Cut	Count	Efficiency (%)
No cut	4285	
E_{EM} cut	4156	$96.99^{+0.25}_{-0.29}$
E_{HAD} cut	4198	$97.97^{+0.21}_{-0.23}$
COT hits cut	4283	$99.95^{+0.03}_{-0.06}$
d_0 cut	4262	$99.46^{+0.12}_{-0.14}$
Isolation cut	4103	$95.75^{+0.32}_{-0.32}$
Δx_{CMU} cut	4266	$99.56^{+0.10}_{-0.12}$
Δx_{CMP} cut	4206	$98.16^{+0.20}_{-0.22}$
All above cuts	3812	$88.96^{+0.47}_{-0.51}$
All cuts excl. isol.	3970	$92.65^{+0.39}_{-0.44}$
Sliding isol. cut	4159	$97.06^{+0.28}_{-0.26}$
All cuts (sliding isol.)	3862	$90.13^{+0.47}_{-0.46}$
χ^2 cut	4285	$100.00^{+0.00}_{-0.04}$
All cuts (χ^2)	3812	$88.96^{+0.47}_{-0.51}$
All track cuts	3894	$90.88^{+0.46}_{-0.47}$
All trk cuts excl. isol.	4055	$94.63^{+0.36}_{-0.37}$

TABLE I: Dataset bhmummP27: Muon ID efficiencies for CMUP

Cut	Count	Efficiency (%)
No cut	2754	
E_{EM} cut	2669	$96.91^{+0.33}_{-0.36}$
E_{HAD} cut	2688	$97.60^{+0.27}_{-0.31}$
COT hits cut	2753	$99.96^{+0.03}_{-0.08}$
d_0 cut	2746	$99.71^{+0.10}_{-0.14}$
Isolation cut	2645	$96.04^{+0.37}_{-0.41}$
Δx_{CMX} cut	2743	$99.60^{+0.11}_{-0.16}$
All above cuts	2498	$90.70^{+0.56}_{-0.62}$
All cuts excl. isol.	2593	$94.15^{+0.45}_{-0.48}$
Sliding isol. cut	2675	$97.13^{+0.31}_{-0.38}$
All cuts (sliding isol.)	2522	$91.58^{+0.54}_{-0.58}$
χ^2 cut	2754	$100.00^{+0.00}_{-0.07}$
All cuts (χ^2)	2498	$90.70^{+0.56}_{-0.62}$
All track cuts	2506	$90.99^{+0.56}_{-0.61}$
All trk cuts excl. isol.	2601	$94.44^{+0.45}_{-0.47}$

TABLE II: Dataset bhmummP27: Muon ID efficiencies for CMX

Cut	Count	Efficiency (%)
No cut	2206	
E_{EM} cut	2138	$96.92^{+0.37}_{-0.41}$
E_{HAD} cut	2159	$97.87^{+0.30}_{-0.34}$
COT hits cut	2205	$99.95^{+0.04}_{-0.10}$
d_0 cut	2202	$99.82^{+0.09}_{-0.14}$
Isolation cut	2116	$95.92^{+0.44}_{-0.49}$
Δx_{CMX} cut	2196	$99.55^{+0.15}_{-0.19}$
All above cuts	2005	$90.89^{+0.66}_{-0.70}$
All cuts excl. isol.	2083	$94.42^{+0.47}_{-0.55}$
Sliding isol. cut	2141	$97.05^{+0.38}_{-0.40}$
All cuts (sliding isol.)	2025	$91.80^{+0.64}_{-0.63}$
χ^2 cut	2206	$100.00^{+0.00}_{-0.08}$
All cuts (χ^2)	2005	$90.89^{+0.66}_{-0.70}$
All track cuts	2013	$91.25^{+0.59}_{-0.67}$
All trk cuts excl. isol.	2091	$94.79^{+0.45}_{-0.52}$

