OMTF performance study using L1 Ntuple

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Motivations

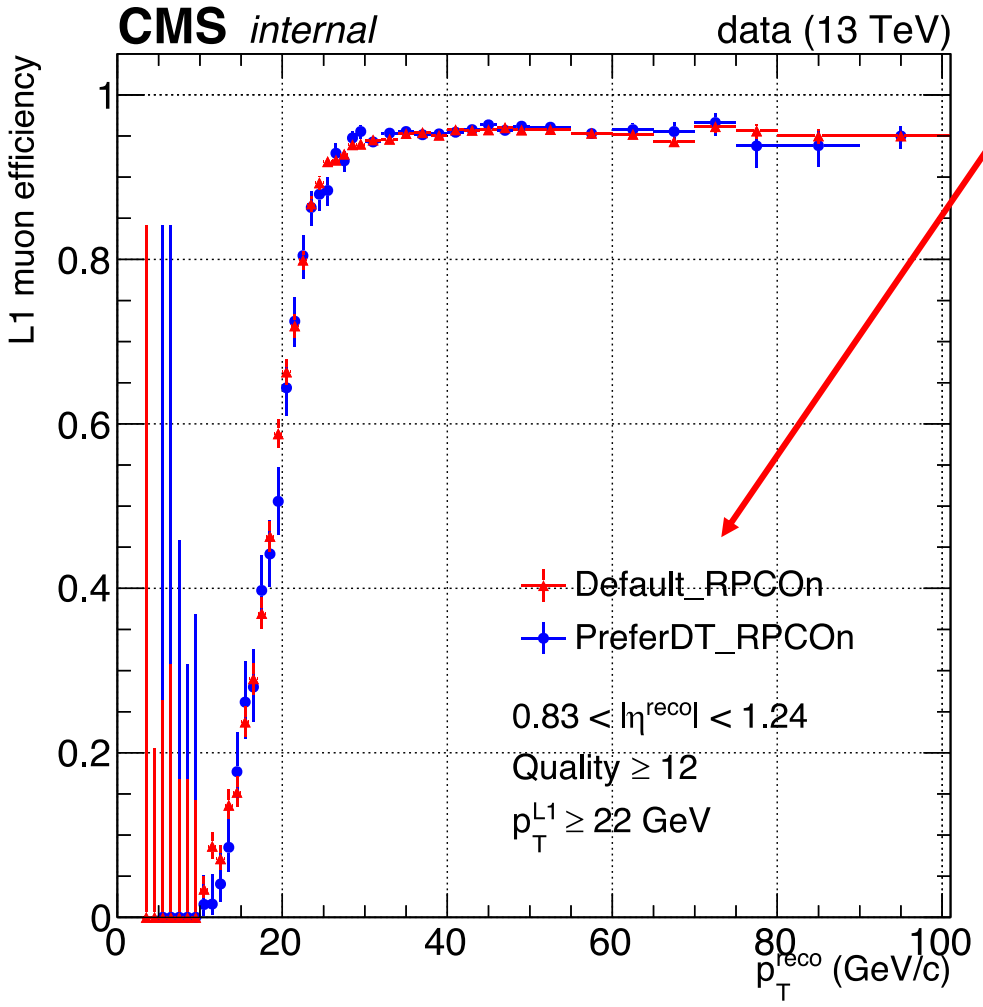
- Compare efficiency and rate performance for several OMTF algorithm options [1]
  - Default
  - Prefer DT: Prefer muon candidate with the DT reference hit
  - FW_V5: Mitigate degraded performance when RPC not available
    - Allow the coincidence of two DT segments or one DT + one CSC to produce a muon
    - Allow the “uncorrelated” DT segments (quality 2 and 3, i.e. based on only one superlayer) to be used by the algorithm
  - For each option above, compare with & w/o RPC TPs

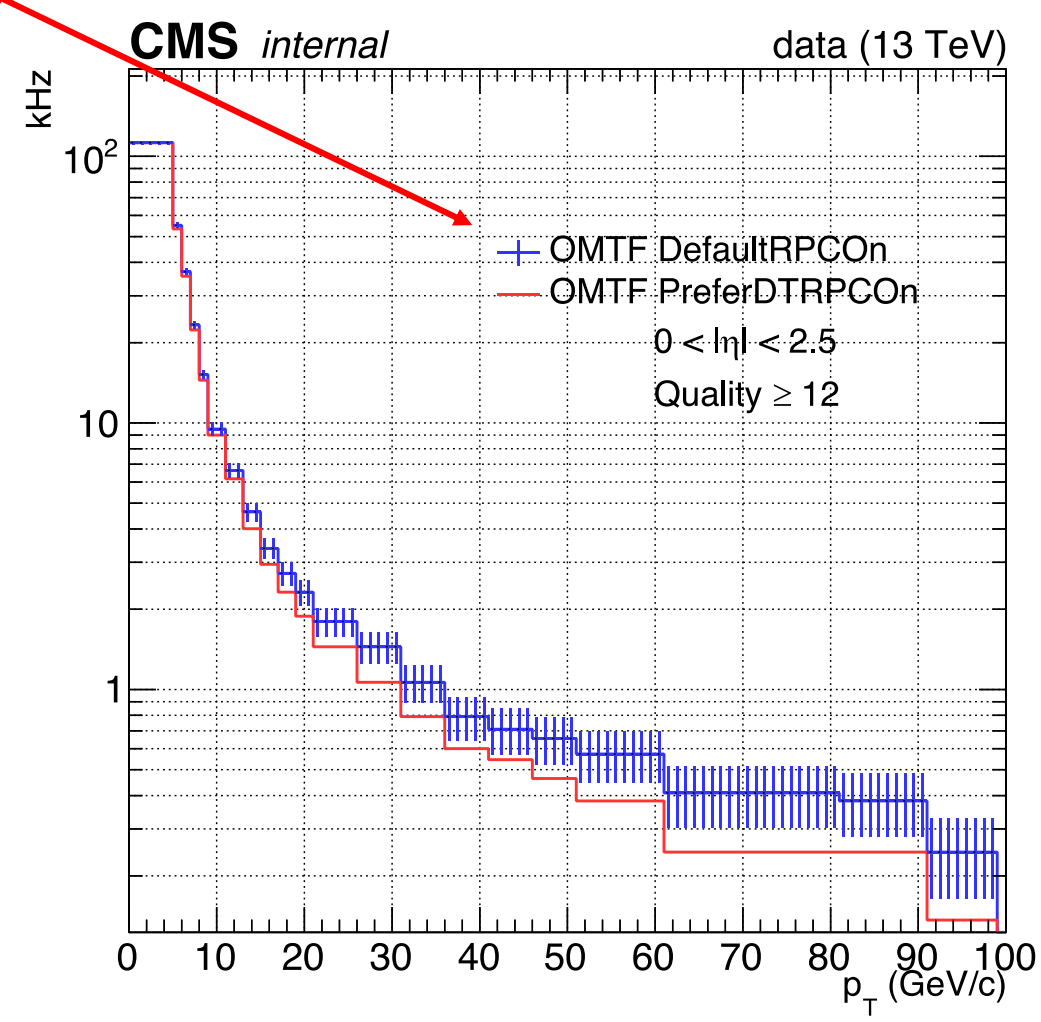
Tools

- L1T muon tool from Thomas Reis
- L1 Ntuples for various OMTF algo options
- Samples
  - /SingleMuon/Run2018A-ZMu-PromptReco-v1/RAW-RECO
    - /afs/cern.ch/cms/CAF/CMSCOMM/COMM_DQM/certification/Collisions18/13TeV/DCSOnly/json_DCSONLY.txt
  - /ZeroBias/Run2018B-v1/RAW, run 317640
    - /afs/cern.ch/cms/CAF/CMSCOMM/COMM_DQM/certification/Collisions18/13TeV/PromptReco/Cert_314472-317696_13TeV_PromptReco_Collisions18_JSON.txt

Default vs Prefer DT (both with RPC)

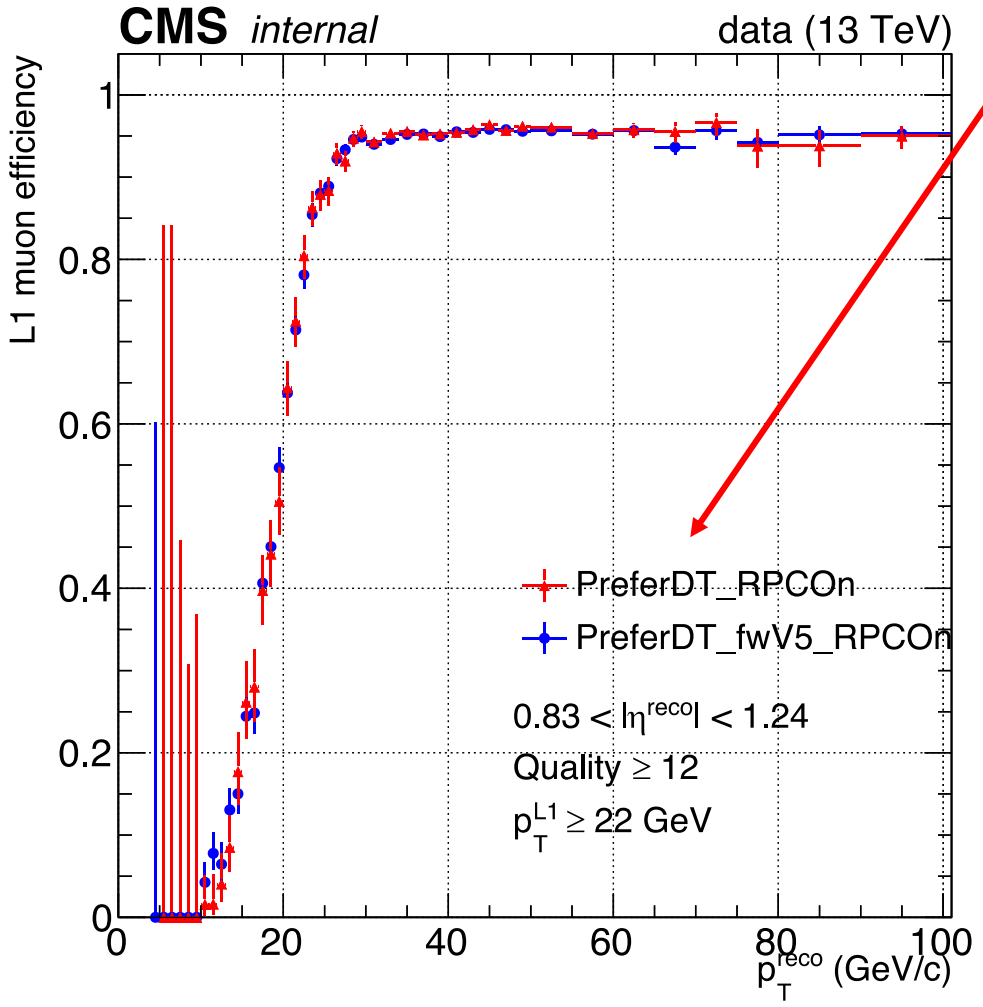
Legend swapped

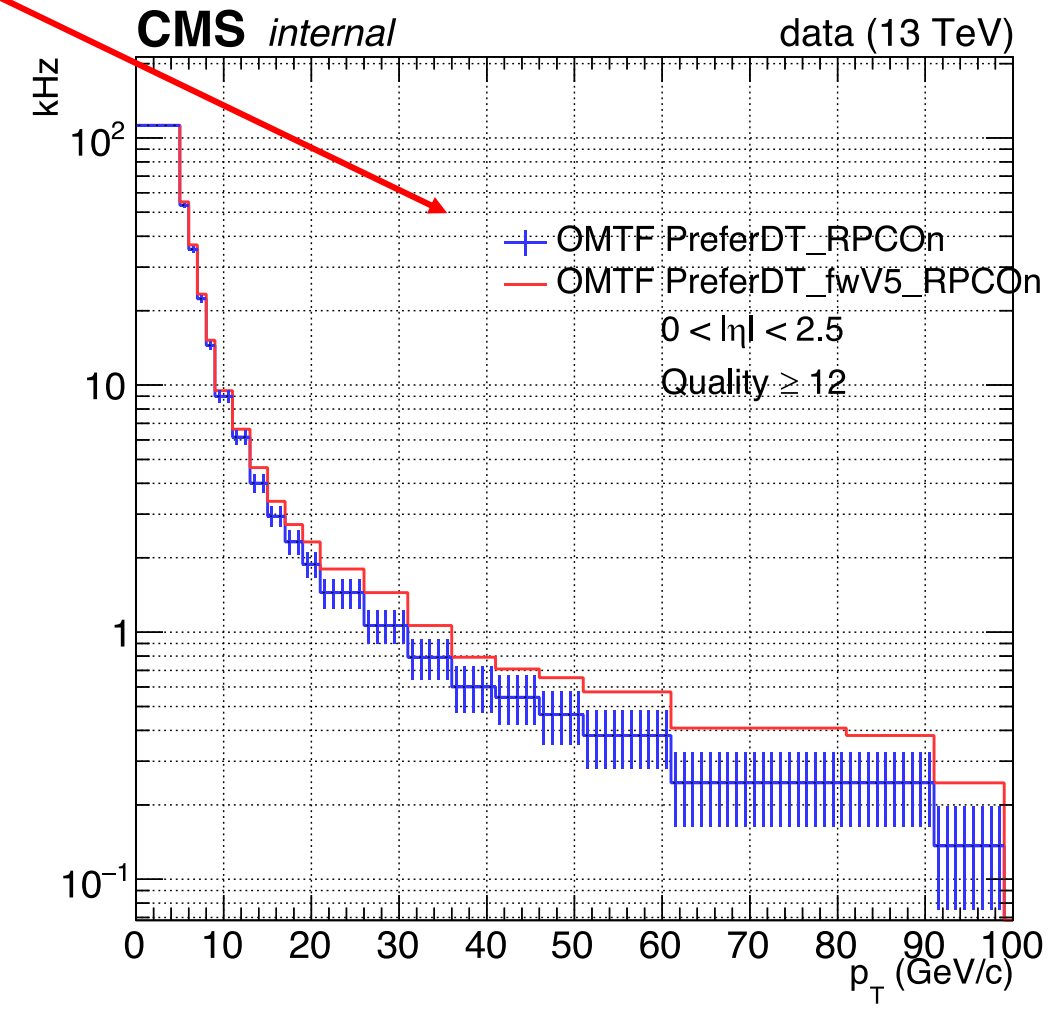




Prefer DT vs Prefer DT + FW_v5 (both with RPC)

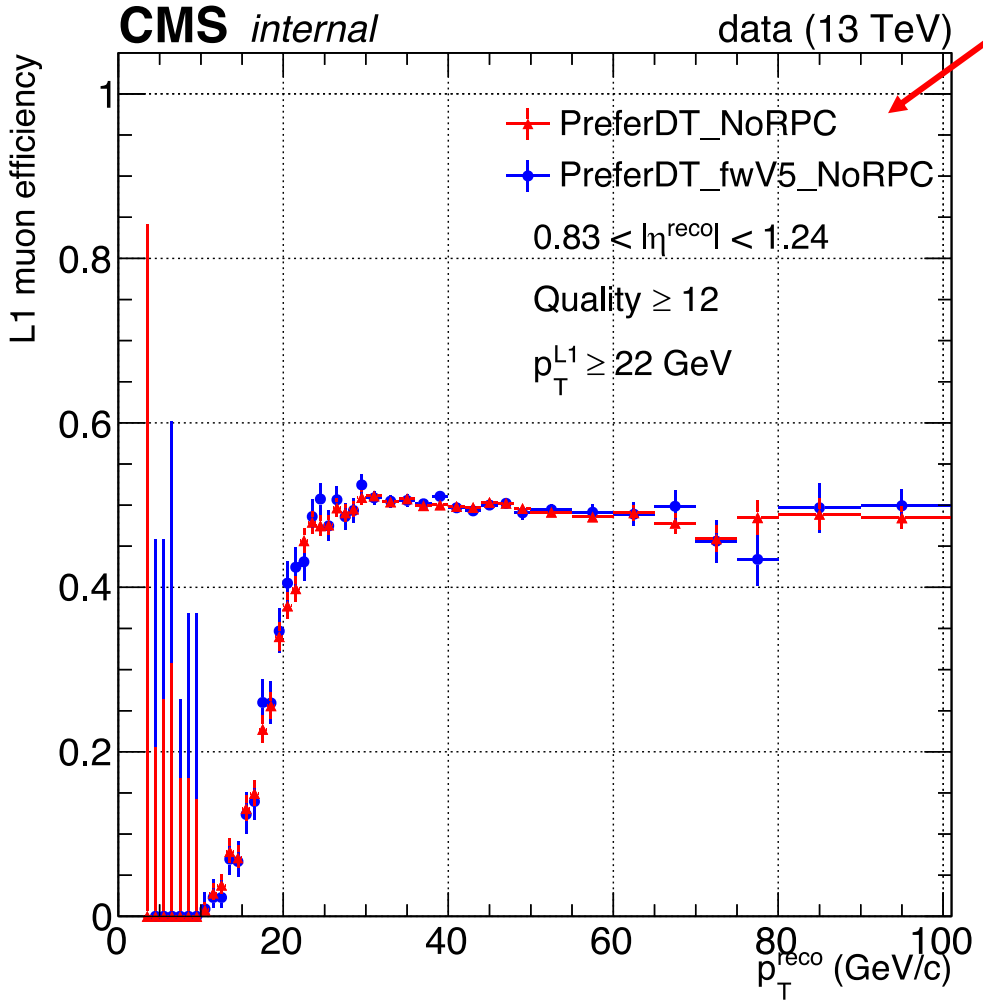
Legend swapped

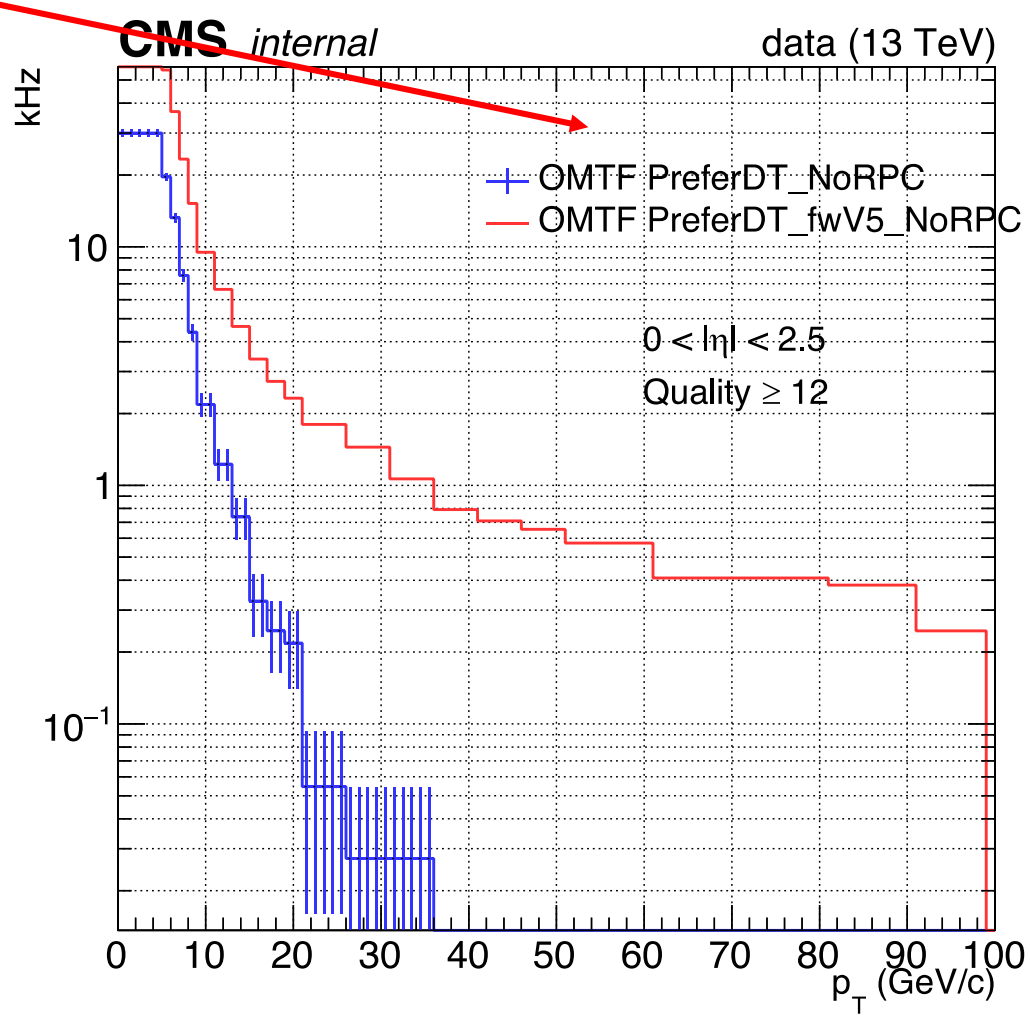




Prefer DT(no RPC) vs Prefer DT + FW_v5(no RPC)

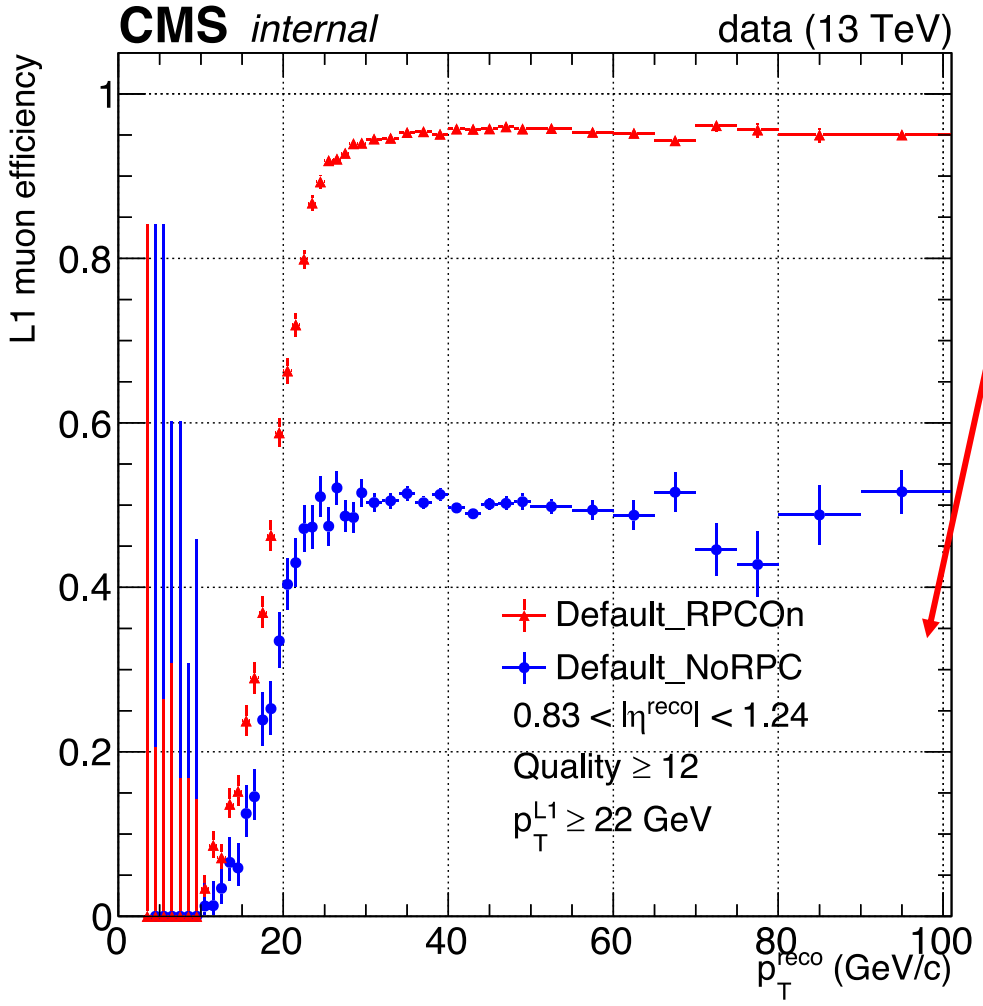
Legend swapped

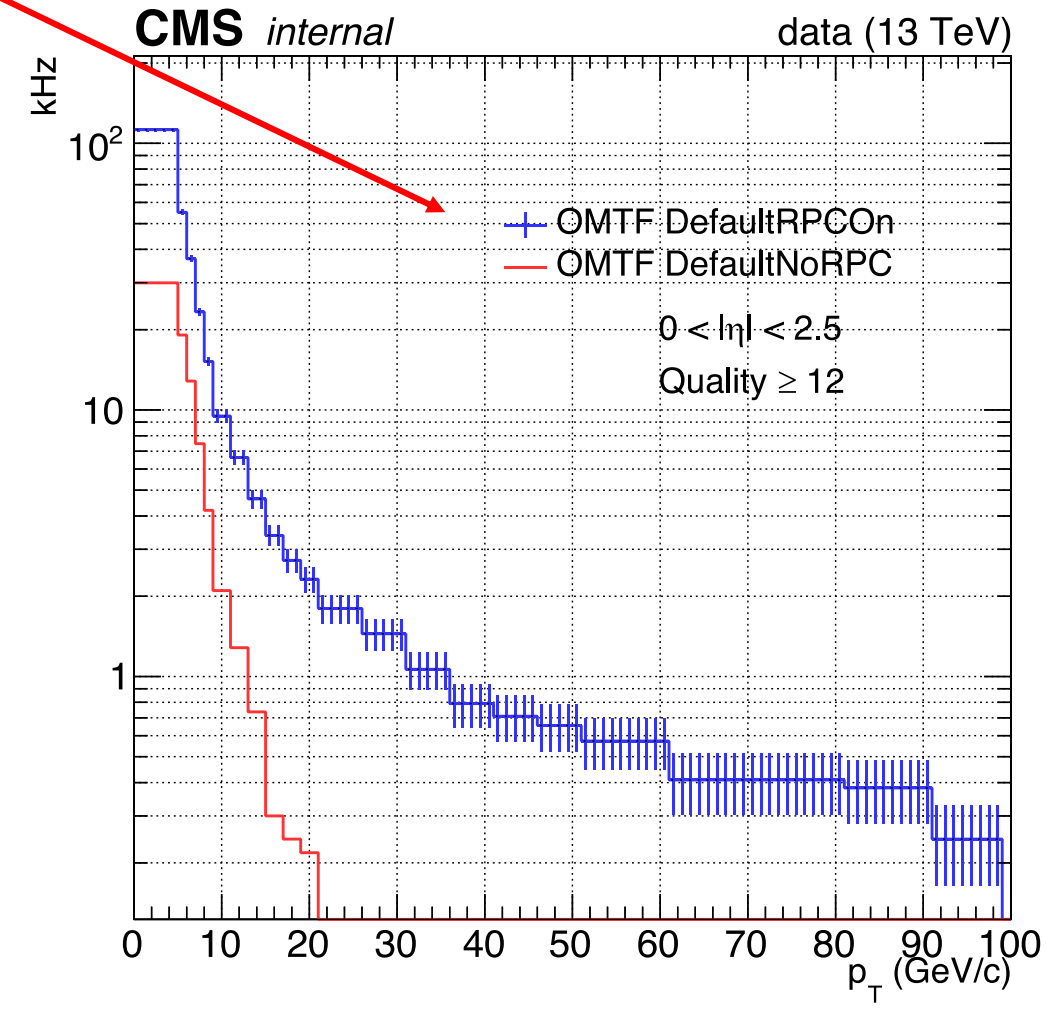




Default: w & w/o RPC

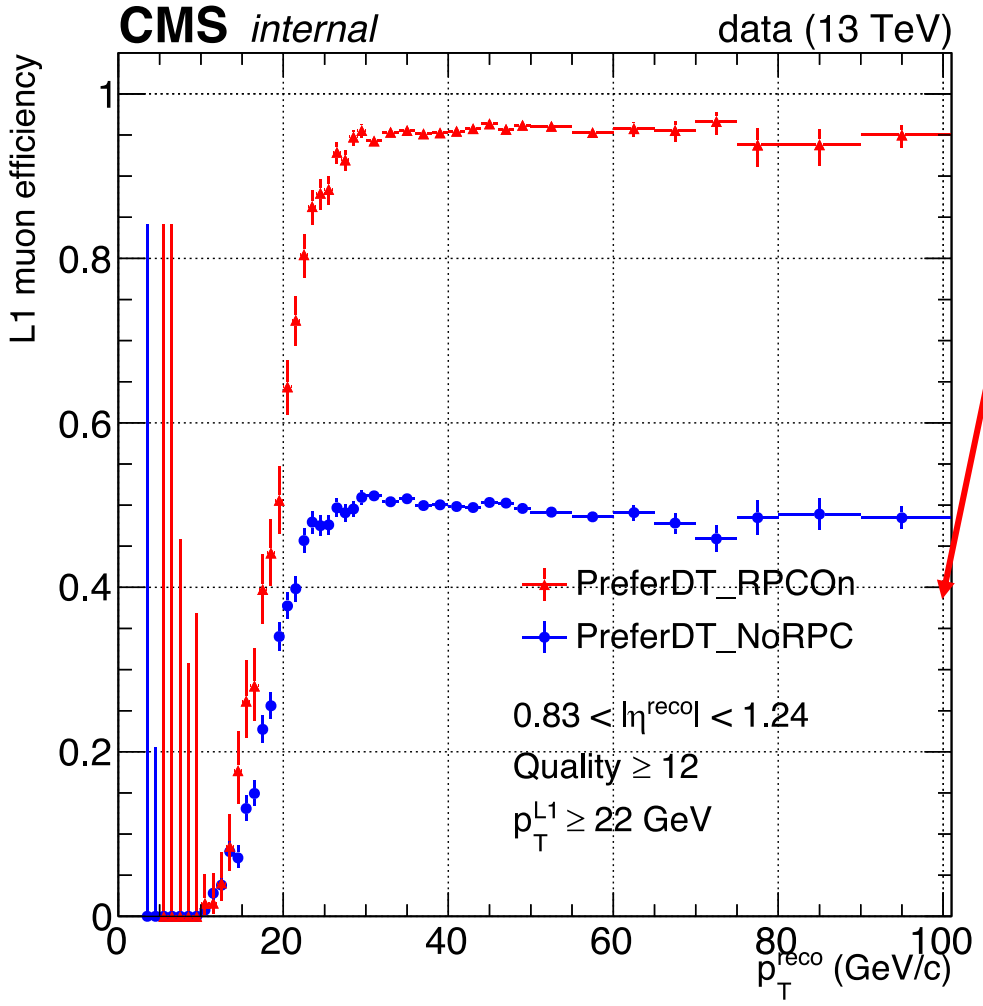
Legend swapped

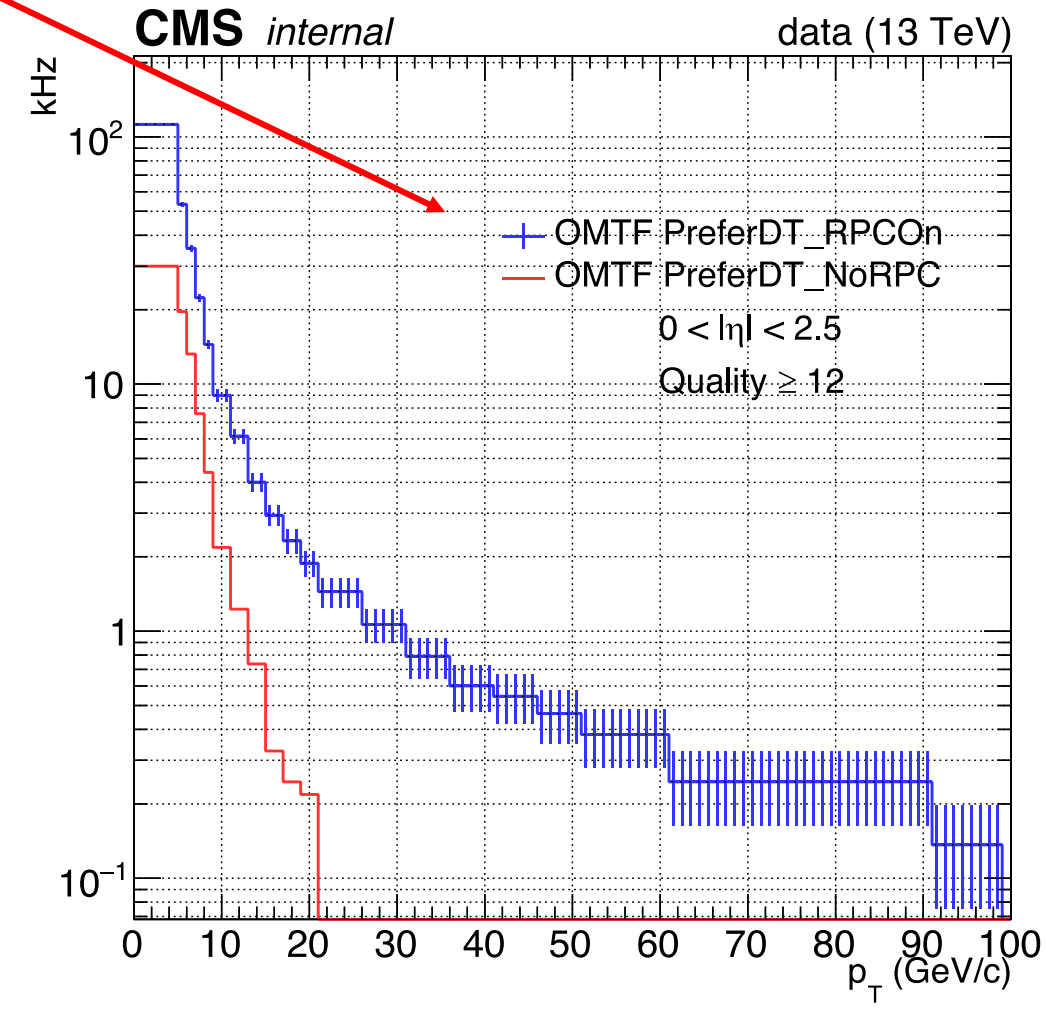




Prefer DT: w & w/o RPC

Legend swapped





Prefer DT+FW_v5: w & w/o RPC

Legend swapped