

Cut	700 GeV, 10 cm, region 2017		
	$\epsilon_i^{\text{CMS}}$	$\epsilon_i^{\text{sim}}, \text{HEPMC}$	$\epsilon_i^{\text{sim}}, \text{HEPMC, no pileup}$
total	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$
trigger	$1.8^{+0.02}_{-0.02} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$
passes $p_T^{\text{miss}}$ filters	$1.8^{+0.02}_{-0.02} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$
$p_T^{\text{miss}} > 120 \text{ GeV}$	$1.7^{+0.02}_{-0.02} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$
$\geq 1$ jet with $p_T > 110 \text{ GeV}$ and $ \eta  < 2.4$	$1.3^{+0.02}_{-0.02} \times 10^{-1}$	$1.3^{+0.01}_{-0.01} \times 10^{-1}$	$1.3^{+0.01}_{-0.01} \times 10^{-1}$
$=0$ pairs of jets with $\Delta\phi_{\text{jet, jet}} > 2.5$	$1.1^{+0.02}_{-0.02} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$
$ \Delta\phi(\text{leading jet}, p_T^{\text{miss}})  > 0.5$	$1.1^{+0.02}_{-0.02} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$
$\geq 1$ track with $ \eta  < 2.1$	$1.1^{+0.02}_{-0.02} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$
$\geq 1$ track with $p_T > 55 \text{ GeV}$	$4.8^{+0.10}_{-0.10} \times 10^{-2}$	$4.7^{+0.06}_{-0.06} \times 10^{-2}$	$4.7^{+0.06}_{-0.06} \times 10^{-2}$
$\geq 1$ track passing fiducial selections	$3.2^{+0.09}_{-0.09} \times 10^{-2}$	$3.6^{+0.05}_{-0.05} \times 10^{-2}$	$3.6^{+0.05}_{-0.05} \times 10^{-2}$
$\geq 1$ track with $\geq 4$ pixel hits	$1.7^{+0.05}_{-0.05} \times 10^{-2}$	$2.6^{+0.05}_{-0.05} \times 10^{-2}$	$2.6^{+0.05}_{-0.05} \times 10^{-2}$
$\geq 1$ track with no missing inner hits	$1.7^{+0.06}_{-0.06} \times 10^{-2}$	$2.0^{+0.04}_{-0.04} \times 10^{-2}$	$2.0^{+0.04}_{-0.04} \times 10^{-2}$
$\geq 1$ track with no missing middle hits	$1.6^{+0.06}_{-0.06} \times 10^{-2}$	$2.0^{+0.04}_{-0.04} \times 10^{-2}$	$2.0^{+0.04}_{-0.04} \times 10^{-2}$
$\geq 1$ track with relative track isolation $< 5\%$	$5.3^{+0.33}_{-0.33} \times 10^{-3}$	$6.2^{+0.23}_{-0.23} \times 10^{-3}$	$5.9^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $ d_{xy}  < 0.02 \text{ cm}$	$5.3^{+0.33}_{-0.33} \times 10^{-3}$	$6.2^{+0.23}_{-0.23} \times 10^{-3}$	$5.9^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $ d_z  < 0.5 \text{ cm}$	$5.3^{+0.33}_{-0.33} \times 10^{-3}$	$6.2^{+0.23}_{-0.23} \times 10^{-3}$	$5.9^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, jet}) > 0.5$	$5.1^{+0.33}_{-0.33} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, electron}) > 0.15$	$5.0^{+0.31}_{-0.31} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, muon}) > 0.15$	$5.0^{+0.31}_{-0.31} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, } \tau_h) > 0.15$	$5.0^{+0.31}_{-0.31} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $E_{\text{calo}} < 10 \text{ GeV}$	$4.9^{+0.31}_{-0.31} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\geq 3$ missing outer hits	$4.9^{+0.31}_{-0.31} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track 4 layers	$3.0^{+0.24}_{-0.24} \times 10^{-3}$	$3.4^{+0.17}_{-0.17} \times 10^{-3}$	$3.2^{+0.16}_{-0.16} \times 10^{-3}$
$\geq 1$ track 5 layers	$1.1^{+0.16}_{-0.16} \times 10^{-3}$	$1.3^{+0.11}_{-0.11} \times 10^{-3}$	$1.2^{+0.10}_{-0.10} \times 10^{-3}$
$\geq 1$ track $\geq 6$ layers	$8.1^{+1.21}_{-1.21} \times 10^{-4}$	$1.2^{+0.10}_{-0.10} \times 10^{-3}$	$1.3^{+0.10}_{-0.10} \times 10^{-3}$

