Muon Trigger Efficiency Calculation

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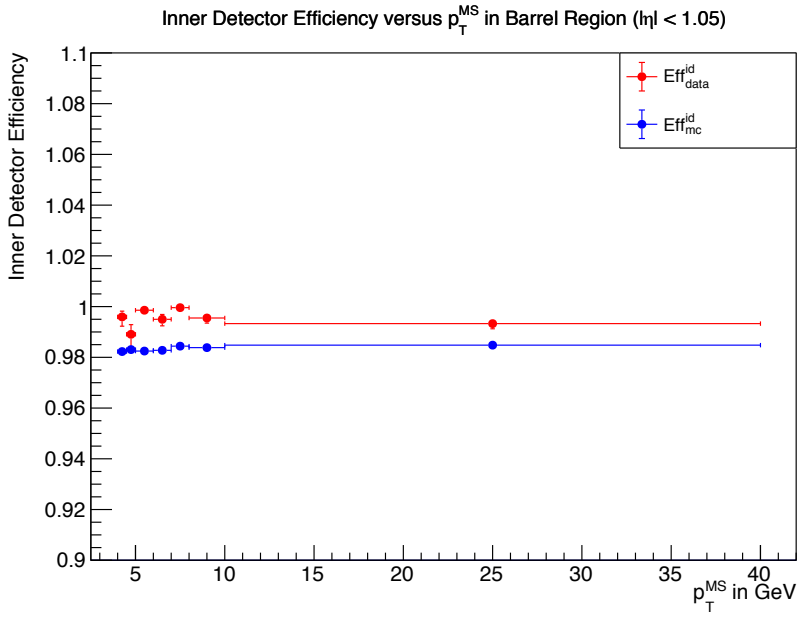
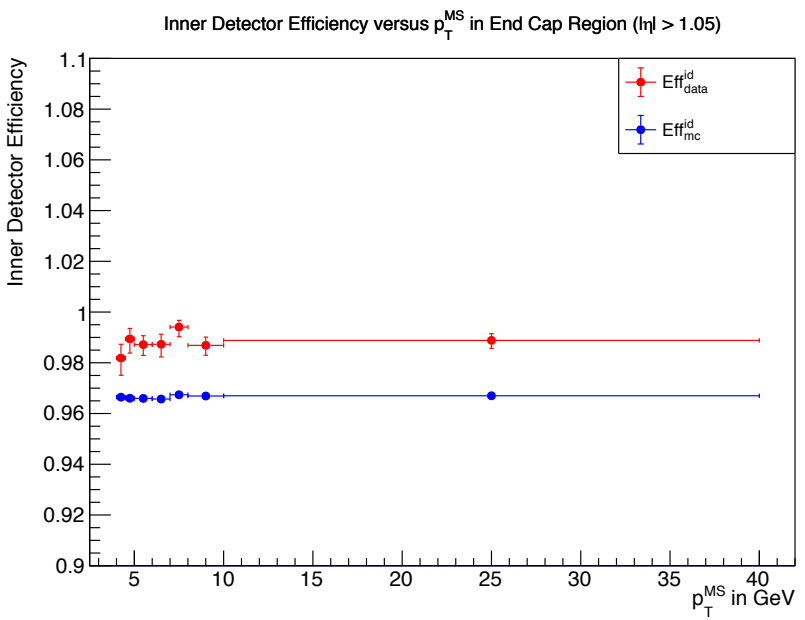
Introduction

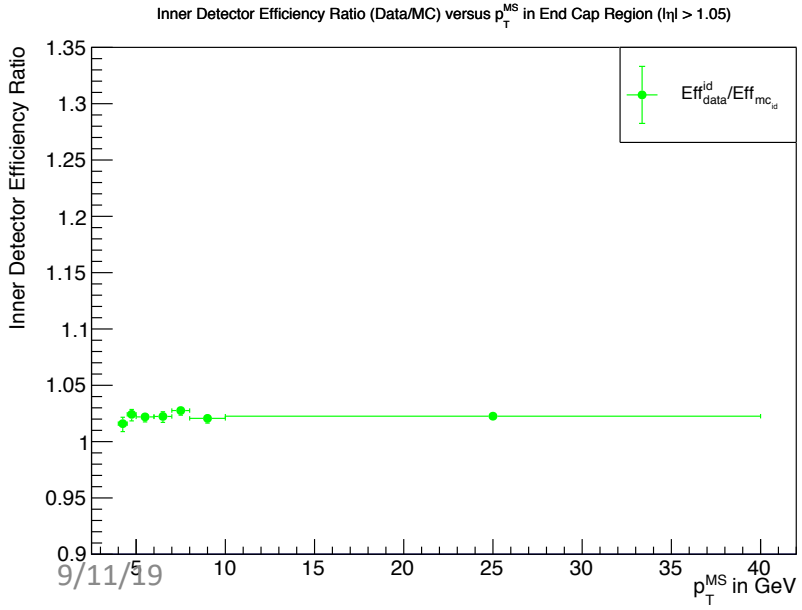
- User Tag & Probe method to calculate efficiency of inner detector (ID) and muon chamber (MS).
- Used tight muons as tag muons.
- Used muon ID selections to select ID tracks.
- No selections applied to MS tracks.
- Match: a MS track (or reconstructed muon) and an ID track with dR < 0.2 for Eff_{ID} calculation, and with dR < 0.005 for Eff_{MS} calculation.
- Eff_{ID} = (# of MS tracks that have a matched ID track)/(# of total MS tracks).
- Eff_{MS}= (# of ID tracks that have a matched reconstructed muon)/(# of ID tracks).

