



Efficiency Comparison

EMTF Working Meeting

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Basics

- 2018 Emulator Changes
 - BX window changed from 3→2
 - 2-station tracks with different hit BX removed
 - dTheta ambiguity when multiple LCTs are in the same chamber resolved
 - Maximum dTheta for “Zone 0” (ring 1) changed from 8 to 4
 - Mode 9 promoted to DoubleMu and mode 12 demote to MuOpen
- Remove Bias
 - HLT_IsoMu27 or HLT_Mu50
 - Only use RECO muons
 - In event: $n\text{RecoMuMatchHLT} \geq 2$
 - In event: $n\text{RecoMuMatchHLT} == 1$ && the RECO mu reco_trig_ID < 0
- 2017
 - SingleMu: 5,274,142 events
- 2018
 - SingleMu: 5,207,722 events

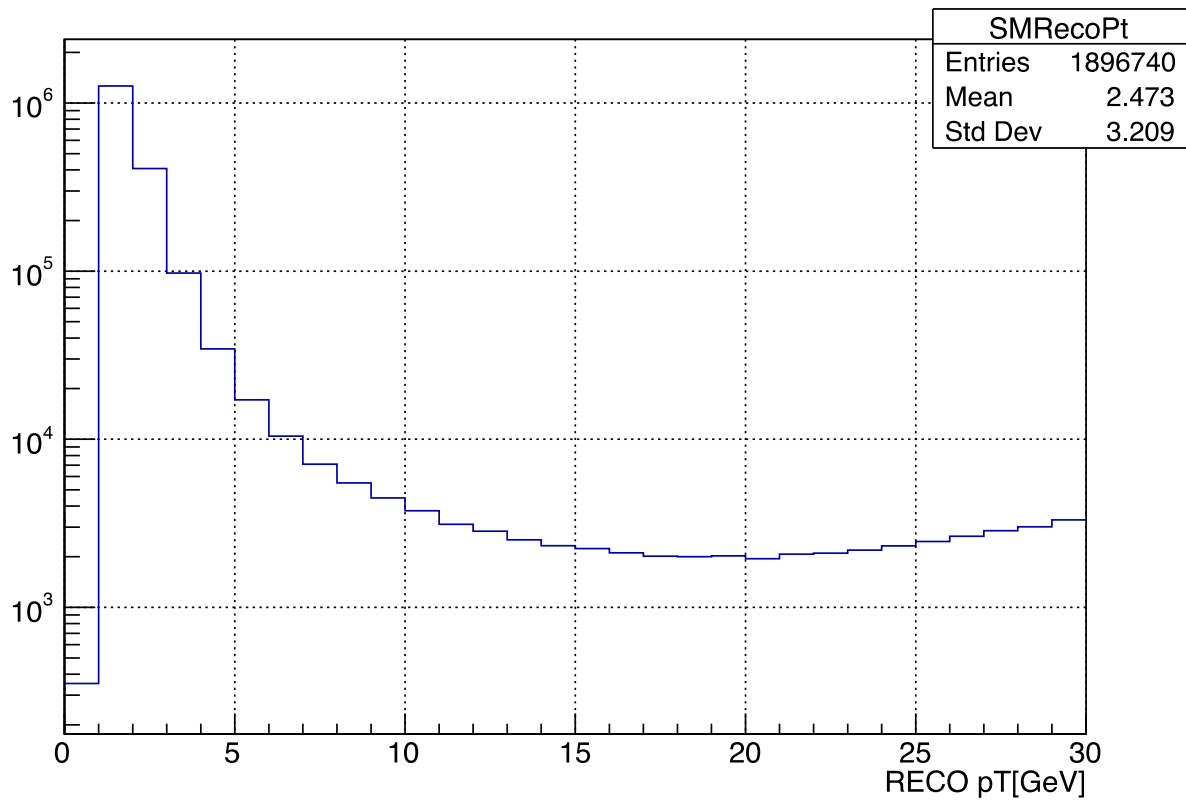
Muon Quality from uGMT

- SingleMu Quality ($Q \geq 12$)
 - EMTF mode 15, 14, 13, 11
- DoubleMu Quality ($Q \geq 8$)
 - EMTF mode 9, 10, 7
 - EMTF mode 15, 14, 13, 11
- MuOpen Quality ($Q \geq 4$)
 - EMTF mode 12, 6, 5, 3
 - EMTF mode 9, 10, 7
 - EMTF mode 15, 14, 13, 11

