Cut Name	Official Count (Eff)	MA5 Count (Eff)
MET Cleaning	190.6 (xxx)	190.6 (xxx)
No Lepton	190.3 (99%)	190.6 (100%)
NJets>2	188.1 (98%)	188.49 (98%)
$H_T > 500$	187.6 (99%)	188.07 (99%)
$H_T>200$	158.7 (84%)	159.72~(84%)
$\operatorname{Min} \Delta(\phi)$	130.8 (82%)	131.11 (82%)

Table 1: The cut flow for the baseline selection in CMSSUS-13-012 for working The the point T1qqqq. is the official second column account as reported by https://twiki.cern.ch/twiki/pub/CMSPublic/PhysicsResultsSUS13012/T1qqqq.pdf, and our own results are given in column 3. The official counts are normalized to luminosity=19.5/fb and σ = 10.17 pb, and our counts are normalized to match the official count after the first cut, MET Cleaning.

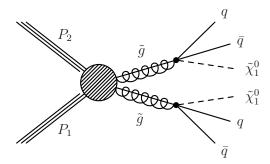


Figure 1: Diagram of the dominant SUSY production mechanism for the T1qqqq working point.

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Signal Region Name	Official	MA5
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, H_T 500-800, \mathcal{M}_T 200-300	1.4	1.21
$\begin{array}{c} \mathrm{NJets3-5}, \ H_T500-800, \ M_T>600 \\ \mathrm{NJets3-5}, \ H_T800-1000, \ M_T200-300 \\ \mathrm{NJets3-5}, \ H_T800-1000, \ M_T300-450 \\ \mathrm{NJets3-5}, \ H_T800-1000, \ M_T450-600 \\ \mathrm{NJets3-5}, \ H_T800-1000, \ M_T450-600 \\ \mathrm{NJets3-5}, \ H_T800-1000, \ M_T+600 \\ \mathrm{NJets3-5}, \ H_T800-1000, \ M_T>600 \\ \mathrm{NJets3-5}, \ H_T800-1020, \ M_T200-300 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ M_T200-300 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ M_T450-600 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ M_T450-600 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ M_T450-600 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ M_T+600 \\ \mathrm{NJets3-5}, \ H_T1250-1500, \ M_T200-300 \\ \mathrm{NJets3-5}, \ H_T1250-800, \ M_T200-300 \\ \mathrm{NJets6-7}, \ H_T500-800, \ M_T200-300 \\ \mathrm{NJets6-7}, \ H_T500-800, \ M_T200-300 \\ \mathrm{NJets6-7}, \ H_T800-1000, \ M_T200-300 \\ \mathrm{NJets6-7}, \ H_T800-1000, \ M_T200-300 \\ \mathrm{NJets6-7}, \ H_T800-1000, \ M_T200-300 \\ \mathrm{NJets6-7}, \ H_T1000-1250, \ M_T200-300 \\ \mathrm{NJets6-7}, \ H_T1250-1500, \ M_T200-300 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 \\ NJet$	NJets3-5, H_T 500-800, \mathcal{M}_T 300-450	2.4	2.08
$\begin{array}{c} \mathrm{NJets3-5}, \ H_T800-1000, \ H_T200-300 \\ \mathrm{NJets3-5}, \ H_T800-1000, \ H_T300-450 \\ \mathrm{NJets3-5}, \ H_T800-1000, \ H_T450-600 \\ \mathrm{NJets3-5}, \ H_T800-1000, \ H_T450-600 \\ \mathrm{NJets3-5}, \ H_T800-1000, \ H_T200-300 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ H_T200-300 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ H_T300-450 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ H_T450-600 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ H_T450-600 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ H_T450-600 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ H_T800 \\ \mathrm{NJets3-5}, \ H_T1250-1500, \ H_T800 \\ \mathrm{NJets3-5}, \ H_T800-1800, \ H_T800 \\ \mathrm{NJets3-5}, \ H_T800-1800, \ H_T800 \\ \mathrm{NJets6-7}, \ H_T800-1000, \ H_T800 \\ \mathrm{NJets6-7}, \ H_T800-1000, \ H_T800 \\ \mathrm{NJets6-7}, \ H_T1000-1250, \ H_T800 \\ \mathrm{NJets6-7}, \ H_T1000-1250, \ H_T800 \\ \mathrm{NJets6-7}, \ H_T1000-1250, \ H_T800 \\ \mathrm{NJets6-7}, \ H_T1250-1500, \ H_T800 \\ \mathrm{NJets6-7}, \ H_T800-1000, \ H_T800 \\ \mathrm{NJets8-7}, \ H_T800-$	NJets3-5, H_T 500-800, \mathcal{H}_T 450-600	1.7	1.36
