	H00 CLT 1000			
	700 GeV, 1000 cm, region 2017			
Cut	$\epsilon_i^{ ext{CMS}}$	$\epsilon_i^{\text{sim}}, \text{HEPMC}$	$\mid \epsilon_i^{\text{sim}}$ , HEPMC, no pileup	
total	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	
trigger	$2.0^{+0.02}_{-0.02} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	
passes $p_{\mathrm{T}}^{\mathrm{miss}}$ filters	$2.0^{+0.02}_{-0.02} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	
$p_{\mathrm{T}}^{\mathrm{miss}} > 120\mathrm{GeV}$	$1.9^{+0.02}_{-0.02} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	
$\geq 1$ jet with $p_{\mathrm{T}} > 110\mathrm{GeV}$ and $ \eta  < 2.4$	$1.4^{+0.02}_{-0.02} \times 10^{-1}$	$1.4^{+0.01}_{-0.01} \times 10^{-1}$	$1.4^{+0.01}_{-0.01} \times 10^{-1}$	
==0 pairs of jets with $\Delta \phi_{\rm jet,\ jet} > 2.5$	$1.2^{+0.02}_{-0.02} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	
$ \Delta\phi({ m leading jet}, ar{p}_{ m T}^{ m miss})  > 0.5$	$ \begin{vmatrix} 1.2^{+0.02}_{-0.02} \times 10^{-1} \\ 1.2^{+0.02}_{-0.02} \times 10^{-1} \\ 1.1^{+0.02}_{-0.02} \times 10^{-1} \end{vmatrix} $	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	
$\geq 1 \text{ track with }  \eta  < 2.1$	$1.2^{+0.02}_{-0.02} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	
$\geq 1 \text{ track with } p_{\mathrm{T}} > 55 \mathrm{GeV}$	$ \begin{vmatrix} 1.1_{-0.02}^{+0.02} \times 10^{-1} \\ 1.1_{-0.02}^{+0.02} \times 10^{-1} \\ 7.9_{-0.12}^{+0.12} \times 10^{-2} \end{vmatrix} $	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	
$\geq 1$ track passing fiducial selections	$7.9^{+0.12}_{-0.12} \times 10^{-2}$	$8.7^{+0.08}_{-0.08} \times 10^{-2}$	$8.7^{+0.08}_{-0.08} \times 10^{-2}$	
$\geq 1$ track with $\geq 4$ pixel hits	$   50^{+0.10} \times 10^{-2}$	$1.70^{\pm0.07} \times 10^{-2}$	$6.9^{+0.07}_{-0.07} \times 10^{-2}$	
$\geq 1$ track with no missing inner hits	$5.9^{+0.10}_{-0.10} \times 10^{-2}$	$4.8^{+0.06}_{-0.06} \times 10^{-2}$	$4.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1$ track with no missing middle hits	$\begin{array}{c} 3.9_{-0.10} \times 10 \\ 5.9_{-0.10}^{+0.10} \times 10^{-2} \\ 5.4_{-0.10}^{+0.10} \times 10^{-2} \\ 4.6_{-0.10}^{+0.10} \times 10^{-2} \end{array}$	$4.8^{+0.06}_{-0.06} \times 10^{-2}$	$4.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1$ track with relative track isolation $< 5\%$	0.10	0.06	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1 \text{ track with }  d_{xy}  < 0.02  \text{cm}$	$4.6^{+0.10}_{-0.10} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1 \text{ track with }  d_z  < 0.5 \text{ cm}$	$4.6^{+0.10}_{-0.10} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1$ track with $\Delta R(\text{track}, \text{jet}) > 0.5$	$4.5^{+0.10}_{-0.10} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1$ track with $\Delta R(\text{track}, \text{electron}) > 0.15$	$4.0^{+0.09}_{-0.09} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1 \text{ track with } \Delta R(\text{track, muon}) > 0.15$	$1.7^{+0.06}_{-0.06} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	