Table 1: Cutflow comparison for 700 GeV, 10 cm, region 2017

Cut	700 GeV, 10 cm, region 2018A		
	$\epsilon_i^{\text{CMS}}$	$\epsilon_i^{\text{sim}}, \text{HEPMC}$	$\epsilon_i^{\text{sim}}, \text{HEPMC, no pileup}$
total	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$
trigger	$1.5^{+0.02}_{-0.02} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$
passes $p_T^{\text{miss}}$ filters	$1.4^{+0.02}_{-0.02} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$
$p_T^{\text{miss}} > 120 \text{ GeV}$	$1.4^{+0.02}_{-0.02} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$
$\geq 1$ jet with $p_T > 110 \text{ GeV}$ and $ \eta  < 2.4$	$1.3^{+0.02}_{-0.02} \times 10^{-1}$	$1.3^{+0.01}_{-0.01} \times 10^{-1}$	$1.3^{+0.01}_{-0.01} \times 10^{-1}$
$=0$ pairs of jets with $\Delta\phi_{\text{jet, jet}} > 2.5$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$
$ \Delta\phi(\text{leading jet}, p_T^{\text{miss}})  > 0.5$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$
$\geq 1$ track with $ \eta  < 2.1$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$
$\geq 1$ track with $p_T > 55 \text{ GeV}$	$4.7^{+0.10}_{-0.10} \times 10^{-2}$	$4.7^{+0.06}_{-0.06} \times 10^{-2}$	$4.7^{+0.06}_{-0.06} \times 10^{-2}$
$\geq 1$ track passing fiducial selections	$3.1^{+0.08}_{-0.08} \times 10^{-2}$	$3.6^{+0.05}_{-0.05} \times 10^{-2}$	$3.6^{+0.05}_{-0.05} \times 10^{-2}$
$\geq 1$ track with $\geq 4$ pixel hits	$1.7^{+0.06}_{-0.06} \times 10^{-2}$	$2.6^{+0.05}_{-0.05} \times 10^{-2}$	$2.6^{+0.05}_{-0.05} \times 10^{-2}$
$\geq 1$ track with no missing inner hits	$1.7^{+0.06}_{-0.06} \times 10^{-2}$	$2.0^{+0.04}_{-0.04} \times 10^{-2}$	$2.0^{+0.04}_{-0.04} \times 10^{-2}$
$\geq 1$ track with no missing middle hits	$1.5^{+0.05}_{-0.05} \times 10^{-2}$	$2.0^{+0.04}_{-0.04} \times 10^{-2}$	$2.0^{+0.04}_{-0.04} \times 10^{-2}$
$\geq 1$ track with relative track isolation $< 5\%$	$5.3^{+0.34}_{-0.34} \times 10^{-3}$	$6.2^{+0.23}_{-0.23} \times 10^{-3}$	$5.9^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $ d_{xy}  < 0.02 \text{ cm}$	$5.1^{+0.34}_{-0.34} \times 10^{-3}$	$6.2^{+0.23}_{-0.23} \times 10^{-3}$	$5.9^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $ d_z  < 0.5 \text{ cm}$	$5.1^{+0.31}_{-0.31} \times 10^{-3}$	$6.2^{+0.23}_{-0.23} \times 10^{-3}$	$5.9^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, jet}) > 0.5$	$4.9^{+0.31}_{-0.31} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, electron}) > 0.15$	$4.7^{+0.31}_{-0.31} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, muon}) > 0.15$	$4.7^{+0.31}_{-0.31} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, } \tau_h) > 0.15$	$4.7^{+0.31}_{-0.31} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $E_{\text{calo}} < 10 \text{ GeV}$	$4.7^{+0.31}_{-0.31} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\geq 3$ missing outer hits	$4.6^{+0.31}_{-0.31} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track 4 layers	$2.8^{+0.24}_{-0.24} \times 10^{-3}$	$3.4^{+0.17}_{-0.17} \times 10^{-3}$	$3.2^{+0.16}_{-0.16} \times 10^{-3}$
$\geq 1$ track 5 layers	$9.2^{+1.36}_{-1.36} \times 10^{-4}$	$1.3^{+0.11}_{-0.11} \times 10^{-3}$	$1.2^{+0.10}_{-0.10} \times 10^{-3}$
$\geq 1$ track $\geq 6$ layers	$9.5^{+1.36}_{-1.36} \times 10^{-4}$	$1.2^{+0.10}_{-0.10} \times 10^{-3}$	$1.2^{+0.10}_{-0.10} \times 10^{-3}$