Mode #	Definition	Stations
15	1+2+4+8	1,2,3,4
14	2+4+8	1,2,3
13	1+4+8	1,2,4
12	4+8	1,2
11	1+2+8	1,3,4
10	2+8	1,3
9	1+8	1,4
7	1+2+4	2,3,4
6	2+4	2,3
5	1+4	2,4
3	1+2	3,4

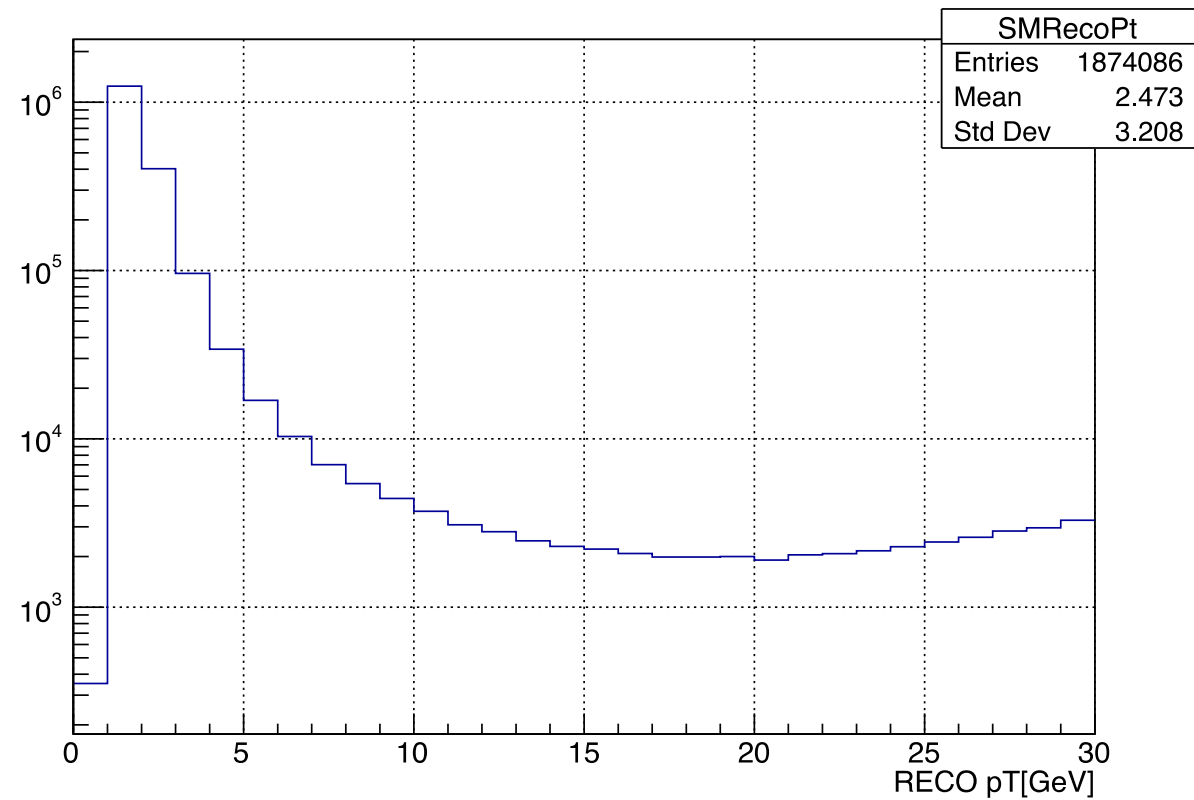
RECO Muon pT

RECO pT [0, 30]GeV, looseID, ReachStationOne, abs(eta_St2) [1.25, 2.40]