$\geq 1 \text{ track with } \Delta R(\text{track}, \tau_{\text{h}}) > 0.15$	$1.7^{+0.06}_{-0.06} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	
$\geq 1 \text{ track with } E_{\text{calo}} < 10 \text{GeV}$	$1.6^{+0.06}_{-0.06} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	
$\geq 1$ track with $\geq 3$ missing outer hits	$\begin{array}{c} 5.4_{-0.33}^{+0.33} \times 10^{-3} \\ 5.4_{-0.33}^{+0.33} \times 10^{-3} \\ 8.1_{-1.38}^{+1.38} \times 10^{-4} \\ 6.6_{-1.21}^{+1.21} \times 10^{-4} \\ 4.2_{-0.29}^{+0.29} \end{array}$	$\begin{array}{c} 2.5^{+0.05}_{-0.05} \times 10^{-2} \\ 5.7^{+0.22}_{-0.22} \times 10^{-3} \\ 6.9^{+0.77}_{-0.77} \times 10^{-4} \end{array}$	$6.3^{+0.23}_{-0.23} \times 10^{-3}$	
$\geq 1$ track with 4 layers	$8.1^{+1.38}_{-1.38} \times 10^{-4}$	$6.9^{+0.77}_{-0.77} \times 10^{-4}$	$7.7^{+0.81}_{-0.81} \times 10^{-4}$	
$\geq 1$ track with 5 layers	$6.6^{+1.21}_{-1.21} \times 10^{-4}$	$8.4^{+0.85}_{-0.85} \times 10^{-4}$	$8.5^{+0.85}_{-0.85} \times 10^{-4}$	
$\geq 1$ track with $\geq 6$ layers	$4.0^{+0.\overline{29}}_{-0.29} \times 10^{-3}$	$4.1^{+0.19}_{-0.19} \times 10^{-3}$	$4.5^{+0.20}_{-0.20} \times 10^{-3}$	

Table 1: Cutflow comparison for 700 GeV, 1000 cm, region 2017

	700 GeV, 1000 cm, region 2018A			
Cut	$\epsilon_i^{\mathrm{CMS}}$	$\epsilon_i^{\text{sim}}$ , HEPMC	$\left \begin{array}{l} \epsilon_i^{\mathrm{sim}},\mathrm{HEPMC},\mathrm{no}\mathrm{pileup} \end{array}\right $	
total	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	
trigger	$1.6^{+0.02}_{-0.02} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	
passes $p_{\mathrm{T}}^{\mathrm{miss}}$ filters	$1.6^{+0.02}_{-0.02} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	
$p_{\mathrm{T}}^{\mathrm{miss}} > 120 \mathrm{GeV}$	$1.5^{+0.02}_{-0.02} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	
$\geq 1$ jet with $p_T > 110 \text{GeV}$ and $ \eta  < 2.4$	$1.4^{+0.02}_{-0.02} \times 10^{-1}$	$1.4^{+0.01}_{-0.01} \times 10^{-1}$	$1.4^{+0.01}_{-0.01} \times 10^{-1}$	
==0 pairs of jets with $\Delta \phi_{\rm iet, jet} > 2.5$	$1.2^{+0.02}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{-0.01}_{-0.01} \times 10^{-1}$	
$ \Delta\phi({ m leading jet},ar{p}_{ m T}^{ m miss}) >0.5$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{-0.01}_{-0.01} \times 10^{-1}$	
$\geq 1 \text{ track with }  \eta  < 2.1$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	
$\geq 1 \text{ track with } p_{\mathrm{T}} > 55 \mathrm{GeV}$	$1.0^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	
≥ 1 track passing fiducial selections	$7.5^{+0.14}_{-0.14} \times 10^{-2}$	$8.7^{+0.08}_{-0.08} \times 10^{-2}$	$8.7^{+0.08}_{-0.08} \times 10^{-2}$	
$\geq 1$ track with $\geq 4$ pixel hits	$5.3^{+0.10}_{-0.10} \times 10^{-2}$	$7.0^{+0.07}_{-0.07} \times 10^{-2}$	$6.9^{+0.07}_{-0.07} \times 10^{-2}$	
