atlas_1402_7029 CutFlow

ATLAS
atlas_1402_7029
SUSY-2013-12
3-leptons ($\leq$ 2 taus) + etmiss
Energy: 8 TeV
Luminosity: 20.3 fb^{-1}
Montecarlo: Herwig++

Signal region	SR0τa, 1-4	
Process	$\tilde{\ell}_L$ mediated	
Point	A1 ($m_{\tilde{\chi}_2^0} = 276.5$ GeV, $m_{\tilde{\chi}_1^0} = 232.5$ GeV	
Source	ATLAS	CheckMATE
Generated events	20000.0	50000.0
Initial Events	4870 $\pm$ 0	4870 $\pm$ 0
3 isol. lep., no tau	165 $\pm$ 6.2	159 $\pm$ 3.9
SFOS, m_{SFOS} = 12-40 GeV	116 $\pm$ 5.3	122 $\pm$ 3.4
b–veto	111 $\pm$ 5.1	116 $\pm$ 3.3
E_T^{miss} = 50-90 GeV	29 $\pm$ 2.6	27.6 $\pm$ 1.6
m_T = 0-80 GeV	27 $\pm$ 2.6	25.9 $\pm$ 1.6
$E_T^{\text{miss}} \geq$ 90 GeV	17 $\pm$ 2	15.2 $\pm$ 1.2
m_T = 0-80 GeV	13 $\pm$ 1.8	11.5 $\pm$ 1.1
E_T^{miss} = 50-75 GeV	22 $\pm$ 2.3	21.1 $\pm$ 1.4
$m_T \geq$ 80 GeV	1.1 $\pm$ 0.52	1.17 $\pm$ 0.34
$E_T^{\text{miss}} \geq$ 75 GeV	24 $\pm$ 2.4	21.6 $\pm$ 1.4
$m_T \geq$ 80 GeV	5 $\pm$ 1.1	4.19 $\pm$ 0.64

Table 1: Cutflow validation for atlas_1402_7029. Shown are number of events passing each cut normalised to a luminosity of 20.3 fb^{-1}. Final error is Monte-Carlo events only.

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Signal region	SR0τa, 5-8	
Process	$\tilde{\ell}_L$ mediated	
Point	A2 ($m_{\tilde{\chi}_2^0} = 407.5$ GeV, $m_{\tilde{\chi}_1^0} = 342.5$ GeV	
Source	ATLAS	CheckMATE
Generated events	20000.0	50000.0
Initial Events	731 ± 0	731 ± 0
Trigger	731 ± 0	368 ± 1.6
3 leptons	731 ± 0	70.1 ± 0.96
separated	731 ± 0	69.4 ± 0.96
at least 1 e/mu	731 ± 0	69.4 ± 0.96
3 isol. lep., no tau	63 ± 1.5	60.4 ± 0.9
SFOS, m_{SFOS} = 40-60 GeV	28 ± 0.99	26.9 ± 0.62
b–veto	27 ± 0.97	25.6 ± 0.6
E_T^{miss} = 50-75 GeV	6 ± 0.47	6.12 ± 0.3
m_T = 0-80 GeV	4 ± 0.38	4.79 ± 0.26
$\lvert m_{3\ell} - m_Z \rvert \gg 10$GeV	4 ± 0.38	3.39 ± 0.22
$E_T^{\mathrm{miss}} \geq 75$ GeV	8 ± 0.54	8.13 ± 0.34
m_T = 0-80 GeV	4 ± 0.38	3.84 ± 0.24
E_T^{miss} = 50-135 GeV	12 ± 0.66	12.1 ± 0.42
$m_T \geq 80$ GeV	4 ± 0.38	4.3 ± 0.25
$E_T^{\mathrm{miss}} \geq 135$ GeV	2 ± 0.27	2.1 ± 0.18
$m_T \geq 80$ GeV	1.5 ± 0.23	1.32 ± 0.14

Table 2: Cutflow validation for atlas_1402_7029. Shown are number of events passing each cut normalised to a luminosity of 20.3 fb^{-1}. Final error is Monte-Carlo events only.

