6.01	13	0.98 ± 0.01	0.98 ± 0.01	1.0	−0.06
15	[SRbC1-3] $m_T > 120$	8.78 ± 0.13	7.73 ± 0.12	0.88	−5.89	14	0.87 ± 0.01	0.87 ± 0.01	0.99	−0.3
16	[SRbC1-3] MET > 160	8.7 ± 0.13	7.67 ± 0.12	0.88	−5.79	15	0.99 ± 0.02	0.99 ± 0.02	1.0	0.07
17	[SRbC1-3] $\text{MET}/\sqrt{(H_T)} > 8$	8.51 ± 0.13	7.52 ± 0.12	0.88	−5.65	16	0.98 ± 0.01	0.98 ± 0.02	1.0	0.08
18	[SRbC1-3] $m_{\text{eff}} > 550$	8.45 ± 0.13	7.42 ± 0.12	0.88	−5.86	17	0.99 ± 0.02	0.99 ± 0.02	0.99	−0.24
19	[SRbC1-3] $m_{\text{eff}} > 700$	7.84 ± 0.13	6.75 ± 0.11	0.86	−6.46	18	0.93 ± 0.01	0.91 ± 0.02	0.98	−0.86
20	SRtN2	3.21 ± 0.08	2.53 ± 0.07	0.79	−6.4	9	0.52 ± 0.01	0.44 ± 0.01	0.85	−4.23
21	SRtN3	2.72 ± 0.07	2.1 ± 0.06	0.77	−6.28	12	0.49 ± 0.01	0.44 ± 0.01	0.9	−2.63
22	SRbC1	6.41 ± 0.11	5.58 ± 0.1	0.87	−5.43	6	0.58 ± 0.01	0.52 ± 0.01	0.9	−4.04
23	SRbC2	1.89 ± 0.06	1.67 ± 0.06	0.89	−2.56	6	0.17 ± 0.01	0.16 ± 0.01	0.92	−1.81
24	SRbC3	1.05 ± 0.05	0.78 ± 0.04	0.75	−4.38	6	0.09 ± 0.0	0.07 ± 0.0	0.77	−3.85

Table 10: The cut-flow table for the $\tilde{t}_1(500) \to t\tilde{\chi}_1^0(200)$ model.

4 ATLAS_2013_CONF_2013_047

4.1 $\tilde{q}\tilde{q}$ direct (450, 400): (ATLAS_CONF_2013_047)

- Process: $pp \to \tilde{q}\tilde{q} \to (q\chi_1^0)(q\chi_1^0)$.
- Mass: $m_{\tilde{q}} = 450$ GeV, $m_{\tilde{\chi}_1^0} = 400$ GeV.
- The number of events: $2 \cdot 10^4$.
- Event Generator: `MadGraph 5 and Pythia 6`. The MLM merging is used with the shower-k_T scheme implemented in MadGraph 5 and Pythia 6, where we take xqcut = qcut = $M_{\rm SUSY}/4$ with MSUSY being the mass of the heavier SUSY particles in the production.

#	cut name	$\epsilon_{\rm Exp}$	$\epsilon_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$	#/?	$R_{\rm Exp}$	$R_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$
0	No cut	100.0	100.0							
1	base: 0 lepton	89.88 ± 0.67	98.45 ± 0.13	1.1	12.55	0	0.9 ± 0.01	0.98 ± 0.0	1.1	12.55
2	base: MET > 160	14.96 ± 0.27	10.39 ± 0.32	0.69	−10.8	1	0.17 ± 0.0	0.11 ± 0.0	0.63	−13.61
3	base: $p_T(j_1) > 130$	12.93 ± 0.25	8.49 ± 0.3	0.66	−11.41	2	0.86 ± 0.02	0.82 ± 0.03	0.95	−1.43
4	base: $p_T(j_2) > 60$	9.03 ± 0.21	5.8 ± 0.25	0.64	−9.92	3	0.7 ± 0.02	0.68 ± 0.03	0.98	−0.46
5	A base: $\Delta\phi(j_i, \text{MET}) > 0.4$	7.04 ± 0.19	4.48 ± 0.22	0.64	−8.85	4	0.78 ± 0.02	0.77 ± 0.04	0.99	−0.13
6	AM: $\text{MET}/\sqrt{H_T} > 15$	2.65 ± 0.12	1.49 ± 0.13	0.56	−6.72	5	0.38 ± 0.02	0.33 ± 0.03	0.88	−1.34
7	AM: $_{\rm meff}$(inc) > 1600	0.13 ± 0.03	0.07 ± 0.03	0.51	−1.74	6	0.05 ± 0.01	0.05 ± 0.02	0.9	−0.24

Table 11: The cut-flow table for A medium signal region: $\tilde{q}\tilde{q}$ direct (450, 400).

4.2 $\tilde{q}\tilde{q}$ direct (850, 100): (ATLAS_CONF_2013_047)

- Process: $pp \to \tilde{q}\tilde{q} \to (q\chi_1^0)(q\chi_1^0)$.
- Mass: $m_{\tilde{q}} = 850$ GeV, $m_{\tilde{\chi}_1^0} = 100$ GeV.
- The number of events: 10^4.
- Event Generator: `MadGraph 5 and Pythia 6`. The MLM merging is used with the shower-k_T scheme implemented in MadGraph 5 and Pythia 6, where we take xqcut = qcut = $M_{\rm SUSY}/4$ with MSUSY being the mass of the heavier SUSY particles in the production.

#	cut name	$\epsilon_{\rm Exp}$	$\epsilon_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$	#/?	$R_{\rm Exp}$	$R_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$
0	No cut	100.0	100.0							
1	base: 0 lepton	98.5 ± 1.4	99.96 ± 0.03	1.01	1.04	0	0.99 ± 0.01	1.0 ± 0.0	1.01	1.04
2	base: MET > 160	89.87 ± 1.34	90.72 ± 0.41	1.01	0.61	1	0.91 ± 0.01	0.91 ± 0.0	0.99	-0.34
3	base: $p_T(j_1) > 130$	89.73 ± 1.34	90.56 ± 0.41	1.01	0.59	2	1.0 ± 0.01	1.0 ± 0.0	1.0	-0.01
4	base: $p_T(j_2) > 60$	87.41 ± 1.32	87.52 ± 0.47	1.0	0.08	3	0.97 ± 0.01	0.97 ± 0.01	0.99	-0.5
5	A base: $\Delta\phi(j_i, \text{MET}) > 0.4$	79.14 ± 1.26	80.64 ± 0.56	1.02	1.09	4	0.91 ± 0.01	0.92 ± 0.01	1.02	1.02
6	AM: $\text{MET}/\sqrt{H_T} > 15$	79.14 ± 1.26	53.44 ± 0.71	0.68	-17.82	5	1.0 ± 0.02	0.66 ± 0.01	0.66	-18.59
7	AM: $_{\rm meff}(\text{inc}) > 1600$	16.48 ± 0.57	18.5 ± 0.55	1.12	2.55	6	0.21 ± 0.01	0.35 ± 0.01	1.66	10.97

Table 12: The cut-flow table for A medium signal region: $\tilde{q}\tilde{q}$ direct (850, 400).

4.3 $\tilde{q}\tilde{q}$ direct (662, 287): (ATLAS_CONF_2013_047)

- Process: $pp \to \tilde{q}\tilde{q} \to (q\chi_1^0)(q\chi_1^0)$.
- Mass: $m_{\tilde{q}} = 662$ GeV, $m_{\tilde{\chi}_1^0} = 287$ GeV.
- The number of events: 10^4.
- Event Generator: `MadGraph 5 and Pythia 6`. The MLM merging is used with the shower-k_T scheme implemented in MadGraph 5 and Pythia 6, where we take xqcut = qcut = $M_{\rm SUSY}/4$ with MSUSY being the mass of the heavier SUSY particles in the production.

#	cut name	$\epsilon_{\rm Exp}$	$\epsilon_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$	#/?	$R_{\rm Exp}$	$R_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$
0	No cut	100.0	100.0							
1	base: 0 lepton	98.21 ± 0.99	99.98 ± 0.02	1.02	1.79	0	0.98 ± 0.01	1.0 ± 0.0	1.02	1.79
2	base: MET > 160	80.68 ± 0.9	81.73 ± 0.4	1.01	1.06	1	0.82 ± 0.01	0.82 ± 0.0	0.99	−0.41
3	base: $p_T(j_1) > 130$	79.95 ± 0.89	80.38 ± 0.41	1.01	0.43	2	0.99 ± 0.01	0.98 ± 0.01	0.99	−0.61
4	base: $p_T(j_2) > 60$	75.64 ± 0.87	75.52 ± 0.45	1.0	−0.12	3	0.95 ± 0.01	0.94 ± 0.01	0.99	−0.53
5	$p_T(j_3) > 60$	35.31 ± 0.59	28.34 ± 0.47	0.8	−9.21	4	0.47 ± 0.01	0.38 ± 0.01	0.8	−9.15
6	$p_T(j_4) > 60$	11.5 ± 0.34	7.13 ± 0.27	0.62	−10.12	5	0.33 ± 0.01	0.25 ± 0.01	0.77	−5.51
7	C base: $\Delta\phi(j_i, \text{MET}) > 0.4$	10.12 ± 0.32	6.29 ± 0.25	0.62	−9.43	6	0.88 ± 0.03	0.88 ± 0.04	1.0	0.05
8	C base: $\Delta\phi(j_i > 40, \text{MET}) > 0.2$	9.28 ± 0.3	5.94 ± 0.25	0.64	−8.52	7	0.92 ± 0.03	0.95 ± 0.04	1.03	0.58
9	CM: $\text{MET}/m_{\rm eff}(4j) > 0.25$	7.16 ± 0.27	4.71 ± 0.22	0.66	−7.05	8	0.77 ± 0.03	0.79 ± 0.04	1.03	0.46
10	CM: $m_{\rm eff}(\text{inc}) > 1200$	2.96 ± 0.17	2.05 ± 0.15	0.69	−4.03	9	0.41 ± 0.02	0.43 ± 0.03	1.05	0.53

Table 13: The cut-flow table for C medium signal region: $\tilde{q}\tilde{q}$ direct (662, 287).

4.4 $\tilde{q}\tilde{q}$ direct (1425, 400): (ATLAS_CONF_2013_047)

- Process: $pp \to \tilde{q}\tilde{g} \to (q\chi_1^0)(qq\chi_1^0)$.
- Mass: $m_{\tilde{g}} = 1425$ GeV, $m_{\tilde{q}} = 1368$ GeV, $m_{\tilde{\chi}_1^0} = 525$ GeV.
- The number of events: $5 \cdot 10^3$.
- Event Generator: `MadGraph 5 and Pythia 6`. The MLM merging is used with the shower-k_T scheme implemented in MadGraph 5 and Pythia 6, where we take xqcut = qcut = $M_{\rm SUSY}/4$ with MSUSY being the mass of the heavier SUSY particles in the production.

#	cut name	$\epsilon_{\rm Exp}$	$\epsilon_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$	#/?	$R_{\rm Exp}$	$R_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$
0	No cut	100.0	100.0							
1	base: 0 lepton	98.0 ± 1.4	99.84 ± 0.06	1.02	1.31	0	0.98 ± 0.01	1.0 ± 0.0	1.02	1.31
2	base: MET > 160	93.3 ± 1.37	94.74 ± 0.32	1.02	1.03	1	0.95 ± 0.01	0.95 ± 0.0	1.0	−0.22
3	base: $p_T(j_1) > 130$	93.3 ± 1.37	94.68 ± 0.32	1.01	0.98	2	1.0 ± 0.01	1.0 ± 0.0	1.0	−0.04
4	base: $p_T(j_2) > 60$	92.4 ± 1.36	94.42 ± 0.32	1.02	1.45	3	0.99 ± 0.01	1.0 ± 0.0	1.01	0.46
5	pTj3 ¿ 60	68.5 ± 1.17	87.2 ± 0.47	1.27	14.82	4	0.74 ± 0.01	0.92 ± 0.01	1.25	13.38
6	B base: $\Delta\phi(j_i, \text{MET}) > 0.4$	60.4 ± 1.1	74.8 ± 0.61	1.24	11.44	5	0.88 ± 0.02	0.86 ± 0.01	0.97	−1.37
7	BT: $\text{MET}/m_{\rm eff}(3j) > 0.4$	44.8 ± 0.95	28.58 ± 0.64	0.64	−14.2	6	0.74 ± 0.02	0.38 ± 0.01	0.52	−20.15
8	BT: $m_{\rm eff}(\text{inc}) > 1800$	27.5 ± 0.74	7.26 ± 0.37	0.26	−24.46	7	0.61 ± 0.02	0.25 ± 0.01	0.41	−17.18

Table 14: The cut-flow table for the B medium signal region: $\tilde{q}\tilde{g}$ direct (1425, 525).