$\geq 1$ track with no missing inner hits	$5.2^{+0.10}_{-0.10} \times 10^{-2}$	$4.8^{+0.06}_{-0.06} \times 10^{-2}$	$4.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1$ track with no missing middle hits	$4.6^{+0.10}_{-0.10} \times 10^{-2}$	$4.8^{+0.06}_{-0.06} \times 10^{-2}$	$4.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1$ track with relative track isolation $< 5\%$	$3.8^{+0.10}_{-0.10} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1 \text{ track with }  d_{xy}  < 0.02 \text{ cm}$	$3.8^{+0.10}_{-0.10} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1 \text{ track with }  d_z  < 0.5 \text{ cm}$	$3.8^{+0.10}_{-0.10} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1 \text{ track with } \Delta R(\text{track, jet}) > 0.5$	$3.8^{+0.10}_{-0.10} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1 \text{ track with } \Delta R(\text{track}, \text{electron}) > 0.15$	$3.3^{+0.08}_{-0.08} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1 \text{ track with } \Delta R(\text{track}, \text{muon}) > 0.15$	$1.4^{+0.05}_{-0.05} \times 10^{-2}$	$ 2.5^{+0.05}_{-0.05} \times 10^{-2} $	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	
$\geq 1 \text{ track with } \Delta R(\text{track}, \tau_{\text{h}}) > 0.15$	$1.4^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	
$\geq 1 \text{ track with } E_{\text{calo}} < 10 \text{GeV}$	$1.3^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	
$\geq 1$ track with $\geq 3$ missing outer hits	$4.6^{+0.31}_{-0.32} \times 10^{-3}$	$5.7^{+0.22}_{-0.22} \times 10^{-3}$	$6.3^{+0.23}_{-0.23} \times 10^{-3}$	
$\geq 1$ track with 4 layers	$7.1^{+1.36}_{-1.36} \times 10^{-4}$	$\begin{array}{c} -0.022 \\ 5.7_{-0.22}^{+0.22} \times 10^{-3} \\ 6.7_{-0.76}^{+0.76} \times 10^{-4} \end{array}$	$ \begin{array}{c} 6.3_{-0.23}^{+0.23} \times 10^{-3} \\ 7.7_{-0.81}^{+0.81} \times 10^{-4} \\ 8.4_{-0.85}^{+0.85} \times 10^{-4} \end{array} $	
$\geq 1$ track with 5 layers	$4.8^{+1.02}_{-1.02} \times 10^{-4}$	$8.7^{+0.87}_{-0.87} \times 10^{-4}$	$8.4^{+0.85}_{-0.85} \times 10^{-4}$	
$\geq 1$ track with $\geq 6$ layers	$3.4^{+0.27}_{-0.27} \times 10^{-3}$	$4.0^{+0.18}_{-0.18} \times 10^{-3}$	$4.5^{+0.20}_{-0.20} \times 10^{-3}$	

Table 2: Cutflow comparison for 700 GeV, 1000 cm, region 2018A

	700 GeV, 1000 cm, region 2018B			
Cut	$\epsilon_i^{ ext{CMS}}$	$\epsilon_i^{\mathrm{sim}}$ , HEPMC	$\epsilon_i^{\mathrm{sim}}$ , HEPMC, no pileup	
total	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	
trigger	$1.6^{+0.02}_{-0.02} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	
passes $p_{\mathrm{T}}^{\mathrm{miss}}$ filters	$ \begin{array}{c c} 1.6^{+0.02}_{-0.02} \times 10^{-1} \\ 1.6^{+0.02}_{-0.02} \times 10^{-1} \end{array} $	$1.8^{+0.01}_{-0.01} \times 10^{-1}$ $1.8^{+0.01}_{-0.01} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	
$p_{\mathrm{T}}^{\mathrm{miss}} > 120\mathrm{GeV}$	$1.5^{+0.02}_{-0.02} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	$1.8^{+0.01}_{-0.01} \times 10^{-1}$	
$\geq 1$ jet with $p_{\mathrm{T}} > 110\mathrm{GeV}$ and $ \eta  < 2.4$	$1.3^{+0.02}_{-0.02} \times 10^{-1}$	$1.4^{+0.01}_{-0.01} \times 10^{-1}$	$1.4^{+0.01}_{-0.01} \times 10^{-1}$	
==0 pairs of jets with $\Delta \phi_{\rm jet,\ jet} > 2.5$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	
$ \Delta\phi({ m leading\ jet}, ar{p}_{ m T}^{ m miss})  > 0.5$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	
$\geq 1$ track with $ \eta  < 2.1$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	$1.2^{+0.01}_{-0.01} \times 10^{-1}$	
$\geq 1 \text{ track with } p_{\mathrm{T}} > 55 \mathrm{GeV}$	$1.0^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	
$\geq 1$ track passing fiducial selections	$7.5^{+0.13}_{-0.13} \times 10^{-2}$	$8.7^{+0.08}_{-0.08} \times 10^{-2}$	$8.7^{+0.08}_{-0.08} \times 10^{-2}$	
$\geq 1$ track with $\geq 4$ pixel hits	$5.3^{+0.11}_{-0.11} \times 10^{-2}$	$7.0^{+0.07}_{-0.07} \times 10^{-2}$	$6.9^{+0.07}_{-0.07} \times 10^{-2}$	
$\geq 1$ track with no missing inner hits	$5.2^{+0.11}_{-0.11} \times 10^{-2}$	$4.8^{+0.06}_{-0.06} \times 10^{-2}$	$4.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1$ track with no missing middle hits	$4.6^{+0.09}_{-0.09} \times 10^{-2}$	$4.8^{+0.06}_{-0.06} \times 10^{-2}$	$4.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1$ track with relative track isolation $< 5\%$	$3.9^{+0.09}_{-0.09} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1 \text{ track with }  d_{xy}  < 0.02  \text{cm}$	$3.9^{+0.09}_{-0.09} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{-0.06}_{-0.06} \times 10^{-2}$	
$\geq 1 \text{ track with }  d_z  < 0.5 \mathrm{cm}$	$3.9^{+0.09}_{-0.09} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1$ track with $\Delta R(\text{track, jet}) > 0.5$	$3.8^{+0.09}_{-0.09} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1$ track with $\Delta R(\text{track}, \text{electron}) > 0.15$	$3.3^{+0.07}_{-0.07} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$	$3.8^{+0.06}_{-0.06} \times 10^{-2}$	
$\geq 1 \text{ track with } \Delta R(\text{track, muon}) > 0.15$	$1.4^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	
$\geq 1 \text{ track with } \Delta R(\text{track}, \tau_{\text{h}}) > 0.15$	$1.4^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	
$\geq 1 \text{ track with } E_{\text{calo}} < 10 \text{GeV}$	$1.4^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	$2.5^{+0.05}_{-0.05} \times 10^{-2}$	
$\geq 1$ track with $\geq 3$ missing outer hits	$4.6^{+0.30}_{-0.30} \times 10^{-3}$	$5.7^{+0.22}_{-0.22} \times 10^{-3}$	$6.3^{+0.23}_{-0.23} \times 10^{-3}$	
$\phi(p_{\rm T}^{\rm miss}) < -1.6 \text{ or } \phi(p_{\rm T}^{\rm miss}) > -0.6$	$3.8^{+0.28}_{-0.28} \times 10^{-3}$	$4.9^{+0.20}_{-0.20} \times 10^{-3}$	$5.3^{+0.21}_{-0.21} \times 10^{-3}$	
$\geq 1$ track with 4 layers	$6.5^{+1.11}_{-1.11} \times 10^{-4}$	$5.9^{+0.71}_{-0.71} \times 10^{-4}$	$6.6^{+0.75}_{-0.75} \times 10^{-4}$	
$\geq 1$ track with 5 layers	$\begin{array}{ c c c }\hline 4.3^{+0.93}_{-0.93} \times 10^{-4} \\ 2.8^{+0.24}_{-0.24} \times 10^{-3} \\ \hline \end{array}$	$7.2_{-0.78}^{+0.178} \times 10^{-4} 3.4_{-0.17}^{+0.17} \times 10^{-3}$	$7.1_{-0.78}^{+0.78} \times 10^{-4} 3.7_{-0.18}^{+0.18} \times 10^{-3}$	
$\geq 1 \text{ track with } \geq 6 \text{ layers}$	$2.8^{+0.24}_{-0.24} \times 10^{-3}$	$3.4^{+0.17}_{-0.17} \times 10^{-3}$	$3.7^{+0.16}_{-0.18} \times 10^{-3}$	

Table 3: Cutflow comparison for 700 GeV, 1000 cm, region 2018B