$\begin{array}{c} \mathrm{NJets3-5}, \ H_T800-1000, \ M_T300-450 & 2.9 & 3.75 \\ \mathrm{NJets3-5}, \ H_T800-1000, \ M_T450-600 & 4.2 & 3.74 \\ \mathrm{NJets3-5}, \ H_T800-1000, \ M_T5-600 & 4.1 & 4.04 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ M_T200-300 & 4.2 & 3.70 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ M_T300-450 & 8.1 & 6.93 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ M_T450-600 & 7.6 & 7.18 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ M_T5-600 & 10.6 & 10.63 \\ \mathrm{NJets3-5}, \ H_T1000-1250, \ M_T5-600 & 10.6 & 10.63 \\ \mathrm{NJets3-5}, \ H_T1250-1500, \ M_T200-300 & 3.9 & 3.64 \\ \mathrm{NJets3-5}, \ H_T1250-1500, \ M_T200-300 & 4.5 & 4.41 \\ \mathrm{NJets3-5}, \ H_T1250-1500, \ M_T200-300 & 4.5 & 4.41 \\ \mathrm{NJets3-5}, \ H_T1250-1500, \ M_T200-300 & 4.5 & 4.41 \\ \mathrm{NJets3-5}, \ H_T500-800, \ M_T200-300 & 0.1 & 0.08 \\ \mathrm{NJets6-7}, \ H_T500-800, \ M_T300-450 & 0.1 & 0.05 \\ \mathrm{NJets6-7}, \ H_T500-800, \ M_T300-450 & 0.1 & 0.04 \\ \mathrm{NJets6-7}, \ H_T800-1000, \ M_T200-300 & 0.3 & 0.24 \\ \mathrm{NJets6-7}, \ H_T800-1000, \ M_T300-450 & 0.6 & 0.51 \\ \mathrm{NJets6-7}, \ H_T800-1000, \ M_T200-300 & 0.9 & 0.91 \\ \mathrm{NJets6-7}, \ H_T1000-1250, \ M_T200-300 & 0.9 & 0.91 \\ \mathrm{NJets6-7}, \ H_T1000-1250, \ M_T200-300 & 1.2 & 1.16 \\ \mathrm{NJets6-7}, \ H_T1250-1500, \ M_T200-300 & 2.3 & 2.56 \\ \mathrm{NJets6-7}, \ H_T1250-1500, \ M_T200-300 & 2.3 & 2.56 \\ \mathrm{NJets6-7}, \ H_T1250-1500, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets6-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1000, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1250, \ M_T>200 & 0.0 & 0.0 \\ \mathrm{NJets-7}, \ H_T800-1250, \ M_$	NJets3-5, H_T 500-800, \mathcal{H}_T >600	0.6	0.60
$\begin{array}{c} \text{NJets3-5}, \ H_T800-1000, \ M_T450-600 & 4.2 & 3.74 \\ \text{NJets3-5}, \ H_T800-1000, \ M_T>600 & 4.1 & 4.04 \\ \text{NJets3-5}, \ H_T1000-1250, \ M_T200-300 & 4.2 & 3.70 \\ \text{NJets3-5}, \ H_T1000-1250, \ M_T300-450 & 8.1 & 6.93 \\ \text{NJets3-5}, \ H_T1000-1250, \ M_T450-600 & 7.6 & 7.18 \\ \text{NJets3-5}, \ H_T1000-1250, \ M_T+5000 & 10.6 & 10.63 \\ \text{NJets3-5}, \ H_T1250-1500, \ M_T>600 & 10.6 & 10.63 \\ \text{NJets3-5}, \ H_T1250-1500, \ M_T200-300 & 3.9 & 3.64 \\ \text{NJets3-5}, \ H_T1250-1500, \ M_T300-450 & 7.3 & 6.74 \\ \text{NJets3-5}, \ H_T1250-1500, \ M_T>450 & 15.6 & 16.52 \\ \text{NJets3-5}, \ H_T1250-1500, \ M_T200-300 & 4.5 & 4.41 \\ \text{NJets3-5}, \ H_T>1500, \ M_T200-300 & 17.9 & 18.80 \\ \text{NJets6-7}, \ H_T>1500, \ M_T200-300 & 0.1 & 0.08 \\ \text{NJets6-7}, \ H_T500-800, \ M_T200-300 & 0.1 & 0.05 \\ \text{NJets6-7}, \ H_T500-800, \ M_T200-300 & 0.3 & 0.24 \\ \text{NJets6-7}, \ H_T800-1000, \ M_T200-300 & 0.3 & 0.24 \\ \text{NJets6-7}, \ H_T800-1000, \ M_T300-450 & 0.6 & 0.51 \\ \text{NJets6-7}, \ H_T800-1250, \ M_T200-300 & 0.9 & 0.91 \\ \text{NJets6-7}, \ H_T1000-1250, \ M_T200-300 & 0.9 & 0.91 \\ \text{NJets6-7}, \ H_T1000-1250, \ M_T200-300 & 1.2 & 1.16 \\ \text{NJets6-7}, \ H_T1250-1500, \ M_T200-300 & 2.3 & 2.56 \\ \text{NJets6-7}, \ H_T1500-800, \ M_T>450 & 4.1 & 5.16 \\ \text{NJets6-7}, \ H_T1500-800, \ M_T>200-300 & 0.0 & 0.0 \\ \text{NJets5-7}, \ H_T500-800, \ M_T>200 & 0.0 & 0.0 \\ \text{NJets5-7}, \ H_T500-800, \ M_T>200 & 0.0 & 0.0 \\ \text{NJets5-7}, \ H_T500-800, \ M_T>200 & 0.0 & 0.0 \\ \text{NJets5-7}, \ H_T500-800, \ M_T>200 & 0.0 & 0.0 \\ \text{NJets5-7}, \ H_T1000-1250, \ M_T>200 & 0.0 & 0.0 \\ \text{NJets5-7}, \ H_T1000-1250, \ M_T>200 & 0.0 & 0.0 \\ \text{NJets5-7}, \ H_T1000-1250, \ M_T>200 & 0.0 & 0.2 \\ \text{NJets5-7}, \ H_T1000-1250, \ M_T>200 & 0.0 & 0.2 \\ \text{NJets5-7}, \ H_T1000-1250, \ M_T>200 & 0.2 & 0.28 \\ \text{NJets5-7}, \ H_T1000-1250, \ M_T>200 & 0.5 & 0.75 \\ \end{array}$	NJets3-5, H_T 800-1000, \mathcal{M}_T 200-300	2.1	1.81
