

0.1 $\tilde{q}\tilde{q}$ direct (1425, 400): (ATLAS_CONF_2013_047)

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

#	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	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: $\text{MET}/m_{\text{eff}}(3j) > 0.4$	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: $m_{\text{eff}}(\text{inc}) > 1800$	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 1: The cut-flow table for the B medium signal region: $\tilde{q}\tilde{g}$ direct (1425, 525).