1 GG1step 1600 0

- Process: $pp \to \tilde{g}\tilde{g}, \tilde{g} \to q\tilde{\chi}_1^{\pm}, \tilde{\chi}_1^{\pm} \to W^{\pm}\tilde{\chi}_1^0$
- Parameters: $(m_{\tilde{g}}, m_{\tilde{\chi}_1^{\pm}}, m_{\tilde{\chi}_1^0}) = (1600, 800, 0)\,\mathrm{GeV}$
- Number of Atom MC events: 656
- Event Generator: `MadGraph5 + Pythia6`

#	cut name	ϵ_{Exp} (%)	ϵ_{Atom} (%)	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	#/?	R_{Exp} (%)	R_{Atom} (%)	$\frac{\text{Atom}}{\text{Exp}}$	$\frac{(\text{Exp}-\text{Atom})}{\text{Error}}$	$\partial \log \epsilon_{\text{Atom}} / \partial \log x_{\text{cut}}$
1	Preselection, MET > 200, $p_T^{j_1} > 200$	90.18 0.95	$60.6^{+1.9}_{-1.9}$	0.67	-13.93	0	90.18 0.95	$60.6^{+1.9}_{-1.9}$	0.67	-13.93	$0.24^{+0.36}_{0.35}$
2	$N_j \geq 2$: 2jl	90.18 ± 0.95	$60.6^{+1.9}_{-1.9}$	0.67	-13.93	1	100.0 ± 3.8	$100.0^{+4.43}_{-4.43}$	1.0	0.0	$0.0^{+0.0}_{0.0}$
3	$\Delta\phi_{min} > 0.8$: 2jl	54.97 ± 0.74	$34.4^{+1.9}_{-1.8}$	0.63	-10.09	2	60.96 ± 3.37	$56.77^{+3.61}_{-3.46}$	0.93	-0.85	$0.0^{+0.0}_{0.0}$
4	$p_T^{j_2} > 200$: 2jl	54.26 ± 0.74	$33.5^{+1.9}_{-1.8}$	0.62	-10.19	3	98.71 ± 2.96	$97.38^{+7.51}_{-7.5}$	0.99	-0.16	$0.0^{+0.0}_{0.0}$
5	MET$/\sqrt{H_T} > 15$: 2jl	29.16 ± 0.54	$28.3^{+1.8}_{-1.7}$	0.97	-0.46	4	53.74 ± 2.54	$84.48^{+7.03}_{-6.98}$	1.57	4.14	$0.0^{+0.0}_{0.0}$
6	$m_{\text{eff}}^{\text{inc}} > 1200$: 2jl	29.13 ± 0.54	$28.3^{+1.8}_{-1.7}$	0.97	-0.44	5	99.9 ± 2.16	$100.0^{+8.75}_{-8.75}$	1.0	0.01	$0.0^{+0.0}_{0.0}$
7	$p_T^{j_1} > 300$: 2jm	89.75 ± 0.95	$60.0^{+1.9}_{-1.9}$	0.67	-14.01	0	99.52 ± 114.88	$99.01^{+268.7}_{268.7}$	0.99	-0.0	$0.0^{+0.0}_{0.0}$
8	$N_j \geq 2$: 2jm	89.75 ± 0.95	$60.0^{+1.9}_{-1.9}$	0.67	-14.01	7	100.0 ± 3.79	$100.0^{+4.48}_{-4.48}$	1.0	0.0	$0.0^{+0.0}_{0.0}$
9	$\Delta\phi_{min} > 0.4$: 2jm	72.16 ± 0.85	$47.3^{+2.0}_{-1.9}$	0.66	-11.44	8	80.4 ± 3.59	$78.83^{+4.16}_{-4.03}$	0.98	-0.29	$0.0^{+0.0}_{0.0}$
10	$p_T^{j_2} > 50$: 2jm	72.16 ± 0.85	$47.3^{+2.0}_{-1.9}$	0.66	-11.44	9	100.0 ± 3.4	$100.0^{+5.83}_{-5.83}$	1.0	0.0	$0.0^{+0.0}_{0.0}$
11	MET$/\sqrt{H_T} > 15$: 2jm	34.76 ± 0.59	$38.2^{+1.9}_{-1.9}$	1.1	1.73	10	48.17 ± 2.85	$80.76^{+5.16}_{-5.27}$	1.68	5.44	$0.0^{+0.0}_{0.0}$
12	$m_{\text{eff}}^{\text{inc}} > 1600 : 2jm$	34.28 ± 0.59	$37.4^{+1.9}_{-1.8}$	1.09	1.65	11	98.62 ± 2.35	$97.91^{+6.96}_{-6.78}$	0.99	-0.1	$0.0^{+0.0}_{0.0}$