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, H_T 800-1000, \mathcal{M}_T 300-450	2.9	3.75
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, H_T 800-1000, \mathcal{M}_T 450-600	4.2	3.74
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, H_T 800-1000, \mathcal{M}_T >600	4.1	4.04
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, H_T 1000-1250, \mathcal{H}_T 200-300	4.2	3.70
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, H_T 1000-1250, \mathcal{H}_T 300-450	8.1	6.93
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, H_T 1000-1250, \mathcal{H}_T 450-600	7.6	7.18
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, H_T 1000-1250, \mathcal{H}_T >600	10.6	10.63
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, H_T 1250-1500, \mathcal{H}_T 200-300	3.9	3.64
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, H_T 1250-1500, \mathcal{H}_T 300-450	7.3	6.74
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, H_T 1250-1500, \mathcal{H}_T >450	15.6	16.52
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, $H_T > 1500$, $\mathcal{H}_T = 200-300$	4.5	4.41
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets3-5, $H_T > 1500$, $\mathcal{H}_T > 300$	17.9	18.80
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, H_T 500-800, \mathcal{H}_T 200-300	0.1	0.08
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, H_T 500-800, \mathcal{H}_T 300-450	0.1	0.05
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, H_T 500-800, \mathcal{M}_T >450	0.1	0.04
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, H_T 800-1000, \mathcal{H}_T 200-300	0.3	0.24
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, H_T 800-1000, \mathcal{H}_T 300-450	0.6	0.51
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, H_T 800-1000, \mathcal{H}_T >450	0.8	0.71
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, H_T 1000-1250, \mathcal{H}_T 200-300	0.9	0.91
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, H_T 1000-1250, \mathcal{H}_T 300-450	1.8	1.74
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, H_T 1000-1250, \mathcal{H}_T >450	2.8	2.94
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, H_T 1250-1500, \mathcal{H}_T 200-300	1.2	1.16
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, H_T 1250-1500, \mathcal{H}_T 300-450	2.4	2.46
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, H_T 1250-1500, \mathcal{H}_T >450	4.1	5.16
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NJets6-7, $H_T > 1500$, $\mathcal{H}_T = 200-300$	2.3	2.56
$\begin{array}{c ccccc} \text{NJets}{>}7, \ H_T800\text{-}1000, \ \mathcal{M}_T{>}200 & 0.0 & 0.01 \\ \text{NJets}{>}7, \ H_T1000\text{-}1250, \ \mathcal{M}_T{>}200 & 0.2 & 0.28 \\ \text{NJets}{>}7, \ H_T1250\text{-}1500, \ \mathcal{M}_T{>}200 & 0.5 & 0.75 \\ \end{array}$		9.8	11.50
$NJets>7, H_T1000-1250, \mathcal{M}_T>200$ 0.2 0.28 $NJets>7, H_T1250-1500, \mathcal{M}_T>200$ 0.5 0.75	$NJets > 7$, $H_T 500-800$, $H_T > 200$	0.0	0.0
NJets>7, H_T 1250-1500, \mathcal{H}_T >200 0.5 0.75	$NJets > 7$, $H_T 800-1000$, $H_T > 200$	0.0	0.01
		0.2	0.28
NJets>7, H_T >1500, \mathcal{M}_T >200 2.2 2.69	NJets>7, H_T 1250-1500, \mathcal{H}_T >200	0.5	0.75
	NJets>7, $H_T>1500, \mathcal{H}_T>200$	2.2	2.69