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Signal region	SR0τa, 9-12	
Process	WZ mediated	
Point	C1 ($m_{\tilde{\chi}_2^0} = 175$ GeV, $m_{\tilde{\chi}_1^0} = 100$ GeV	
Source	ATLAS	CheckMATE
Generated events	20000.0	50000.0
Initial Events	897 ± 0	897 ± 0
3 isol. lep., no tau	148 ± 2.4	142 ± 1.5
SFOS, $m_{\text{SFOS}} = 60$-81.2 GeV	78 ± 1.8	73.9 ± 1.1
b–veto	75 ± 1.8	71.1 ± 1.1
$E_T^{\text{miss}} = 50$-75 GeV	20 ± 0.94	19.4 ± 0.58
$m_T = 0$-80 GeV	13 ± 0.76	13.5 ± 0.49
$\lvert m_{3\ell} - m_Z \rvert \gg 10$GeV	10 ± 0.67	9.45 ± 0.41
$E_T^{\text{miss}} = 50$-75 GeV	20 ± 0.94	19.4 ± 0.58
$m_T \geq 80$ GeV	7 ± 0.56	5.95 ± 0.33
$E_T^{\text{miss}} \geq 75$ GeV	19 ± 0.91	18.8 ± 0.57
$m_T = 0$-110 GeV	15 ± 0.81	15.7 ± 0.53
$E_T^{\text{miss}} \geq 75$ GeV	19 ± 0.91	18.8 ± 0.57
$m_T \geq 110$ GeV	4 ± 0.42	3.07 ± 0.23

Table 3: Cutflow validation for atlas_1402_7029. Shown are number of events passing each cut normalised to a luminosity of 20.3 fb^{-1}. Final error is Monte-Carlo events only.

Signal region	SR0τa, 13-16	
Process	WZ mediated	
Point	C2 ($m_{\tilde{\chi}_2^0} = 350$ GeV, $m_{\tilde{\chi}_1^0} = 50$ GeV	
Source	ATLAS	CheckMATE
Generated events	20000.0	50000.0
Initial Events	49.2 ± 0	49.2 ± 0
3 isol. lep., no tau	11 ± 0.14	11.9 ± 0.094
SFOS, $m_{\text{SFOS}} = 81.2$-101.2 GeV	10 ± 0.14	9.87 ± 0.088
b–veto	10 ± 0.14	9.39 ± 0.086
$E_T^{\text{miss}} = 50$-90 GeV	1.1 ± 0.051	1.03 ± 0.031
$m_T = 0$-110 GeV	0.6 ± 0.038	0.673 ± 0.026
$\lvert m_{3\ell} - m_Z \rvert \gg 10$GeV	0.6 ± 0.038	0.665 ± 0.025
$E_T^{\text{miss}} \geq 90$ GeV	8 ± 0.13	7.87 ± 0.081
m_T0-110 GeV	2.4 ± 0.075	2.53 ± 0.049
$E_T^{\text{miss}} = 50$-135 GeV	2.9 ± 0.082	2.78 ± 0.051
$m_T \geq 110$ GeV	1.6 ± 0.062	1.29 ± 0.035
$E_T^{\text{miss}} \geq 135$ GeV	7 ± 0.12	6.12 ± 0.073
$m_T \geq 110$ GeV	5 ± 0.11	4.4 ± 0.063

Table 4: Cutflow validation for atlas_1402_7029. Shown are number of events passing each cut normalised to a luminosity of 20.3 fb^{-1}. Final error is Monte-Carlo events only.

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Signal region	SR0τa, 17-20	
Process	$\tilde{\ell}_L$ mediated	
Point	A3 ($m_{\tilde{\chi}_2^0} = 687.5$ GeV, $m_{\tilde{\chi}_1^0} = 62.5$ GeV	
Source	ATLAS	CheckMATE
Generated events	20000.0	50000.0
Initial Events	40.6 ± 0	40.6 ± 0
Trigger	40.6 ± 0	31.2 ± 0.076
3 leptons	40.6 ± 0	8.09 ± 0.073
separated	40.6 ± 0	8.04 ± 0.072
at least 1 e/mu	40.6 ± 0	8.04 ± 0.072
3 isol. lep., no tau	5 ± 0.094	6.14 ± 0.065
SFOS, $m_{\mathrm{SFOS}} \geq 101.2$ GeV	5 ± 0.094	5.76 ± 0.063
b–veto	4 ± 0.086	5.43 ± 0.062
$E_T^{\mathrm{miss}} = 50$-210 GeV	1.4 ± 0.052	1.72 ± 0.037
$m_T =\geq 180$ GeV	0.5 ± 0.032	0.636 ± 0.023
$E_T^{\mathrm{miss}} = 50$-210 GeV	1.4 ± 0.052	1.72 ± 0.037
$m_T = 0$-80 GeV	0.9 ± 0.042	1.08 ± 0.029
$E_T^{\mathrm{miss}} \geq 210$ GeV	3.0 ± 0.075	3.6 ± 0.052
$m_T 0$-120 GeV	0.23 ± 0.022	0.345 ± 0.017
$E_T^{\mathrm{miss}} \geq 210$ GeV	3.0 ± 0.075	3.6 ± 0.052
$m_T \geq 120$ GeV	2.7 ± 0.072	3.25 ± 0.049

Table 5: Cutflow validation for atlas_1402_7029. Shown are number of events passing each cut normalised to a luminosity of 20.3 fb^{-1}. Final error is Monte-Carlo events only.