4.5 $\tilde{q}\tilde{q}$ direct (1612, 37): (ATLAS_CONF_2013_047)

- Process: $pp \to \tilde{q}\tilde{g} \to (q\chi_1^0)(qq\chi_1^0)$.
- Mass: $m_{\tilde{g}} = 1612$ GeV, $m_{\tilde{q}} = 1548$ GeV, $m_{\tilde{\chi}_1^0} = 37$ GeV.
- The number of events: $5 \cdot 10^3$.
- Event Generator: `MadGraph 5 and Pythia 6`. The MLM merging is used with the shower-k_T scheme implemented in MadGraph 5 and Pythia 6, where we take xqcut = qcut = $M_{\rm SUSY}/4$ with MSUSY being the mass of the heavier SUSY particles in the production.

#	cut name	$\epsilon_{\rm Exp}$	$\epsilon_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$	#/?	$R_{\rm Exp}$	$R_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$
0	No cut	100.0	100.0							
1	base: 0 lepton	98.8 ± 1.41	99.96 ± 0.03	1.01	0.83	0	0.99 ± 0.01	1.0 ± 0.0	1.01	0.83
2	base: MET > 160	95.9 ± 1.38	97.02 ± 0.24	1.01	0.8	1	0.97 ± 0.01	0.97 ± 0.0	1.0	−0.0
3	base: $p_T(j_1) > 130$	95.8 ± 1.38	97.02 ± 0.24	1.01	0.87	2	1.0 ± 0.01	1.0 ± 0.0	1.0	0.07
4	base: $p_T(j_2) > 60$	95.2 ± 1.38	96.96 ± 0.24	1.02	1.26	3	0.99 ± 0.01	1.0 ± 0.0	1.01	0.39
5	pTj3 ¿ 60	75.7 ± 1.23	93.02 ± 0.36	1.23	13.51	4	0.8 ± 0.01	0.96 ± 0.0	1.21	12.21
6	B base: $\Delta\phi(j_i, \text{MET}) > 0.4$	66.2 ± 1.15	77.58 ± 0.59	1.17	8.8	5	0.87 ± 0.02	0.83 ± 0.01	0.95	−2.46
7	BM: $\text{MET}/m_{\rm eff}(3j) > 0.3$	31.8 ± 0.8	50.7 ± 0.71	1.59	17.73	6	0.48 ± 0.01	0.65 ± 0.01	1.36	11.46
8	BM: $m_{\rm eff}(\text{inc}) > 1800$	22.8 ± 0.68	45.48 ± 0.7	1.99	23.25	7	0.72 ± 0.02	0.9 ± 0.01	1.25	7.1

Table 15: The cut-flow table for B tight signal region: $\tilde{q}\tilde{g}$ direct (1612, 37).

4.6 $\tilde{g}\tilde{g}$ direct (1162, 337): (ATLAS_CONF_2013_047)

- Process: $pp \to \tilde{g}\tilde{g} \to (qq\chi_1^0)(qq\chi_1^0)$.
- Mass: $m_{\tilde{q}} = 1162$ GeV, $m_{\tilde{\chi}_1^0} = 337$ GeV.
- The number of events: $5 \cdot 10^3$.
- Event Generator: `MadGraph 5 and Pythia 6`. The MLM merging is used with the shower-k_T scheme implemented in MadGraph 5 and Pythia 6, where we take xqcut = qcut = $M_{\rm SUSY}/4$ with MSUSY being the mass of the heavier SUSY particles in the production.

#	cut name	$\epsilon_{\rm Exp}$	$\epsilon_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$	#/?	$R_{\rm Exp}$	$R_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$
0	No cut	100.0	100.0							
1	base: 0 lepton	98.45 ± 1.4	99.88 ± 0.05	1.01	1.02	0	0.98 ± 0.01	1.0 ± 0.0	1.01	1.02
2	base: MET > 160	88.81 ± 1.33	89.8 ± 0.43	1.01	0.71	1	0.9 ± 0.01	0.9 ± 0.0	1.0	−0.21
3	base: $p_T(j_1) > 130$	88.81 ± 1.33	89.78 ± 0.43	1.01	0.69	2	1.0 ± 0.02	1.0 ± 0.0	1.0	−0.01
4	base: $p_T(j_2) > 60$	88.73 ± 1.33	89.76 ± 0.43	1.01	0.74	3	1.0 ± 0.01	1.0 ± 0.0	1.0	0.04
5	$p_T(j_3) > 60$	87.09 ± 1.32	88.2 ± 0.46	1.01	0.79	4	0.98 ± 0.01	0.98 ± 0.01	1.0	0.07
6	$p_T(j_4) > 60$	74.1 ± 1.22	74.14 ± 0.62	1.0	0.03	5	0.85 ± 0.01	0.84 ± 0.01	0.99	−0.66
7	$p_T(j_5) > 60$	40.93 ± 0.9	36.54 ± 0.68	0.89	−3.88	6	0.55 ± 0.01	0.49 ± 0.01	0.89	−3.9
8	D base: $\Delta\phi(j_i, \text{MET}) > 0.4$	34.23 ± 0.83	30.24 ± 0.65	0.88	−3.79	7	0.84 ± 0.02	0.83 ± 0.02	0.99	−0.32
9	D base: $\Delta\phi(j_i > 40, \text{MET}) > 0.2$	28.51 ± 0.76	26.24 ± 0.62	0.92	−2.32	8	0.83 ± 0.02	0.87 ± 0.02	1.04	1.15
10	DM: $\text{MET}/m_{\rm eff}(5j) > 0.2$	22.06 ± 0.66	20.66 ± 0.57	0.94	−1.6	9	0.77 ± 0.02	0.79 ± 0.02	1.02	0.43
11	DM: $m_{\rm eff}(\text{inc}) > 1600$	13.4 ± 0.52	13.02 ± 0.48	0.97	−0.54	10	0.61 ± 0.02	0.63 ± 0.02	1.04	0.69

Table 16: The cut-flow table for D signal region: $\tilde{g}\tilde{g}$ direct (1162, 337).

4.7 $\tilde{g}\tilde{g}$ one step (1065, 785, 505): (ATLAS_CONF_2013_047)

- Process: $pp \to \tilde{g}\tilde{g} : \tilde{g} \to qq\chi_1^{\pm} \to W^{\pm}qq\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{q}} = 1065$ GeV, $m_{\tilde{\chi}_1^{\pm}} = 785$ GeV, $m_{\tilde{\chi}_1^0} = 505$ GeV.
- The number of events: $2 \cdot 10^4$.
- Event Generator: `MadGraph 5 and Pythia 6`. The MLM merging is used with the shower-k_T scheme implemented in MadGraph 5 and Pythia 6, where we take xqcut = qcut = $M_{\rm SUSY}/4$ with MSUSY being the mass of the heavier SUSY particles in the production.

#	cut name	$\epsilon_{\rm Exp}$	$\epsilon_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$	#/?	$R_{\rm Exp}$	$R_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$
0	No cut	100.0	100.0							
1	base: 0 lepton	63.7 ± 0.56	65.01 ± 0.34	1.02	1.99	0	0.64 ± 0.01	0.65 ± 0.0	1.02	1.99
2	base: MET > 160	50.04 ± 0.5	50.89 ± 0.35	1.02	1.39	1	0.79 ± 0.01	0.78 ± 0.01	1.0	−0.29
3	base: $p_T(j_1) > 130$	49.28 ± 0.5	49.79 ± 0.35	1.01	0.82	2	0.98 ± 0.01	0.98 ± 0.01	0.99	−0.54
4	base: $p_T(j_2) > 60$	49.25 ± 0.5	49.73 ± 0.35	1.01	0.8	3	1.0 ± 0.01	1.0 ± 0.01	1.0	−0.02
5	$p_T(j_3) > 60$	48.6 ± 0.49	48.88 ± 0.35	1.01	0.46	4	0.99 ± 0.01	0.98 ± 0.01	1.0	−0.33
6	$p_T(j_4) > 60$	44.55 ± 0.47	44.42 ± 0.35	1.0	−0.21	5	0.92 ± 0.01	0.91 ± 0.01	0.99	−0.64
7	$p_T(j_5) > 60$	34.4 ± 0.41	33.06 ± 0.33	0.96	−2.52	6	0.77 ± 0.01	0.74 ± 0.01	0.96	−2.34
8	D base: $\Delta\phi(j_i, \text{MET}) > 0.4$	29.23 ± 0.38	28.42 ± 0.32	0.97	−1.64	7	0.85 ± 0.01	0.86 ± 0.01	1.01	0.66
9	D base: $\Delta\phi(j_i > 40, \text{MET}) > 0.2$	24.64 ± 0.35	24.4 ± 0.3	0.99	−0.51	8	0.84 ± 0.01	0.86 ± 0.01	1.02	0.99
10	DM: $\text{MET}/m_{\rm eff}(5j) > 0.2$	21.59 ± 0.33	21.81 ± 0.29	1.01	0.49	9	0.88 ± 0.01	0.89 ± 0.01	1.02	0.97
11	DM: $m_{\rm eff}(\text{inc}) > 1600$	1.97 ± 0.1	1.87 ± 0.1	0.95	−0.74	10	0.09 ± 0.0	0.09 ± 0.0	0.94	−0.88

Table 17: The cut-flow table for D signal region: $\tilde{g}\tilde{g}$ one step (1065, 785, 505).

4.8 $\tilde{g}\tilde{g}$ one step (1265, 865, 465): (ATLAS_CONF_2013_047)

- Process: $pp \to \tilde{g}\tilde{g} : \tilde{g} \to qq\chi_1^{\pm} \to W^{\pm}qq\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{q}} = 1265$ GeV, $m_{\tilde{\chi}_1^{\pm}} = 865$ GeV, $m_{\tilde{\chi}_1^0} = 465$ GeV.
- The number of events: $2 \cdot 10^4$.
- Event Generator: `MadGraph 5 and Pythia 6`. The MLM merging is used with the shower-k_T scheme implemented in MadGraph 5 and Pythia 6, where we take xqcut = qcut = $M_{\rm SUSY}/4$ with MSUSY being the mass of the heavier SUSY particles in the production.

#	cut name	$\epsilon_{\rm Exp}$	$\epsilon_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$	#/?	$R_{\rm Exp}$	$R_{\rm Atom}$	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$
0	No cut	100.0	100.0							
1	base: 0 lepton	63.5 ± 0.56	64.49 ± 0.34	1.02	1.51	0	0.64 ± 0.01	0.64 ± 0.0	1.02	1.51
2	base: MET > 160	55.6 ± 0.53	56.18 ± 0.35	1.01	0.92	1	0.88 ± 0.01	0.87 ± 0.01	0.99	−0.45
3	base: $p_T(j_1) > 130$	55.6 ± 0.53	56.08 ± 0.35	1.01	0.76	2	1.0 ± 0.01	1.0 ± 0.01	1.0	−0.16
4	base: $p_T(j_2) > 60$	55.6 ± 0.53	56.07 ± 0.35	1.01	0.75	3	1.0 ± 0.01	1.0 ± 0.01	1.0	−0.01
5	$p_T(j_3) > 60$	55.4 ± 0.53	55.78 ± 0.35	1.01	0.61	4	1.0 ± 0.01	0.99 ± 0.01	1.0	−0.14
6	$p_T(j_4) > 60$	53.4 ± 0.52	53.82 ± 0.35	1.01	0.67	5	0.96 ± 0.01	0.96 ± 0.01	1.0	0.08
7	$p_T(j_5) > 60$	46.3 ± 0.48	45.81 ± 0.35	0.99	−0.81	6	0.87 ± 0.01	0.85 ± 0.01	0.98	−1.42
8	$p_T(j_6) > 60$	31.7 ± 0.4	30.33 ± 0.33	0.96	−2.67	7	0.68 ± 0.01	0.66 ± 0.01	0.97	−2.03
9	E base: $\Delta\phi(j_i, \text{MET}) > 0.4$	26.5 ± 0.36	25.54 ± 0.31	0.96	−2.01	8	0.84 ± 0.01	0.84 ± 0.01	1.01	0.4
10	E base: $\Delta\phi(j_i > 40, \text{MET}) > 0.2$	21.3 ± 0.33	20.82 ± 0.29	0.98	−1.1	9	0.8 ± 0.01	0.82 ± 0.01	1.01	0.68
11	ET: $\text{MET}/m_{\rm eff}(6j) > 0.25$	12.0 ± 0.24	11.95 ± 0.23	1.0	−0.16	10	0.56 ± 0.01	0.57 ± 0.01	1.02	0.65
12	ET: $m_{\rm eff}(\text{inc}) > 1500$	7.9 ± 0.2	8.22 ± 0.19	1.04	1.15	11	0.66 ± 0.02	0.69 ± 0.02	1.05	1.28

Table 18: The cut-flow table for E tight signal region: $\tilde{g}\tilde{g}$ one step (1265, 865, 465).