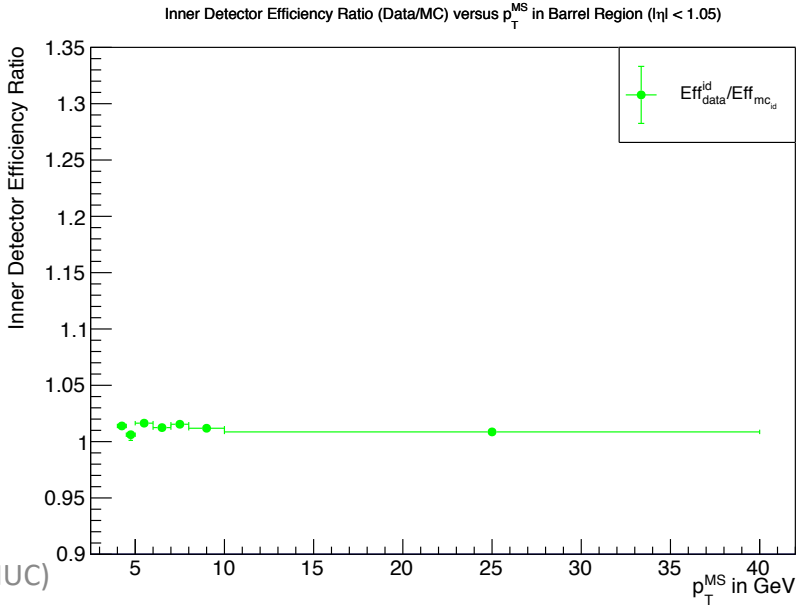
- To do:
  - Produce efficiency graphs using MC truth information and compare it with MC T&P results

Inner Detector Efficiency vs p_T^{MS}

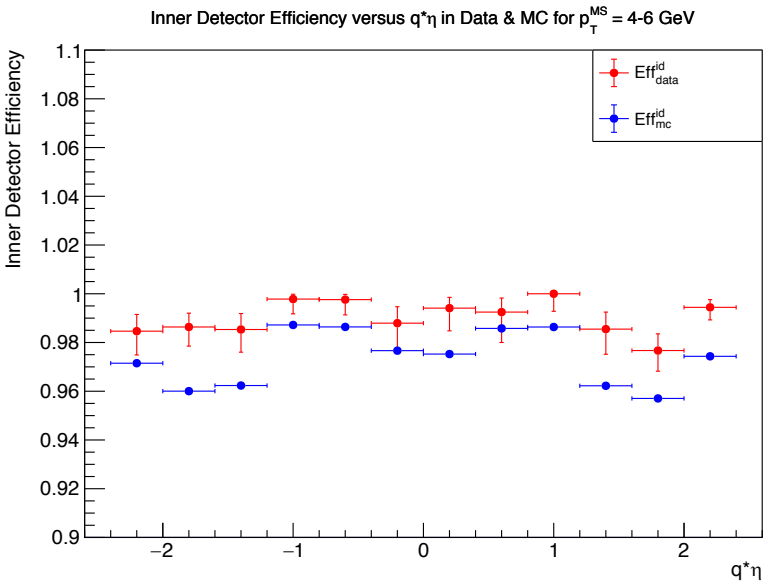


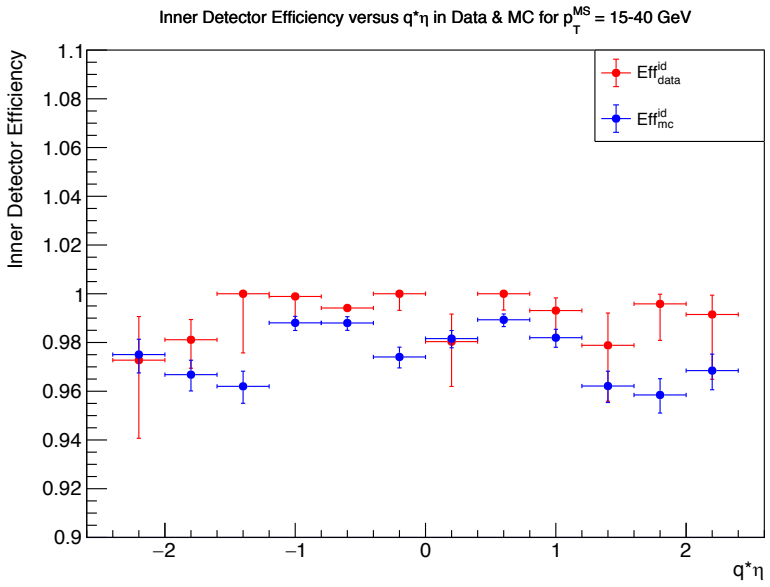


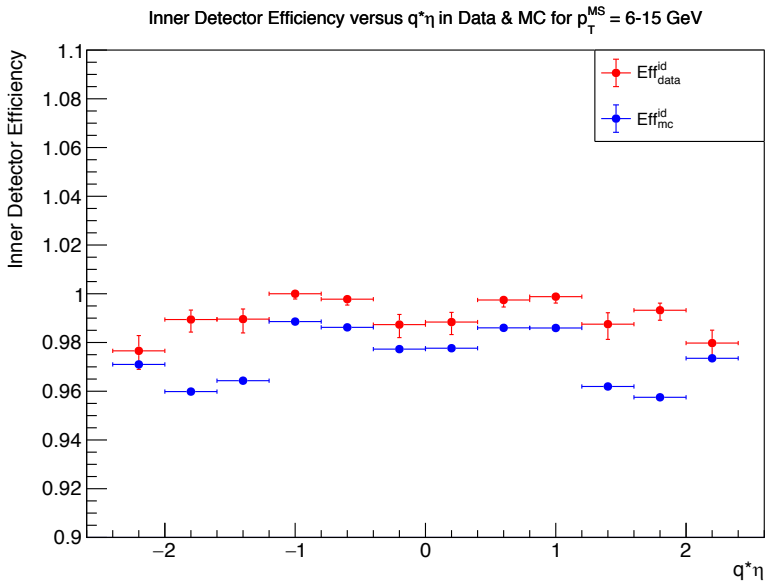


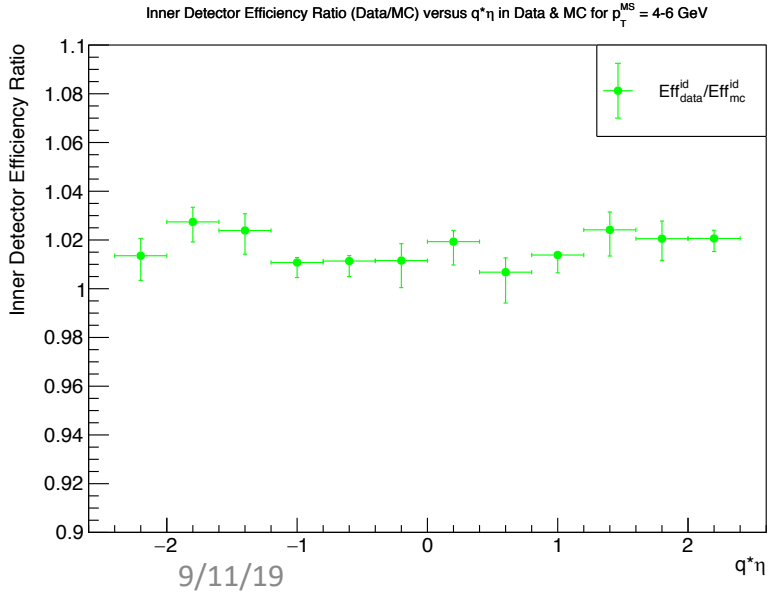


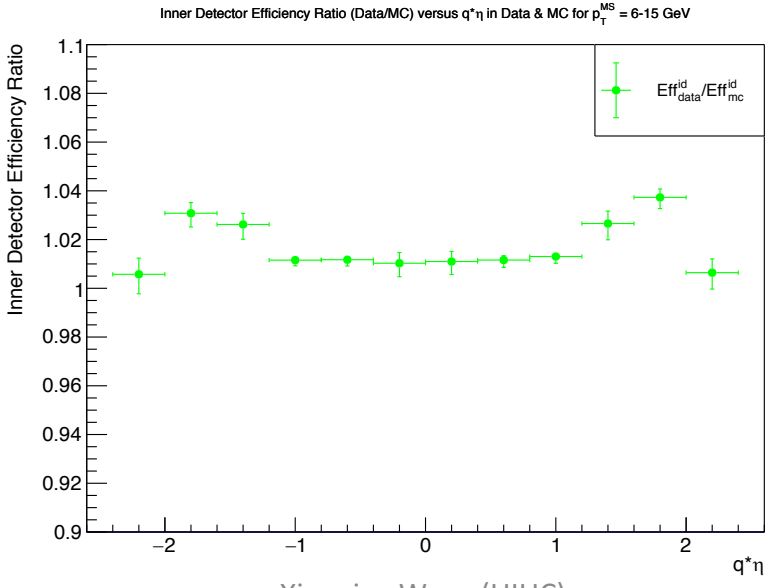
Inner Detector Efficiency vs q*η

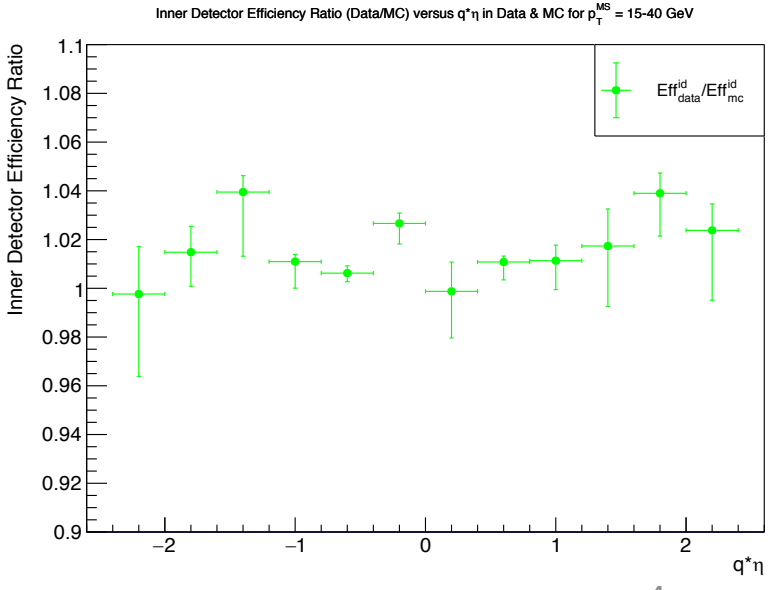




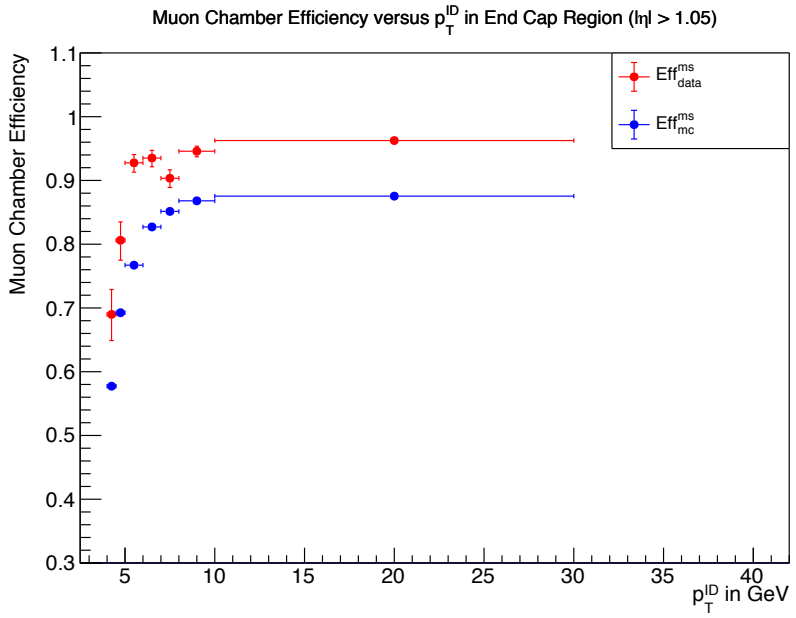


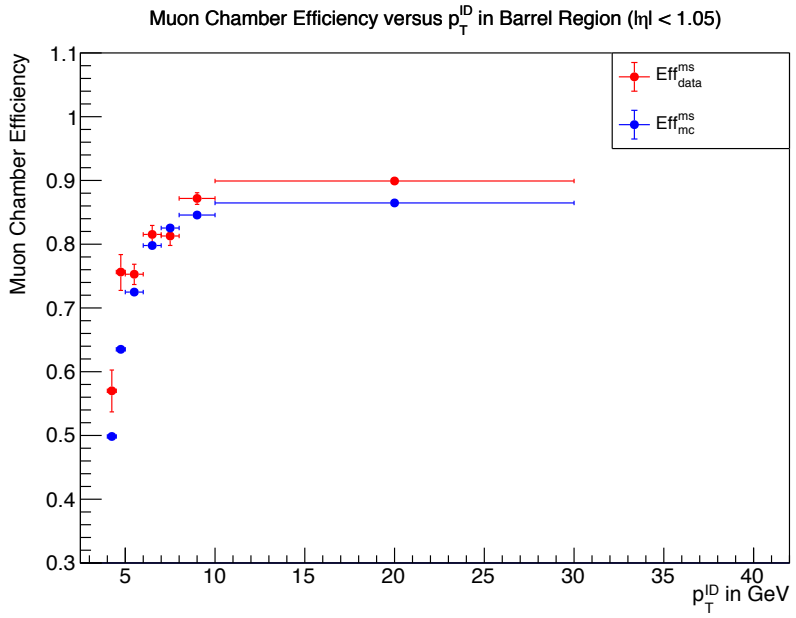


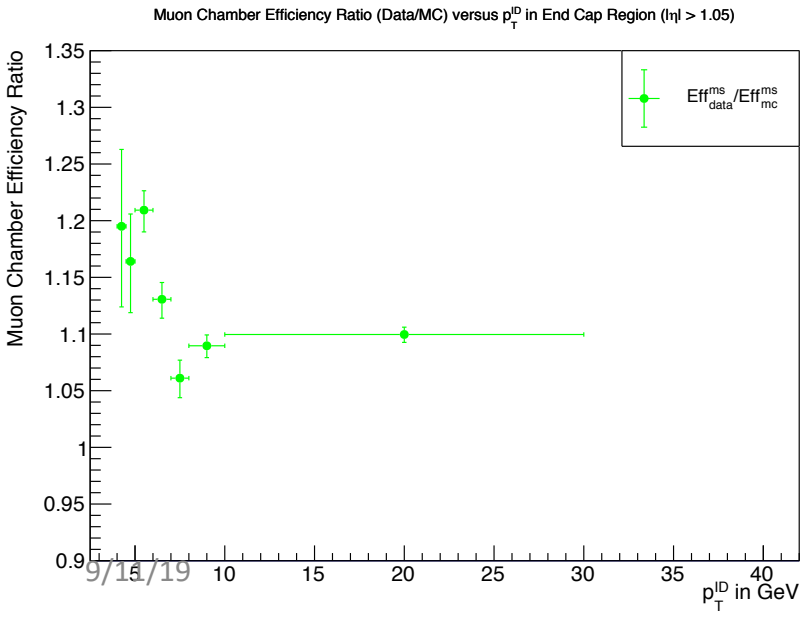


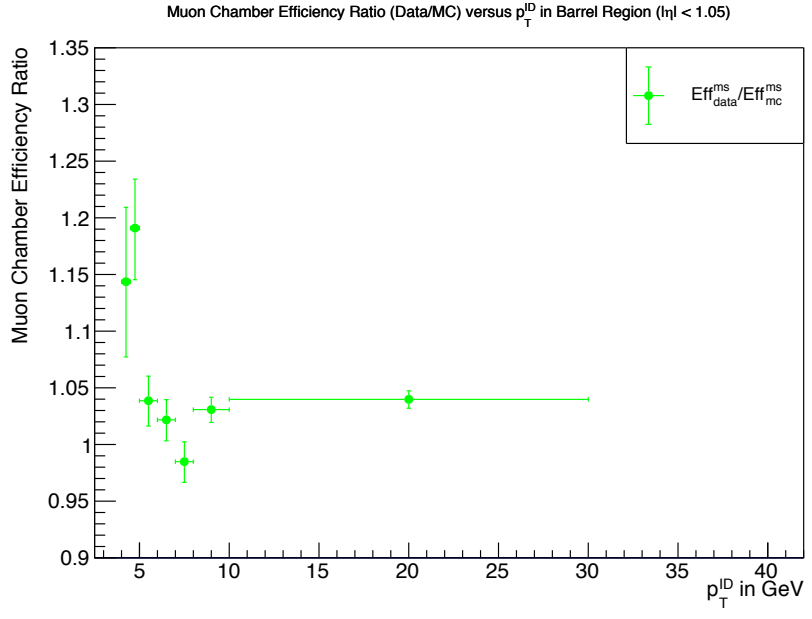


Muon Chamber Detector Efficiency vs p_T

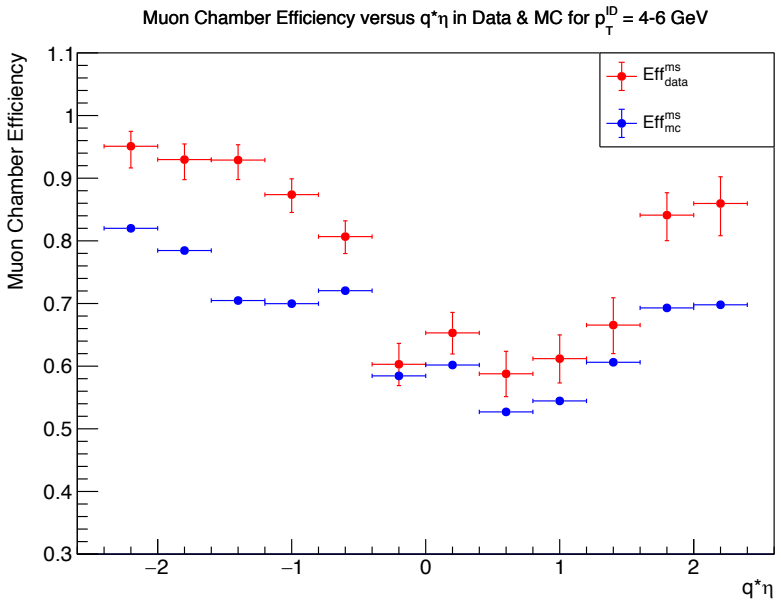


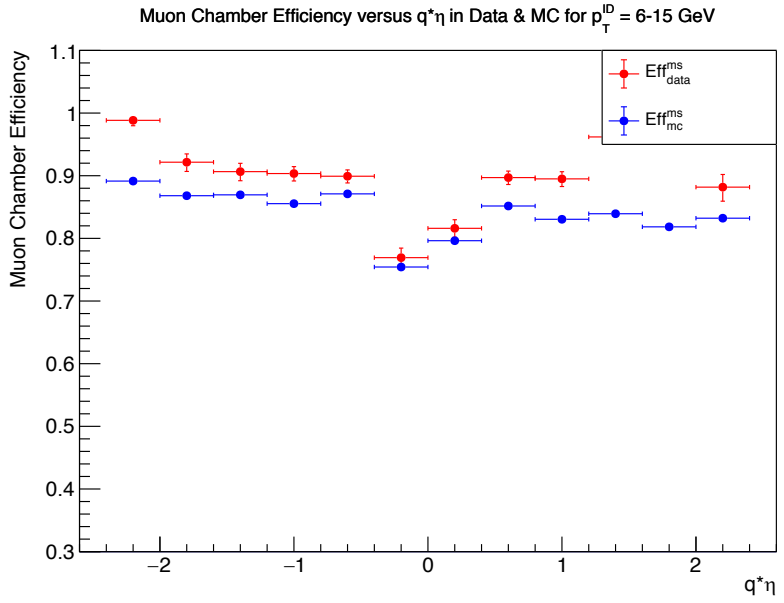


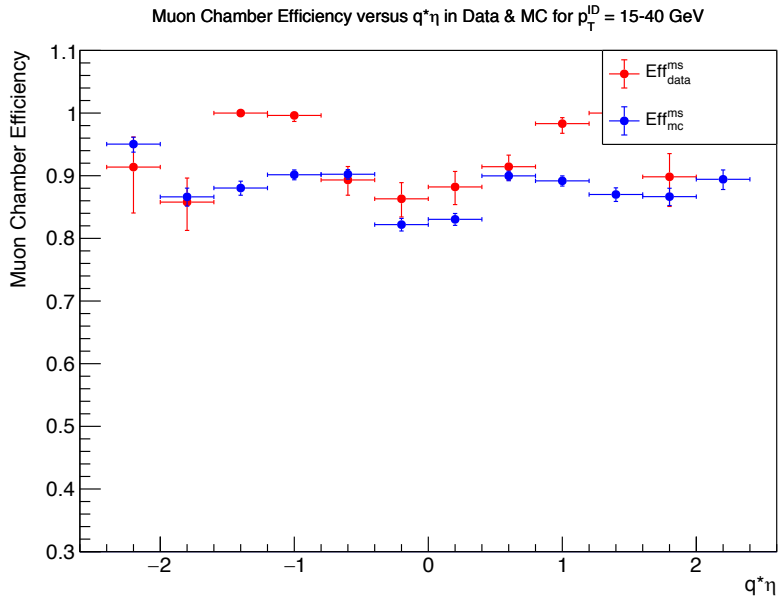


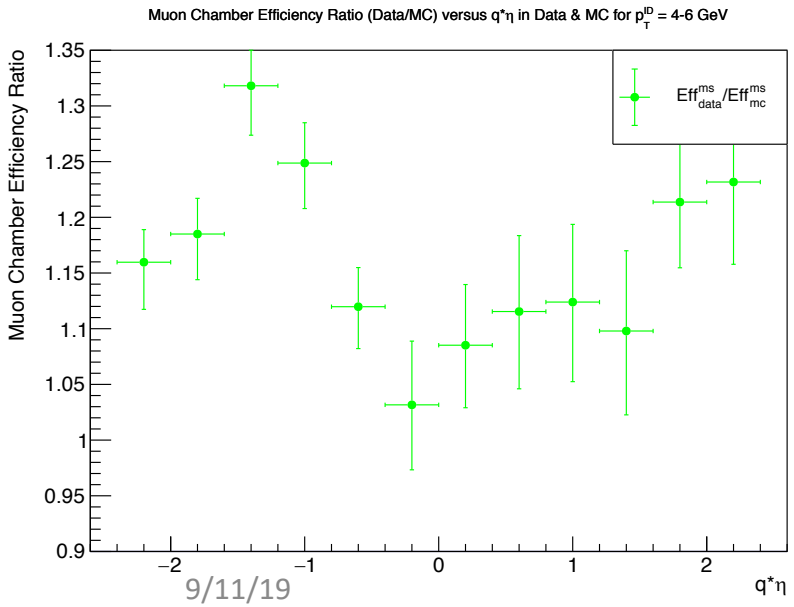


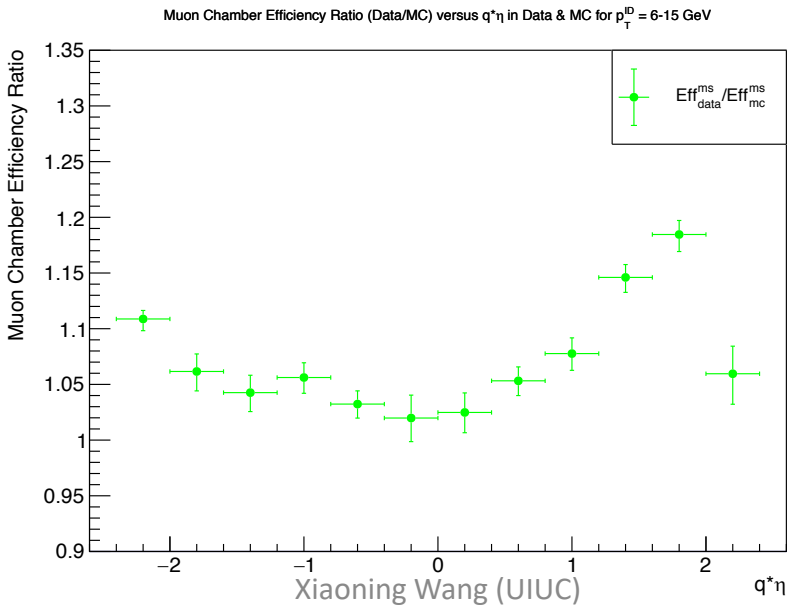
