Cut	300 GeV, 10 cm, region 2017		
	ϵ_i^{CMS}	ϵ_i^{sim}, MLM	ϵ_i^{sim}, MLM, no pileup
total	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$
trigger	$1.3^{+0.02}_{-0.02} \times 10^{-1}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
passes $p_{\text{T}}^{\text{miss}}$ filters	$1.3^{+0.02}_{-0.02} \times 10^{-1}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
$p_{\text{T}}^{\text{miss}} > 120\,\text{GeV}$	$1.3^{+0.02}_{-0.02} \times 10^{-1}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
≥ 1 jet with $p_{\text{T}} > 110\,\text{GeV}$ and $\lvert\eta\rvert < 2.4$	$8.0^{+0.13}_{-0.13} \times 10^{-2}$	$5.5^{+0.07}_{-0.07} \times 10^{-2}$	$5.6^{+0.07}_{-0.07} \times 10^{-2}$
==0 pairs of jets with $\Delta\phi_{\text{jet, jet}} > 2.5$	$7.0^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
$\lvert\Delta\phi(\text{leading jet}, \vec{p}_{\text{T}}^{\text{miss}})\rvert > 0.5$	$7.0^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
≥ 1 track with $\lvert\eta\rvert < 2.1$	$6.8^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
≥ 1 track with $p_{\text{T}} > 55\,\text{GeV}$	$3.2^{+0.08}_{-0.08} \times 10^{-2}$	$4.5^{+0.07}_{-0.07} \times 10^{-2}$	$4.5^{+0.07}_{-0.07} \times 10^{-2}$
≥ 1 track passing fiducial selections	$2.2^{+0.07}_{-0.07} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$
≥ 1 track with ≥ 4 pixel hits	$1.3^{+0.05}_{-0.05} \times 10^{-2}$	$1.4^{+0.04}_{-0.04} \times 10^{-2}$	$1.5^{+0.04}_{-0.04} \times 10^{-2}$
≥ 1 track with no missing inner hits	$1.3^{+0.05}_{-0.05} \times 10^{-2}$	$1.1^{+0.03}_{-0.03} \times 10^{-2}$	$1.2^{+0.03}_{-0.03} \times 10^{-2}$
≥ 1 track with no missing middle hits	$1.2^{+0.05}_{-0.05} \times 10^{-2}$	$1.1^{+0.03}_{-0.03} \times 10^{-2}$	$1.2^{+0.03}_{-0.03} \times 10^{-2}$
≥ 1 track with relative track isolation $< 5\%$	$5.8^{+0.34}_{-0.34} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\lvert d_{\text{xy}}\rvert < 0.02\,\text{cm}$	$5.7^{+0.34}_{-0.34} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\lvert d_z\rvert < 0.5\,\text{cm}$	$5.7^{+0.34}_{-0.34} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\Delta R(\text{track}, \text{jet}) > 0.5$	$5.5^{+0.33}_{-0.33} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\Delta R(\text{track}, \text{electron}) > 0.15$	$5.4^{+0.33}_{-0.33} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\Delta R(\text{track}, \text{muon}) > 0.15$	$5.4^{+0.33}_{-0.33} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\Delta R(\text{track}, \tau_{\text{h}}) > 0.15$	$5.4^{+0.33}_{-0.33} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $E_{\text{calo}} < 10\,\text{GeV}$	$5.3^{+0.33}_{-0.33} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with ≥ 3 missing outer hits	$5.2^{+0.33}_{-0.33} \times 10^{-3}$	$4.2^{+0.21}_{-0.21} \times 10^{-3}$	$4.5^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track 4 layers	$3.0^{+0.25}_{-0.25} \times 10^{-3}$	$1.8^{+0.14}_{-0.14} \times 10^{-3}$	$2.0^{+0.14}_{-0.14} \times 10^{-3}$
≥ 1 track 5 layers	$1.2^{+0.15}_{-0.15} \times 10^{-3}$	$1.1^{+0.11}_{-0.11} \times 10^{-3}$	$9.5^{+1.01}_{-1.01} \times 10^{-4}$
≥ 1 track with ≥ 6 layers	$1.0^{+0.15}_{-0.15} \times 10^{-3}$	$1.2^{+0.11}_{-0.11} \times 10^{-3}$	$1.5^{+0.13}_{-0.13} \times 10^{-3}$

