1 GGdirect 1100 700

- Process: $pp \to \tilde{g}\tilde{g}, \tilde{g} \to q\tilde{\chi}_1^0$
- Parameters: $(m_{\tilde{g}}, m_{\tilde{\chi}_1^0}) = (1100, 700)\,\text{GeV}$
- Number of Atom MC events: 6839
- Event Generator: `MadGraph5 + Pythia6`

#	cut name	$\epsilon_{\rm Exp}$ (%)	$\epsilon_{\rm Atom}$ (%)	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$	#/?	$R_{\rm Exp}$ (%)	$R_{\rm Atom}$ (%)	$\frac{\rm Atom}{\rm Exp}$	$\frac{\rm (Exp-Atom)}{\rm Error}$	$\partial \log \epsilon_{\rm Atom}/\partial \log x_{\rm cut}$
1	Preselection, MET >200, $p_T^{j1}>200$	57.71 0.44	$63.19^{+0.59}_{-0.58}$	1.09	7.53	0	57.71 0.44	$63.19^{+0.59}_{-0.58}$	1.09	7.53	$0.98^{+0.11}_{0.11}$
2	$N_j \geq 2$: 2jl	57.66 ± 0.44	$63.16^{+0.59}_{-0.58}$	1.1	7.56	1	99.91 ± 1.75	$99.95^{+1.31}_{-1.31}$	1.0	0.02	$0.0^{+0.0}_{0.0}$
3	$\Delta\phi_{min} > 0.8$: 2jl	41.2 ± 0.37	$42.5^{+0.6}_{-0.59}$	1.03	1.87	2	71.45 ± 1.62	$67.29^{+1.13}_{-1.13}$	0.94	-2.11	$0.0^{+0.0}_{0.0}$
4	$p_T^{j2} > 200$: 2jl	21.33 ± 0.27	$21.8^{+0.5}_{-0.49}$	1.02	0.84	3	51.78 ± 1.27	$51.29^{+1.38}_{-1.36}$	0.99	-0.26	$0.0^{+0.0}_{0.0}$
5	$\mathrm{MET}/\sqrt{H_T} > 15$: 2jl	7.34 ± 0.16	$19.1^{+0.48}_{-0.47}$	2.6	23.73	4	34.43 ± 0.83	$87.61^{+2.95}_{-2.95}$	2.54	17.37	$0.0^{+0.0}_{0.0}$
6	$m_{\rm eff}^{\rm inc} > 1200$: 2jl	5.45 ± 0.13	$13.1^{+0.41}_{-0.4}$	2.4	18.12	5	74.26 ± 0.58	$68.59^{+2.73}_{-2.71}$	0.92	-2.03	$0.0^{+0.0}_{0.0}$
7	$p_T^{j1} > 300$: 2jm	35.1 ± 0.34	$38.5^{+0.59}_{-0.58}$	1.1	5.05	0	60.81 ± 51.95	$60.93^{+83.44}_{82.02}$	1.0	0.0	$0.0^{+0.0}_{0.0}$
8	$N_j \geq 2$: 2jm	35.04 ± 0.34	$38.5^{+0.59}_{-0.58}$	1.1	5.13	7	99.85 ± 1.37	$100.0^{+2.15}_{-2.15}$	1.0	0.06	$0.0^{+0.0}_{0.0}$
9	$\Delta\phi_{min} > 0.4$: 2jm	29.3 ± 0.31	$30.7^{+0.56}_{-0.55}$	1.05	2.22	8	83.6 ± 1.31	$79.74^{+1.89}_{-1.88}$	0.95	-1.68	$0.0^{+0.0}_{0.0}$
10	$p_T^{j2} > 50$: 2jm	29.3 ± 0.31	$30.7^{+0.56}_{-0.55}$	1.05	2.22	9	100.0 ± 1.25	$100.0^{+2.56}_{-2.56}$	1.0	0.0	$0.0^{+0.0}_{0.0}$
11	$\mathrm{MET}/\sqrt{H_T} > 15$: 2jm	11.82 ± 0.2	$27.1^{+0.54}_{-0.53}$	2.29	27.0	10	40.35 ± 1.01	$88.27^{+2.37}_{-2.36}$	2.19	18.67	$0.0^{+0.0}_{0.0}$
12	$m_{\rm eff}^{\rm inc} > 1600 : 2jm$	3.25 ± 0.1	$8.85^{+0.35}_{-0.34}$	2.72	15.74	11	27.52 ± 0.59	$32.66^{+1.44}_{-1.41}$	1.19	3.35	$0.0^{+0.0}_{0.0}$
13	$Nj \geq 2$: 2jt	57.66 ± 0.44	$63.16^{+0.59}_{-0.58}$	1.1	7.56	0	99.91 ± 53.07	$99.95^{+83.44}_{82.02}$	1.0	0.0	$0.0^{+0.0}_{0.0}$