Signal region	SR0taub	
Process	Wh mediated	
Point	D1 ($m_{\tilde{\chi}_2^0} = 130$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV	
Source	ATLAS	CheckMATE
Generated events	20000.0	40000.0
Initial Events	2430 ± 0	2390 ± 0
$\ell^{\pm}\ell^{\pm}\ell'^{\mp}$	19 ± 1.5	19.9 ± 1.1
b- Veto	18 ± 1.5	19.1 ± 1.1
$E_T^{\mathrm{miss}} > 50$ GeV	12 ± 1.2	11.6 ± 0.83
$p_T^{3^{\mathrm{rd}}\ell} > 20$ GeV	7 ± 0.92	6.06 ± 0.6
$\Delta\phi^{\mathrm{min}_{\ell\ell'}} \leq 1.0$	5 ± 0.78	4.66 ± 0.53

Table 6: Cutflow validation for atlas_1402_7029. Shown are number of events passing each cut normalised to a luminosity of 20.3 fb^{-1}. Final error is Monte-Carlo events only.

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Signal region	SR1tau	
Process	Wh mediated	
Point	D2 ($m_{\tilde{\chi}_2^0} = 140$ GeV, $m_{\tilde{\chi}_1^0} = 10$ GeV	
Source	ATLAS	CheckMATE
Generated events	20000.0	40000.0
Initial Events	1840 ± 0	1800 ± 0
OS lep tau	23 ± 1.4	25.1 ± 1.1
Zee veto	22 ± 1.4	24.2 ± 1
b- Veto	21 ± 1.4	22.4 ± 1
$E_T^{\rm miss} > 50$ GeV	14 ± 1.1	13.2 ± 0.77
$\sum p_T^{\ell} > 70$ GeV	10 ± 0.96	9.03 ± 0.64
$p_T^{\rm 2nd\ell} > 30$ GeV	6 ± 0.74	4.44 ± 0.45
$m_{\ell\tau}$ <120 GeV	6 ± 0.74	3.63 ± 0.4

Table 7: Cutflow validation for atlas_1402_7029. Shown are number of events passing each cut normalised to a luminosity of 20.3 fb^{-1}. Final error is Monte-Carlo events only.

Signal region	SR2Taua	
Process	$\tilde{\tau}_L$ mediated	
Point	B ($m_{\tilde{\chi}_2^0} = 140$ GeV, $m_{\tilde{\chi}_1^0} = 10$ GeV	
Source	ATLAS	CheckMATE
Generated events	20000.0	20000.0
Initial Events	4380 ± 0	4380 ± 0
Trigger	4380 ± 0	1080 ± 13
3 leptons	4380 ± 0	127 ± 5.2
separated	4380 ± 0	127 ± 5.2
at least 1 e/mu	4380 ± 0	127 ± 5.2
$\tau\tau\ell$	48 ± 3.2	49.1 ± 3.3
b- Veto	46 ± 3.2	42.1 ± 3
$E_T^{\rm miss} > 50$ GeV	35 ± 2.8	33.5 ± 2.7
$m_{T2}^{\rm max} > 100$ GeV	14 ± 1.7	12.3 ± 1.6

Table 8: Cutflow validation for atlas_1402_7029. Shown are number of events passing each cut normalised to a luminosity of 20.3 fb^{-1}. Final error is Monte-Carlo events only.

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Signal region	SR2Tau	
Process	WZ mediated	
Point	D1 ($m_{\tilde{\chi}_2^0} = 130$ GeV, $m_{\tilde{\chi}_1^0} = 0$ GeV	
Source	ATLAS	CheckMATE
Generated events	20000.0	40000.0
Initial Events	2430 ± 0	2390 ± 0
$\tau^+\tau^-\ell$	34 ± 2	33.6 ± 1.4
b- Veto	33 ± 2	29.2 ± 1.3
$E_T^{\text{miss}} > 60$ GeV	14 ± 1.3	12.3 ± 0.85
$\sum p_T^\tau > 110$ GeV	10 ± 1.1	7.56 ± 0.67
$m_{\tau\tau} = 70$-120 GeV	5 ± 0.78	4.32 ± 0.51

Table 9: Cutflow validation for atlas_1402_7029. Shown are number of events passing each cut normalised to a luminosity of 20.3 fb^{-1}. Final error is Monte-Carlo events only.