

## $\tilde{g}\tilde{g}$ one step (1265, 865, 465): (ATLAS\_CONF\_2013\_047)

- Process:  $pp \rightarrow \tilde{g}\tilde{g} : \tilde{g} \rightarrow qq\chi_1^\pm \rightarrow W^\pm qq\tilde{\chi}_1^0$ .
- 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  $\text{xqcut} = \text{qcut} = M_{\text{SUSY}}/4$  with MSUSY being the mass of the heavier SUSY particles in the production.

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

Table 1: The cut-flow table for E tight signal region:  $\tilde{g}\tilde{g}$  one step (1265, 865, 465).