14	$\Delta\phi_{min} > 0.8$: 2jt	41.2 ± 0.37	$42.5^{+0.6}_{-0.59}$	1.03	1.87	13	71.45 ± 1.62	$67.29^{+1.13}_{-1.13}$	0.94	-2.11	$0.0^{+0.0}_{0.0}$
15	$p_T^{j2} > 200$: 2jt	21.33 ± 0.27	$21.8^{+0.5}_{-0.49}$	1.02	0.84	14	51.78 ± 1.27	$51.29^{+1.38}_{-1.36}$	0.99	-0.26	$0.0^{+0.0}_{0.0}$
16	$\mathrm{MET}/\sqrt{H_T} > 20$: 2jl	2.32 ± 0.09	$2.35^{+0.19}_{-0.18}$	1.01	0.13	15	10.89 ± 0.66	$10.78^{+0.9}_{-0.86}$	0.99	-0.1	$0.0^{+0.0}_{0.0}$
17	$m_{\rm eff\,inc} > 2000 : 2jt$	0.45 ± 0.04	$0.77^{+0.11}_{-0.1}$	1.7	2.98	16	19.51 ± 0.24	$32.77^{+5.31}_{-4.98}$	1.68	2.66	$0.0^{+0.0}_{0.0}$
18	$N_j \geq 4$: 4jt	45.62 ± 0.39	$50.7^{+0.61}_{-0.6}$	1.11	7.1	0	79.05 ± 52.52	$80.23^{+84.86}_{83.45}$	1.02	0.01	$0.0^{+0.0}_{0.0}$
19	$\Delta\phi_{min}$ cut: 4jt	35.46 ± 0.34	$37.3^{+0.59}_{-0.58}$	1.05	2.73	18	77.73 ± 1.47	$73.57^{+1.45}_{-1.45}$	0.95	-2.01	$0.12^{+0.14}_{0.14}$
20	$p_T^{j2} > 100$: 4jt	34.74 ± 0.34	$36.6^{+0.59}_{-0.58}$	1.05	2.77	19	97.97 ± 1.37	$98.12^{+2.2}_{-2.2}$	1.0	0.06	$0.0^{+0.0}_{0.0}$
21	$p_T^{j4} > 100$: 4jt	14.97 ± 0.22	$16.8^{+0.46}_{-0.45}$	1.12	3.65	20	43.08 ± 1.12	$45.9^{+1.45}_{-1.43}$	1.07	1.55	$0.0^{+0.0}_{0.0}$
22	Aplanarity > 0.04: 4jt	10.2 ± 0.18	$16.8^{+0.46}_{-0.45}$	1.65	13.57	21	68.15 ± 0.81	$100.0^{+3.83}_{-3.83}$	1.47	8.13	$0.0^{+0.0}_{0.0}$
23	$\mathrm{MET}/\sqrt{H_T} > 0.2$" 4jt	9.45 ± 0.18	$14.9^{+0.44}_{-0.42}$	1.58	11.95	22	92.65 ± 0.72	$88.69^{+3.54}_{-3.49}$	0.96	-1.1	$0.0^{+0.0}_{0.0}$
24	$m_{\rm eff}^{\rm inc} > 2200 : 4jt$	0.36 ± 0.03	$1.87^{+0.17}_{-0.16}$	5.24	9.25	23	3.77 ± 0.37	$12.55^{+1.19}_{-1.14}$	3.33	7.35	$0.0^{+0.0}_{0.0}$
25	$N_j \geq 5$: 5j	26.78 ± 0.3	$33.3^{+0.57}_{-0.57}$	1.24	10.14	0	46.4 ± 51.4	$52.7^{+82.04}_{81.32}$	1.14	0.07	$0.0^{+0.0}_{0.0}$
26	$\Delta\phi_{min}$ cut: 5j	19.96 ± 0.26	$23.0^{+0.51}_{-0.5}$	1.15	5.41	25	74.53 ± 1.11	$69.07^{+1.93}_{-1.91}$	0.93	-2.45	$0.16^{+0.18}_{0.18}$
27	$p_T^{j2} > 100$: 5j	19.67 ± 0.26	$22.7^{+0.51}_{-0.5}$	1.15	5.4	26	98.55 ± 1.03	$98.7^{+3.09}_{-3.08}$	1.0	0.05	$0.0^{+0.0}_{0.0}$
28	$p_T^{j5} > 50$: 5j	11.15 ± 0.19	$22.7^{+0.51}_{-0.5}$	2.04	21.55	27	56.69 ± 0.89	$100.0^{+3.15}_{-3.15}$	1.76	13.24	$0.0^{+0.0}_{0.0}$
29	Aplanarity > 0.04: 5j	7.93 ± 0.16	$22.7^{+0.51}_{-0.5}$	2.86	28.09	28	71.15 ± 0.71	$100.0^{+3.15}_{-3.15}$	1.41	8.94	$0.0^{+0.0}_{0.0}$
