

atlas_1606_03903 CutFlow

ATLAS
 atlas_1606_03903
 ATLAS-SUSY-2015-02
 1-lepton + (b-)jets + etmiss
 Energy: 13 TeV
 Luminosity: 3.2 fb⁻¹
 Montecarlo: MG5

Signal region	SR1	
	$pp \rightarrow \tilde{g}\tilde{g} \rightarrow 2 \times (\tilde{t}t) \rightarrow 2 \times (c\tilde{\chi}_1^0 t)$	
Process	$m(\tilde{g}) = 1100 \text{ GeV}, m(\tilde{t}) = 805 \text{ GeV}, m(\tilde{\chi}_1^0) = 800 \text{ GeV}$	
Point		
Source	ATLAS	CheckMATE
Generated events	20000.0	40918.0
Initial Events	1 ± 0	1 ± 0
Event skim*	0.857 ± 0.0025	-
Event DQ*	0.846 ± 0.0026	-
Primary vertex	0.846 ± 0.0026	-
≥ 1 baseline lepton	0.423 ± 0.0035	0.418 ± 0.0024
≥ 1 signal lepton	0.297 ± 0.0032	0.296 ± 0.0023
= 1 signal lepton	0.269 ± 0.0031	0.269 ± 0.0022
= 1 baseline lepton	0.234 ± 0.003	0.237 ± 0.0021
$E_T^{miss} > 100 \text{ GeV}$	0.202 ± 0.0028	0.208 ± 0.002
≥ 4 jets	0.161 ± 0.0026	0.167 ± 0.0018
trigger	0.154 ± 0.0026	-
$E_T^{miss} > 200 \text{ GeV}$	0.107 ± 0.0022	0.117 ± 0.0016
$\Delta\phi(\text{jet}_1, E_T^{miss}) > 0.4$	0.107 ± 0.0022	0.116 ± 0.0016
$\Delta\phi(\text{jet}_2, E_T^{miss}) > 0.4$	0.102 ± 0.0021	0.11 ± 0.0015
$m_{T2}^\tau > 80 \text{ GeV}$	0.1 ± 0.0021	0.105 ± 0.0015
jet ₁ $p_T > 80 \text{ GeV}$	0.099 ± 0.0021	0.104 ± 0.0015
jet ₂ $p_T > 50 \text{ GeV}$	0.097 ± 0.0021	0.103 ± 0.0015
jet ₃ $p_T > 40 \text{ GeV}$	0.092 ± 0.002	0.0993 ± 0.0015
jet ₄ $p_T > 40 \text{ GeV}$	0.071 ± 0.0018	0.0807 ± 0.0013
$E_T^{miss} > 260 \text{ GeV}$	0.052 ± 0.0016	0.0612 ± 0.0012
$H_{T,\text{sig}}^{\text{miss}} > 14$	0.04 ± 0.0014	0.0485 ± 0.0011
$m_T > 170 \text{ GeV}$	0.03 ± 0.0012	0.0343 ± 0.0009
$am_{T2} > 175 \text{ GeV}$	0.022 ± 0.001	0.0293 ± 0.00083
topness > 6.5	0.021 ± 0.001	0.0276 ± 0.00081
$m_{\text{top}}^X < 270 \text{ GeV}$	0.017 ± 0.00091	0.0199 ± 0.00069
$\Delta R(b, \ell) < 3$	0.017 ± 0.00091	0.0185 ± 0.00067
≥ 1 b-tagged jets (77% eff.)	0.015 ± 0.00086	0.0183 ± 0.00066

Table 1: Cutflow validation for atlas_1606_03903. Shown are the total efficiency after each cut normalised by number of events generated. Final error is Monte-Carlo events only.