TABLE III: Dataset bhmummP27: Muon ID efficiencies for CMX Arches

Cut	Count	Efficiency (%)
No cut	448	
E_{EM} cut	435	$97.10^{+0.80}_{-1.05}$
E_{HAD} cut	438	$97.77^{+0.72}_{-0.94}$
COT hits cut	448	$100.00^{+0.00}_{-0.41}$
d_0 cut	444	$99.11^{+0.43}_{-0.69}$
Isolation cut	433	$96.65^{+0.86}_{-1.10}$
Δx_{CMX} cut	448	$100.00^{+0.00}_{-0.41}$
All above cuts	408	$91.07^{+1.41}_{-1.52}$
All cuts excl. isol.	422	$94.20^{+1.02}_{-1.33}$
Sliding isol. cut	438	$97.77^{+0.72}_{-0.94}$
All cuts (sliding isol.)	412	$91.96^{+1.30}_{-1.44}$
χ^2 cut	448	$100.00^{+0.00}_{-0.41}$
All cuts (χ^2)	408	$91.07^{+1.41}_{-1.52}$
All track cuts	408	$91.07^{+1.41}_{-1.52}$
All trk cuts excl. isol.	422	$94.20^{+1.02}_{-1.33}$

TABLE IV: Dataset bhmummP27: Muon ID efficiencies for CMX Miniskirt

Cut	Count	Efficiency (%)
No cut	100	
E_{EM} cut	96	$96.00^{+1.95}_{-3.13}$
E_{HAD} cut	91	$91.00^{+2.95}_{-3.70}$
COT hits cut	100	$100.00^{+0.00}_{-1.83}$
d_0 cut	100	$100.00^{+0.00}_{-1.83}$
Isolation cut	96	$96.00^{+1.95}_{-3.13}$
Δx_{CMX} cut	99	$99.00^{+0.90}_{-2.27}$
All above cuts	85	$85.00^{+3.48}_{-4.34}$
All cuts excl. isol.	88	$88.00^{+3.21}_{-4.21}$
Sliding isol. cut	96	$96.00^{+1.95}_{-3.13}$
All cuts (sliding isol.)	85	$85.00^{+3.48}_{-4.34}$
χ^2 cut	100	$100.00^{+0.00}_{-1.83}$
All cuts (χ^2)	85	$85.00^{+3.48}_{-4.34}$
All track cuts	85	$85.00^{+3.48}_{-4.34}$
All trk cuts excl. isol.	88	$88.00^{+3.21}_{-4.21}$

TABLE V: Dataset bhmummP27: Muon ID efficiencies for CMX Keystone

Cut	Count	Efficiency (%)
No cut	548	
E_{EM} cut	531	$96.90^{+0.71}_{-0.95}$
E_{HAD} cut	529	$96.53^{+0.78}_{-0.98}$
COT hits cut	548	$100.00^{+0.00}_{-0.34}$
d_0 cut	544	$99.27^{+0.36}_{-0.56}$
Isolation cut	529	$96.53^{+0.78}_{-0.98}$
Δx_{CMX} cut	547	$99.82^{+0.15}_{-0.42}$
All above cuts	493	$89.96^{+1.35}_{-1.39}$
All cuts excl. isol.	510	$93.07^{+1.17}_{-1.17}$
Sliding isol. cut	534	$97.45^{+0.65}_{-0.91}$
All cuts (sliding isol.)	497	$90.69^{+1.20}_{-1.34}$
χ^2 cut	548	$100.00^{+0.00}_{-0.34}$
All cuts (χ^2)	493	$89.96^{+1.35}_{-1.39}$
All track cuts	493	$89.96^{+1.35}_{-1.39}$
All trk cuts excl. isol.	510	$93.07^{+1.17}_{-1.17}$