2017

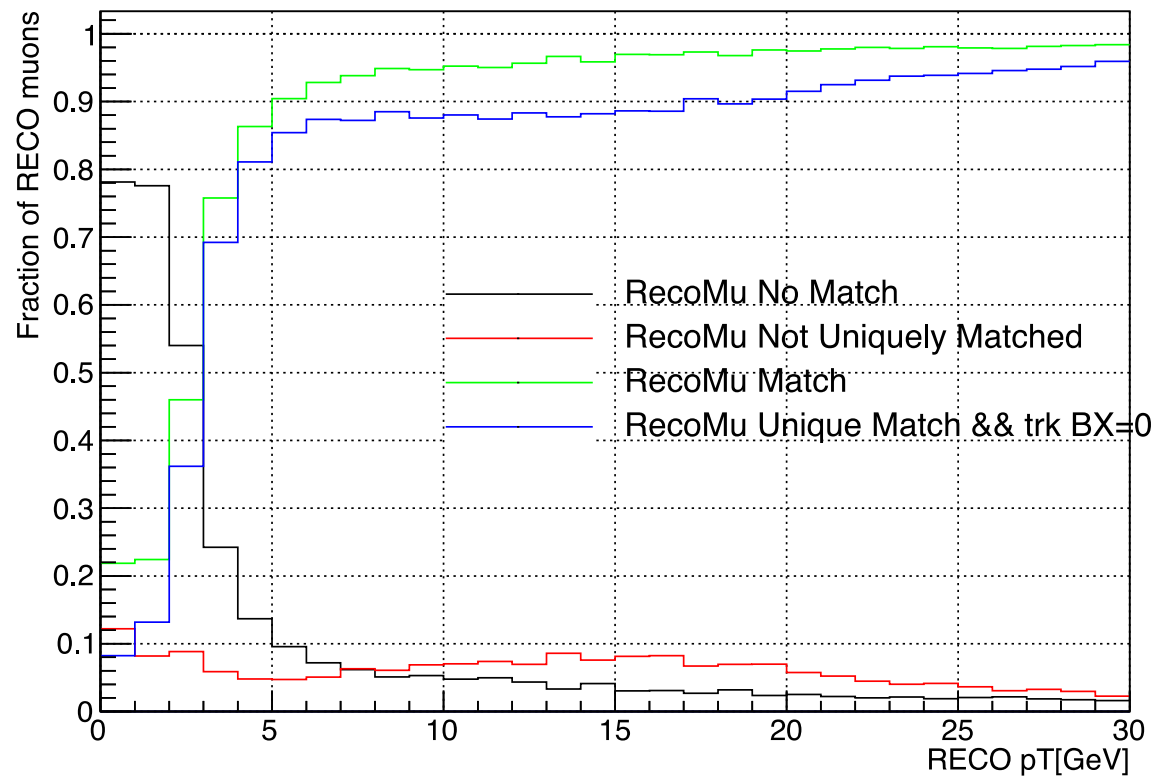
RECO pT [0, 30]GeV, looseID, ReachStationOne, abs(eta_St2) [1.25, 2.40]