Table 1: Cutflow comparison for 300 GeV, 10 cm, region 2017

Cut	300 GeV, 10 cm, region 2018A		
	ϵ_i^{CMS}	ϵ_i^{sim}, MLM	ϵ_i^{sim}, MLM, no pileup
total	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$
trigger	$9.1^{+0.13}_{-0.13} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
passes $p_{\text{T}}^{\text{miss}}$ filters	$9.1^{+0.13}_{-0.13} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
$p_{\text{T}}^{\text{miss}} > 120\,\text{GeV}$	$8.9^{+0.13}_{-0.13} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
≥ 1 jet with $p_{\text{T}} > 110\,\text{GeV}$ and $\lvert\eta\rvert < 2.4$	$8.0^{+0.13}_{-0.13} \times 10^{-2}$	$5.5^{+0.07}_{-0.07} \times 10^{-2}$	$5.6^{+0.07}_{-0.07} \times 10^{-2}$
==0 pairs of jets with $\Delta\phi_{\text{jet, jet}} > 2.5$	$7.0^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
$\lvert\Delta\phi(\text{leading jet}, \vec{p}_{\text{T}}^{\text{miss}})\rvert > 0.5$	$7.0^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
≥ 1 track with $\lvert\eta\rvert < 2.1$	$6.8^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
≥ 1 track with $p_{\text{T}} > 55\,\text{GeV}$	$3.2^{+0.08}_{-0.08} \times 10^{-2}$	$4.5^{+0.07}_{-0.07} \times 10^{-2}$	$4.5^{+0.07}_{-0.07} \times 10^{-2}$
≥ 1 track passing fiducial selections	$2.0^{+0.06}_{-0.06} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$
≥ 1 track with ≥ 4 pixel hits	$1.1^{+0.05}_{-0.05} \times 10^{-2}$	$1.4^{+0.04}_{-0.04} \times 10^{-2}$	$1.5^{+0.04}_{-0.04} \times 10^{-2}$
≥ 1 track with no missing inner hits	$1.1^{+0.05}_{-0.05} \times 10^{-2}$	$1.1^{+0.03}_{-0.03} \times 10^{-2}$	$1.2^{+0.03}_{-0.03} \times 10^{-2}$
≥ 1 track with no missing middle hits	$1.0^{+0.05}_{-0.05} \times 10^{-2}$	$1.1^{+0.03}_{-0.03} \times 10^{-2}$	$1.2^{+0.03}_{-0.03} \times 10^{-2}$
≥ 1 track with relative track isolation $< 5\%$	$5.1^{+0.32}_{-0.32} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\lvert d_{\text{xy}}\rvert < 0.02\,\text{cm}$	$5.1^{+0.32}_{-0.32} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\lvert d_z\rvert < 0.5\,\text{cm}$	$5.1^{+0.32}_{-0.32} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\Delta R(\text{track}, \text{jet}) > 0.5$	$5.0^{+0.32}_{-0.32} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\Delta R(\text{track}, \text{electron}) > 0.15$	$4.9^{+0.31}_{-0.31} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\Delta R(\text{track}, \text{muon}) > 0.15$	$4.9^{+0.31}_{-0.31} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\Delta R(\text{track}, \tau_{\text{h}}) > 0.15$	$4.9^{+0.31}_{-0.31} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $E_{\text{calo}} < 10\,\text{GeV}$	$4.8^{+0.31}_{-0.31} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with ≥ 3 missing outer hits	$4.8^{+0.31}_{-0.31} \times 10^{-3}$	$4.2^{+0.21}_{-0.21} \times 10^{-3}$	$4.5^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track 4 layers	$2.6^{+0.23}_{-0.23} \times 10^{-3}$	$1.9^{+0.14}_{-0.14} \times 10^{-3}$	$2.0^{+0.14}_{-0.14} \times 10^{-3}$
≥ 1 track 5 layers	$1.1^{+0.15}_{-0.15} \times 10^{-3}$	$1.1^{+0.11}_{-0.11} \times 10^{-3}$	$9.9^{+1.02}_{-1.02} \times 10^{-4}$
≥ 1 track with ≥ 6 layers	$1.1^{+0.15}_{-0.15} \times 10^{-3}$	$1.2^{+0.11}_{-0.11} \times 10^{-3}$	$1.6^{+0.13}_{-0.13} \times 10^{-3}$

