

$\tau \rightarrow 3\mu$ trigger efficiencies



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Introduction

- ⇒ Used MC 2015, Sim09.
- ⇒ TCK: 0x6139160F.
- ⇒ All triggers used in Run2 are considered.
- ⇒ The selection: stripping + trutmaching (no L0 or HLT1 requirements).
- ⇒ Considered $IsMu\text{on}=2$ or 3.

IsMuon == 3 WITH TOS BUG!!

Name	Eff	Gain wrt. to previous
Hlt2TriMuonTau23MuDecision	0.76343	0.76343
Hlt2SingleMuonLowPTDecision	0.76372	0.00136
Hlt2CharmHadDpToPimPipPipTurbo	0.76444	0.00071
Hlt2SingleMuonDecision	0.76459	0.00015
Hlt2RareCharmD02KPiDecision	0.76474	0.00015
Hlt2LowMultDiMuon	0.76482	0.00008
Hlt2XcMuXForTauB2XcMuDecision	0.76482	0.0

How to read table

Example: Hlt2CharmHadDpToPimPipPipTurbo, 0.76444, 0.00071

Eff. of Hlt2CharmHadDpToPimPipPipTurbo || Hlt2SingleMuonLowPT || Hlt2TriMuonTau23Mu is 0.76444.

Gain of adding Hlt2CharmHadDpToPimPipPipTurbo to previous Hlt2SingleMuonLowPT || Hlt2TriMuonTau23Mu is 0.00071.

IsMuon == 3 WITH TOS BUG FIXED!!

Name	Eff	Gain wrt. to previous
Hlt2TriMuonTau23Mu	0.76343	0.763439
Hlt2SingleMuonLowPT	0.764768	0.001328
Hlt2CharmHadDpToPimPipPipTurbo	0.76515	0.00038
Hlt2RareCharmD02KPi	0.76528	0.00012
Hlt2SingleMuon	0.765369	0.00008
Hlt2LowMultDiMuon	0.765454	0.00006
Hlt2XcMuXForTauB2XcMu	0.765454	0.0

How to read table

Example: Hlt2CharmHadDpToPimPipPipTurbo, 0.76444, 0.00071

Eff. of Hlt2CharmHadDpToPimPipPipTurbo || Hlt2SingleMuonLowPT || Hlt2TriMuonTau23Mu is 0.76444.

Gain of adding Hlt2CharmHadDpToPimPipPipTurbo to previous Hlt2SingleMuonLowPT || Hlt2TriMuonTau23Mu is 0.00071.

IsMuon == 2 WITH TOS BUG!!

Name	Eff	Gain wrt. to previous
Hlt2CharmHadDpToPimPipPipTurbo	0.18769	0.18769
Hlt2SingleMuonD	0.25864	0.07095
Hlt2SingleMuonLowPT	0.27076	0.01212
Hlt2RareCharmD02KPi	0.27431	0.003543
Hlt2CharmHadDspToKpPimPip	0.27738	0.00307
Hlt2CharmHadInclSigc2PiLc2HHXBDT	0.279347	0.00195
Hlt2RareCharmD02MuMu	0.28121	0.00186
Hlt2LowMultDiMuon_PS	0.28279	0.00158
Hlt2TopoMu3Body	0.28400	0.001212
Hlt2PIDKs2PiPiLLTurboCalib	0.284568	0.00055

IsMuon == 2 WITH TOS BUG FIXED!!

Name	Eff	Gain wrt. to previous
Hlt2CharmHadDpToPimPipPipTurbo	0.22792	0.22792
Hlt2SingleMuon	0.28015	0.052231
Hlt2SingleMuonLowPT	0.28975	0.00960
Hlt2RareCharmD02KPi	0.293869	0.004115
Hlt2CharmHadDspToKpPimPipTurbo	0.297034	0.003165
Hlt2CharmHadInclSigc2PiLc2HHXBDT	0.29946	0.00242
Hlt2RareCharmD02MuMu	0.30115	0.00168
Hlt2LowMultDiMuon	0.302732	0.001582
Hlt2TopoMu3Body	0.303999	0.001266
Hlt2CharmHadDspToKmPipPipTurbo	0.30452	0.00052

Conclusions

- ⇒ For 2 IsMuon we are fucked up with TOS triggers...
- ⇒ We should probably add a trigger line asap!
- ⇒ Or maybe trigger on TIS?