13	$Nj \geq 2$: 2jt	91.08 ± 0.95	$60.6^{+1.9}_{-1.9}$	0.67	-14.34	0	101.0 ± 114.96	$100.0^{+268.7}_{268.7}$	0.99	-0.0	$0.0^{+0.0}_{0.0}$
14	$\Delta\phi_{min} > 0.8$: 2jt	54.97 ± 0.74	$34.4^{+1.9}_{-1.8}$	0.63	-10.09	13	60.35 ± 3.38	$56.77^{+3.61}_{-3.46}$	0.94	-0.73	$0.0^{+0.0}_{0.0}$
15	$p_T^{j_2} > 200$: 2jt	54.26 ± 0.74	$33.5^{+1.9}_{-1.8}$	0.62	-10.19	14	98.71 ± 2.96	$97.38^{+7.51}_{-7.5}$	0.99	-0.16	$0.0^{+0.0}_{0.0}$
16	MET$/\sqrt{H_T} > 20$: 2jl	16.7 ± 0.41	$5.2^{+0.94}_{-0.8}$	0.31	-11.22	15	30.78 ± 2.24	$15.52^{+2.93}_{-2.55}$	0.5	-4.14	$0.0^{+0.0}_{0.0}$
17	$m_{\text{effinc}} > 2000 : 2jt$	15.97 ± 0.4	$4.9^{+0.91}_{-0.77}$	0.31	-11.14	16	95.63 ± 1.62	$94.23^{+22.72}_{-22.57}$	0.99	-0.06	$0.0^{+0.0}_{0.0}$
18	$N_j \geq 4$: 4jt	85.7 ± 0.93	$60.4^{+1.9}_{-1.9}$	0.7	-11.97	0	95.03 ± 114.64	$99.67^{+268.7}_{268.7}$	1.05	0.02	$0.0^{+0.0}_{0.0}$
19	$\Delta\phi_{min}$ cut: 4jt	59.69 ± 0.77	$38.1^{+1.9}_{-1.8}$	0.64	-10.53	18	69.65 ± 3.39	$63.08^{+3.72}_{-3.58}$	0.91	-1.31	$0.24^{+0.45}_{0.44}$
20	$p_T^{j_2} > 100$: 4jt	59.69 ± 0.77	$38.1^{+1.9}_{-1.8}$	0.64	-10.53	19	100.0 ± 3.09	$100.0^{+6.87}_{-6.87}$	1.0	0.0	$0.0^{+0.0}_{0.0}$
21	$p_T^{j_4} > 100$: 4jt	52.27 ± 0.72	$36.2^{+1.9}_{-1.8}$	0.69	-7.9	20	87.57 ± 2.99	$95.01^{+6.71}_{-6.69}$	1.09	1.02	$0.0^{+0.0}_{0.0}$
22	Aplanarity > 0.04: 4jt	35.62 ± 0.6	$36.2^{+1.9}_{-1.8}$	1.02	0.31	21	68.15 ± 2.63	$100.0^{+7.23}_{-7.23}$	1.47	4.14	$0.0^{+0.0}_{0.0}$
23	MET$/\sqrt{H_T} > 0.2$" 4jt	25.24 ± 0.5	$24.5^{+1.7}_{-1.6}$	0.97	-0.42	22	70.86 ± 2.19	$67.68^{+5.78}_{-5.67}$	0.96	-0.51	$0.0^{+0.0}_{0.0}$
24	$m_{\text{eff}}^{\text{inc}} > 2200 : 4jt$	21.38 ± 0.46	$19.6^{+1.6}_{-1.5}$	0.92	-1.07	23	84.71 ± 1.93	$80.0^{+8.36}_{-8.26}$	0.94	-0.55	$0.0^{+0.0}_{0.0}$
25	$N_j \geq 5$: 5j	64.34 ± 0.8	$59.5^{+1.9}_{-1.9}$	0.92	-2.35	0	71.35 ± 113.22	$98.18^{+268.7}_{268.7}$	1.38	0.09	$0.0^{+0.0}_{0.0}$
26	$\Delta\phi_{min}$ cut: 5j	43.61 ± 0.66	$37.1^{+1.9}_{-1.8}$	0.85	-3.24	25	67.78 ± 2.92	$62.35^{+3.76}_{-3.62}$	0.92	-1.14	$0.25^{+0.45}_{0.45}$
27	$p_T^{j_2} > 100$: 5j	43.61 ± 0.66	$37.1^{+1.9}_{-1.8}$	0.85	-3.24	26	100.0 ± 2.64	$100.0^{+7.05}_{-7.05}$	1.0	0.0	$0.0^{+0.0}_{0.0}$
28	$p_T^{j_5} > 50$: 5j	40.18 ± 0.63	$37.1^{+1.9}_{-1.8}$	0.92	-1.54	27	92.13 ± 2.59	$100.0^{+7.05}_{-7.05}$	1.09	1.05	$0.0^{+0.0}_{0.0}$
29	Aplanarity > 0.04: 5j	28.62 ± 0.53	$37.1^{+1.9}_{-1.8}$	1.3	4.52	28	71.23 ± 2.33	$100.0^{+7.05}_{-7.05}$	1.4	3.87	$0.0^{+0.0}_{0.0}$