5 ATLAS_2013_CONF_2013_048

5.1 $\tilde{t}_1(400) \to b\tilde{\chi}_1^+(250) \to W^+\tilde{\chi}_1^0(1)$ (ATLAS_CONF_2013_048)

- Process: $pp \to \tilde{t}_1\tilde{t}_1^* : \tilde{t}_1 \to b\tilde{\chi}_1^+ \to W^+\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{t}_1} = 400$ GeV, $m_{\tilde{\chi}_1^\pm} = 250$ GeV, $m_{\tilde{\chi}_1^0} = 1$ GeV.
- The number of events: $3 \cdot 10^4$.
- Event Generator: `MadGraph 5` and `Pythia 6`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	Same Flavour	100.0	100.0							
1	SF: Opposite Sign	97.82 ± 2.67	98.73 ± 3.69	1.01	0.2	0	0.98 ± 0.03	0.99 ± 0.04	1.01	0.2
2	SF: $m_{\ell\ell} > 20$	96.55 ± 2.66	96.48 ± 3.65	1.0	−0.02	1	0.99 ± 0.03	0.98 ± 0.04	0.99	−0.22
3	SF: Leading lepton p_T	95.01 ± 2.63	94.8 ± 3.62	1.0	−0.05	2	0.98 ± 0.03	0.98 ± 0.04	1.0	−0.03
4	SF: $\lvert m_{\ell\ell} - m_Z \rvert > 20$	70.38 ± 2.27	72.57 ± 3.17	1.03	0.56	3	0.74 ± 0.02	0.77 ± 0.03	1.03	0.61
5	SF: $\Delta\phi_{\text{min}} > 1$	36.96 ± 1.64	38.96 ± 2.33	1.05	0.7	4	0.53 ± 0.02	0.54 ± 0.03	1.02	0.29
6	SF: $\Delta\phi_b < 1.5$	35.58 ± 1.61	36.01 ± 2.24	1.01	0.15	5	0.96 ± 0.04	0.92 ± 0.06	0.96	−0.53
7	SF: M90	7.85 ± 0.76	6.19 ± 0.93	0.79	−1.38	6	0.22 ± 0.02	0.17 ± 0.03	0.78	−1.45
8	SF: M100	3.34 ± 0.49	3.09 ± 0.66	0.93	−0.3	7	0.43 ± 0.06	0.5 ± 0.11	1.17	0.6
9	SF: M110	3.78 ± 0.53	3.8 ± 0.73	1.0	0.02	8	1.13 ± 0.16	1.23 ± 0.24	1.09	0.34
10	SF: M120	2.5 ± 0.43	2.95 ± 0.64	1.18	0.58	9	0.66 ± 0.11	0.78 ± 0.17	1.17	0.57

Table 19: The cut-flow table for the same flavour channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	Opposite Flavour	100.0	100.0							
1	OF: Opposite Sign	97.43 ± 2.74	99.0 ± 3.72	1.02	0.34	0	0.97 ± 0.03	0.99 ± 0.04	1.02	0.34
2	OF: $m_{\ell\ell} > 20$	96.42 ± 2.72	97.3 ± 3.69	1.01	0.19	1	0.99 ± 0.03	0.98 ± 0.04	0.99	−0.15
3	OF: Leading lepton p_T	94.82 ± 2.7	95.59 ± 3.66	1.01	0.17	2	0.98 ± 0.03	0.98 ± 0.04	1.0	−0.02
4	OF: $\Delta\phi_{\text{min}} > 1$	46.68 ± 1.89	50.78 ± 2.68	1.09	1.25	3	0.49 ± 0.02	0.53 ± 0.03	1.08	1.13
5	OF: $\Delta\phi_b < 1.5$	45.05 ± 1.86	48.93 ± 2.63	1.09	1.21	4	0.97 ± 0.04	0.96 ± 0.05	1.0	−0.02
6	OF: M90	9.51 ± 0.85	8.39 ± 1.09	0.88	−0.8	5	0.21 ± 0.02	0.17 ± 0.02	0.81	−1.35
7	OF: M100	3.33 ± 0.51	4.13 ± 0.77	1.24	0.87	6	0.35 ± 0.05	0.49 ± 0.09	1.4	1.34
8	OF: M110	5.06 ± 0.62	4.55 ± 0.8	0.9	−0.5	7	1.52 ± 0.19	1.1 ± 0.19	0.73	−1.54
9	OF: M120	3.64 ± 0.53	3.13 ± 0.67	0.86	−0.6	8	0.72 ± 0.1	0.69 ± 0.15	0.95	−0.18

Table 20: The cut-flow table for the opposite flavour channel.

6 ATLAS_2013_CONF_2013_049

6.1 $\tilde{e}^{\pm}(191) \to e^{\pm}\tilde{\chi}_1^0(90)$ (ATLAS_CONF_2013_049)

- Process: $\tilde{e}^+\tilde{e}^- : \tilde{e}^{\pm} \to e^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{e}} = 191$ GeV, $m_{\tilde{\chi}_1^0} = 90$ GeV.
- The number of events: $2 \cdot 10^3$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	*ee*: Trigger	100.0	100.0							
1	*ee*: Z veto	92.67 ± 1.58	92.91 ± 1.4	1.0	0.12	0	0.93 ± 0.02	0.93 ± 0.01	1.0	0.12
2	*ee*: Jet veto	38.67 ± 1.02	52.4 ± 1.47	1.36	7.66	1	0.42 ± 0.01	0.56 ± 0.02	1.35	7.6
3	*ee*: MET^{rel}	30.0 ± 0.9	39.7 ± 1.38	1.32	5.9	2	0.78 ± 0.02	0.76 ± 0.03	0.98	−0.52
4	*ee*: $m_{T2} > 90$	14.4 ± 0.62	17.29 ± 1.01	1.2	2.43	3	0.48 ± 0.02	0.44 ± 0.03	0.91	−1.36
5	*ee*: $m_{T2} > 110$	8.2 ± 0.47	9.12 ± 0.76	1.11	1.03	4	0.57 ± 0.03	0.53 ± 0.04	0.93	−0.77

Table 21: The cut-flow table for the *ee* channel.

6.2 $\tilde{\mu}^{\pm}(191) \to \mu^{\pm}\tilde{\chi}_1^0(90)$ (ATLAS_CONF_2013_049)

- Process: $\tilde{\mu}^+\tilde{\mu}^- : \tilde{\mu}^{\pm} \to \mu^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\mu}} = 191$ GeV, $m_{\tilde{\chi}_1^0} = 90$ GeV.
- The number of events: $2 \cdot 10^3$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$\mu\mu$: Trigger	100.0	100.0							
1	$\mu\mu$: Z veto	93.08 ± 1.51	92.05 ± 1.2	0.99	-0.53	0	0.93 ± 0.02	0.92 ± 0.01	0.99	-0.53
2	$\mu\mu$: Jet veto	38.99 ± 0.98	50.59 ± 1.36	1.3	6.93	1	0.42 ± 0.01	0.55 ± 0.01	1.31	7.21
3	$\mu\mu$: MET^{rel}	31.45 ± 0.88	39.06 ± 1.28	1.24	4.9	2	0.81 ± 0.02	0.77 ± 0.03	0.96	-1.01
4	$\mu\mu$: $m_{T2} > 90$	13.58 ± 0.58	16.88 ± 0.95	1.24	2.97	3	0.43 ± 0.02	0.43 ± 0.02	1.0	0.01
5	$\mu\mu$: $m_{T2} > 110$	7.55 ± 0.43	10.66 ± 0.77	1.41	3.51	4	0.56 ± 0.03	0.63 ± 0.05	1.14	1.36

Table 22: The cut-flow table for the $\mu\mu$ channel.

6.3 $\tilde{e}^{\pm}(250) \to e^{\pm}\tilde{\chi}_1^0(10)$ (ATLAS_CONF_2013_049)

- Process: $\tilde{e}^+\tilde{e}^- : \tilde{e}^{\pm} \to e^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{e}} = 250$ GeV, $m_{\tilde{\chi}_1^0} = 10$ GeV.
- The number of events: $2 \cdot 10^3$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	ee: Trigger	100.0	100.0							
1	ee: Z veto	98.18 ± 1.59	97.29 ± 1.24	0.99	−0.44	0	0.98 ± 0.02	0.97 ± 0.01	0.99	−0.44
2	ee: Jet veto	36.36 ± 0.97	48.81 ± 1.4	1.34	7.32	1	0.37 ± 0.01	0.5 ± 0.01	1.35	7.53
3	ee: MET^{rel}	30.91 ± 0.89	43.26 ± 1.36	1.4	7.59	2	0.85 ± 0.02	0.89 ± 0.03	1.04	0.98
4	ee: $m_{T2} > 90$	22.18 ± 0.76	32.24 ± 1.25	1.45	6.89	3	0.72 ± 0.02	0.75 ± 0.03	1.04	0.73
5	ee: $m_{T2} > 110$	19.09 ± 0.7	27.08 ± 1.17	1.42	5.84	4	0.86 ± 0.03	0.84 ± 0.04	0.98	−0.43

Table 23: The cut-flow table for the ee channel.

6.4 $\tilde{\mu}^{\pm}(250) \to \mu^{\pm}\tilde{\chi}_1^0(10)$ (ATLAS_CONF_2013_049)

- Process: $\tilde{\mu}^+\tilde{\mu}^- : \tilde{\mu}^{\pm} \to \mu^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\mu}} = 250$ GeV, $m_{\tilde{\chi}_1^0} = 10$ GeV.
- The number of events: $2 \cdot 10^3$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$\mu\mu$: Trigger	100.0	100.0							
1	$\mu\mu$: Z veto	98.0 ± 1.74	95.9 ± 1.68	0.98	−0.87	0	0.98 ± 0.02	0.96 ± 0.02	0.98	−0.87
2	$\mu\mu$: Jet veto	40.0 ± 1.11	48.61 ± 1.61	1.22	4.4	1	0.41 ± 0.01	0.51 ± 0.02	1.24	4.88
3	$\mu\mu$: MET^{rel}	34.0 ± 1.03	42.18 ± 1.54	1.24	4.42	2	0.85 ± 0.03	0.87 ± 0.03	1.02	0.44
4	$\mu\mu$: $m_{T2} > 90$	25.0 ± 0.88	29.33 ± 1.36	1.17	2.68	3	0.74 ± 0.03	0.7 ± 0.03	0.95	−0.97
5	$\mu\mu$: $m_{T2} > 110$	22.4 ± 0.83	24.77 ± 1.27	1.11	1.56	4	0.9 ± 0.03	0.84 ± 0.04	0.94	−0.95

Table 24: The cut-flow table for the $\mu\mu$ channel.