TABLE VI: Dataset bhmummP27: Muon ID efficiencies for MiniKey

Cut	Count	Efficiency (%)
No cut	990	
E_{EM} cut	950	$95.96^{+0.67}_{-0.70}$
E_{HAD} cut	958	$96.77^{+0.55}_{-0.63}$
COT hits cut	990	$100.00^{+0.00}_{-0.19}$
d_0 cut	987	$99.70^{+0.17}_{-0.30}$
Isolation cut	944	$95.35^{+0.69}_{-0.77}$
Δx_{CMU} cut	987	$99.70^{+0.17}_{-0.30}$
All above cuts	887	$89.60^{+0.98}_{-1.07}$
All cuts excl. isol.	921	$93.03^{+0.77}_{-0.89}$
Sliding isol. cut	956	$96.57^{+0.55}_{-0.72}$
All cuts (sliding isol.)	899	$90.81^{+0.94}_{-1.01}$
χ^2 cut	990	$100.00^{+0.00}_{-0.19}$
All cuts (χ^2)	887	$89.60^{+0.98}_{-1.07}$
All track cuts	888	$89.70^{+0.98}_{-1.07}$
All trk cuts excl. isol.	922	$93.13^{+0.77}_{-0.89}$

TABLE VII: Dataset bhmummP27: Muon ID efficiencies for CMU-only

Cut	Count	Efficiency (%)
No cut	1125	
E_{EM} cut	1097	$97.51^{+0.46}_{-0.56}$
E_{HAD} cut	1099	$97.69^{+0.43}_{-0.55}$
COT hits cut	1125	$100.00^{+0.00}_{-0.16}$
d_0 cut	1120	$99.56^{+0.19}_{-0.30}$
Isolation cut	1065	$94.67^{+0.69}_{-0.77}$
Δx_{CMP} cut	1107	$98.40^{+0.35}_{-0.48}$
All above cuts	999	$88.80^{+0.99}_{-1.06}$
All cuts excl. isol.	1053	$93.60^{+0.69}_{-0.78}$
Sliding isol. cut	1084	$96.36^{+0.57}_{-0.60}$
All cuts (sliding isol.)	1016	$90.31^{+0.85}_{-1.00}$
χ^2 cut	1125	$100.00^{+0.00}_{-0.16}$
All cuts (χ^2)	999	$88.80^{+0.99}_{-1.06}$
All track cuts	1016	$90.31^{+0.85}_{-1.00}$
All trk cuts excl. isol.	1070	$95.11^{+0.64}_{-0.73}$

TABLE VIII: Dataset bhmummP27: Muon ID efficiencies for CMP-only

Cut	Count	Efficiency (%)
No cut	969	
E_{EM} cut	933	$96.28^{+0.64}_{-0.73}$
E_{HAD} cut	943	$97.32^{+0.49}_{-0.59}$
COT hits cut	960	$99.07^{+0.32}_{-0.41}$
d_0 cut	955	$98.56^{+0.39}_{-0.48}$
Isolation cut	901	$92.98^{+0.82}_{-0.94}$
Min E cut	925	$95.46^{+0.68}_{-0.78}$
All above cuts	821	$84.73^{+1.11}_{-1.28}$
All cuts excl. isol.	866	$89.37^{+1.01}_{-1.04}$
Sliding isol. cut	914	$94.32^{+0.74}_{-0.82}$
All cuts (sliding isol.)	833	$85.96^{+1.10}_{-1.25}$
χ^2 cut	969	$100.00^{+0.00}_{-0.19}$
All cuts (χ^2)	821	$84.73^{+1.11}_{-1.28}$

TABLE IX: Dataset bhmummP27: Muon ID efficiencies for CMIO

Cut	Count	Efficiency (%)
No cut	744	
E_{EM} cut	708	$95.16^{+0.79}_{-0.87}$
E_{HAD} cut	706	$94.89^{+0.76}_{-0.90}$
COT hits cut	744	$100.00^{+0.00}_{-0.25}$
d_0 cut	737	$99.06^{+0.33}_{-0.50}$
Isolation cut	682	$91.67^{+1.06}_{-1.19}$
Min E cut	739	$99.33^{+0.31}_{-0.48}$
All above cuts	647	$86.96^{+1.22}_{-1.32}$
All cuts excl. isol.	680	$91.40^{+1.03}_{-1.11}$
Sliding isol. cut	690	$92.74^{+0.96}_{-1.09}$
All cuts (sliding isol.)	653	$87.77^{+1.20}_{-1.34}$
χ^2 cut	744	$100.00^{+0.00}_{-0.25}$
All cuts (χ^2)	647	$86.96^{+1.22}_{-1.32}$