Signal region	SR2	
	$pp \rightarrow \tilde{g}\tilde{g} \rightarrow 2 \times (\tilde{t}t) \rightarrow 2 \times (c\tilde{\chi}_1^0 t)$	
Process	$m(\tilde{g}) = 1250 \text{ GeV}, m(\tilde{t}) = 755 \text{ GeV}, m(\tilde{\chi}_1^0) = 750 \text{ GeV}$	
Point		
Source	ATLAS	CheckMATE
Generated events	20000.0	43251.0
Initial Events	1 ± 0	1 ± 0
Event skim*	0.874 ± 0.0023	-
Event DQ*	0.866 ± 0.0024	-
Primary vertex	0.866 ± 0.0024	-
≥ 1 baseline lepton	0.422 ± 0.0035	0.42 ± 0.0024
≥ 1 signal lepton	0.311 ± 0.0033	0.314 ± 0.0022
$= 1$ signal lepton	0.281 ± 0.0032	0.285 ± 0.0022
$= 1$ baseline lepton	0.25 ± 0.0031	0.255 ± 0.0021
$E_T^{miss} > 100 \text{ GeV}$	0.236 ± 0.003	0.242 ± 0.0021
≥ 4 jets	0.191 ± 0.0028	0.198 ± 0.0019
trigger	0.188 ± 0.0028	-
$E_T^{miss} > 200 \text{ GeV}$	0.163 ± 0.0026	0.169 ± 0.0018
$\Delta\phi(\text{jet}_1, E_T^{miss}) > 0.4$	0.162 ± 0.0026	0.168 ± 0.0018
$\Delta\phi(\text{jet}_2, E_T^{miss}) > 0.4$	0.154 ± 0.0026	0.159 ± 0.0018
$m_{T2}^{\tau} > 80 \text{ GeV}$	0.152 ± 0.0025	0.154 ± 0.0017
$\text{jet}_1 p_T > 120 \text{ GeV}$	0.145 ± 0.0025	0.149 ± 0.0017
$\text{jet}_2 p_T > 80 \text{ GeV}$	0.135 ± 0.0024	0.141 ± 0.0017
$\text{jet}_3 p_T > 50 \text{ GeV}$	0.126 ± 0.0023	0.133 ± 0.0016
$E_T^{miss} > 350 \text{ GeV}$	0.084 ± 0.002	0.0914 ± 0.0014
$H_{T,\text{sig}}^{\text{miss}} > 20$	0.065 ± 0.0017	0.0736 ± 0.0013
$m_T > 200 \text{ GeV}$	0.056 ± 0.0016	0.0618 ± 0.0012
$am_{T2} > 175 \text{ GeV}$	0.052 ± 0.0016	0.0591 ± 0.0011
$\Delta R(b, \ell) < 2.5$	0.048 ± 0.0015	0.0529 ± 0.0011
≥ 1 b -tagged jets (77% eff.)	0.044 ± 0.0015	0.0479 ± 0.001
≥ 1 large-R jet $p_T > 200 \text{ GeV}$	0.03 ± 0.0012	0.0335 ± 0.00087
$\Delta\phi(2^{\text{nd}}\text{large-R jet}, E_T^{miss}) > 1$	0.03 ± 0.0012	0.029 ± 0.00081

Table 2: Cutflow validation for atlas_1606_03903. Shown are the total efficiency after each cut normalised by number of events generated. Final error is Monte-Carlo events only.

Signal region	SR3	
Process	$pp \rightarrow \tilde{g}\tilde{g} \rightarrow 2 \times (\tilde{t}t) \rightarrow 2 \times (c\tilde{\chi}_1^0 t)$	
Point	$m(\tilde{g}) = 1400 \text{ GeV}, m(\tilde{t}) = 405 \text{ GeV}, m(\tilde{\chi}_1^0) = 400 \text{ GeV}$	
Source	ATLAS	CheckMATE
Generated events	19000.0	42819.0
Initial Events	1 ± 0	1 ± 0
Event skim*	0.886 ± 0.0023	-
Event DQ*	0.877 ± 0.0024	-
Primary vertex	0.877 ± 0.0024	-
≥ 1 baseline lepton	0.436 ± 0.0036	0.424 ± 0.0024
≥ 1 signal lepton	0.325 ± 0.0034	0.312 ± 0.0022
$= 1$ signal lepton	0.291 ± 0.0033	0.281 ± 0.0022
$= 1$ baseline lepton	0.253 ± 0.0032	0.249 ± 0.0021
$E_T^{miss} > 100 \text{ GeV}$	0.248 ± 0.0031	0.243 ± 0.0021
≥ 4 jets	0.198 ± 0.0029	0.2 ± 0.0019
trigger	0.197 ± 0.0029	-
$E_T^{miss} > 200 \text{ GeV}$	0.185 ± 0.0028	0.187 ± 0.0019
$\Delta\phi(\text{jet}_1, E_T^{miss}) > 0.4$	0.183 ± 0.0028	0.186 ± 0.0019
$\Delta\phi(\text{jet}_2, E_T^{miss}) > 0.4$	0.173 ± 0.0027	0.175 ± 0.0018
$m_{T2}^\tau > 80 \text{ GeV}$	0.171 ± 0.0027	0.17 ± 0.0018
$\text{jet}_1 p_T > 120 \text{ GeV}$	0.169 ± 0.0027	0.169 ± 0.0018
$\text{jet}_2 p_T > 80 \text{ GeV}$	0.162 ± 0.0027	0.164 ± 0.0018
$\text{jet}_3 p_T > 50 \text{ GeV}$	0.152 ± 0.0026	0.156 ± 0.0018
$E_T^{miss} > 480 \text{ GeV}$	0.102 ± 0.0022	0.105 ± 0.0015
$H_{T,\text{sig}}^{\text{miss}} > 20$	0.101 ± 0.0022	0.103 ± 0.0015
$m_T > 190 \text{ GeV}$	0.095 ± 0.0021	0.0945 ± 0.0014
$am_{T2} > 175 \text{ GeV}$	0.088 ± 0.0021	0.0919 ± 0.0014
$\Delta R(b, \ell) < 2.8$	0.079 ± 0.002	0.0816 ± 0.0013
≥ 1 b -tagged jets (77% eff.)	0.071 ± 0.0019	0.0719 ± 0.0012
≥ 1 large-R jet $p_T > 280 \text{ GeV}$	0.065 ± 0.0018	0.063 ± 0.0012

Table 3: Cutflow validation for atlas_1606_03903. Shown are the total efficiency after each cut normalised by number of events generated. Final error is Monte-Carlo events only.