2018

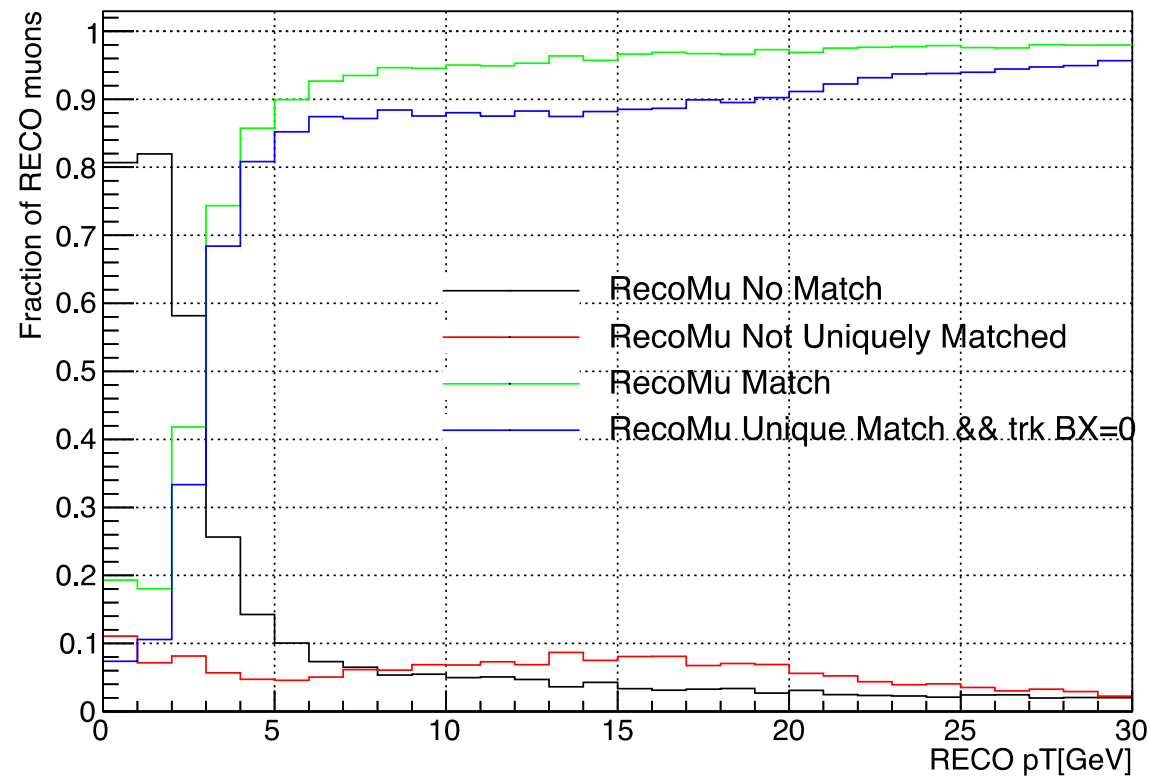
Match Scenarios

SBadMatchEff



2017

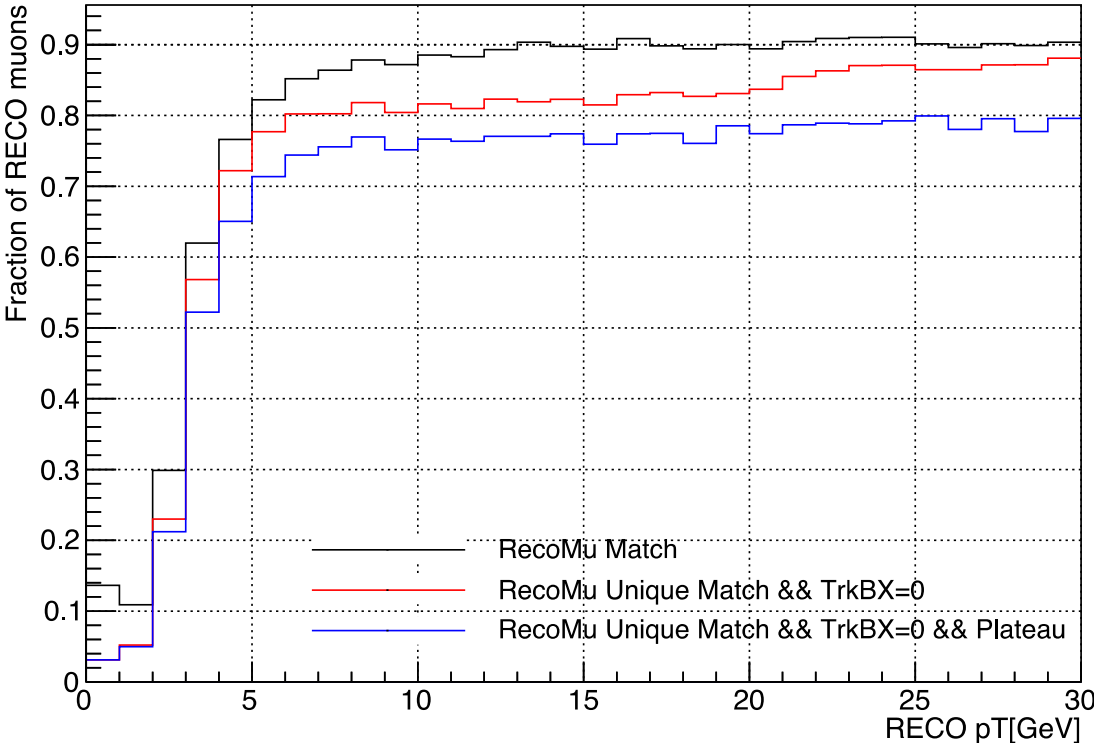
SBadMatchEff



2018

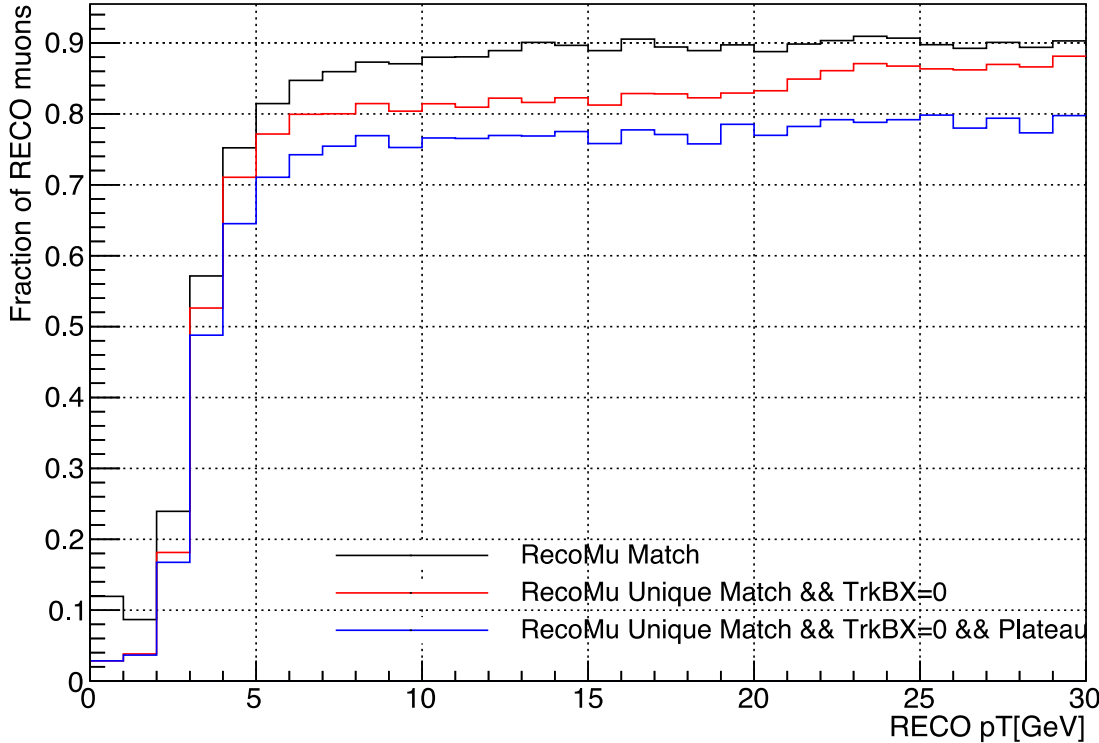
SingleMu Modes

SingleMuModes



2017

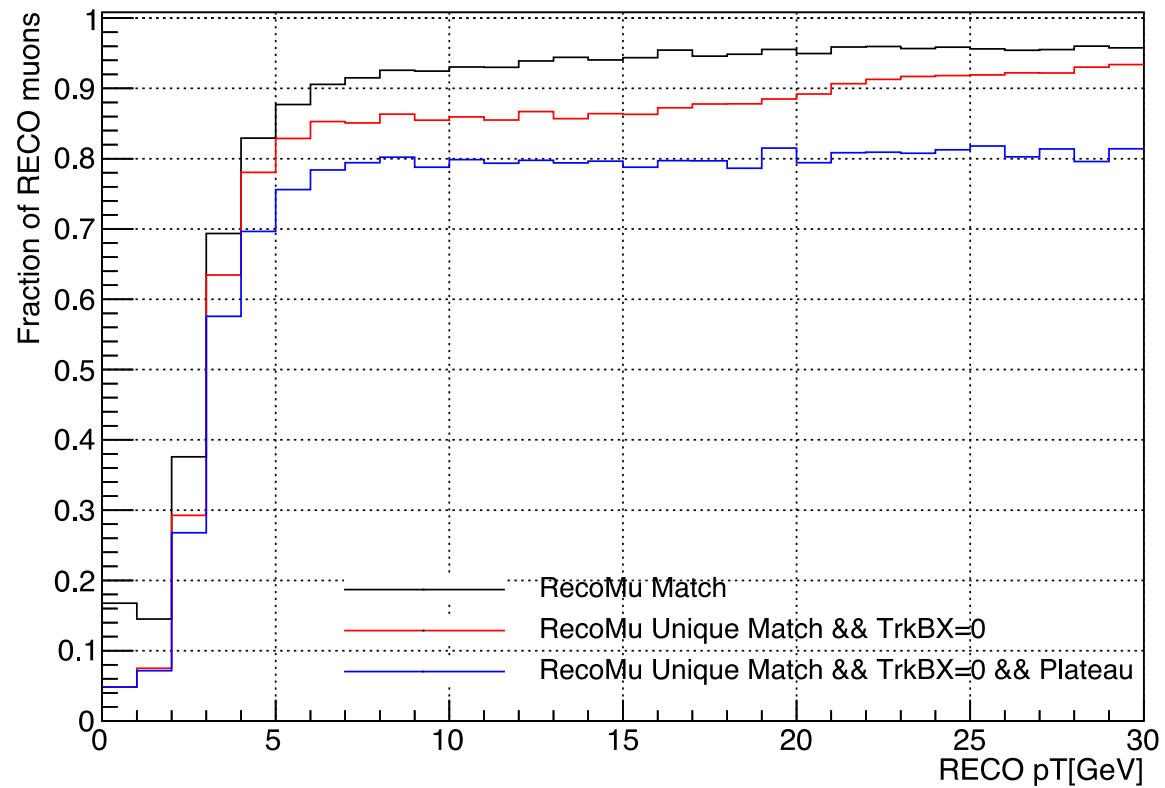