TABLE X: Dataset bhmummP27: Muon ID efficiencies for SCMIO

Category	Fiducial	w/ Stub	Efficiency (%)
CMUP	4718	4158	$88.13^{+0.47}_{-0.51}$
CMX	2813	2664	$94.70^{+0.44}_{-0.44}$
CMX Arches	2192	2134	$97.35^{+0.33}_{-0.41}$
CMX Miniskirt	511	435	$85.13^{+1.69}_{-1.83}$
CMX Keystone	110	95	$86.36^{+3.28}_{-4.14}$
CMU-only	1071	947	$88.42^{+0.98}_{-1.07}$
CMP-only	1260	1099	$87.22^{+0.91}_{-1.04}$
CMX MiniKey	621	530	$85.35^{+1.47}_{-1.65}$

TABLE XI: Dataset bhmummP27: Muon reconstruction efficiencies

1st leg	2nd leg	1st passes	both pass	Efficiency (%)
CMUP	CMUP	1409	1239	-
CMX	CMUP	1690	1558	$93.08^{+0.44}_{-0.39}$
CMUP	CMX	1797	1558	-
CMX	CMX	598	458	$86.71^{+0.67}_{-0.69}$
CMUP	ARCH	1425	1323	-
CMUP	MK	372	235	-
ARCH	ARCH	422	362	-
ARCH	MK	138	82	-
MK	ARCH	89	82	$92.65^{+0.62}_{-0.59}$
MK	MK	31	14	$72.67^{+2.09}_{-1.93}$

TABLE XII: Dataset bhmummP27: Muon L1 trigger efficiencies

Category	Events Passing	Efficiency (%)
Pass L1	1558	-
CMUP	1421	$98.20^{+0.36}_{-0.47}$
CMX	1330	$91.91^{+0.72}_{-0.74}$
CMUP-CMX	1306	-
CMUPA	1204	-
CMUPMK	217	-
CMUPARCH	1106	$91.86^{+0.77}_{-0.89}$
CMUP-MK	200	$92.17^{+1.88}_{-2.22}$

TABLE XIII: Dataset bhmummP27: Muon L2 trigger efficiencies

Category	Events Passing	Efficiency (%)
Pass L1	1558	-
CMUP-CMUP$_S$	1347	-
CMX-CMX$_S$	1249	-
CMUP-CMX-CMUP$_S$	1242	$93.38^{+0.71}_{-0.76}$
CMUP-CMX-CMX$_S$	1228	$86.42^{+0.94}_{-1.02}$
CMUP-CMX-CMX$_S$-A	1035	$85.96^{+1.00}_{-1.05}$
CMUP-CMX-CMX$_S$-MK	193	$88.94^{+2.17}_{-2.51}$

TABLE XIV: Dataset bhmummP27: Muon L2 SLAM trigger efficiencies

Category	Efficiency (%)
CMUP	$91.12^{+0.56}_{-0.62}$
CMX	$79.51^{+0.88}_{-0.92}$
ARCH	$84.88^{+0.92}_{-1.01}$
MK	$66.98^{+2.36}_{-2.48}$
CMUP$_S$	$86.65^{+0.79}_{-0.82}$
CMX$_S$	$74.76^{+1.00}_{-1.07}$
ARCH$_S$	$79.43^{+1.07}_{-1.11}$
MK$_S$	$64.64^{+2.44}_{-2.57}$

TABLE XVI: Dataset bhmummP27: Muon combined trigger efficiencies

Category	Events Passing	Efficiency (%)
Pass L2	1306	-
CMUP	1302	$99.69^{+0.15}_{-0.24}$
CMX	1303	$99.77^{+0.12}_{-0.22}$
CMUP-CMX	1299	-
CMUPA	1102	-
CMUPMK	200	-
CMUPARCH	1099	$99.73^{+0.14}_{-0.25}$
CMUP-MK	200	$100.00^{+0.00}_{-0.92}$

TABLE XV: Dataset bhmummP27: Muon L3 trigger efficiencies