30	$\mathrm{MET}/m_{\rm eff}(N_j) > 0.25$" 5j	5.14 ± 0.13	$15.7^{+0.45}_{-0.43}$	3.06	23.5	29	64.75 ± 0.59	$69.16^{+2.5}_{-2.45}$	1.07	1.75	$0.0^{+0.0}_{0.0}$
31	$m_{\rm eff}^{\rm inc} > 1600$: 5j	1.54 ± 0.07	$4.49^{+0.26}_{-0.24}$	2.92	11.79	30	29.92 ± 0.4	$28.6^{+1.83}_{-1.73}$	0.96	-0.7	$0.0^{+0.0}_{0.0}$
32	$N_j \geq 6$: 6jm	11.7 ± 0.2	$18.2^{+0.47}_{-0.46}$	1.56	12.99	0	20.27 ± 49.94	$28.8^{+75.43}_{74.03}$	1.42	0.1	$0.0^{+0.0}_{0.0}$
33	$\Delta\phi_{min}$ cut: 6jm	8.28 ± 0.17	$11.5^{+0.39}_{-0.38}$	1.39	7.76	32	70.82 ± 0.73	$63.19^{+2.67}_{-2.65}$	0.89	-2.76	$0.2^{+0.25}_{0.25}$
34	$p_T^{j2} > 100$: 6jm	8.22 ± 0.17	$11.5^{+0.39}_{-0.38}$	1.4	7.92	33	99.2 ± 0.66	$100.0^{+4.73}_{-4.73}$	1.01	0.17	$0.0^{+0.0}_{0.0}$
35	$p_T^{j6} > 50$: 6jm	5.75 ± 0.14	$11.5^{+0.39}_{-0.38}$	2.0	14.23	34	69.94 ± 0.61	$100.0^{+4.73}_{-4.73}$	1.43	6.3	$0.0^{+0.0}_{0.0}$
36	Aplanarity > 0.04: 6jm	4.22 ± 0.12	$11.5^{+0.39}_{-0.38}$	2.72	18.28	35	73.49 ± 0.51	$100.0^{+4.73}_{-4.73}$	1.36	5.57	$0.0^{+0.0}_{0.0}$
37	$\mathrm{MET}/m_{\rm eff}(N_j) > 0.25$" 6jm	2.3 ± 0.09	$7.05^{+0.32}_{-0.3}$	3.07	15.2	36	54.46 ± 0.41	$61.3^{+3.44}_{-3.34}$	1.13	2.04	$0.0^{+0.0}_{0.0}$
38	$m_{\rm eff}^{\rm inc} > 1600$: 6jm	0.97 ± 0.06	$2.97^{+0.21}_{-0.2}$	3.06	9.62	37	42.17 ± 0.29	$42.13^{+3.48}_{-3.42}$	1.0	-0.01	$0.0^{+0.0}_{0.0}$
39	$N_j \geq 6$: 6jt	11.7 ± 0.2	$18.2^{+0.47}_{-0.46}$	1.56	12.99	0	20.27 ± 49.94	$28.8^{+75.43}_{74.03}$	1.42	0.1	$0.0^{+0.0}_{0.0}$
40	$\Delta\phi_{min}$ cut: 6jt	8.28 ± 0.17	$11.5^{+0.39}_{-0.38}$	1.39	7.76	39	70.82 ± 0.73	$63.19^{+2.67}_{-2.65}$	0.89	-2.76	$0.2^{+0.25}_{0.25}$
41	$p_T^{j2} > 100$: 6jt	8.22 ± 0.17	$11.5^{+0.39}_{-0.38}$	1.4	7.92	40	99.2 ± 0.66	$100.0^{+4.73}_{-4.73}$	1.01	0.17	$0.0^{+0.0}_{0.0}$
42	$p_T^{j2} > 100$: 6jt	5.75 ± 0.14	$11.5^{+0.39}_{-0.38}$	2.0	14.23	41	69.94 ± 0.61	$100.0^{+4.73}_{-4.73}$	1.43	6.3	$0.0^{+0.0}_{0.0}$
43	Aplanarity > 0.04: 6jt	4.22 ± 0.12	$11.5^{+0.39}_{-0.38}$	2.72	18.28	42	73.49 ± 0.51	$100.0^{+4.73}_{-4.73}$	1.36	5.57	$0.0^{+0.0}_{0.0}$
44	$\mathrm{MET}/m_{\rm eff}(N_j) > 0.25$: 6jt	3.43 ± 0.11	$9.72^{+0.36}_{-0.35}$	2.83	17.19	43	81.22 ± 0.45	$84.52^{+4.2}_{-4.18}$	1.04	0.79	$0.0^{+0.0}_{0.0}$
45	$m_{\rm eff}^{\rm inc} > 1600$: 6jt	0.43 ± 0.04	$2.11^{+0.18}_{-0.17}$	4.87	9.63	44	12.63 ± 0.27	$21.71^{+2.01}_{-1.92}$	1.72	4.67	$0.0^{+0.0}_{0.0}$

Table 1: