OMTF performance study using L1 Ntuple

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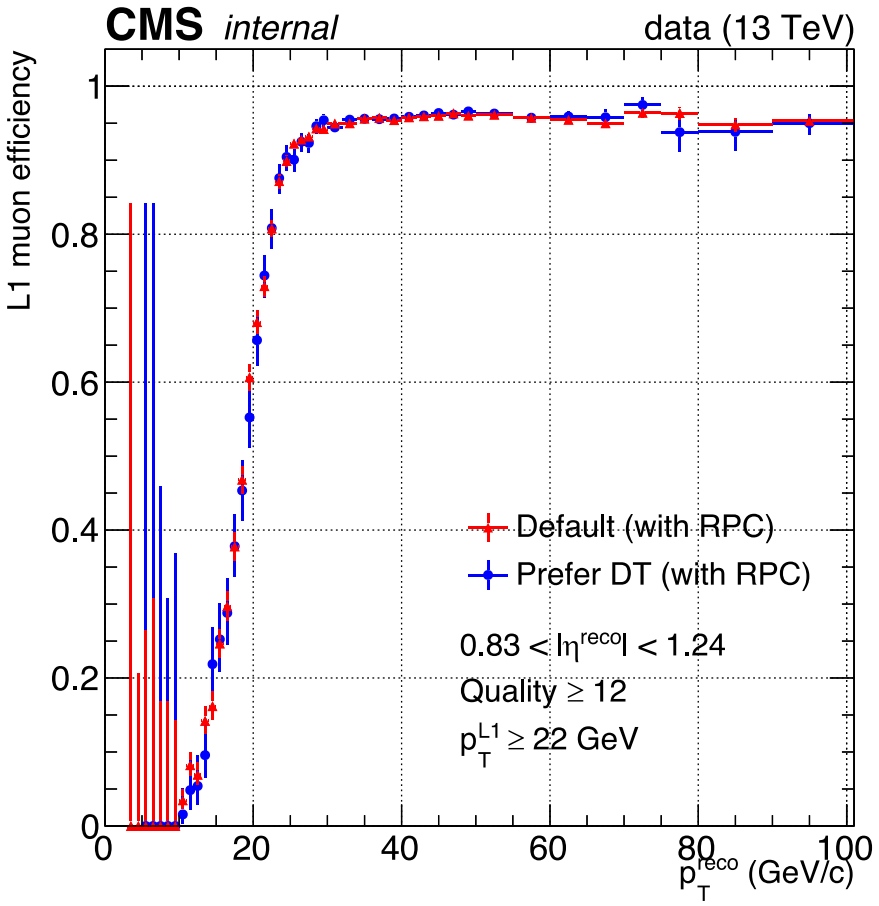
Motivations

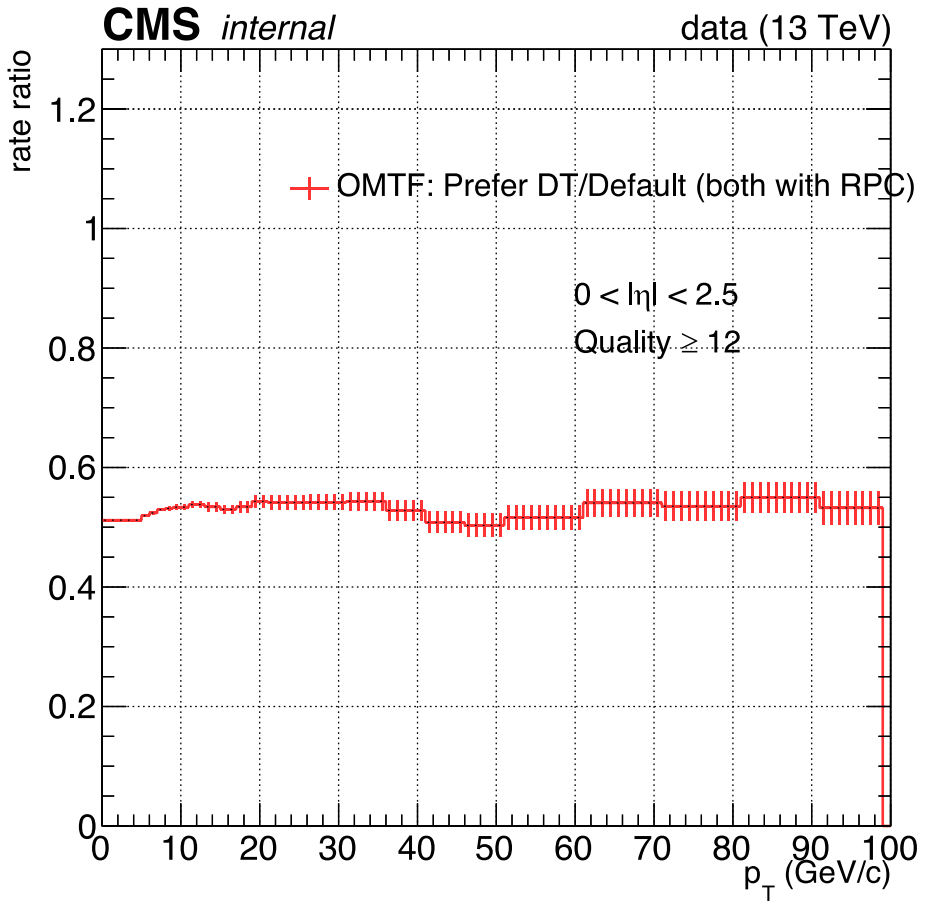
- Compare efficiency and rate performance for several OMTF algorithm options [1]
  - Default
  - Prefer DT
  - FW_V5
    - Mitigate degraded performance when RPC not available
    - Allow the coincidence of two DT segments or one DT + one CSC to produce a muon
    - Allow the “uncorrelated” DT segments (quality 2 and 3, i.e. based on only one superlayer) to be used by the algorithm
- With RPC and without RPC

