

**$\tilde{g}\tilde{g}$  direct (1162, 337): (ATLAS\_CONF\_2013\_047)**

- Process:  $pp \rightarrow \tilde{g}\tilde{g} \rightarrow (qq\chi_1^0)(qq\chi_1^0)$ .
- 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  $xqcut = qcut = M_{\text{SUSY}}/4$  with  $M_{\text{SUSY}}$  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	$98.45 \pm 1.4$	$99.88 \pm 0.05$	1.01	1.02	0	$0.98 \pm 0.01$	$1.0 \pm 0.0$	1.01	1.02
2	base: MET > 160	$88.81 \pm 1.33$	$89.8 \pm 0.43$	1.01	0.71	1	$0.9 \pm 0.01$	$0.9 \pm 0.0$	1.0	-0.21
3	base: $p_T(j_1) > 130$	$88.81 \pm 1.33$	$89.78 \pm 0.43$	1.01	0.69	2	$1.0 \pm 0.02$	$1.0 \pm 0.0$	1.0	-0.01
4	base: $p_T(j_2) > 60$	$88.73 \pm 1.33$	$89.76 \pm 0.43$	1.01	0.74	3	$1.0 \pm 0.01$	$1.0 \pm 0.0$	1.0	0.04
5	$p_T(j_3) > 60$	$87.09 \pm 1.32$	$88.2 \pm 0.46$	1.01	0.79	4	$0.98 \pm 0.01$	$0.98 \pm 0.01$	1.0	0.07
6	$p_T(j_4) > 60$	$74.1 \pm 1.22$	$74.14 \pm 0.62$	1.0	0.03	5	$0.85 \pm 0.01$	$0.84 \pm 0.01$	0.99	-0.66
7	$p_T(j_5) > 60$	$40.93 \pm 0.9$	$36.54 \pm 0.68$	0.89	-3.88	6	$0.55 \pm 0.01$	$0.49 \pm 0.01$	0.89	-3.9
8	D base: $\Delta\phi(j_i, \text{MET}) > 0.4$	$34.23 \pm 0.83$	$30.24 \pm 0.65$	0.88	-3.79	7	$0.84 \pm 0.02$	$0.83 \pm 0.02$	0.99	-0.32
9	D base: $\Delta\phi(j_i > 40, \text{MET}) > 0.2$	$28.51 \pm 0.76$	$26.24 \pm 0.62$	0.92	-2.32	8	$0.83 \pm 0.02$	$0.87 \pm 0.02$	1.04	1.15
10	DM: MET/ $m_{\text{eff}}(5j) > 0.2$	$22.06 \pm 0.66$	$20.66 \pm 0.57$	0.94	-1.6	9	$0.77 \pm 0.02$	$0.79 \pm 0.02$	1.02	0.43
11	DM: $m_{\text{eff}}(\text{inc}) > 1600$	$13.4 \pm 0.52$	$13.02 \pm 0.48$	0.97	-0.54	10	$0.61 \pm 0.02$	$0.63 \pm 0.02$	1.04	0.69

Table 1: The cut-flow table for D signal region:  $\tilde{g}\tilde{g}$  direct (1162, 337).