Table 2: Cutflow comparison for 700 GeV, 10 cm, region 2018A

Cut	700 GeV, 10 cm, region 2018B		
	$\epsilon_i^{\text{CMS}}$	$\epsilon_i^{\text{sim}}, \text{HEPMC}$	$\epsilon_i^{\text{sim}}, \text{HEPMC, no pileup}$
total	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$	$1.0^{+0.00}_{-0.00}$
trigger	$1.5^{+0.02}_{-0.02} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$
passes $p_T^{\text{miss}}$ filters	$1.4^{+0.02}_{-0.02} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$
$p_T^{\text{miss}} > 120 \text{ GeV}$	$1.4^{+0.02}_{-0.02} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$	$1.5^{+0.01}_{-0.01} \times 10^{-1}$
$\geq 1$ jet with $p_T > 110 \text{ GeV}$ and $ \eta  < 2.4$	$1.3^{+0.02}_{-0.02} \times 10^{-1}$	$1.3^{+0.01}_{-0.01} \times 10^{-1}$	$1.3^{+0.01}_{-0.01} \times 10^{-1}$
$=0$ pairs of jets with $\Delta\phi_{\text{jet, jet}} > 2.5$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$
$ \Delta\phi(\text{leading jet}, p_T^{\text{miss}})  > 0.5$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$
$\geq 1$ track with $ \eta  < 2.1$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$	$1.1^{+0.01}_{-0.01} \times 10^{-1}$
$\geq 1$ track with $p_T > 55 \text{ GeV}$	$4.7^{+0.09}_{-0.09} \times 10^{-2}$	$4.7^{+0.06}_{-0.06} \times 10^{-2}$	$4.7^{+0.06}_{-0.06} \times 10^{-2}$
$\geq 1$ track passing fiducial selections	$3.1^{+0.07}_{-0.07} \times 10^{-2}$	$3.6^{+0.05}_{-0.05} \times 10^{-2}$	$3.6^{+0.05}_{-0.05} \times 10^{-2}$
$\geq 1$ track with $\geq 4$ pixel hits	$1.7^{+0.06}_{-0.06} \times 10^{-2}$	$2.6^{+0.05}_{-0.05} \times 10^{-2}$	$2.6^{+0.05}_{-0.05} \times 10^{-2}$
$\geq 1$ track with no missing inner hits	$1.7^{+0.06}_{-0.06} \times 10^{-2}$	$2.0^{+0.04}_{-0.04} \times 10^{-2}$	$2.0^{+0.04}_{-0.04} \times 10^{-2}$
$\geq 1$ track with no missing middle hits	$1.5^{+0.06}_{-0.06} \times 10^{-2}$	$2.0^{+0.04}_{-0.04} \times 10^{-2}$	$2.0^{+0.04}_{-0.04} \times 10^{-2}$
$\geq 1$ track with relative track isolation $< 5\%$	$5.3^{+0.33}_{-0.33} \times 10^{-3}$	$6.2^{+0.23}_{-0.23} \times 10^{-3}$	$5.9^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $ d_{xy}  < 0.02 \text{ cm}$	$5.2^{+0.33}_{-0.33} \times 10^{-3}$	$6.2^{+0.23}_{-0.23} \times 10^{-3}$	$5.9^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $ d_z  < 0.5 \text{ cm}$	$5.2^{+0.32}_{-0.32} \times 10^{-3}$	$6.2^{+0.23}_{-0.23} \times 10^{-3}$	$5.9^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, jet}) > 0.5$	$5.0^{+0.32}_{-0.32} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, electron}) > 0.15$	$4.8^{+0.32}_{-0.32} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, muon}) > 0.15$	$4.8^{+0.32}_{-0.32} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\Delta R(\text{track, } \tau_h) > 0.15$	$4.8^{+0.32}_{-0.32} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $E_{\text{calo}} < 10 \text{ GeV}$	$4.7^{+0.32}_{-0.32} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\geq 1$ track with $\geq 3$ missing outer hits	$4.7^{+0.32}_{-0.32} \times 10^{-3}$	$6.1^{+0.23}_{-0.23} \times 10^{-3}$	$5.8^{+0.22}_{-0.22} \times 10^{-3}$
$\phi(p_T^{\text{miss}}) < -1.6$ or $\phi(p_T^{\text{miss}}) > -0.6$	$3.8^{+0.28}_{-0.28} \times 10^{-3}$	$5.1^{+0.21}_{-0.21} \times 10^{-3}$	$5.0^{+0.21}_{-0.21} \times 10^{-3}$
$\geq 1$ track 4 layers	$2.3^{+0.22}_{-0.22} \times 10^{-3}$	$2.9^{+0.16}_{-0.16} \times 10^{-3}$	$2.7^{+0.15}_{-0.15} \times 10^{-3}$
$\geq 1$ track 5 layers	$7.2^{+1.30}_{-1.30} \times 10^{-4}$	$1.1^{+0.10}_{-0.10} \times 10^{-3}$	$1.1^{+0.10}_{-0.10} \times 10^{-3}$
$\geq 1$ track $\geq 6$ layers	$8.0^{+1.30}_{-1.30} \times 10^{-4}$	$9.7^{+0.91}_{-0.91} \times 10^{-4}$	$1.1^{+0.10}_{-0.10} \times 10^{-3}$

Table 3: Cutflow comparison for 700 GeV, 10 cm, region 2018B