Tools

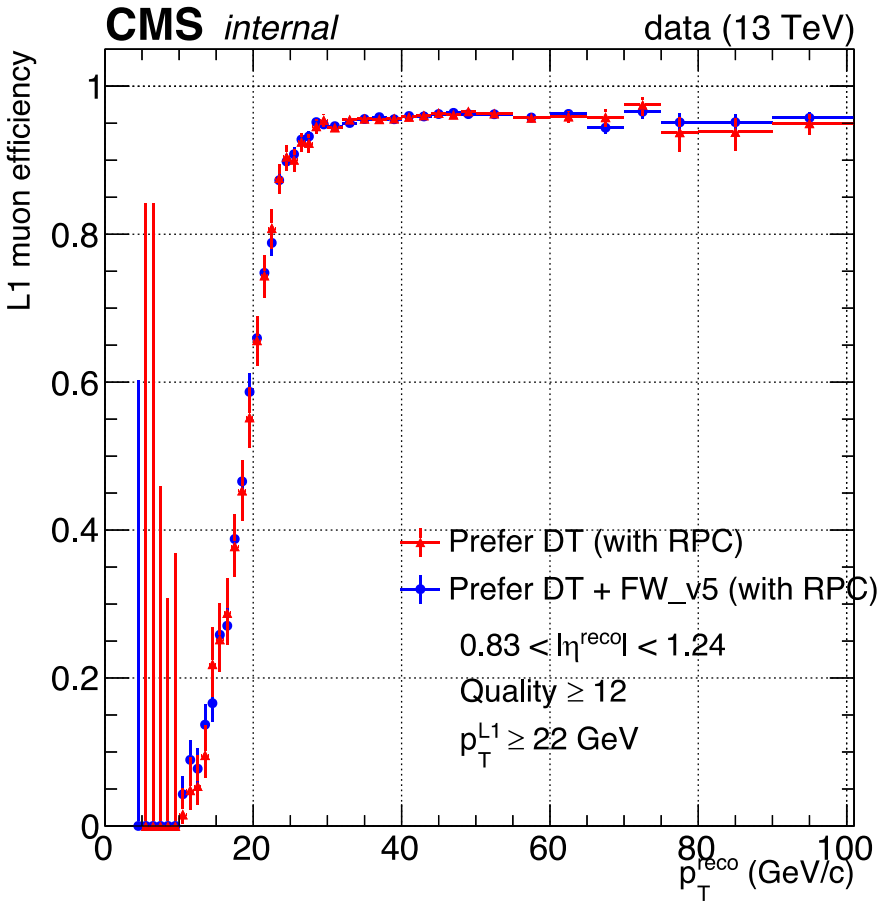
- L1T muon tool from Thomas Reis
- L1 Ntuples for various OMTF algo options
- Samples
  - /SingleMuon/Run2018A-ZMu-PromptReco-v1/RAW-RECO
  - /ZeroBias/Run2018A-v1/RAW
- Json
  - /afs/cern.ch/cms/CAF/CMSCOMM/COMM_DQM/certification/Collisions18/13TeV/DCSOnly/json_DCSONLY.txt

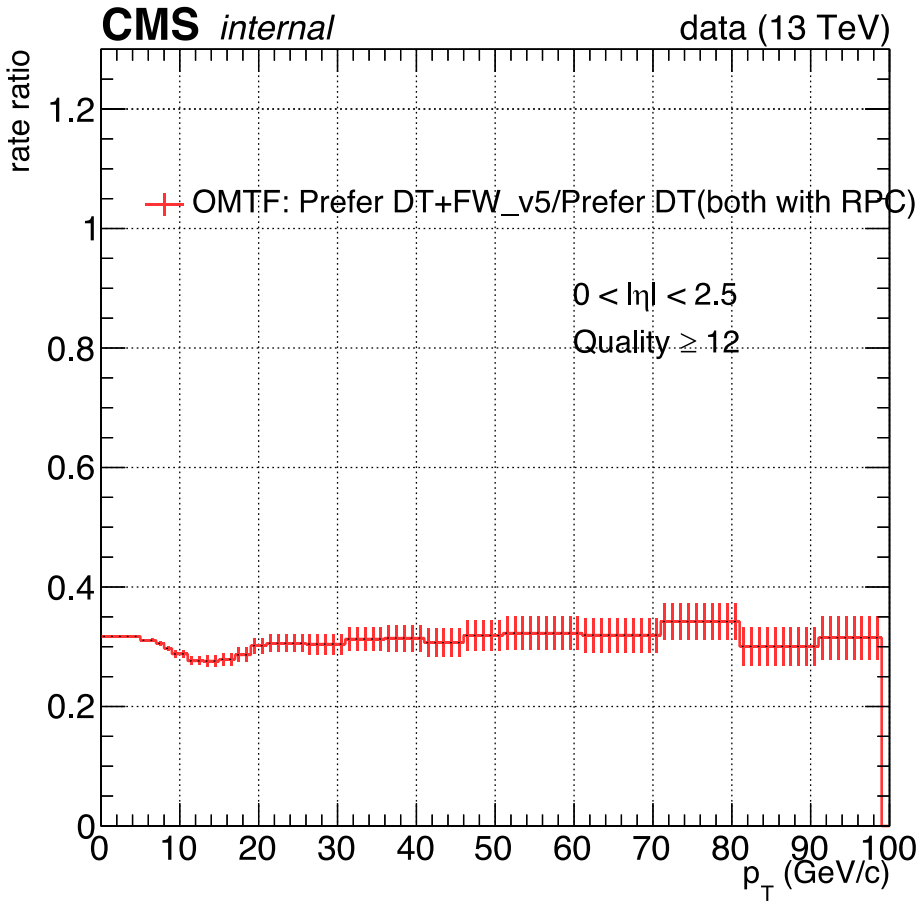
Default vs Prefer DT (both with RPC)



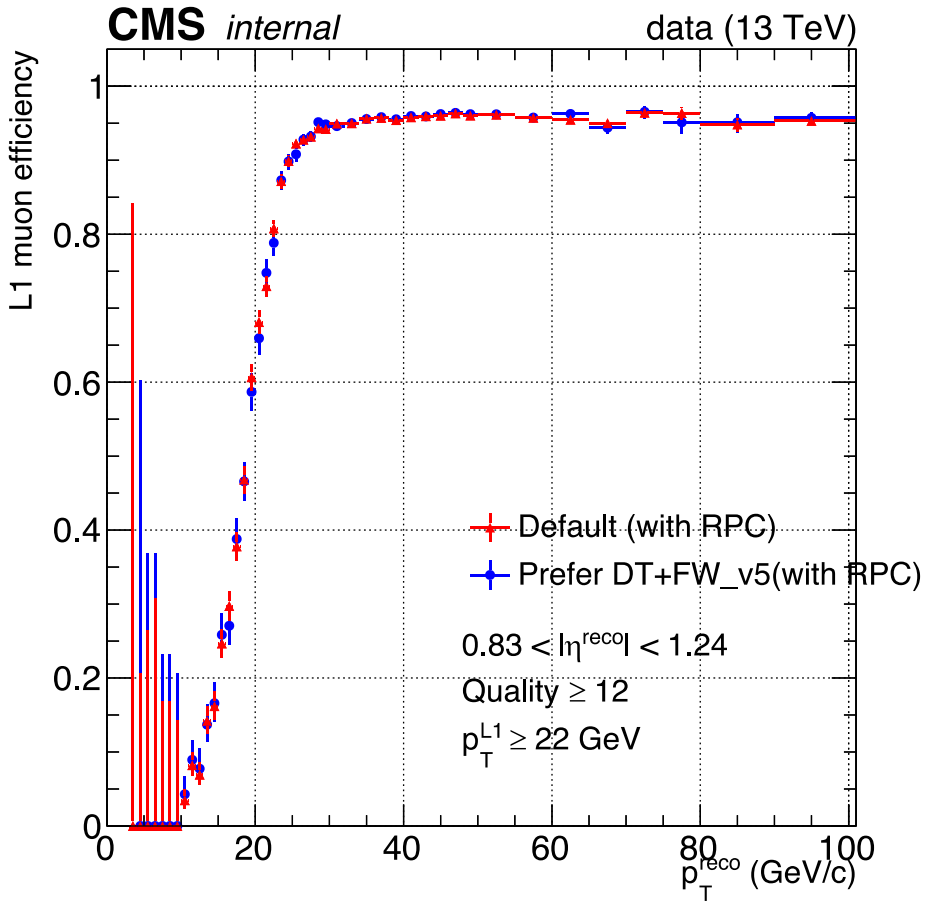


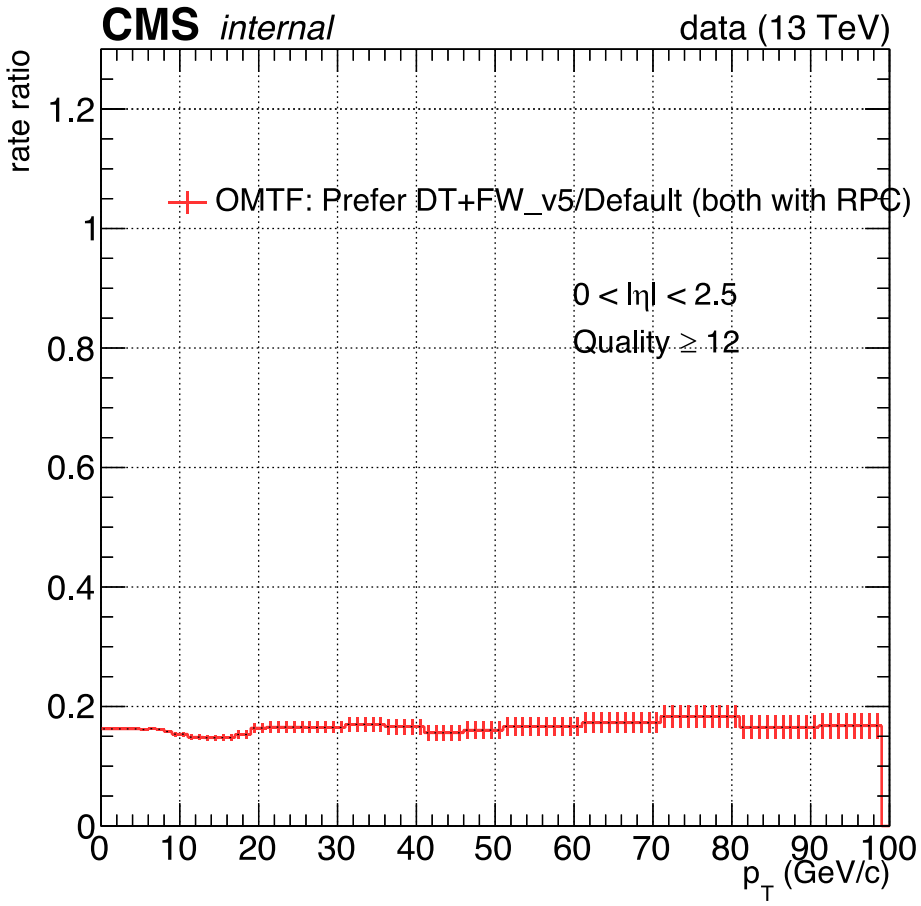
Prefer DT vs Prefer DT + FW_v5 (both with RPC)



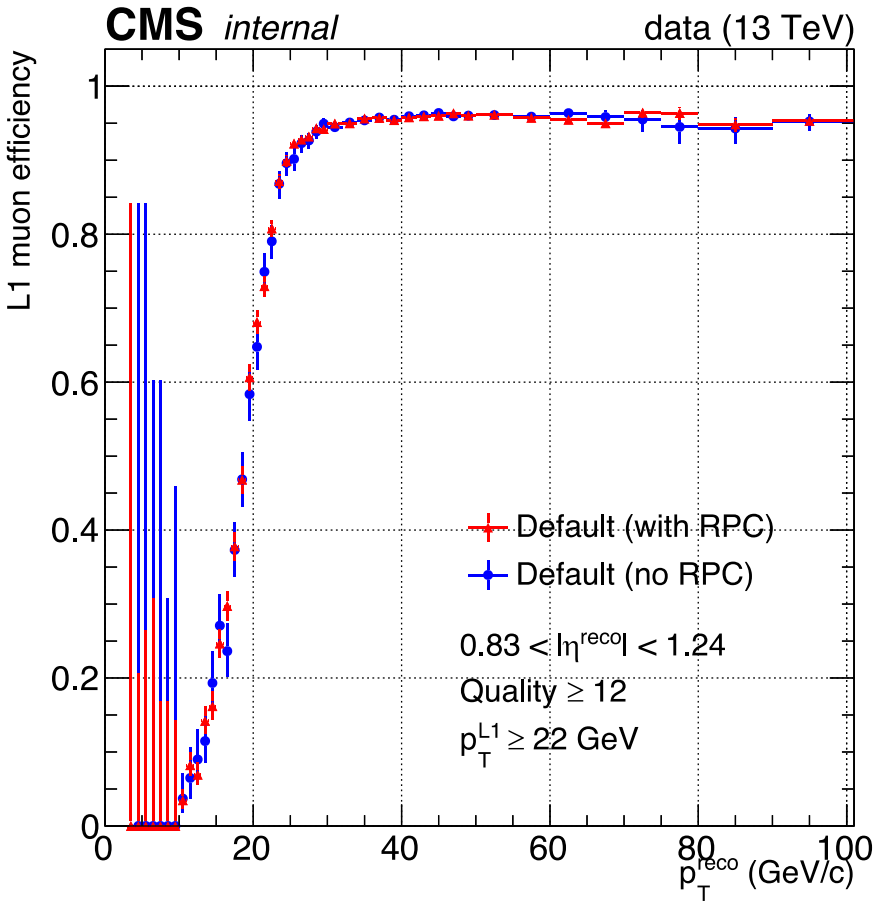


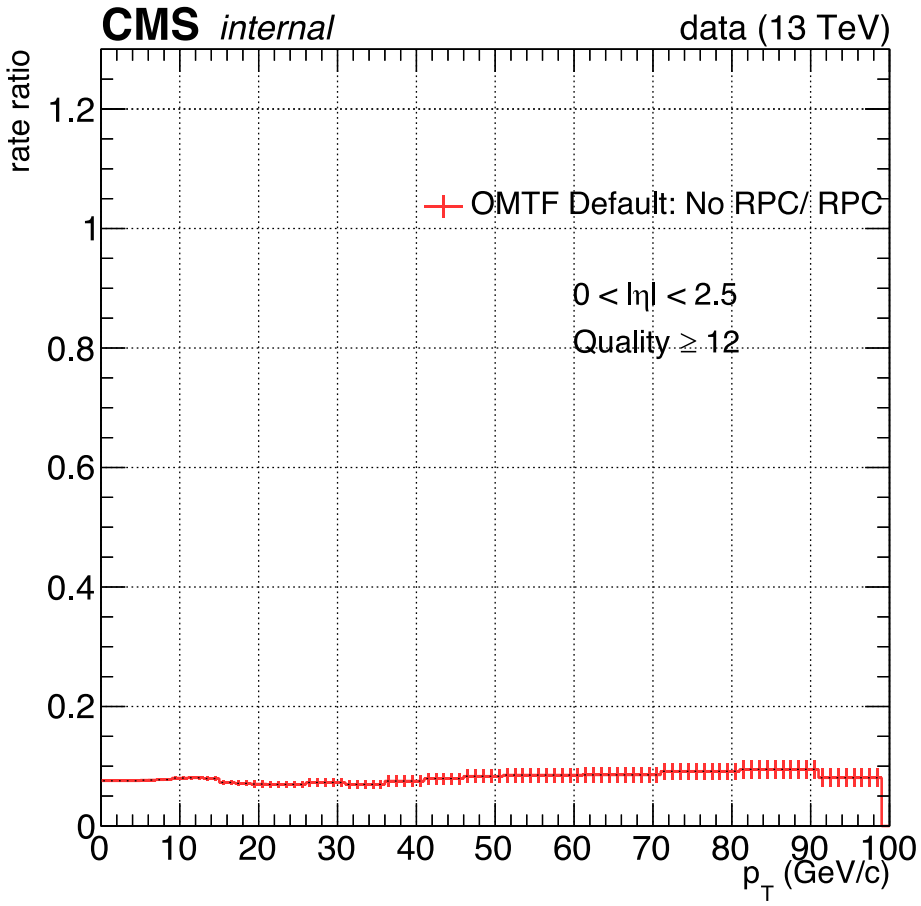
Default vs Prefer DT+FW_5 (both with RPC)



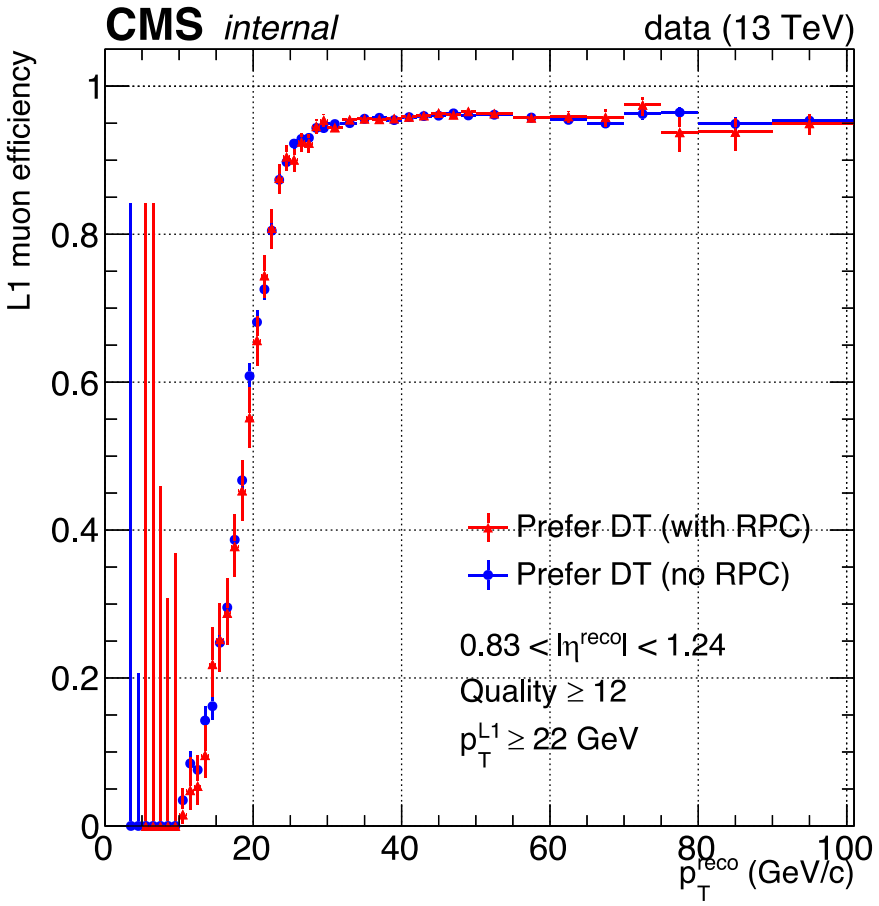


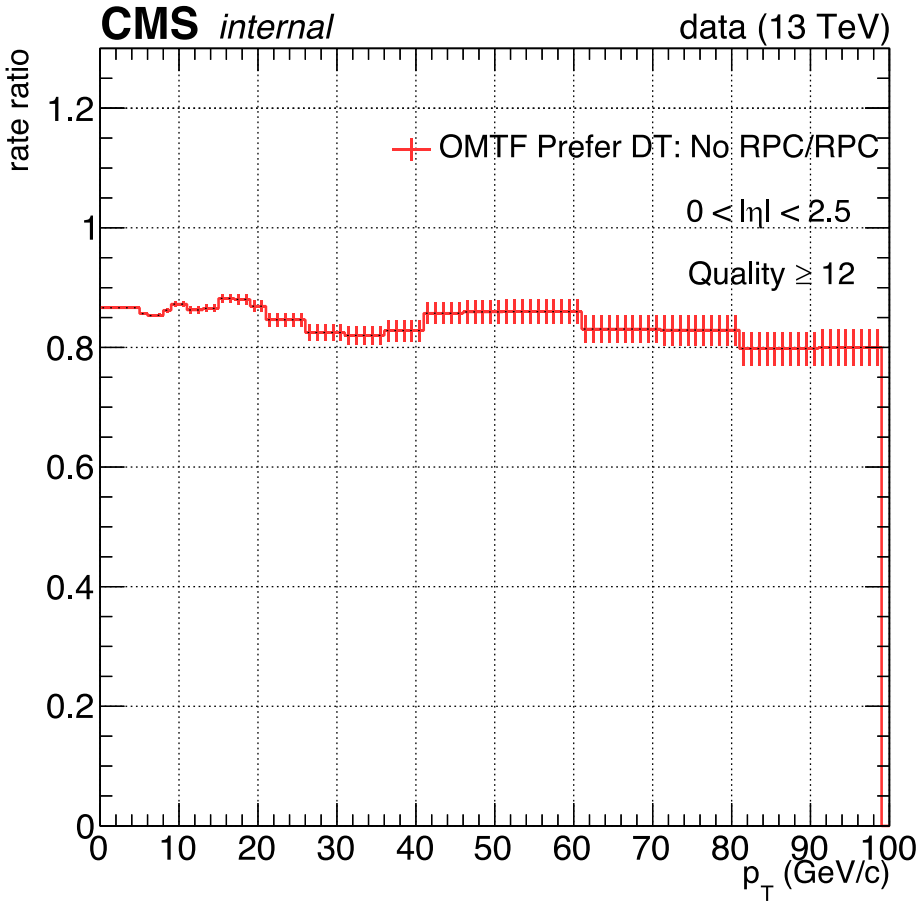
Default w/o RPC



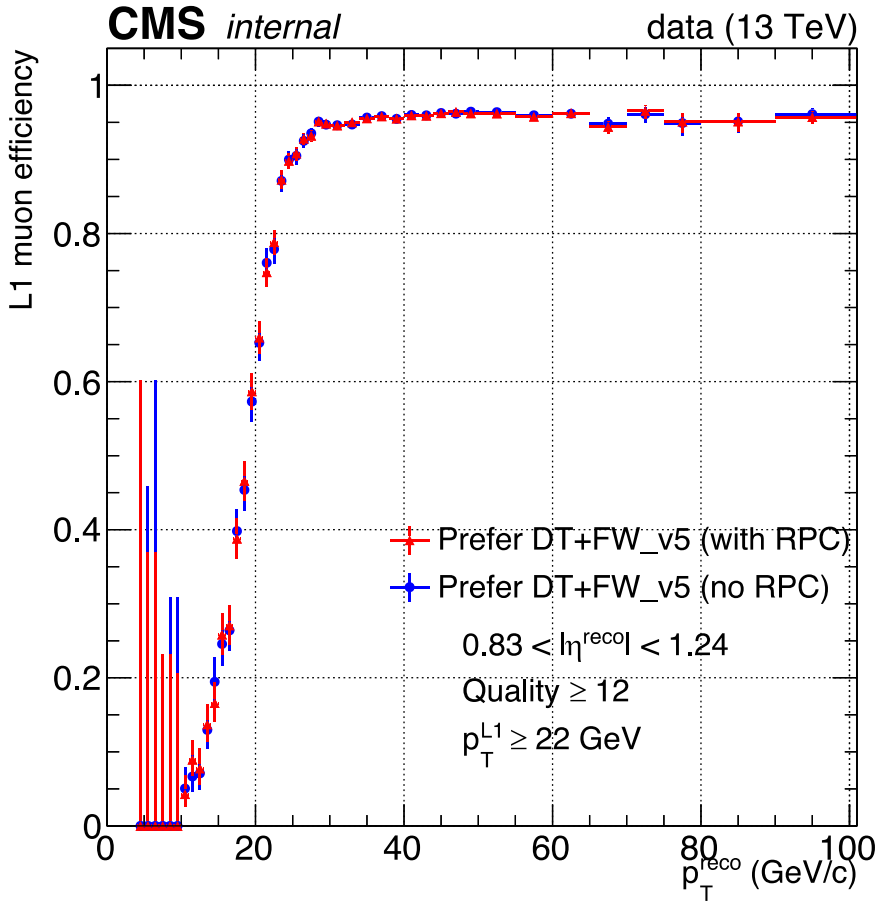