SingleMuModes



2018

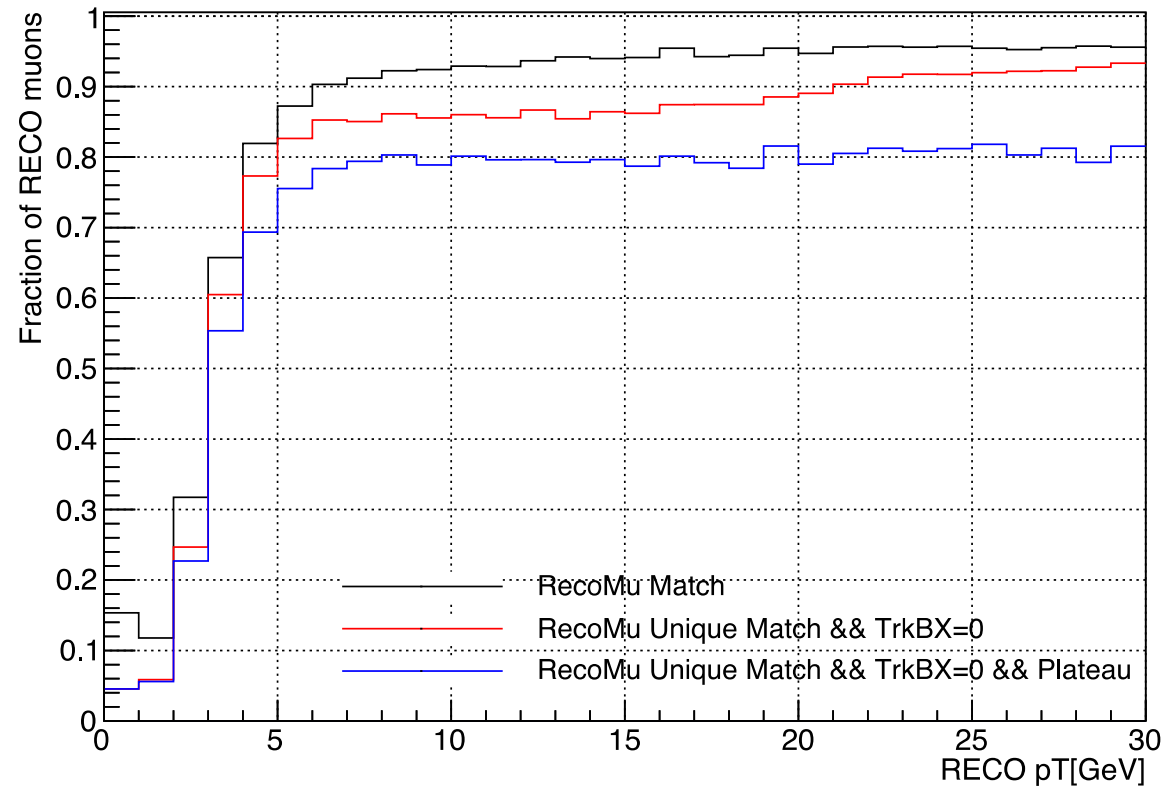
DoubleMu Inclusive

DoubleMuModes



2017

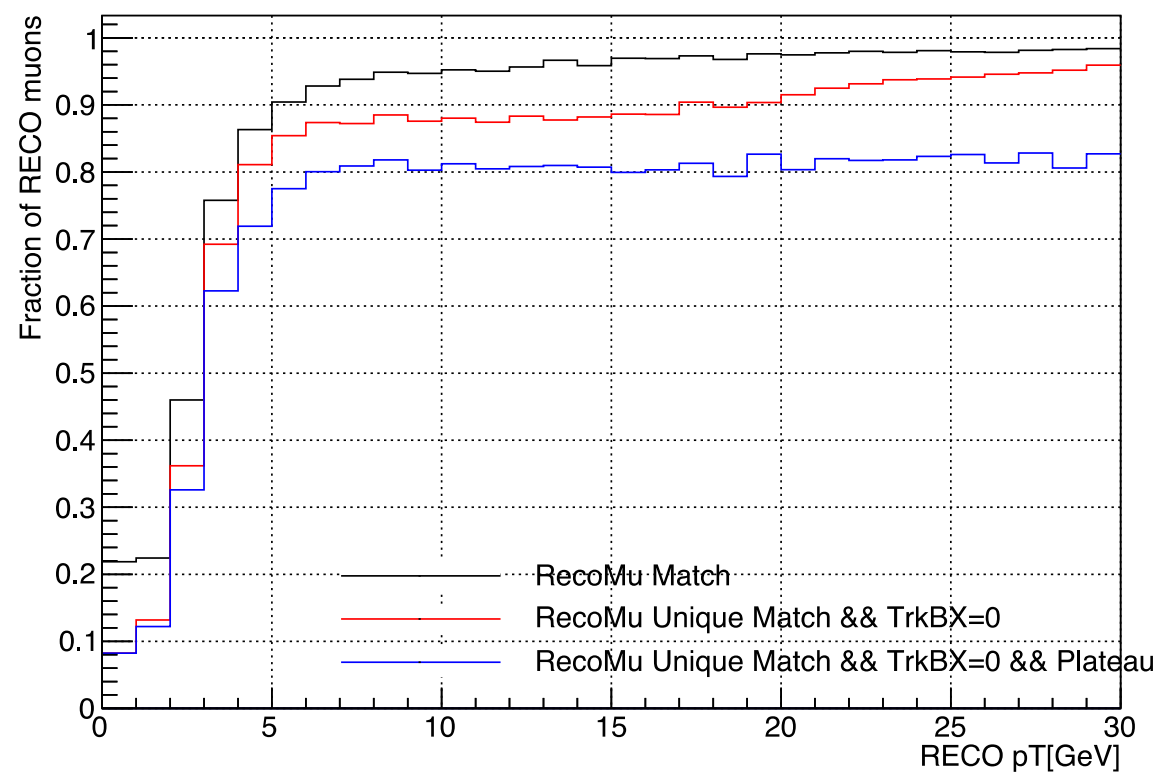
DoubleMuModes



2018

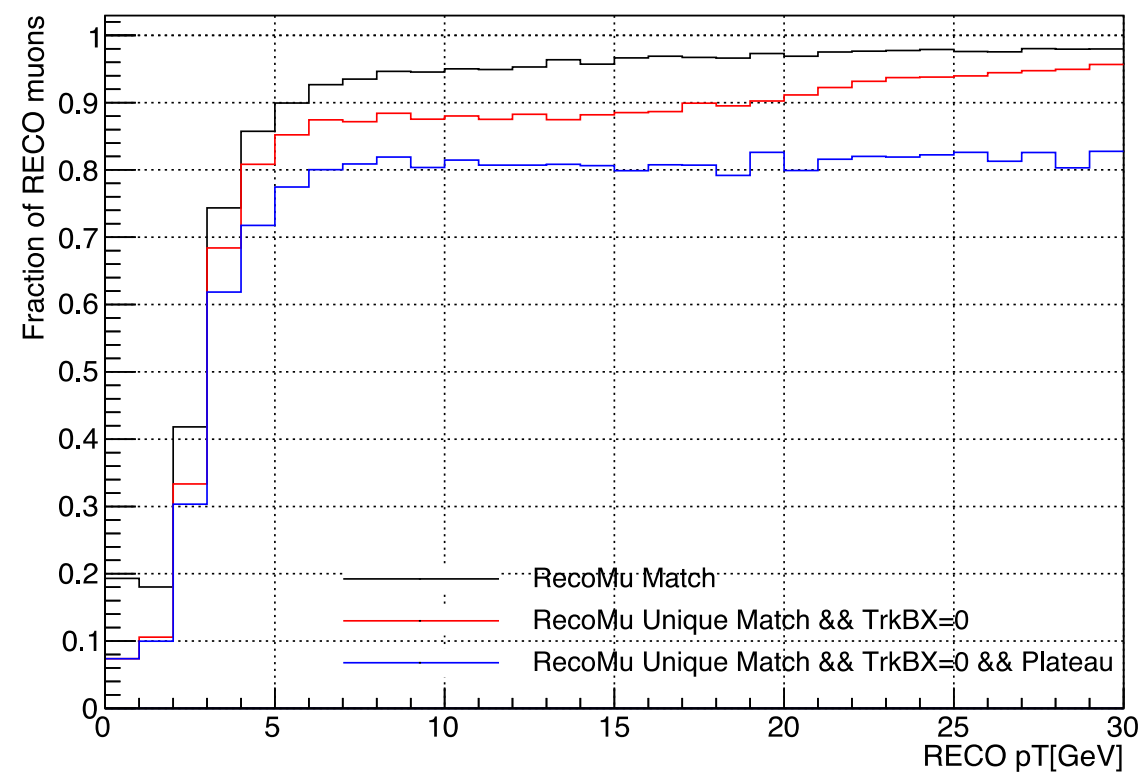
MuOpen Inclusive

MuOpenModes



2017

MuOpenModes



2018

Back Up

Data Files

root://eoscms.cern.ch//store/user/abrinke1/EMTF/Emulator/ntuples/HADD/

- 2017

- NTuple_SingleMuon_FlatNtuple_Run_306154_2018_04_26_SingleMu_2017_emul.root

- 2018

- NTuple_SingleMuon_FlatNtuple_Run_306154_2018_04_26_SingleMu_2018_emul_dTh4.root

Codes

- EMTF tracks
 - <https://github.com/abrinke1/EMTFAnalyzer/blob/master/NTupleMaker/src/FlatNtupleBranches/EMTFTrackInfo.cc>
- RECO muons
 - <https://github.com/abrinke1/EMTFAnalyzer/blob/master/NTupleMaker/src/FlatNtupleBranches/RecoMuonInfo.cc>
- RECO muon-EMTF track dR match
 - <https://github.com/abrinke1/EMTFAnalyzer/blob/master/NTupleMaker/src/FlatNtupleMatchers/RecoTrkDR.cc>
- Macro
 - https://github.com/weishi10141993/EMTF_Studies/blob/master/ModesRateEffV0.C