6.5 $\tilde{\chi}_1^{\pm}(350) \to (\ell\tilde{\nu}(175) \text{ or } \nu\tilde{\ell}(175)) \to \nu\ell\tilde{\chi}_1^0(0)$ (ATLAS_CONF_2013_049)

- Process: $\tilde{\chi}_1^+\tilde{\chi}_1^- : \tilde{\chi}_1^{\pm} \to (\ell\tilde{\nu} \text{ or } \nu\tilde{\ell}) \to \nu\ell\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = 350$ GeV, $m_{\tilde{\ell}/\tilde{\nu}} = 175$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: $2 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	ee: Trigger	100.0	100.0							
1	ee: Z veto	92.31 ± 1.49	93.49 ± 2.02	1.01	0.47	0	0.92 ± 0.01	0.93 ± 0.02	1.01	0.47
2	ee: Jet veto	38.46 ± 0.96	36.96 ± 1.31	0.96	−0.92	1	0.42 ± 0.01	0.4 ± 0.01	0.95	−1.22
3	ee: MET^{rel}	32.69 ± 0.89	31.71 ± 1.22	0.97	−0.65	2	0.85 ± 0.02	0.86 ± 0.03	1.01	0.2
4	ee: $m_{T2} > 90$	22.5 ± 0.74	20.43 ± 0.98	0.91	−1.68	3	0.69 ± 0.02	0.64 ± 0.03	0.94	−1.15
5	ee: $m_{T2} > 110$	18.27 ± 0.66	16.77 ± 0.89	0.92	−1.35	4	0.81 ± 0.03	0.82 ± 0.04	1.01	0.17

Table 25: The cut-flow table for the ee channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$\mu\mu$: Trigger	100.0	100.0							
1	$\mu\mu$: Z veto	92.31 ± 1.46	93.31 ± 1.97	1.01	0.41	0	0.92 ± 0.01	0.93 ± 0.02	1.01	0.41
2	$\mu\mu$: Jet veto	38.46 ± 0.94	36.47 ± 1.27	0.95	−1.26	1	0.42 ± 0.01	0.39 ± 0.01	0.94	−1.52
3	$\mu\mu$: MET^{rel}	32.69 ± 0.87	31.35 ± 1.18	0.96	−0.91	2	0.85 ± 0.02	0.86 ± 0.03	1.01	0.24
4	$\mu\mu$: $m_{T2} > 90$	22.5 ± 0.72	20.24 ± 0.96	0.9	−1.89	3	0.69 ± 0.02	0.65 ± 0.03	0.94	−1.13
5	$\mu\mu$: $m_{T2} > 110$	18.27 ± 0.65	16.37 ± 0.86	0.9	−1.76	4	0.81 ± 0.03	0.81 ± 0.04	1.0	−0.06

Table 26: The cut-flow table for the $\mu\mu$ channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$e\mu$: Trigger	100.0	100.0							
1	$e\mu$: Z veto	92.31 ± 1.04	93.18 ± 1.32	1.01	0.52	0	0.92 ± 0.01	0.93 ± 0.01	1.01	0.52
2	$e\mu$: Jet veto	38.46 ± 0.67	37.6 ± 0.9	0.98	−0.77	1	0.42 ± 0.01	0.4 ± 0.01	0.97	−1.09
3	$e\mu$: MET^{rel}	32.69 ± 0.62	32.21 ± 0.84	0.99	−0.46	2	0.85 ± 0.02	0.86 ± 0.02	1.01	0.24
4	$e\mu$: $m_{T2} > 90$	22.5 ± 0.51	20.61 ± 0.68	0.92	−2.22	3	0.69 ± 0.02	0.64 ± 0.02	0.93	−1.83
5	$e\mu$: $m_{T2} > 110$	18.27 ± 0.46	17.03 ± 0.62	0.93	−1.6	4	0.81 ± 0.02	0.83 ± 0.03	1.02	0.39

Table 27: The cut-flow table for the $e\mu$ channel.

6.6 $\tilde{\chi}_1^{\pm}(425) \to (\ell\tilde{\nu}(250) \text{ or } \nu\tilde{\ell}(75)) \to \nu\ell\tilde{\chi}_1^0(0)$ (ATLAS_CONF_2013_049)

- Process: $\tilde{\chi}_1^+\tilde{\chi}_1^- : \tilde{\chi}_1^{\pm} \to (\ell\tilde{\nu} \text{ or } \nu\tilde{\ell}) \to \nu\ell\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = 425$ GeV, $m_{\tilde{\ell}/\tilde{\nu}} = 250$ GeV, $m_{\tilde{\chi}_1^0} = 75$ GeV.
- The number of events: 10^4.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	ee: Trigger	100.0	100.0							
1	ee: Z veto	95.0 ± 1.54	94.73 ± 2.08	1.0	-0.1	0	0.95 ± 0.02	0.95 ± 0.02	1.0	-0.1
2	ee: Jet veto	35.0 ± 0.94	27.76 ± 1.16	0.79	-4.84	1	0.37 ± 0.01	0.29 ± 0.01	0.8	-4.78
3	ee: MET^{rel}	30.0 ± 0.87	24.45 ± 1.09	0.81	-3.98	2	0.86 ± 0.02	0.88 ± 0.04	1.03	0.5
4	ee: $m_{T2} > 90$	21.5 ± 0.73	16.27 ± 0.9	0.76	-4.52	3	0.72 ± 0.02	0.67 ± 0.04	0.93	-1.17
5	ee: $m_{T2} > 110$	18.5 ± 0.68	13.4 ± 0.81	0.72	-4.8	4	0.86 ± 0.03	0.82 ± 0.05	0.96	-0.61

Table 28: The cut-flow table for the ee channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$\mu\mu$: Trigger	100.0	100.0							
1	$\mu\mu$: Z veto	95.0 ± 1.5	95.16 ± 2.01	1.0	0.07	0	0.95 ± 0.02	0.95 ± 0.02	1.0	0.07
2	$\mu\mu$: Jet veto	35.0 ± 0.91	27.74 ± 1.13	0.79	-5.0	1	0.37 ± 0.01	0.29 ± 0.01	0.79	-5.04
3	$\mu\mu$: MET^{rel}	30.0 ± 0.84	24.8 ± 1.07	0.83	-3.82	2	0.86 ± 0.02	0.89 ± 0.04	1.04	0.81
4	$\mu\mu$: $m_{T2} > 90$	21.5 ± 0.71	16.45 ± 0.88	0.77	-4.47	3	0.72 ± 0.02	0.66 ± 0.04	0.93	-1.25
5	$\mu\mu$: $m_{T2} > 110$	18.5 ± 0.66	13.75 ± 0.8	0.74	-4.57	4	0.86 ± 0.03	0.84 ± 0.05	0.97	-0.43

Table 29: The cut-flow table for the $\mu\mu$ channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$e\mu$: Trigger	100.0	100.0							
1	$e\mu$: Z veto	93.55 ± 1.07	94.48 ± 1.36	1.01	0.54	0	0.94 ± 0.01	0.94 ± 0.01	1.01	0.54
2	$e\mu$: Jet veto	35.48 ± 0.66	27.93 ± 0.8	0.79	-7.28	1	0.38 ± 0.01	0.3 ± 0.01	0.78	-7.59
3	$e\mu$: MET^{rel}	29.03 ± 0.6	24.34 ± 0.75	0.84	-4.89	2	0.82 ± 0.02	0.87 ± 0.03	1.07	1.68
4	$e\mu$: $m_{T2} > 90$	21.61 ± 0.51	16.63 ± 0.63	0.77	-6.16	3	0.74 ± 0.02	0.68 ± 0.03	0.92	-1.97
5	$e\mu$: $m_{T2} > 110$	18.39 ± 0.47	14.06 ± 0.58	0.76	-5.79	4	0.85 ± 0.02	0.85 ± 0.03	0.99	-0.12

Table 30: The cut-flow table for the $e\mu$ channel.

6.7 $\tilde{\chi}_1^{\pm}(100) \to W^{\pm}\tilde{\chi}_1^0(0)$ (ATLAS_CONF_2013_049)

- Process: $\tilde{\chi}_1^+\tilde{\chi}_1^- : \tilde{\chi}_1^{\pm} \to W^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = 100$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: $5 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	WW: Jet veto	100.0	100.0							
1	WW: $p_T(\ell_1) > 35, p_T(\ell_2) > 20$	69.98 ± 2.44	70.87 ± 3.46	1.01	0.21	0	0.7 ± 0.02	0.71 ± 0.03	1.01	0.21
2	WWa	7.11 ± 0.78	5.79 ± 0.99	0.81	−1.05	1	0.1 ± 0.01	0.08 ± 0.01	0.8	−1.11

Table 31: The cut-flow table for WWa signal region.

6.8 $\tilde{\chi}_1^{\pm}(140) \to W^{\pm}\tilde{\chi}_1^0(20)$ (ATLAS_CONF_2013_049)

- Process: $\tilde{\chi}_1^+\tilde{\chi}_1^- : \tilde{\chi}_1^{\pm} \to W^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = 140$ GeV, $m_{\tilde{\chi}_1^0} = 20$ GeV.
- The number of events: $5 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	WW: Jet veto	100.0	100.0							
1	WW: $p_T(\ell_1) > 35, p_T(\ell_2) > 20$	74.1 ± 2.51	73.64 ± 3.52	0.99	−0.11	0	0.74 ± 0.03	0.74 ± 0.04	0.99	−0.11
2	WWb	5.9 ± 0.71	3.06 ± 0.72	0.52	−2.81	1	0.08 ± 0.01	0.04 ± 0.01	0.52	−2.78

Table 32: The cut-flow table for WWb signal region.

6.9 $\tilde{\chi}_1^{\pm}(200) \to W^{\pm}\tilde{\chi}_1^0(0)$ (ATLAS_CONF_2013_049)

- Process: $\tilde{\chi}_1^+\tilde{\chi}_1^- : \tilde{\chi}_1^{\pm} \to W^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = 200$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: $5 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	WW: Jet veto	100.0	100.0							
1	WW: $p_T(\ell_1) > 35, p_T(\ell_2) > 20$	80.65 ± 2.69	80.97 ± 3.8	1.0	0.07	0	0.81 ± 0.03	0.81 ± 0.04	1.0	0.07
2	WWc	10.65 ± 0.98	11.13 ± 1.41	1.05	0.28	1	0.13 ± 0.01	0.14 ± 0.02	1.04	0.26

Table 33: The cut-flow table for WWb signal region.

7 ATLAS_2013_CONF_2013_061

7.1 0-lepton 4-jet channel, Gbb model (ATLAS_CONF_2013_061)

- Process: $\tilde{g}\tilde{g} \to (b\bar{b}\tilde{\chi}_1^0)(b\bar{b}\tilde{\chi}_1^0)$.
- Mass: $m_{\tilde{g}} = 1300$ GeV, $m_{\tilde{\chi}_1^0} = 100$ GeV.
- The number of events: 10^3.
- Event Generator: `MadGraph 5` and `Pythia 6`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	No cut	100.0	100.0							
1	0l-base: ≥ 4 jets ($p_T > 30$)	95.4 ± 0.31	92.67 ± 0.84	0.97	-3.06	0	0.95 ± 0.0	0.93 ± 0.01	0.97	-3.06
2	0l-base: $p_T(j_1) > 90$	95.4 ± 0.31	92.67 ± 0.84	0.97	-3.06	1	1.0 ± 0.0	1.0 ± 0.01	1.0	0.0
3	0l-base: MET > 150	88.7 ± 0.3	86.26 ± 1.11	0.97	-2.13	2	0.93 ± 0.0	0.93 ± 0.01	1.0	0.09
4	0l-base: Lepton veto	88.7 ± 0.3	86.26 ± 1.11	0.97	-2.13	3	1.0 ± 0.0	1.0 ± 0.01	1.0	0.0
5	0l-base: $\Delta\phi_{\text{min}}^{4j} > 0.5$	58.5 ± 0.24	56.1 ± 1.6	0.96	-1.49	4	0.66 ± 0.0	0.65 ± 0.02	0.99	-0.49
6	0l-base: $\text{MET}/m_{\text{eff}}^{4j} > 0.2$	46.2 ± 0.21	44.52 ± 1.6	0.96	-1.04	5	0.79 ± 0.0	0.79 ± 0.03	1.01	0.14
7	SR-0l-4j-A: ≥ 4 jets ($p_T > 30$)	46.2 ± 0.21	44.52 ± 1.6	0.96	-1.04	6	1.0 ± 0.0	1.0 ± 0.04	1.0	0.0
8	SR-0l-4j-A: ≥ 3 b-jets ($p_T > 30$)	20.5 ± 0.14	16.84 ± 1.2	0.82	-3.02	7	0.44 ± 0.0	0.38 ± 0.03	0.85	-2.41
9	SR-0l-4j-A: MET > 200	20.5 ± 0.14	16.84 ± 1.2	0.82	-3.02	8	1.0 ± 0.01	1.0 ± 0.07	1.0	0.0
10	SR-0l-4j-A: $m_{\text{eff}}^{4j} > 1000$	20.3 ± 0.14	16.74 ± 1.2	0.82	-2.95	9	0.99 ± 0.01	0.99 ± 0.07	1.0	0.05
11	SR-0l-4j-A	10.8 ± 0.1	9.61 ± 0.95	0.89	-1.25	10	0.53 ± 0.01	0.57 ± 0.06	1.08	0.74
12	SR-0l-4j-B: ≥ 4 jets ($p_T > 50$)	42.8 ± 0.21	40.39 ± 1.58	0.94	-1.51	6	0.93 ± 0.0	0.91 ± 0.04	0.98	-0.54
13	SR-0l-4j-B: ≥ 3 b-jets ($p_T > 50$)	17.9 ± 0.13	14.26 ± 1.12	0.8	-3.22	12	0.42 ± 0.0	0.35 ± 0.03	0.84	-2.33
14	SR-0l-4j-B: MET > 350	16.2 ± 0.13	13.33 ± 1.09	0.82	-2.61	13	0.91 ± 0.01	0.93 ± 0.08	1.03	0.39
15	SR-0l-4j-B	15.9 ± 0.13	13.33 ± 1.09	0.84	-2.34	14	0.98 ± 0.01	1.0 ± 0.08	1.02	0.22
16	SR-0l-4j-C: ≥ 4 jets ($p_T > 50$)	42.8 ± 0.21	40.39 ± 1.58	0.94	-1.51	6	0.93 ± 0.0	0.91 ± 0.04	0.98	-0.54
17	SR-0l-4j-C: ≥ 3 b-jets ($p_T > 50$)	17.9 ± 0.13	14.26 ± 1.12	0.8	-3.22	16	0.42 ± 0.0	0.35 ± 0.03	0.84	-2.33
18	SR-0l-4j-C: MET > 250	17.4 ± 0.13	14.26 ± 1.12	0.82	-2.78	17	0.97 ± 0.01	1.0 ± 0.08	1.03	0.35
19	SR-0l-4j-C	15.9 ± 0.13	13.22 ± 1.09	0.83	-2.44	18	0.91 ± 0.01	0.93 ± 0.08	1.02	0.18

Table 34: The cut-flow table for the 0-lepton 4-jet channel in Gbb model.

7.2 0-lepton 7-jet channel, Gtt model (ATLAS_CONF_2013_061)

- Process: $\tilde{g}\tilde{g} \to (t\bar{t}\tilde{\chi}_1^0)(t\bar{t}\tilde{\chi}_1^0)$.
- Mass: $m_{\tilde{g}} = 1300$ GeV, $m_{\tilde{\chi}_1^0} = 100$ GeV.
- The number of events: $5 \cdot 10^3$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	No cut	100.0	100.0							
1	0l-base: ≥ 4 jets ($p_T > 30$)	96.9 ± 0.31	99.42 ± 0.11	1.03	7.65	0	0.97 ± 0.0	0.99 ± 0.0	1.03	7.65
2	0l-base: $p_T(j_1) > 90$	96.9 ± 0.31	99.32 ± 0.12	1.02	7.28	1	1.0 ± 0.0	1.0 ± 0.0	1.0	−0.29
3	0l-base: MET > 150	88.3 ± 0.3	90.38 ± 0.42	1.02	4.06	2	0.91 ± 0.0	0.91 ± 0.0	1.0	−0.24
4	0l-base: Lepton veto	45.9 ± 0.21	46.68 ± 0.71	1.02	1.06	3	0.52 ± 0.0	0.52 ± 0.01	0.99	−0.41
5	0l-base: $\Delta\phi_{\text{min}}^{4j} > 0.5$	30.0 ± 0.17	33.34 ± 0.67	1.11	4.85	4	0.65 ± 0.0	0.71 ± 0.01	1.09	4.1
6	0l-base: $\text{MET}/m_{\text{eff}}^{4j} > 0.2$	25.9 ± 0.16	29.14 ± 0.64	1.13	4.89	5	0.86 ± 0.01	0.87 ± 0.02	1.01	0.53
7	SR-0l-7j: ≥ 7 jets ($p_T > 30$)	24.6 ± 0.16	26.84 ± 0.63	1.09	3.47	6	0.95 ± 0.01	0.92 ± 0.02	0.97	−1.29
8	SR-0l-7j: ≥ 3 b-jets ($p_T > 30$)	11.5 ± 0.11	10.38 ± 0.43	0.9	−2.52	7	0.47 ± 0.0	0.39 ± 0.02	0.83	−4.85
9	SR-0l-7j-A: MET > 200	11.3 ± 0.11	10.28 ± 0.43	0.91	−2.31	8	0.98 ± 0.01	0.99 ± 0.04	1.01	0.18
10	SR-0l-7j-A	11.3 ± 0.11	10.22 ± 0.43	0.9	−2.45	9	1.0 ± 0.01	0.99 ± 0.04	0.99	−0.14
11	SR-0l-7j-B: MET > 350	9.2 ± 0.1	8.32 ± 0.39	0.9	−2.19	8	0.8 ± 0.01	0.8 ± 0.04	1.0	0.04
12	SR-0l-7j-B	9.2 ± 0.1	8.32 ± 0.39	0.9	−2.19	11	1.0 ± 0.01	1.0 ± 0.05	1.0	0.0
13	SR-0l-7j-C: MET > 250	10.8 ± 0.1	9.92 ± 0.42	0.92	−2.02	8	0.94 ± 0.01	0.96 ± 0.04	1.02	0.4
14	SR-0l-7j-C	9.5 ± 0.1	8.56 ± 0.4	0.9	−2.31	13	0.88 ± 0.01	0.86 ± 0.04	0.98	−0.41

Table 35: The cut-flow table for the 0-lepton 7-jet channel in Gtt model.

7.3 1-lepton 6-jet channel, Gtt model (ATLAS_CONF_2013_061)

- Process: $\tilde{g}\tilde{g} \to (t\bar{t}\tilde{\chi}_1^0)(t\bar{t}\tilde{\chi}_1^0)$.
- Mass: $m_{\tilde{g}} = 1300$ GeV, $m_{\tilde{\chi}_1^0} = 100$ GeV.
- The number of events: $5 \cdot 10^3$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	No cut	100.0	100.0							
1	1l-base: ≥ 4 jets ($p_T > 30$)	96.9 ± 0.31	99.42 ± 0.11	1.03	7.65	0	0.97 ± 0.0	0.99 ± 0.0	1.03	7.65
2	1l-base: $p_T(j_1) > 90$	96.8 ± 0.31	99.32 ± 0.12	1.03	7.59	1	1.0 ± 0.0	1.0 ± 0.0	1.0	0.01
3	1l-base: MET > 150	88.3 ± 0.3	90.38 ± 0.42	1.02	4.06	2	0.91 ± 0.0	0.91 ± 0.0	1.0	−0.42
4	1l-base: >= 1 signal lepton	40.9 ± 0.2	43.7 ± 0.7	1.07	3.84	3	0.46 ± 0.0	0.48 ± 0.01	1.04	2.51
5	SR-1l-6j: ≥ 6 jets ($p_T > 30$)	37.3 ± 0.19	38.3 ± 0.69	1.03	1.4	4	0.91 ± 0.0	0.88 ± 0.02	0.96	−2.16
6	SR-1l-6j: ≥ 3 b-jets ($p_T > 30$)	14.3 ± 0.12	15.22 ± 0.51	1.06	1.76	5	0.38 ± 0.0	0.4 ± 0.01	1.04	1.03
7	SR-1l-6j-A: $m_T > 140$	11.3 ± 0.11	11.6 ± 0.45	1.03	0.64	6	0.79 ± 0.01	0.76 ± 0.03	0.96	−0.91
8	SR-1l-6j-A: MET > 175	10.9 ± 0.1	11.4 ± 0.45	1.05	1.08	7	0.96 ± 0.01	0.98 ± 0.04	1.02	0.46
9	SR-1l-6j-A: MET/$\sqrt{(H_T(\text{inc}))} > 5$	10.8 ± 0.1	11.22 ± 0.45	1.04	0.92	8	0.99 ± 0.01	0.98 ± 0.04	0.99	−0.16
10	SR-1l-6j-A	10.8 ± 0.1	11.22 ± 0.45	1.04	0.92	9	1.0 ± 0.01	1.0 ± 0.04	1.0	0.0
11	SR-1l-6j-B: $m_T > 140$	11.3 ± 0.11	11.6 ± 0.45	1.03	0.64	6	0.79 ± 0.01	0.76 ± 0.03	0.96	−0.91
12	SR-1l-6j-B: MET > 225	10.0 ± 0.1	10.48 ± 0.43	1.05	1.08	11	0.88 ± 0.01	0.9 ± 0.04	1.02	0.48
13	SR-1l-6j-B: $MET/\sqrt{(H_T(\text{inc}))} > 5$	10.0 ± 0.1	10.46 ± 0.43	1.05	1.04	12	1.0 ± 0.01	1.0 ± 0.04	1.0	−0.04
14	SR-1l-6j-B	10.0 ± 0.1	10.46 ± 0.43	1.05	1.04	13	1.0 ± 0.01	1.0 ± 0.04	1.0	0.0
15	SR-1l-6j-C: $m_T > 160$	10.7 ± 0.1	11.18 ± 0.45	1.04	1.05	6	0.75 ± 0.01	0.73 ± 0.03	0.98	−0.45
16	SR-1l-6j-C: MET > 275	8.8 ± 0.09	9.32 ± 0.41	1.06	1.23	15	0.82 ± 0.01	0.83 ± 0.04	1.01	0.3
17	SR-1l-6j-C: MET/$\sqrt{(H_T(\text{inc}))} > 5$	8.8 ± 0.09	9.32 ± 0.41	1.06	1.23	16	1.0 ± 0.01	1.0 ± 0.04	1.0	0.0
18	SR-1l-6j-C	8.8 ± 0.09	9.32 ± 0.41	1.06	1.23	17	1.0 ± 0.01	1.0 ± 0.04	1.0	0.0

Table 36: The cut-flow table for the 1-lepton 6-jet channel in Gtt model.

8 ATLAS_2013_CONF_2013_093

8.1 $(m_{\tilde{\chi}_2^0}, m_{\tilde{\chi}_1^0}) = (130, 0)$ (ATLAS_CONF_2013_091)

- Process: $\tilde{\chi}_1^{\pm}\tilde{\chi}_2^0 \to (W^{\pm}\tilde{\chi}_1^0)(Z\tilde{\chi}_1^0)$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = m_{\tilde{\chi}_2^0} = 130$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: $5 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	MET > 50	100.0	100.0							
1	>= 2 central jets	70.76 ± 0.38	65.01 ± 1.19	0.92	−4.61	0	0.71 ± 0.0	0.65 ± 0.01	0.92	−4.61
2	2 leading jets central	66.66 ± 0.37	61.32 ± 1.16	0.92	−4.39	1	0.94 ± 0.01	0.94 ± 0.02	1.0	0.07
3	4th leading jet veto ($p_T > 25$)	58.09 ± 0.34	52.86 ± 1.08	0.91	−4.63	2	0.87 ± 0.01	0.86 ± 0.02	0.99	−0.52
4	baseline lepton veto	57.13 ± 0.34	49.1 ± 1.04	0.86	−7.33	3	0.98 ± 0.01	0.93 ± 0.02	0.94	−2.66
5	$m_{jj} > 50$	54.22 ± 0.33	45.76 ± 1.01	0.84	−7.99	4	0.95 ± 0.01	0.93 ± 0.02	0.98	−0.81
6	$m_T > 40$	44.87 ± 0.3	36.39 ± 0.9	0.81	−8.92	5	0.83 ± 0.01	0.8 ± 0.02	0.96	−1.57
7	$m_{CT} > 160$	5.43 ± 0.1	4.38 ± 0.32	0.81	−3.14	6	0.12 ± 0.0	0.12 ± 0.01	1.0	−0.07
8	exactly 2 leading bjets	4.3 ± 0.09	3.57 ± 0.29	0.83	−2.41	7	0.79 ± 0.02	0.82 ± 0.07	1.03	0.35
9	exactly 2 leading bjets	1.4 ± 0.05	1.15 ± 0.16	0.82	−1.45	8	0.33 ± 0.01	0.32 ± 0.05	0.99	−0.06
10	SRA: $100 < m_T < 130$	0.27 ± 0.02	0.25 ± 0.08	0.95	−0.18	9	0.19 ± 0.02	0.22 ± 0.07	1.15	0.42
11	SRB: $m_T > 130$	0.01 ± 0.0	0.05 ± 0.03	4.29	1.07	10	0.04 ± 0.02	0.18 ± 0.13	4.53	1.09

Table 37: The cut-flow table for $(m_{\tilde{\chi}_2^0}, m_{\tilde{\chi}_1^0}) = (130, 0)$.

8.2 $(m_{\tilde{\chi}_2^0}, m_{\tilde{\chi}_1^0}) = (225, 0)$ (ATLAS_CONF_2013_091)

- Process: $\tilde{\chi}_1^{\pm}\tilde{\chi}_2^0 \to (W^{\pm}\tilde{\chi}_1^0)(Z\tilde{\chi}_1^0)$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = m_{\tilde{\chi}_2^0} = 225$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: $5 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	MET > 50	100.0	100.0							
1	>= 2 central jets	76.28 ± 0.39	71.48 ± 0.93	0.94	−4.77	0	0.76 ± 0.0	0.71 ± 0.01	0.94	−4.77
2	2 leading jets central	73.12 ± 0.38	68.63 ± 0.91	0.94	−4.54	1	0.96 ± 0.01	0.96 ± 0.01	1.0	0.11
3	4th leading jet veto ($p_T > 25$)	61.53 ± 0.35	56.18 ± 0.83	0.91	−5.91	2	0.84 ± 0.0	0.82 ± 0.01	0.97	−1.75
4	baseline lepton veto	60.51 ± 0.35	51.9 ± 0.8	0.86	−9.83	3	0.98 ± 0.01	0.92 ± 0.01	0.94	−3.88
5	$m_{jj} > 50$	57.56 ± 0.34	48.34 ± 0.78	0.84	−10.86	4	0.95 ± 0.01	0.93 ± 0.01	0.98	−1.24
6	$m_T > 40$	50.87 ± 0.32	41.76 ± 0.73	0.82	−11.48	5	0.88 ± 0.01	0.86 ± 0.02	0.98	−1.24
7	$m_{CT} > 160$	8.74 ± 0.13	6.66 ± 0.3	0.76	−6.36	6	0.17 ± 0.0	0.16 ± 0.01	0.93	−1.6
8	exactly 2 leading bjets	7.57 ± 0.12	5.99 ± 0.28	0.79	−5.13	7	0.87 ± 0.01	0.9 ± 0.04	1.04	0.72
9	exactly 2 leading bjets	2.32 ± 0.07	1.85 ± 0.16	0.8	−2.75	8	0.31 ± 0.01	0.31 ± 0.03	1.01	0.08
10	SRA: $100 < m_T < 130$	0.42 ± 0.03	0.31 ± 0.06	0.73	−1.61	9	0.18 ± 0.01	0.17 ± 0.03	0.92	−0.41
11	SRB: $m_T > 130$	0.95 ± 0.04	0.67 ± 0.1	0.71	−2.59	10	2.23 ± 0.1	2.17 ± 0.31	0.98	−0.17

Table 38: The cut-flow table for $(m_{\tilde{\chi}_2^0}, m_{\tilde{\chi}_1^0}) = (225, 0)$.

9 ATLAS_2014_I1286444

9.1 SR H160: $\tilde{t}_1(300) \to b\tilde{\chi}_1^+(150) \to W^+\tilde{\chi}_1^0(50)$ (ATLAS_2014_I1286444 (1403.4853))

- Process: $pp \to \tilde{t}_1\tilde{t}_1^* : \tilde{t}_1 \to b\tilde{\chi}_1^+ \to W^+\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{t}_1} = 300$ GeV, $m_{\tilde{\chi}_1^\pm} = 150$ GeV, $m_{\tilde{\chi}_1^0} = 50$ GeV.
- The number of events: 10^4.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$p_T(\ell_1) > 25$: SF	100.0	100.0							
1	H160: $= 2b$-jets: SF	41.1 ± 0.55	42.68 ± 1.71	1.04	0.88	0	0.41 ± 0.01	0.43 ± 0.02	1.04	0.88
2	H160: $m_{T2}(\text{b}-\text{jet}) > 160$: SF	5.81 ± 0.21	4.08 ± 0.54	0.7	−2.98	1	0.14 ± 0.01	0.1 ± 0.01	0.68	−3.35
3	H160: $m_{T2} < 90$: SF	5.65 ± 0.2	4.08 ± 0.54	0.72	−2.7	2	0.97 ± 0.03	1.0 ± 0.13	1.03	0.21
4	H160: $p_T(\ell_1) < 60$: SF	2.88 ± 0.14	1.31 ± 0.31	0.46	−4.6	3	0.51 ± 0.03	0.32 ± 0.08	0.63	−2.36

Table 39: The cut-flow table for the same flavour channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$p_T(\ell_1) > 25$: DF	100.0	100.0							
1	H160: $= 2b$-jets: DF	36.17 ± 0.53	40.77 ± 1.72	1.13	2.55	0	0.36 ± 0.01	0.41 ± 0.02	1.13	2.55
2	H160: $m_{T2}(\text{b}-\text{jet}) > 160$: DF	5.57 ± 0.21	4.62 ± 0.59	0.83	−1.52	1	0.15 ± 0.01	0.11 ± 0.01	0.73	−2.61
3	H160: $m_{T2} < 90$: DF	5.46 ± 0.21	4.38 ± 0.58	0.8	−1.76	2	0.98 ± 0.04	0.95 ± 0.13	0.97	−0.23
4	H160: $p_T(\ell_1) < 60$: DF	2.36 ± 0.13	1.92 ± 0.38	0.82	−1.06	3	0.43 ± 0.02	0.44 ± 0.09	1.02	0.08

Table 40: The cut-flow table for the different flavour channel.

9.2 SR H160: $\tilde{t}_1(250) \to b\tilde{\chi}_1^+(106) \to W^+\tilde{\chi}_1^0(60)$ (ATLAS_2014_I1286444 (1403.4853))

- Process: $pp \to \tilde{t}_1\tilde{t}_1^* : \tilde{t}_1 \to b\tilde{\chi}_1^+ \to W^+\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{t}_1} = 250$ GeV, $m_{\tilde{\chi}_1^\pm} = 106$ GeV, $m_{\tilde{\chi}_1^0} = 60$ GeV.
- The number of events: 10^4.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$p_T(\ell_1) > 25$: SF	100.0	100.0							
1	H160: $= 2b$-jets: SF	41.1 ± 0.77	41.69 ± 2.43	1.01	0.23	0	0.41 ± 0.01	0.42 ± 0.02	1.01	0.23
2	H160: $m_{T2}(\text{b}-\text{jet}) > 160$: SF	5.81 ± 0.29	2.48 ± 0.6	0.43	−5.0	1	0.14 ± 0.01	0.06 ± 0.01	0.42	−5.11
3	H160: $m_{T2} < 90$: SF	5.65 ± 0.29	2.48 ± 0.6	0.44	−4.76	2	0.97 ± 0.05	1.0 ± 0.24	1.03	0.11
4	H160: $p_T(\ell_1) < 60$: SF	2.88 ± 0.2	2.04 ± 0.55	0.71	−1.44	3	0.51 ± 0.04	0.82 ± 0.22	1.61	1.41

Table 41: The cut-flow table for the same flavour channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$p_T(\ell_1) > 25$: DF	100.0	100.0							
1	H160: $= 2b$-jets: DF	36.17 ± 0.7	40.16 ± 2.29	1.11	1.67	0	0.36 ± 0.01	0.4 ± 0.02	1.11	1.67
2	H160: $m_{T2}(\text{b}-\text{jet}) > 160$: DF	5.57 ± 0.27	3.5 ± 0.69	0.63	−2.8	1	0.15 ± 0.01	0.09 ± 0.02	0.57	−3.58
3	H160: $m_{T2} < 90$: DF	5.46 ± 0.27	3.5 ± 0.69	0.64	−2.66	2	0.98 ± 0.05	1.0 ± 0.2	1.02	0.1
4	H160: $p_T(\ell_1) < 60$: DF	2.36 ± 0.18	3.1 ± 0.65	1.32	1.11	3	0.43 ± 0.03	0.88 ± 0.18	2.05	2.42

Table 42: The cut-flow table for the different flavour channel.

9.3 SR L: $\tilde{t}_1(300) \to b\tilde{\chi}_1^+(150) \to W^+\tilde{\chi}_1^0(1)$ (ATLAS_2014_I1286444 (1403.4853))

- Process: $pp \to \tilde{t}_1\tilde{t}_1^* : \tilde{t}_1 \to b\tilde{\chi}_1^+ \to W^+\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{t}_1} = 300$ GeV, $m_{\tilde{\chi}_1^\pm} = 150$ GeV, $m_{\tilde{\chi}_1^0} = 1$ GeV.
- The number of events: 10^4.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$p_T(\ell_1) > 25$: SF	100.0	100.0							
1	Z veto: SF	70.97 ± 0.71	70.98 ± 2.12	1.0	0.0	0	0.71 ± 0.01	0.71 ± 0.02	1.0	0.0
2	$\Delta\phi_j > 1.0$: SF	38.07 ± 0.52	38.37 ± 1.6	1.01	0.18	1	0.54 ± 0.01	0.54 ± 0.02	1.01	0.17
3	$\Delta\phi_b < 1.5$: SF	36.96 ± 0.51	36.96 ± 1.57	1.0	−0.0	2	0.97 ± 0.01	0.96 ± 0.04	0.99	−0.18
4	$m_{T2} > 90$: SF	2.38 ± 0.13	2.53 ± 0.42	1.06	0.35	3	0.06 ± 0.0	0.07 ± 0.01	1.06	0.35
5	$m_{T2} > 120$: SF	0.36 ± 0.05	0.21 ± 0.12	0.59	−1.11	4	0.15 ± 0.02	0.08 ± 0.05	0.56	−1.27
6	$m_{T2} > 100, p_T(j) > 100, 50$: SF	1.02 ± 0.08	0.63 ± 0.21	0.62	−1.69	5	2.85 ± 0.24	3.0 ± 1.0	1.05	0.15
7	$m_{T2} > 110, p_T(j) > 20, 20$: SF	0.82 ± 0.08	0.42 ± 0.17	0.52	−2.1	6	0.8 ± 0.07	0.67 ± 0.27	0.83	−0.48

Table 43: The cut-flow table for the same flavour channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$p_T(\ell_1) > 25$: DF	100.0	100.0							
1	$\Delta\phi_j > 1.0$: DF	51.36 ± 0.61	56.2 ± 1.95	1.09	2.36	0	0.51 ± 0.01	0.56 ± 0.02	1.09	2.36
2	$\Delta\phi_b < 1.5$: DF	49.75 ± 0.6	54.37 ± 1.92	1.09	2.29	1	0.97 ± 0.01	0.97 ± 0.03	1.0	−0.03
3	$m_{T2} > 90$: DF	3.01 ± 0.15	3.37 ± 0.5	1.12	0.7	2	0.06 ± 0.0	0.06 ± 0.01	1.03	0.16
4	$m_{T2} > 120$: DF	0.37 ± 0.05	0.15 ± 0.1	0.4	−1.9	3	0.12 ± 0.02	0.04 ± 0.03	0.36	−2.23
5	$m_{T2} > 100, p_T(j) > 100, 50$: DF	0.61 ± 0.07	1.03 ± 0.27	1.7	1.49	4	1.65 ± 0.18	7.0 ± 1.87	4.25	2.85
6	$m_{T2} > 110, p_T(j) > 20, 20$: DF	0.64 ± 0.07	0.73 ± 0.23	1.14	0.37	5	1.06 ± 0.11	0.71 ± 0.23	0.67	−1.39

Table 44: The cut-flow table for the different flavour channel.

9.4 SR L: $\tilde{t}_1(400) \to b\tilde{\chi}_1^+(390) \to W^+\tilde{\chi}_1^0(195)$ (ATLAS_2014_I1286444 (1403.4853))

- Process: $pp \to \tilde{t}_1\tilde{t}_1^* : \tilde{t}_1 \to b\tilde{\chi}_1^+ \to W^+\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{t}_1} = 400$ GeV, $m_{\tilde{\chi}_1^\pm} = 390$ GeV, $m_{\tilde{\chi}_1^0} = 195$ GeV.
- The number of events: $2 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$p_T(\ell_1) > 25$: SF	100.0	100.0							
1	Z veto: SF	75.72 ± 0.66	76.52 ± 1.37	1.01	0.52	0	0.76 ± 0.01	0.77 ± 0.01	1.01	0.52
2	$\Delta\phi_j > 1.0$: SF	56.4 ± 0.57	62.86 ± 1.26	1.11	4.68	1	0.74 ± 0.01	0.82 ± 0.02	1.1	4.24
3	$\Delta\phi_b < 1.5$: SF	43.12 ± 0.49	48.01 ± 1.12	1.11	4.01	2	0.76 ± 0.01	0.76 ± 0.02	1.0	−0.04
4	$m_{T2} > 90$: SF	12.19 ± 0.26	13.09 ± 0.6	1.07	1.37	3	0.28 ± 0.01	0.27 ± 0.01	0.96	−0.72
5	$m_{T2} > 120$: SF	6.51 ± 0.19	6.76 ± 0.44	1.04	0.52	4	0.53 ± 0.02	0.52 ± 0.03	0.97	−0.49
6	$m_{T2} > 100, p_T(j) > 100, 50$: SF	0.67 ± 0.06	0.62 ± 0.13	0.94	−0.29	5	0.1 ± 0.01	0.09 ± 0.02	0.9	−0.46
7	$m_{T2} > 110, p_T(j) > 20, 20$: SF	2.64 ± 0.12	2.13 ± 0.25	0.81	−1.87	6	3.96 ± 0.18	3.41 ± 0.39	0.86	−1.28

Table 45: The cut-flow table for the same flavour channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	$p_T(\ell_1) > 25$: SF	100.0	100.0							
1	$\Delta\phi_j > 1.0$: SF	76.33 ± 0.66	82.58 ± 1.42	1.08	4.0	0	0.76 ± 0.01	0.83 ± 0.01	1.08	4.0
2	$\Delta\phi_b < 1.5$: SF	57.5 ± 0.57	63.11 ± 1.26	1.1	4.04	1	0.75 ± 0.01	0.76 ± 0.02	1.01	0.64
3	$m_{T2} > 90$: SF	15.97 ± 0.3	17.45 ± 0.69	1.09	1.96	2	0.28 ± 0.01	0.28 ± 0.01	1.0	−0.1
4	$m_{T2} > 120$: SF	7.93 ± 0.21	8.71 ± 0.49	1.1	1.45	3	0.5 ± 0.01	0.5 ± 0.03	1.0	0.08
5	$m_{T2} > 100, p_T(j) > 100, 50$: SF	1.12 ± 0.08	0.65 ± 0.14	0.59	−2.93	4	0.14 ± 0.01	0.08 ± 0.02	0.53	−3.53
6	$m_{T2} > 110, p_T(j) > 20, 20$: SF	3.71 ± 0.15	2.88 ± 0.29	0.78	−2.6	5	3.32 ± 0.13	4.39 ± 0.44	1.32	2.36

Table 46: The cut-flow table for the different flavour channel.

10 ATLAS_2014_I1286761

10.1 $\tilde{e}^{\pm}(191) \to e^{\pm}\tilde{\chi}_1^0(90)$ (ATLAS_2014_I1286761 (1403.5294))

- Process: $\tilde{e}^+\tilde{e}^- : \tilde{e}^{\pm} \to e^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{e}} = 191$ GeV, $m_{\tilde{\chi}_1^0} = 90$ GeV.
- The number of events: $2 \cdot 10^3$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: SF	100.0	100.0							
1	Jet veto: SF	44.68 ± 1.12	55.0 ± 0.68	1.23	7.87	0	0.45 ± 0.01	0.55 ± 0.01	1.23	7.87
2	Z veto: SF	41.14 ± 1.07	51.72 ± 0.68	1.26	8.34	1	0.92 ± 0.02	0.94 ± 0.01	1.02	0.73
3	$m_{T2} > 90$: SF	16.1 ± 0.67	18.67 ± 0.48	1.16	3.12	2	0.39 ± 0.02	0.36 ± 0.01	0.92	−1.63
4	$m_{T2} > 20$: SF	5.91 ± 0.41	7.1 ± 0.31	1.2	2.35	3	0.37 ± 0.03	0.38 ± 0.02	1.04	0.45
5	$m_{T2} > 150$: SF	0.44 ± 0.11	0.0 ± 0.0	0.0	−3.98	4	0.07 ± 0.02	0.0 ± 0.0	0.0	−3.98

Table 47: The cut-flow table for the same flavour channel.

10.2 $\tilde{\mu}^{\pm}(191) \to \mu^{\pm}\tilde{\chi}_1^0(90)$ (ATLAS_2014_I1286761 (1403.5294))

- Process: $\tilde{\mu}^+\tilde{\mu}^- : \tilde{\mu}^{\pm} \to \mu^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\mu}} = 191$ GeV, $m_{\tilde{\chi}_1^0} = 90$ GeV.
- The number of events: $2 \cdot 10^3$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: SF	100.0	100.0							
1	Jet veto: SF	43.78 ± 1.06	55.25 ± 0.64	1.26	9.24	0	0.44 ± 0.01	0.55 ± 0.01	1.26	9.24
2	Z veto: SF	40.6 ± 1.02	51.26 ± 0.63	1.26	8.86	1	0.93 ± 0.02	0.93 ± 0.01	1.0	0.02
3	$m_{T2} > 90$: SF	14.68 ± 0.62	17.57 ± 0.44	1.2	3.8	2	0.36 ± 0.02	0.34 ± 0.01	0.95	−1.09
4	$m_{T2} > 20$: SF	5.75 ± 0.39	6.64 ± 0.29	1.15	1.84	3	0.39 ± 0.03	0.38 ± 0.02	0.96	−0.45
5	$m_{T2} > 150$: SF	0.74 ± 0.14	0.0 ± 0.0	0.0	−5.36	4	0.13 ± 0.02	0.0 ± 0.0	0.0	−5.36

Table 48: The cut-flow table for the same flavour channel.

10.3 $\tilde{e}^{\pm}(250) \to e^{\pm}\tilde{\chi}_1^0(10)$ (ATLAS_2014_I1286761 (1403.5294))

- Process: $\tilde{e}^+\tilde{e}^- : \tilde{e}^{\pm} \to e^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{e}} = 250$ GeV, $m_{\tilde{\chi}_1^0} = 10$ GeV.
- The number of events: $2 \cdot 10^3$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: SF	100.0	100.0							
1	Jet veto: SF	42.13 ± 1.05	50.68 ± 1.42	1.2	4.85	0	0.42 ± 0.01	0.51 ± 0.01	1.2	4.85
2	Z veto: SF	41.06 ± 1.03	48.99 ± 1.41	1.19	4.53	1	0.97 ± 0.02	0.97 ± 0.03	0.99	−0.22
3	$m_{T2} > 90$: SF	26.17 ± 0.83	32.44 ± 1.26	1.24	4.16	2	0.64 ± 0.02	0.66 ± 0.03	1.04	0.76
4	$m_{T2} > 20$: SF	21.28 ± 0.74	25.21 ± 1.15	1.18	2.87	3	0.81 ± 0.03	0.78 ± 0.04	0.96	−0.79
5	$m_{T2} > 150$: SF	15.74 ± 0.64	18.44 ± 1.02	1.17	2.24	4	0.74 ± 0.03	0.73 ± 0.04	0.99	−0.17

Table 49: The cut-flow table for the same flavour channel.

10.4 $\tilde{\mu}^{\pm}(250) \to \mu^{\pm}\tilde{\chi}_1^0(10)$ (ATLAS_2014_I1286761 (1403.5294))

- Process: $\tilde{\mu}^+\tilde{\mu}^- : \tilde{\mu}^{\pm} \to \mu^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\mu}} = 250$ GeV, $m_{\tilde{\chi}_1^0} = 10$ GeV.
- The number of events: $2 \cdot 10^3$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: SF	100.0	100.0							
1	Jet veto: SF	37.89 ± 1.09	50.2 ± 1.63	1.32	6.26	0	0.38 ± 0.01	0.5 ± 0.02	1.32	6.26
2	Z veto: SF	36.52 ± 1.07	48.63 ± 1.62	1.33	6.24	1	0.96 ± 0.03	0.97 ± 0.03	1.01	0.11
3	$m_{T2} > 90$: SF	22.85 ± 0.85	29.52 ± 1.37	1.29	4.14	2	0.63 ± 0.02	0.61 ± 0.03	0.97	−0.51
4	$m_{T2} > 20$: SF	17.77 ± 0.75	23.26 ± 1.25	1.31	3.78	3	0.78 ± 0.03	0.79 ± 0.04	1.01	0.19
5	$m_{T2} > 150$: SF	13.67 ± 0.65	16.91 ± 1.09	1.24	2.56	4	0.77 ± 0.04	0.73 ± 0.05	0.95	−0.71

Table 50: The cut-flow table for the same flavour channel.

10.5 $\tilde{\chi}_1^{\pm}(350) \to (\ell\tilde{\nu}(175)$ or $\nu\tilde{\ell}(175)) \to \nu\ell\tilde{\chi}_1^0(0)$ (ATLAS_2014_I1286761 (1403.5294))

- Process: $\tilde{\chi}_1^+\tilde{\chi}_1^- : \tilde{\chi}_1^{\pm} \to (\ell\tilde{\nu}$ or $\nu\tilde{\ell}) \to \nu\ell\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = 350$ GeV, $m_{\tilde{\ell}/\tilde{\nu}} = 175$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: 10^4.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: SF	100.0	100.0							
1	Jet veto: SF	43.19 ± 0.73	39.08 ± 0.95	0.91	−3.43	0	0.43 ± 0.01	0.39 ± 0.01	0.91	−3.43
2	Z veto: SF	40.58 ± 0.71	36.87 ± 0.92	0.91	−3.19	1	0.94 ± 0.02	0.94 ± 0.02	1.0	0.13
3	$m_{T2} > 90$: SF	24.25 ± 0.55	21.21 ± 0.71	0.87	−3.38	2	0.6 ± 0.01	0.58 ± 0.02	0.96	−0.94
4	$m_{T2} > 120$: SF	18.14 ± 0.48	15.41 ± 0.61	0.85	−3.53	3	0.75 ± 0.02	0.73 ± 0.03	0.97	−0.62
5	$m_{T2} > 150$: SF	11.92 ± 0.39	10.38 ± 0.5	0.87	−2.44	4	0.66 ± 0.02	0.67 ± 0.03	1.02	0.42

Table 51: The cut-flow table for the same flavour channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: DF	100.0	100.0							
1	Jet veto: DF	41.7 ± 0.72	40.24 ± 0.95	0.96	−1.23	0	0.42 ± 0.01	0.4 ± 0.01	0.96	−1.23
2	Z veto: DF	41.7 ± 0.72	40.24 ± 0.95	0.96	−1.23	1	1.0 ± 0.02	1.0 ± 0.02	1.0	0.0
3	$m_{T2} > 90$: DF	24.58 ± 0.55	22.88 ± 0.73	0.93	−1.86	2	0.59 ± 0.01	0.57 ± 0.02	0.96	−0.93
4	$m_{T2} > 120$: DF	18.92 ± 0.48	17.16 ± 0.64	0.91	−2.19	3	0.77 ± 0.02	0.75 ± 0.03	0.97	−0.57
5	$m_{T2} > 150$: DF	13.0 ± 0.4	11.45 ± 0.52	0.88	−2.35	4	0.69 ± 0.02	0.67 ± 0.03	0.97	−0.54

Table 52: The cut-flow table for the different flavour channel.