Table 2: Cutflow comparison for 300 GeV, 10 cm, region 2018A

Cut	300 GeV, 10 cm, region 2018B		
	ϵ_i^{CMS}	ϵ_i^{sim}, MLM	ϵ_i^{sim}, MLM, no pileup
total	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$
trigger	$9.1^{+0.14}_{-0.14} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
passes $p_{\text{T}}^{\text{miss}}$ filters	$9.1^{+0.14}_{-0.14} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
$p_{\text{T}}^{\text{miss}} > 120\,\text{GeV}$	$8.9^{+0.13}_{-0.13} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$	$8.2^{+0.09}_{-0.09} \times 10^{-2}$
≥ 1 jet with $p_{\text{T}} > 110\,\text{GeV}$ and $\lvert\eta\rvert < 2.4$	$8.0^{+0.13}_{-0.13} \times 10^{-2}$	$5.5^{+0.07}_{-0.07} \times 10^{-2}$	$5.6^{+0.07}_{-0.07} \times 10^{-2}$
==0 pairs of jets with $\Delta\phi_{\text{jet, jet}} > 2.5$	$7.0^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
$\lvert\Delta\phi(\text{leading jet}, \vec{p}_{\text{T}}^{\text{miss}})\rvert > 0.5$	$7.0^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
≥ 1 track with $\lvert\eta\rvert < 2.1$	$6.8^{+0.12}_{-0.12} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$	$4.8^{+0.07}_{-0.07} \times 10^{-2}$
≥ 1 track with $p_{\text{T}} > 55\,\text{GeV}$	$3.2^{+0.08}_{-0.08} \times 10^{-2}$	$4.5^{+0.07}_{-0.07} \times 10^{-2}$	$4.5^{+0.07}_{-0.07} \times 10^{-2}$
≥ 1 track passing fiducial selections	$2.1^{+0.06}_{-0.06} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$	$3.7^{+0.06}_{-0.06} \times 10^{-2}$
≥ 1 track with ≥ 4 pixel hits	$1.1^{+0.05}_{-0.05} \times 10^{-2}$	$1.4^{+0.04}_{-0.04} \times 10^{-2}$	$1.5^{+0.04}_{-0.04} \times 10^{-2}$
≥ 1 track with no missing inner hits	$1.1^{+0.05}_{-0.05} \times 10^{-2}$	$1.1^{+0.03}_{-0.03} \times 10^{-2}$	$1.2^{+0.03}_{-0.03} \times 10^{-2}$
≥ 1 track with no missing middle hits	$1.0^{+0.05}_{-0.05} \times 10^{-2}$	$1.1^{+0.03}_{-0.03} \times 10^{-2}$	$1.2^{+0.03}_{-0.03} \times 10^{-2}$
≥ 1 track with relative track isolation $< 5\%$	$5.1^{+0.32}_{-0.32} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\lvert d_{\text{xy}}\rvert < 0.02\,\text{cm}$	$5.1^{+0.32}_{-0.32} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\lvert d_z\rvert < 0.5\,\text{cm}$	$5.1^{+0.32}_{-0.32} \times 10^{-3}$	$4.4^{+0.22}_{-0.22} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\Delta R(\text{track}, \text{jet}) > 0.5$	$5.0^{+0.32}_{-0.32} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.7^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\Delta R(\text{track}, \text{electron}) > 0.15$	$4.9^{+0.31}_{-0.31} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\Delta R(\text{track}, \text{muon}) > 0.15$	$4.8^{+0.31}_{-0.31} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $\Delta R(\text{track}, \tau_{\text{h}}) > 0.15$	$4.8^{+0.31}_{-0.31} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with $E_{\text{calo}} < 10\,\text{GeV}$	$4.8^{+0.31}_{-0.31} \times 10^{-3}$	$4.3^{+0.21}_{-0.21} \times 10^{-3}$	$4.6^{+0.22}_{-0.22} \times 10^{-3}$
≥ 1 track with ≥ 3 missing outer hits	$4.7^{+0.31}_{-0.31} \times 10^{-3}$	$4.2^{+0.21}_{-0.21} \times 10^{-3}$	$4.5^{+0.22}_{-0.22} \times 10^{-3}$
$\phi(p_{\text{T}}^{\text{miss}}) < -1.6$ or $\phi(p_{\text{T}}^{\text{miss}}) > -0.6$	$4.0^{+0.28}_{-0.28} \times 10^{-3}$	$3.5^{+0.19}_{-0.19} \times 10^{-3}$	$3.7^{+0.20}_{-0.20} \times 10^{-3}$
≥ 1 track 4 layers	$2.2^{+0.21}_{-0.21} \times 10^{-3}$	$1.5^{+0.13}_{-0.13} \times 10^{-3}$	$1.7^{+0.13}_{-0.13} \times 10^{-3}$
≥ 1 track 5 layers	$9.4^{+1.39}_{-1.39} \times 10^{-4}$	$9.1^{+0.98}_{-0.98} \times 10^{-4}$	$7.6^{+0.90}_{-0.90} \times 10^{-4}$
≥ 1 track with ≥ 6 layers	$9.2^{+1.34}_{-1.34} \times 10^{-4}$	$10.0^{+1.03}_{-1.03} \times 10^{-4}$	$1.3^{+0.12}_{-0.12} \times 10^{-3}$

Table 3: Cutflow comparison for 300 GeV, 10 cm, region 2018B