30	MET$/m_{\text{efff}}(N_j) > 0.25$" 5j	14.01 ± 0.37	$16.0^{+1.5}_{-1.4}$	1.14	1.37	29	48.95 ± 1.8	$43.13^{+4.55}_{-4.37}$	0.88	-1.19	$0.0^{+0.0}_{0.0}$
31	$m_{\text{eff}}^{\text{inc}} > 1600$: 5j	13.88 ± 0.37	$15.2^{+1.5}_{-1.3}$	1.1	0.98	30	99.07 ± 1.49	$95.0^{+12.53}_{-12.06}$	0.96	-0.32	$0.0^{+0.0}_{0.0}$
32	$N_j \geq 6$: 6jm	36.83 ± 0.61	$54.2^{+2.0}_{-1.9}$	1.47	8.71	0	40.84 ± 110.75	$89.44^{+275.86}_{268.7}$	2.19	0.17	$0.0^{+0.0}_{0.0}$
33	$\Delta\phi_{min}$ cut: 6jm	23.72 ± 0.49	$33.6^{+1.9}_{-1.8}$	1.42	5.3	32	64.4 ± 2.18	$61.99^{+4.12}_{-4.03}$	0.96	-0.52	$0.27^{+0.48}_{0.47}$
34	$p_T^{j_2} > 100$: 6jm	23.72 ± 0.49	$33.6^{+1.9}_{-1.8}$	1.42	5.3	33	100.0 ± 1.95	$100.0^{+7.79}_{-7.79}$	1.0	0.0	$0.0^{+0.0}_{0.0}$
35	$p_T^{j_6} > 50$: 6jm	22.56 ± 0.47	$33.6^{+1.9}_{-1.8}$	1.49	5.93	34	95.11 ± 1.92	$100.0^{+7.79}_{-7.79}$	1.05	0.61	$0.0^{+0.0}_{0.0}$
36	Aplanarity > 0.04: 6jm	16.87 ± 0.41	$33.6^{+1.9}_{-1.8}$	1.99	9.06	35	74.78 ± 1.77	$100.0^{+7.79}_{-7.79}$	1.34	3.16	$0.0^{+0.0}_{0.0}$
37	MET$/m_{\text{efff}}(N_j) > 0.25$" 6jm	7.55 ± 0.27	$12.9^{+1.4}_{-1.2}$	1.71	4.35	36	44.75 ± 1.36	$38.39^{+4.65}_{-4.18}$	0.86	-1.31	$0.0^{+0.0}_{0.0}$
38	$m_{\text{eff}}^{\text{inc}} > 1600$: 6jm	7.46 ± 0.27	$12.6^{+1.4}_{-1.2}$	1.69	4.18	37	98.81 ± 1.1	$97.67^{+14.15}_{-14.1}$	0.99	-0.08	$0.0^{+0.0}_{0.0}$
39	$N_j \geq 6$: 6jt	36.83 ± 0.61	$54.2^{+2.0}_{-1.9}$	1.47	8.71	0	40.84 ± 110.75	$89.44^{+275.86}_{268.7}$	2.19	0.17	$0.0^{+0.0}_{0.0}$
40	$\Delta\phi_{min}$ cut: 6jt	23.72 ± 0.49	$33.6^{+1.9}_{-1.8}$	1.42	5.3	39	64.4 ± 2.18	$61.99^{+4.12}_{-4.03}$	0.96	-0.52	$0.27^{+0.48}_{0.47}$
41	$p_T^{j_2} > 100$: 6jt	23.72 ± 0.49	$33.6^{+1.9}_{-1.8}$	1.42	5.3	40	100.0 ± 1.95	$100.0^{+7.79}_{-7.79}$	1.0	0.0	$0.0^{+0.0}_{0.0}$
42	$p_T^{j_2} > 100$: 6jt	22.56 ± 0.47	$33.6^{+1.9}_{-1.8}$	1.49	5.93	41	95.11 ± 1.92	$100.0^{+7.79}_{-7.79}$	1.05	0.61	$0.0^{+0.0}_{0.0}$
43	Aplanarity > 0.04: 6jt	16.87 ± 0.41	$33.6^{+1.9}_{-1.8}$	1.99	9.06	42	74.78 ± 1.77	$100.0^{+7.79}_{-7.79}$	1.34	3.16	$0.0^{+0.0}_{0.0}$
44	MET$/m_{\text{efff}}(N_j) > 0.25$: 6jt	10.63 ± 0.33	$19.8^{+1.6}_{-1.5}$	1.86	5.97	43	63.01 ± 1.47	$58.93^{+5.71}_{-5.57}$	0.94	-0.69	$0.0^{+0.0}_{0.0}$
45	$m_{\text{eff}}^{\text{inc}} > 1600$: 6jt	9.9 ± 0.31	$18.0^{+1.6}_{-1.4}$	1.82	5.64	44	93.13 ± 1.28	$90.91^{+10.62}_{-10.2}$	0.98	-0.21	$0.0^{+0.0}_{0.0}$

Table 1: