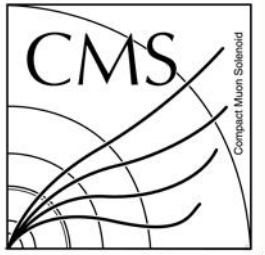


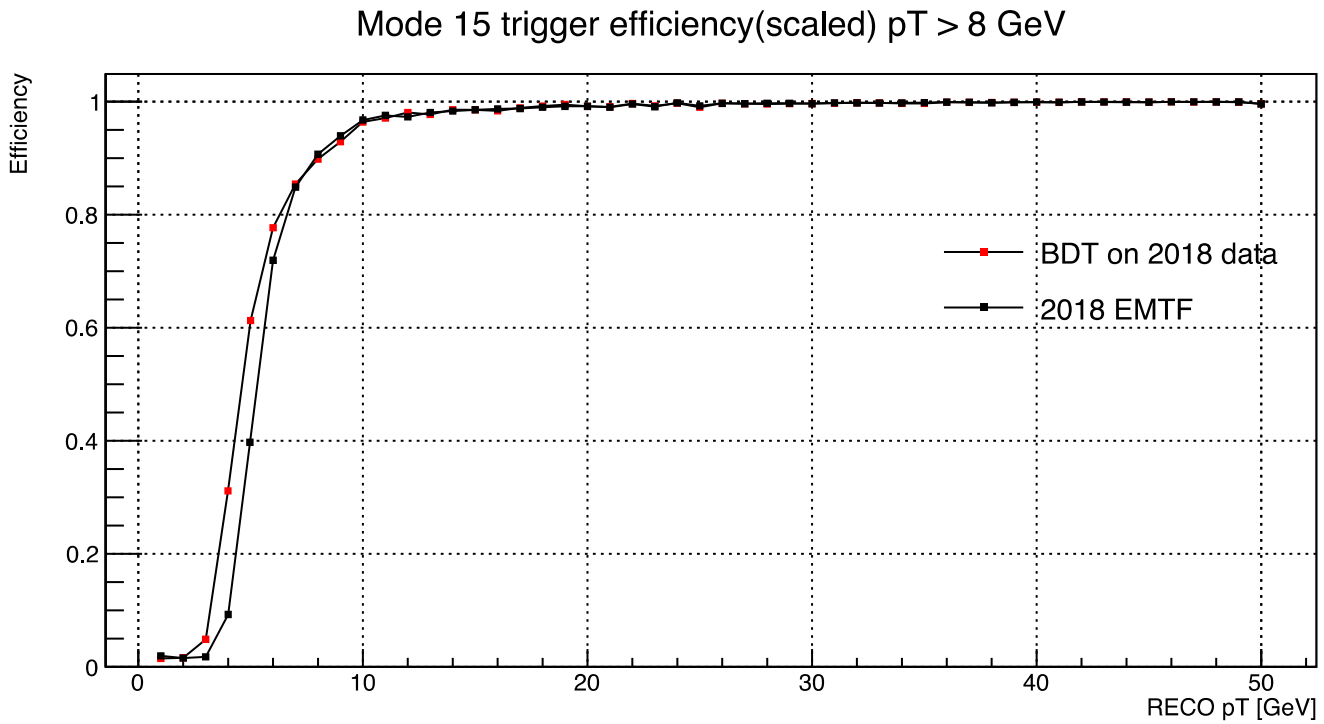

# Training $p_T$ with 2018 Data

Wei Shi, Andrew Brinkerhoff

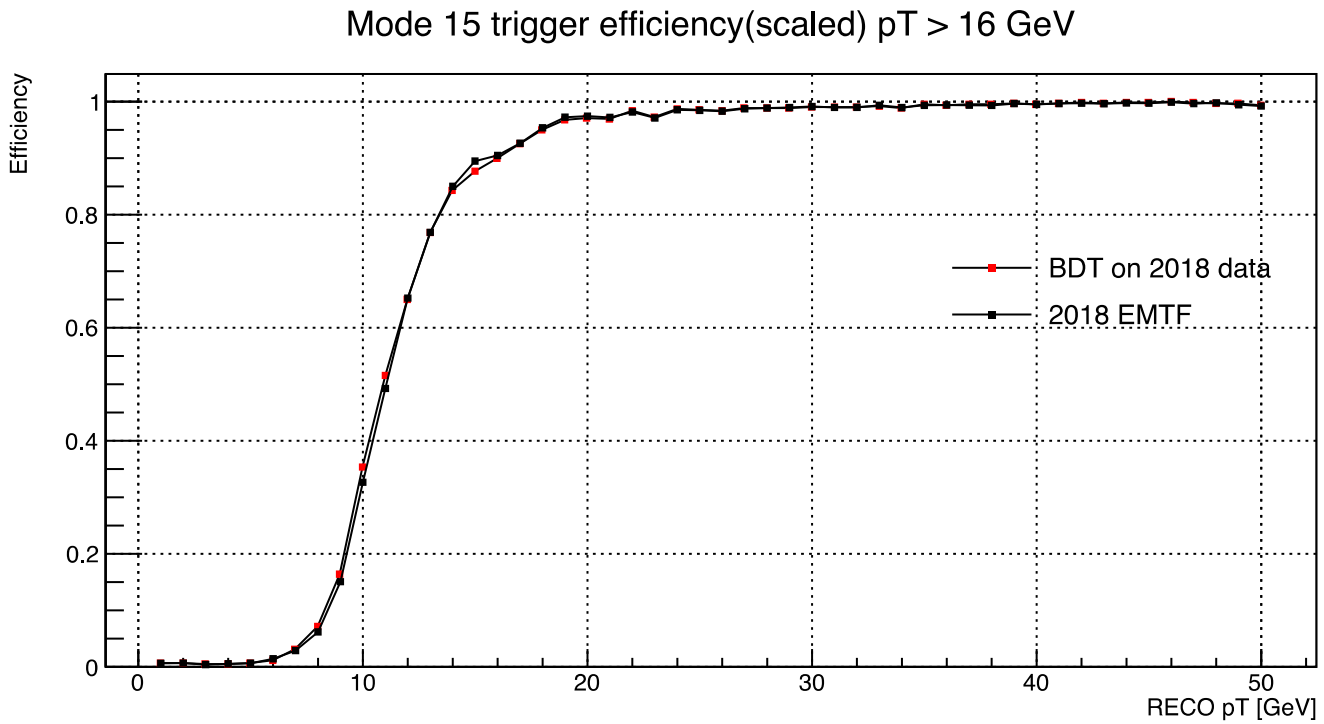
# Basics

- Train 228,659 muons
  - SingleMu Ntuple
    - */SingleMuon/FlatNtuple_2019_01_09_SingleMuon_PU50_Sep24_FW/*/000*/*.root
  - EMTF track uniquely matched to RECO muon + 2018 P5 BDT pT as input
  - Replace LCT with Offline CSC segments for phi and theta, train on CSC-only track
- Test 333,816 muons
  - SingleMu data (uniquely matched) + ZeroBias
    - */ZeroBias/FlatNtuple_2019_01_09_ZeroBias_PU50_Sep24_FW/*/000*/*.root
- Settings
  - Removed bias events for training and test
    - Removed events: nRecoMuonsTrig<2 && nRecoMuonsTrigCen==0
  - logPt target, 1/pT weight, Least Square loss function
  - 400 trees, not tuned

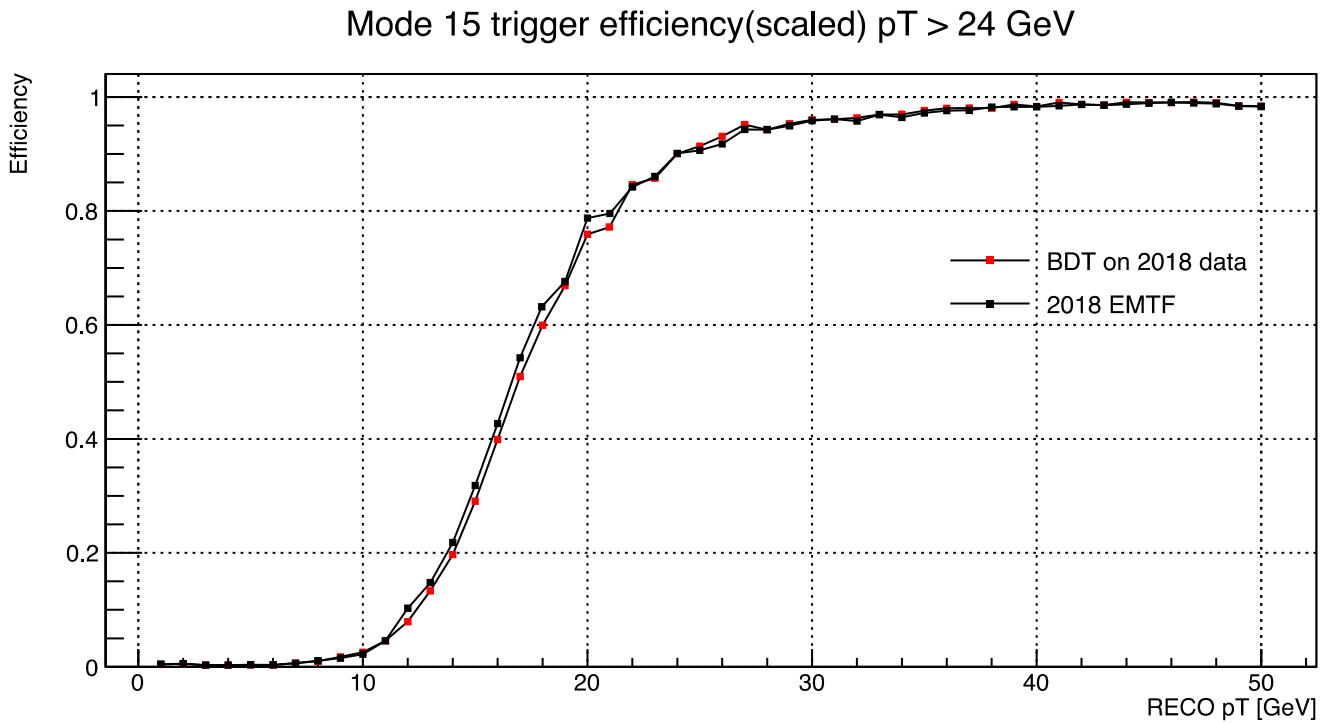
# Efficiency @ 8 GeV



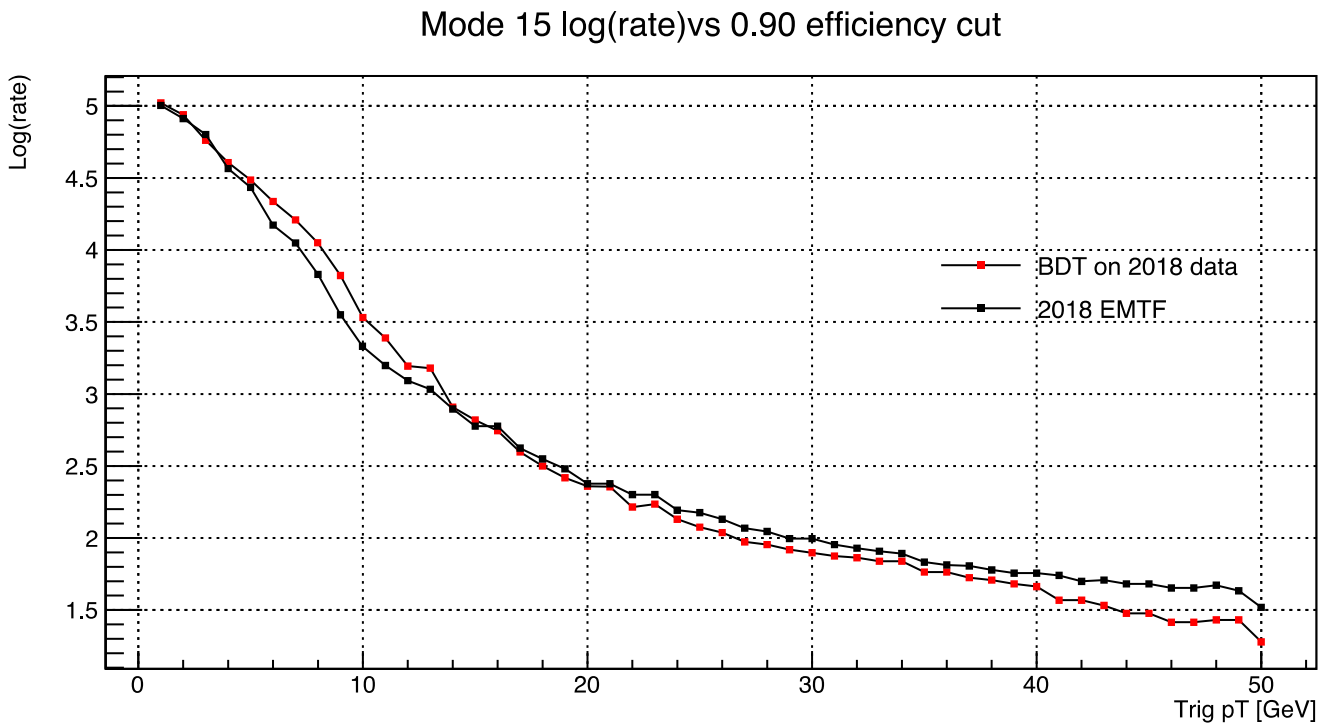
# Efficiency @ 16 GeV



# Efficiency @ 24 GeV

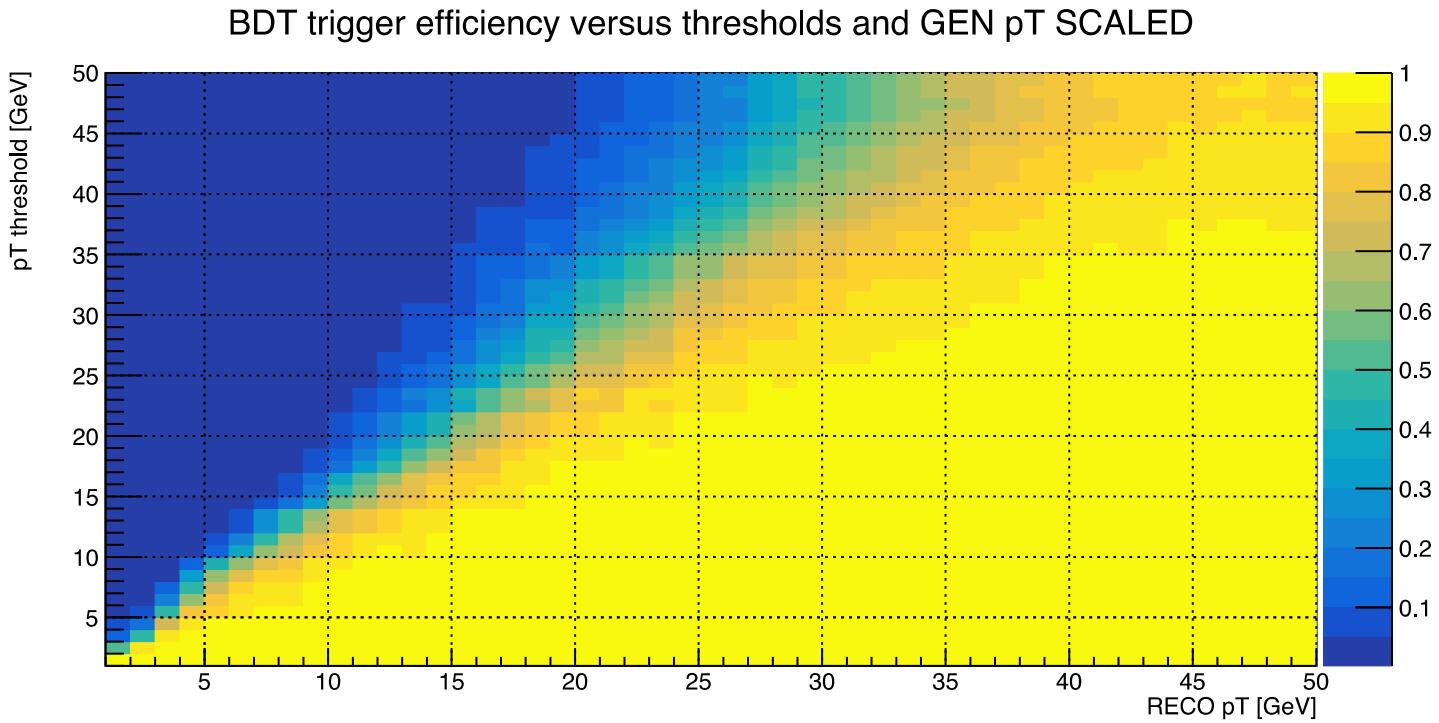


# Rate

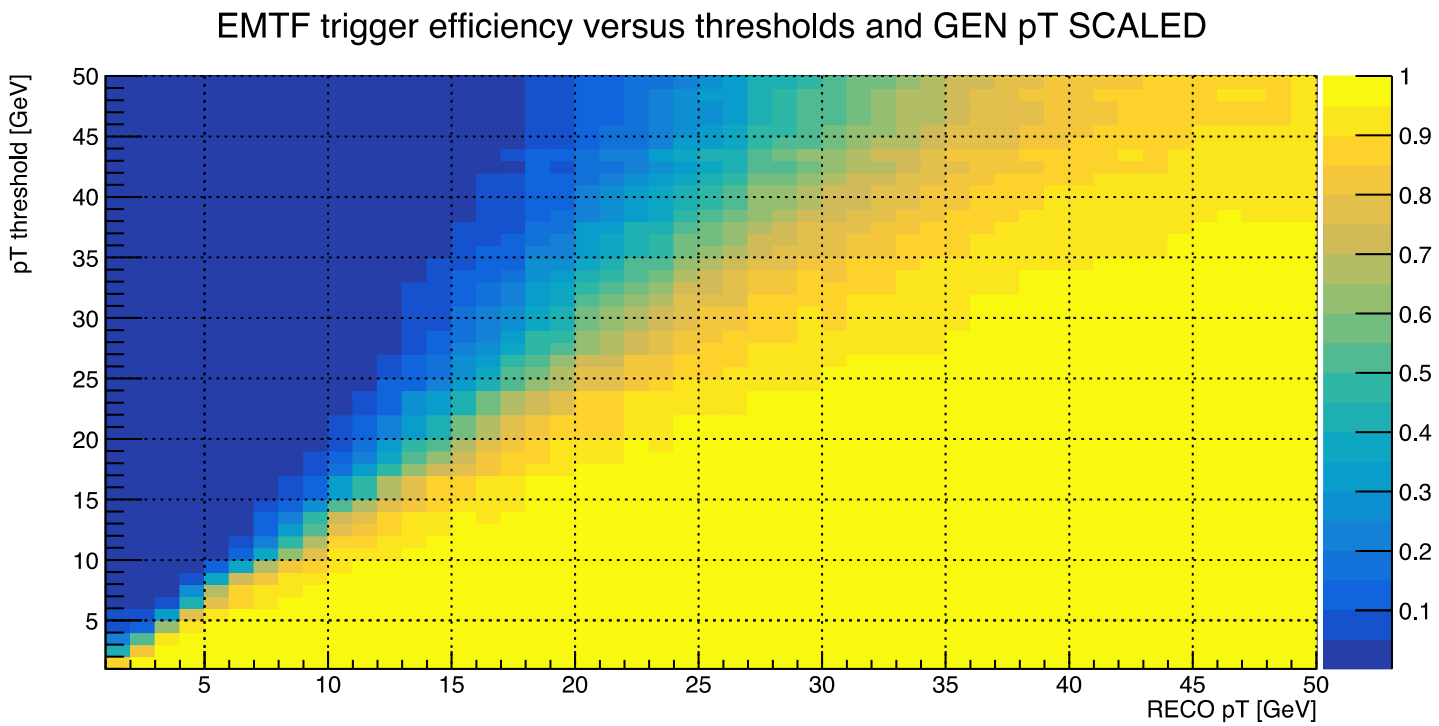

Mode 15 log(rate)vs 0.90 efficiency cut
Log(rate)
5
4.5
4
3.5
3
2.5
2
1.5
0
10
20
30
40
50
Trig pT [GeV]
BDT on 2018 data
2018 EMTF

# Back Up

# New BDT 2D Efficiency



# 2018 EMTF 2D Efficiency



# Tools

- Training: https://github.com/weishi10141993/EMTFPtAssign2017/blob/test/PtRegression2018.C
- Evaluation: https://github.com/weishi10141993/EMTFPtAssign2017/blob/test/macros/ReadMVAOut_v1_BDT.C