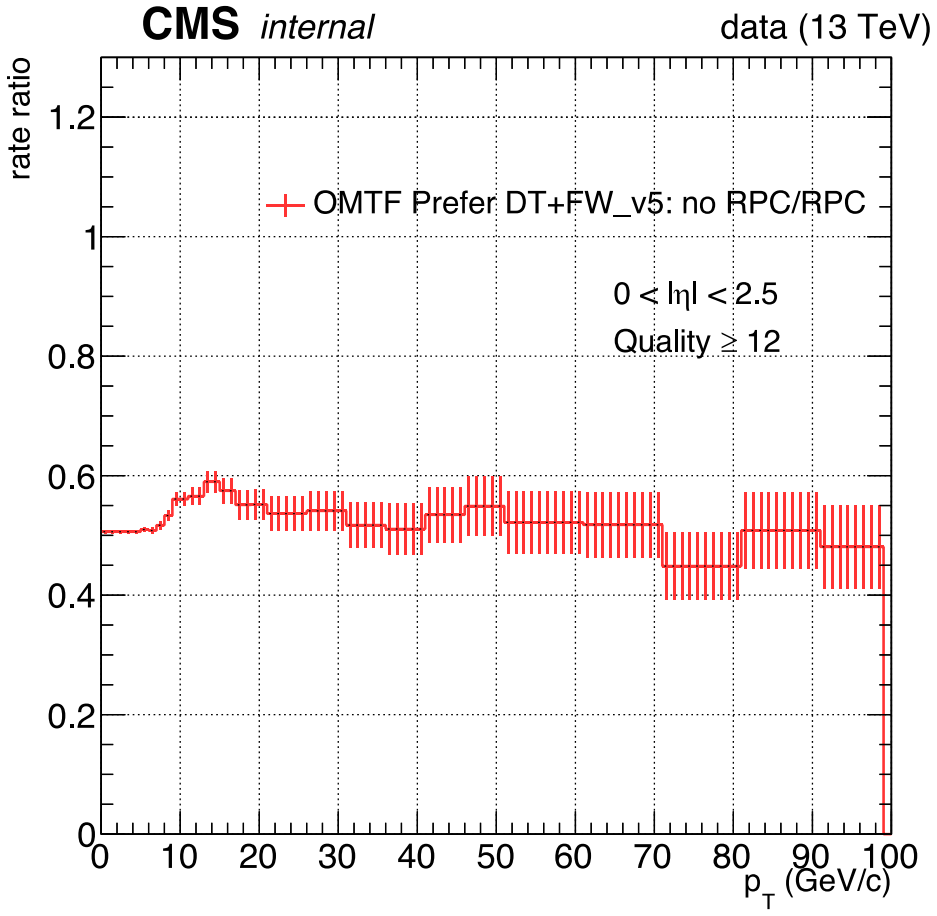
Prefer DT: w/o RPC





Prefer DT+FW_v5: w/o RPC



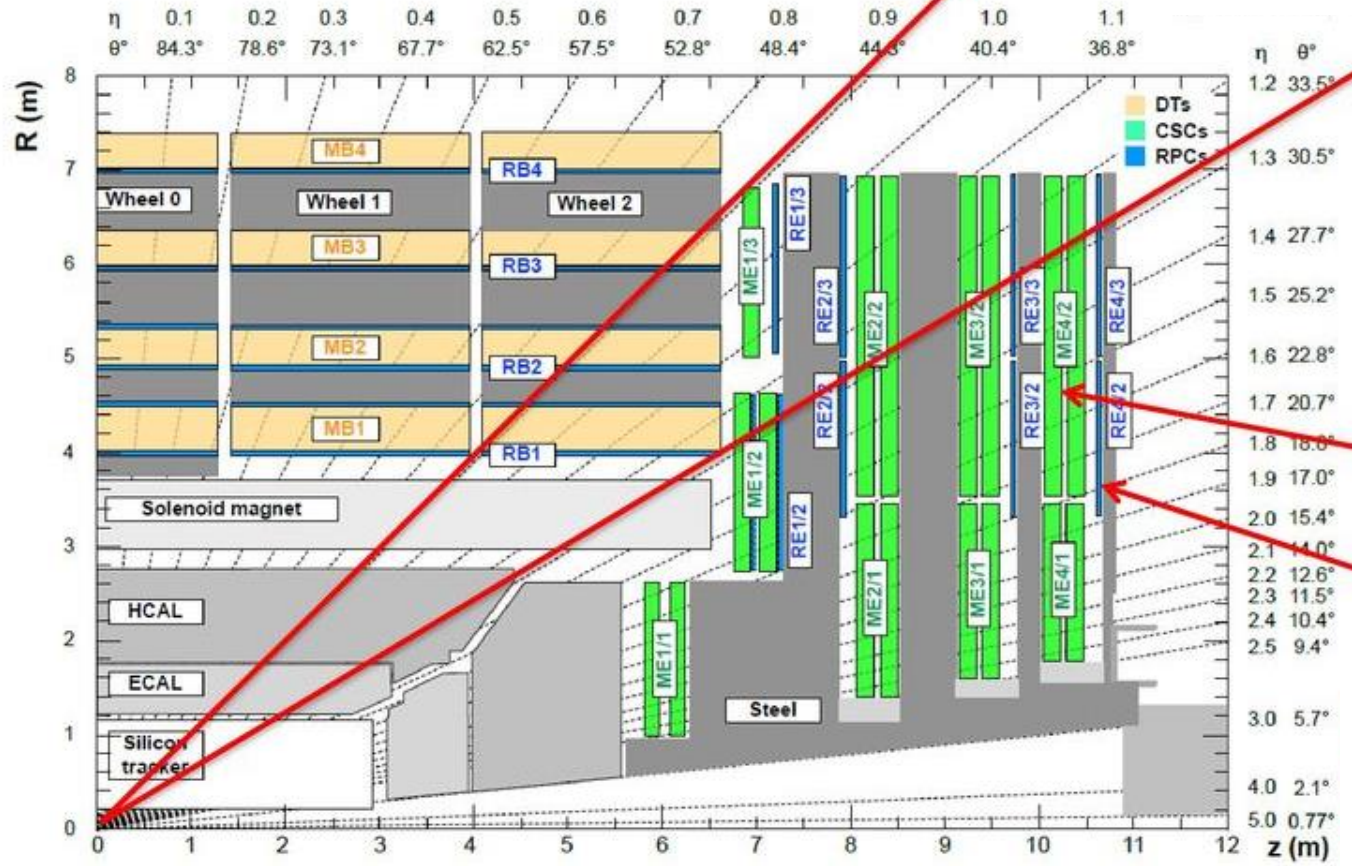


Back Up

Geometry

Barrel Muon Track Finder (BMTF)

Overlap Muon Track Finder (OMTF)



Endcap Muon Track Finder (EMTF)

Cathode Strip Chambers (CSC)

Resistive Plate Chambers (RPC)