10.6 $\tilde{\chi}_1^{\pm}(425) \to (\ell\tilde{\nu}(250)$ or $\nu\tilde{\ell}(250)) \to \nu\ell\tilde{\chi}_1^0(75)$ (ATLAS_2014_I1286761 (1403.5294))

- Process: $\tilde{\chi}_1^+\tilde{\chi}_1^- : \tilde{\chi}_1^{\pm} \to (\ell\tilde{\nu}$ or $\nu\tilde{\ell}) \to \nu\ell\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = 425$ GeV, $m_{\tilde{\ell}/\tilde{\nu}} = 250$ GeV, $m_{\tilde{\chi}_1^0} = 75$ GeV.
- The number of events: 10^4.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: SF	100.0	100.0							
1	Jet veto: SF	40.35 ± 0.71	29.99 ± 1.2	0.74	−7.44	0	0.4 ± 0.01	0.3 ± 0.01	0.74	−7.44
2	Z veto: SF	38.37 ± 0.7	28.22 ± 1.16	0.74	−7.49	1	0.95 ± 0.02	0.94 ± 0.04	0.99	−0.24
3	$m_{T2} > 90$: SF	24.01 ± 0.55	17.48 ± 0.92	0.73	−6.07	2	0.63 ± 0.01	0.62 ± 0.03	0.99	−0.18
4	$m_{T2} > 120$: SF	19.06 ± 0.49	13.02 ± 0.8	0.68	−6.42	3	0.79 ± 0.02	0.74 ± 0.05	0.94	−0.97
5	$m_{T2} > 150$: SF	14.11 ± 0.42	9.32 ± 0.68	0.66	−5.97	4	0.74 ± 0.02	0.72 ± 0.05	0.97	−0.43

Table 53: The cut-flow table for the same flavour channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: DF	100.0	100.0							
1	Jet veto: DF	39.3 ± 0.7	29.59 ± 1.18	0.75	−7.06	0	0.39 ± 0.01	0.3 ± 0.01	0.75	−7.06
2	Z veto: DF	39.3 ± 0.7	29.59 ± 1.18	0.75	−7.06	1	1.0 ± 0.02	1.0 ± 0.04	1.0	0.0
3	$m_{T2} > 90$: DF	25.24 ± 0.56	18.03 ± 0.93	0.71	−6.62	2	0.64 ± 0.01	0.61 ± 0.03	0.95	−0.96
4	$m_{T2} > 120$: DF	20.13 ± 0.5	14.77 ± 0.85	0.73	−5.44	3	0.8 ± 0.02	0.82 ± 0.05	1.03	0.43
5	$m_{T2} > 50$: DF	14.7 ± 0.43	11.12 ± 0.74	0.76	−4.19	4	0.73 ± 0.02	0.75 ± 0.05	1.03	0.41

Table 54: The cut-flow table for the different flavour channel.

10.7 $\tilde{\chi}_1^{\pm}(100) \to W^{\pm}\tilde{\chi}_1^0(0)$ (ATLAS_2014_I1286761 (1403.5294))

- Process: $\tilde{\chi}_1^+\tilde{\chi}_1^- : \tilde{\chi}_1^{\pm} \to W^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = 100$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: $5 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: SF	100.0	100.0							
1	Jet Veto: SF	49.5 ± 1.96	68.02 ± 3.24	1.37	4.88	0	0.49 ± 0.02	0.68 ± 0.03	1.37	4.88
2	Z Veto: SF	40.81 ± 1.78	53.67 ± 2.88	1.31	3.79	1	0.82 ± 0.04	0.79 ± 0.04	0.96	−0.64
3	WWa: $p_T(\ell\ell) > 80$: SF	6.85 ± 0.73	7.96 ± 1.11	1.16	0.83	2	0.17 ± 0.02	0.15 ± 0.02	0.88	−0.72
4	WWa: METrel > 80: SF	4.06 ± 0.56	5.46 ± 0.92	1.34	1.3	3	0.59 ± 0.08	0.69 ± 0.12	1.16	0.66
5	WWa: $m_{\ell\ell} < 120$: SF	2.77 ± 0.46	4.21 ± 0.81	1.52	1.54	4	0.68 ± 0.11	0.77 ± 0.15	1.13	0.47

Table 55: The cut-flow table for the same flavour channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: DF	100.0	100.0							
1	Jet Veto: DF	49.93 ± 1.96	65.23 ± 3.15	1.31	4.12	0	0.5 ± 0.02	0.65 ± 0.03	1.31	4.12
2	Z Veto: DF	49.93 ± 1.96	65.23 ± 3.15	1.31	4.12	1	1.0 ± 0.04	1.0 ± 0.05	1.0	0.0
3	WWa: $p_T(\ell\ell) > 80$: DF	7.69 ± 0.77	6.46 ± 1.0	0.84	−0.98	2	0.15 ± 0.02	0.1 ± 0.02	0.64	−2.53
4	WWa: METrel > 80: DF	4.82 ± 0.61	3.69 ± 0.75	0.77	−1.16	3	0.63 ± 0.08	0.57 ± 0.12	0.91	−0.39
5	WWa: $m_{\ell\ell} < 120$: DF	3.29 ± 0.5	3.08 ± 0.69	0.93	−0.25	4	0.68 ± 0.1	0.83 ± 0.19	1.22	0.7

Table 56: The cut-flow table for the different flavour channel.

10.8 $\tilde{\chi}_1^{\pm}(140) \to W^{\pm}\tilde{\chi}_1^0(20)$ (ATLAS_2014_I1286761 (1403.5294))

- Process: $\tilde{\chi}_1^+\tilde{\chi}_1^- : \tilde{\chi}_1^{\pm} \to W^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = 140$ GeV, $m_{\tilde{\chi}_1^0} = 20$ GeV.
- The number of events: $5 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: SF	100.0	100.0							
1	Jet Veto: SF	46.68 ± 1.82	59.6 ± 2.9	1.28	3.77	0	0.47 ± 0.02	0.6 ± 0.03	1.28	3.77
2	Z Veto: SF	39.25 ± 1.67	51.35 ± 2.69	1.31	3.82	1	0.84 ± 0.04	0.86 ± 0.05	1.02	0.36
3	WWb: $m_{T2} > 90$: SF	3.15 ± 0.47	3.56 ± 0.71	1.13	0.48	2	0.08 ± 0.01	0.07 ± 0.01	0.86	−0.59
4	WWb: $m_{T2} < 170$: SF	2.72 ± 0.44	3.41 ± 0.7	1.25	0.84	3	0.87 ± 0.14	0.96 ± 0.2	1.11	0.39

Table 57: The cut-flow table for the same flavour channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: DF	100.0	100.0							
1	Jet Veto: DF	46.73 ± 1.76	58.96 ± 2.79	1.26	3.71	0	0.47 ± 0.02	0.59 ± 0.03	1.26	3.71
2	Z Veto: DF	46.73 ± 1.76	58.96 ± 2.79	1.26	3.71	1	1.0 ± 0.04	1.0 ± 0.05	1.0	0.0
3	WWb: $m_{T2} > 90$: DF	3.15 ± 0.46	2.79 ± 0.61	0.88	−0.48	2	0.07 ± 0.01	0.05 ± 0.01	0.7	−1.42
4	WWb: $m_{\ell\ell} < 170$: DF	2.84 ± 0.43	2.66 ± 0.59	0.94	−0.25	3	0.9 ± 0.14	0.95 ± 0.21	1.06	0.21

Table 58: The cut-flow table for the different flavour channel.

10.9 $\tilde{\chi}_1^{\pm}(200) \to W^{\pm}\tilde{\chi}_1^0(0)$ (ATLAS_2014_I1286761 (1403.5294))

- Process: $\tilde{\chi}_1^+\tilde{\chi}_1^- : \tilde{\chi}_1^{\pm} \to W^{\pm}\tilde{\chi}_1^0$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = 200$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: $5 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: SF	100.0	100.0							
1	Jet Veto: SF	43.81 ± 1.66	52.82 ± 2.56	1.21	2.95	0	0.44 ± 0.02	0.53 ± 0.03	1.21	2.95
2	Z Veto: SF	38.42 ± 1.55	43.54 ± 2.33	1.13	1.83	1	0.88 ± 0.04	0.82 ± 0.04	0.94	−0.93
3	WWc: $m_{T2} > 100$: SF	5.96 ± 0.61	4.14 ± 0.72	0.69	−1.93	2	0.16 ± 0.02	0.1 ± 0.02	0.61	−2.62

Table 59: The cut-flow table for the same flavour channel.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: DF	100.0	100.0							
1	Jet Veto: DF	43.32 ± 1.63	55.0 ± 2.58	1.27	3.83	0	0.43 ± 0.02	0.55 ± 0.03	1.27	3.83
2	Z Veto: DF	43.32 ± 1.63	55.0 ± 2.58	1.27	3.83	1	1.0 ± 0.04	1.0 ± 0.05	1.0	0.0

Table 60: The cut-flow table for the different flavour channel.

10.10 Zjets SR: S1 (ATLAS_2014_I1286761 (1403.5294))

- Process: $\tilde{\chi}_1^{\pm}\tilde{\chi}_2^0 \to (W^{\pm}\tilde{\chi}_1^0)(Z\tilde{\chi}_1^0)$: forcing $Z \to \ell^+\ell^-$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = m_{\tilde{\chi}_2^0} = 250$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV.
- The number of events: $2 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: SF	100.0	100.0							
1	Zjets: > 1 light jets	76.97 ± 0.47	65.31 ± 0.86	0.85	−11.86	0	0.77 ± 0.0	0.65 ± 0.01	0.85	−11.86
2	Zjets: No b- and F-jets	57.9 ± 0.41	54.05 ± 0.8	0.93	−4.26	1	0.75 ± 0.01	0.83 ± 0.01	1.1	5.63
3	Zjets: Z window	55.66 ± 0.4	49.71 ± 0.78	0.89	−6.8	2	0.96 ± 0.01	0.92 ± 0.01	0.96	−2.62
4	Zjets: $p_T^{\ell\ell} > 80$	42.18 ± 0.35	36.71 ± 0.69	0.87	−7.09	3	0.76 ± 0.01	0.74 ± 0.01	0.97	−1.26
5	Zjets: METrel > 80	20.27 ± 0.24	17.76 ± 0.49	0.88	−4.55	4	0.48 ± 0.01	0.48 ± 0.01	1.01	0.22
6	Zjets: $0.3 < \Delta R(\ell\ell) < 1.5$	14.75 ± 0.21	12.5 ± 0.42	0.85	−4.83	5	0.73 ± 0.01	0.7 ± 0.02	0.97	−0.95
7	Zjets: $50 < m_{jj} < 100$	9.46 ± 0.17	8.3 ± 0.34	0.88	−3.06	6	0.64 ± 0.01	0.66 ± 0.03	1.04	0.76
8	Zjets: 2 light jets $p_T > 45$	4.77 ± 0.12	3.79 ± 0.23	0.79	−3.74	7	0.5 ± 0.01	0.46 ± 0.03	0.91	−1.53

Table 61: The cut-flow table for the S1 signal region.

10.11 Zjets SR: S2 (ATLAS_2014_I1286761 (1403.5294))

- Process: $\tilde{\chi}_1^{\pm}\tilde{\chi}_2^0 \to (W^{\pm}\tilde{\chi}_1^0)(Z\tilde{\chi}_1^0)$.
- Mass: $m_{\tilde{\chi}_1^{\pm}} = m_{\tilde{\chi}_2^0} = 350$ GeV, $m_{\tilde{\chi}_1^0} = 50$ GeV.
- The number of events: $5 \cdot 10^4$.
- Event Generator: `Herwig++ 2.5.2`.

#	cut name	ϵ_{Exp}	ϵ_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp}	R_{Atom}	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$
0	= 2 OSlep $p_T > 35, 20$: SF	100.0	100.0							
1	Zjets: > 1 light jets	80.43 ± 0.47	70.38 ± 0.84	0.88	-10.51	0	0.8 ± 0.0	0.7 ± 0.01	0.88	-10.51
2	Zjets: No b- and F-jets	59.02 ± 0.4	57.87 ± 0.78	0.98	-1.31	1	0.73 ± 0.0	0.82 ± 0.01	1.12	7.28
3	Zjets: Z window	56.57 ± 0.39	53.38 ± 0.76	0.94	-3.74	2	0.96 ± 0.01	0.92 ± 0.01	0.96	-2.46
4	Zjets: $p_T^{\ell\ell} > 80$	49.54 ± 0.37	46.58 ± 0.72	0.94	-3.67	3	0.88 ± 0.01	0.87 ± 0.01	1.0	-0.21
5	Zjets: METrel > 80	32.11 ± 0.29	30.51 ± 0.6	0.95	-2.39	4	0.65 ± 0.01	0.66 ± 0.01	1.01	0.48
6	Zjets: $0.3 < \Delta R(\ell\ell) < 1.5$	26.91 ± 0.27	25.2 ± 0.55	0.94	-2.78	5	0.84 ± 0.01	0.83 ± 0.02	0.99	-0.61
7	Zjets: $50 < m_{jj} < 100$	17.74 ± 0.22	16.79 ± 0.46	0.95	-1.85	6	0.66 ± 0.01	0.67 ± 0.02	1.01	0.37
8	Zjets: 2 light jets $p_T > 45$	11.31 ± 0.17	9.76 ± 0.36	0.86	-3.92	7	0.64 ± 0.01	0.58 ± 0.02	0.91	-2.43

Table 62: The cut-flow table for the S1 signal region.