Table 2: The signal region (SR) counts in CMS SUS-13-012 for the working point T1qqqq after all selection has been applied. Column 2 is the official account obtained through generous correspondence with Christian Sanders, and our own results displayed in column 3. These counts were determined by applying the SR selection to the end of the cut flow featured in table 1.

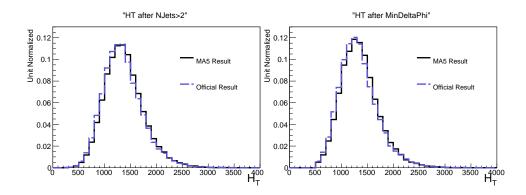


Figure 2: Comparison of the distributions of H_T between the official and our own samples after the "n-1" cut, Min $\Delta(\phi)$ (left), and after all baseline cuts (right), for the T1qqqq working point.

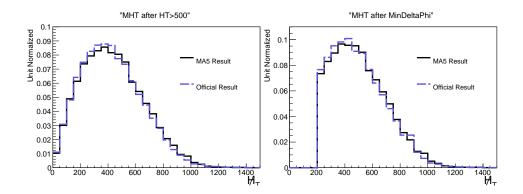


Figure 3: Comparison of the distributions of \mathcal{H}_T between the official and our own samples after the "n-1" cut, Min $\Delta(\phi)$ (left), and after all baseline cuts (right), for the T1qqqq working point.

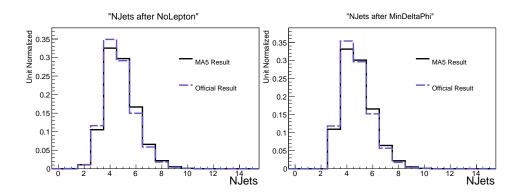


Figure 4: Comparison of the distributions of NJets between the official and our own samples after the "n-1" cut, Min $\Delta(\phi)$ (left), and after all baseline cuts (right), for the T1qqqq working point.

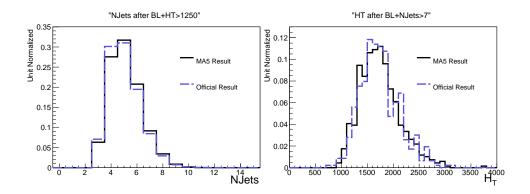


Figure 5: Additional checks: comparison between ours and the official distributions of NJets after $BL+H_T>1250$ cuts (left), and H_T after BL+NJets>7 cuts (right), for the T1qqqq working point.