Muon Chamber Efficiency vs q*eta

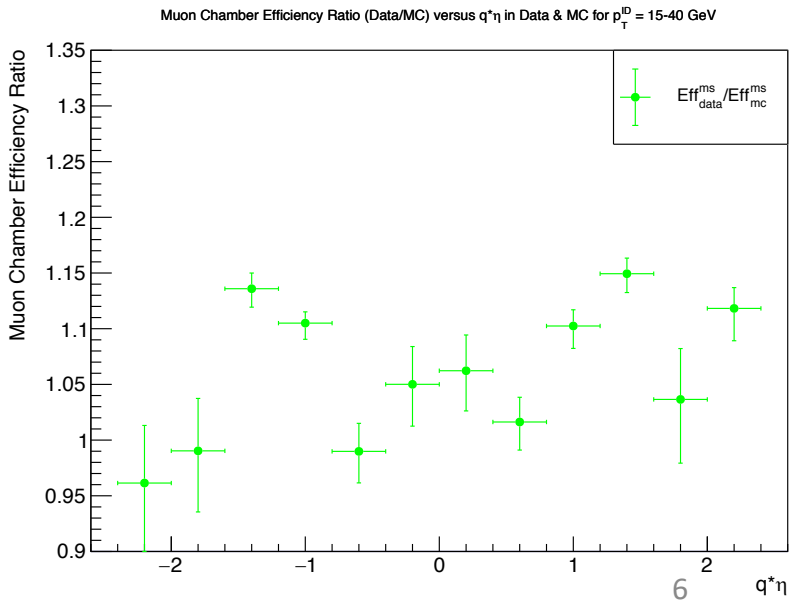






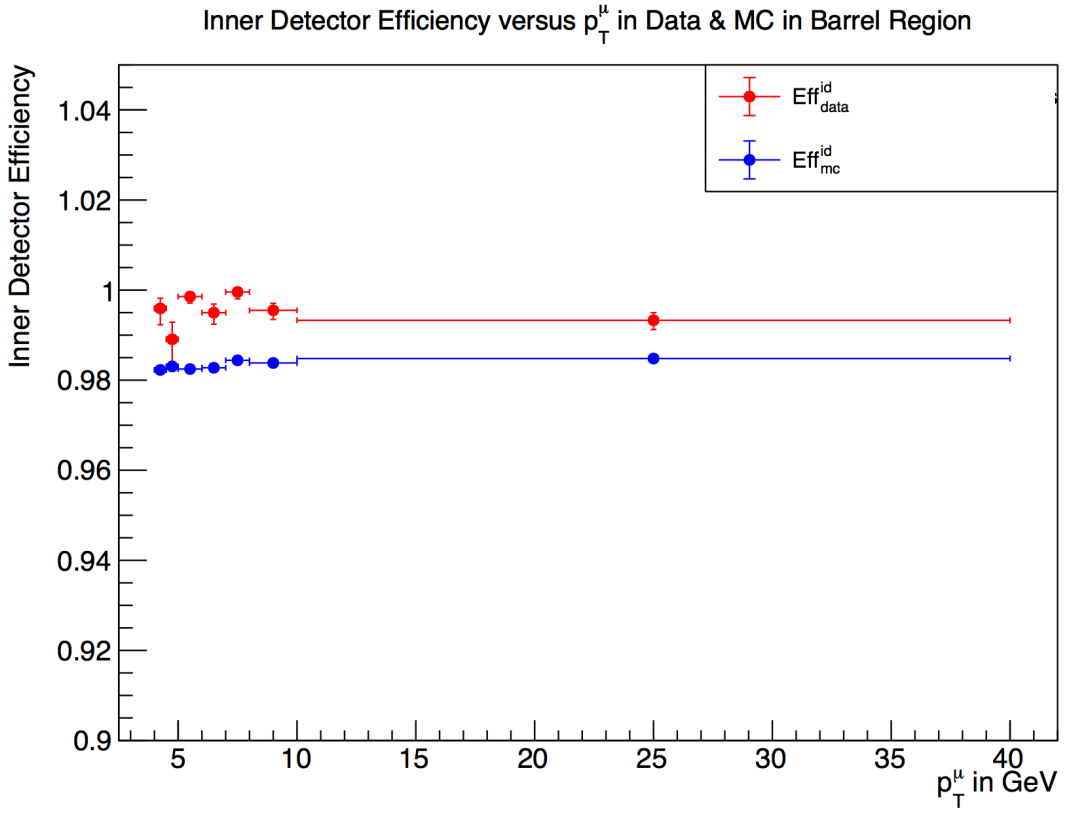


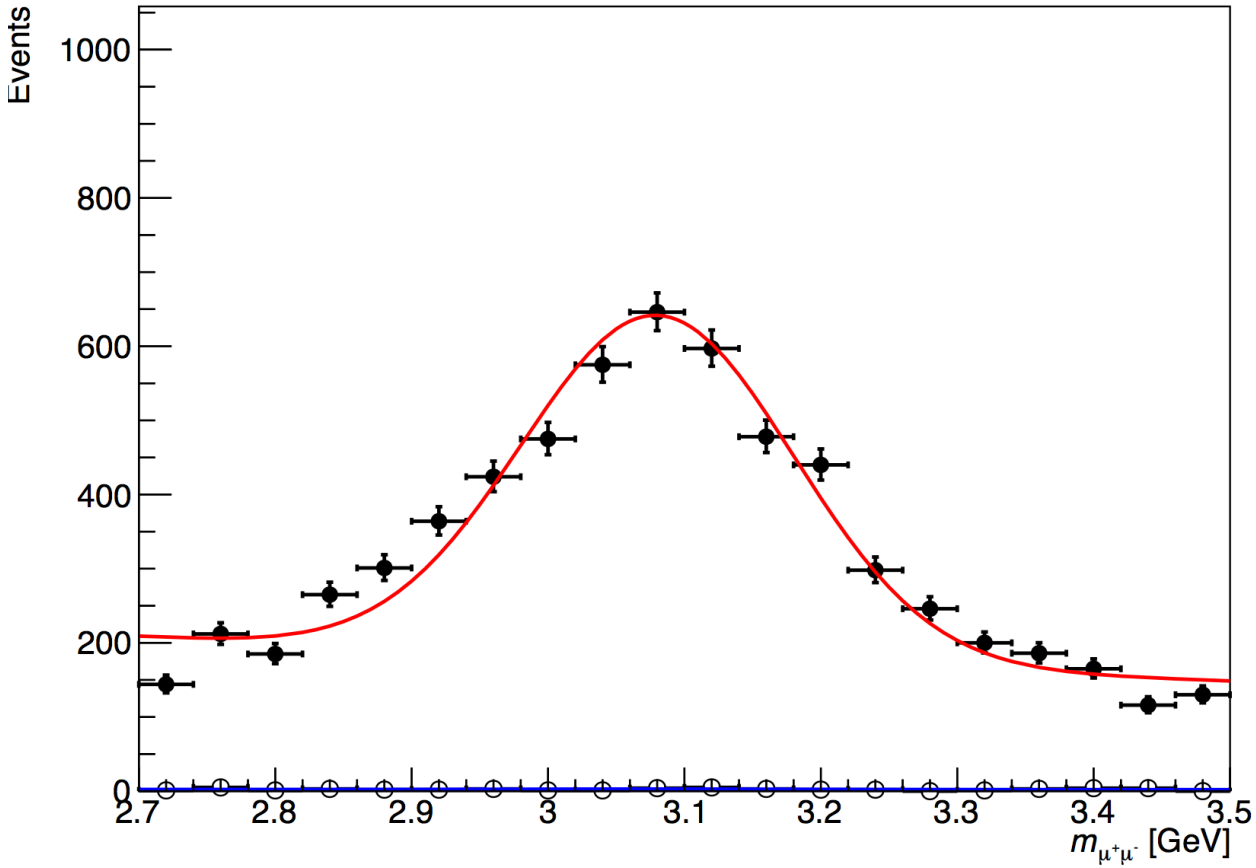




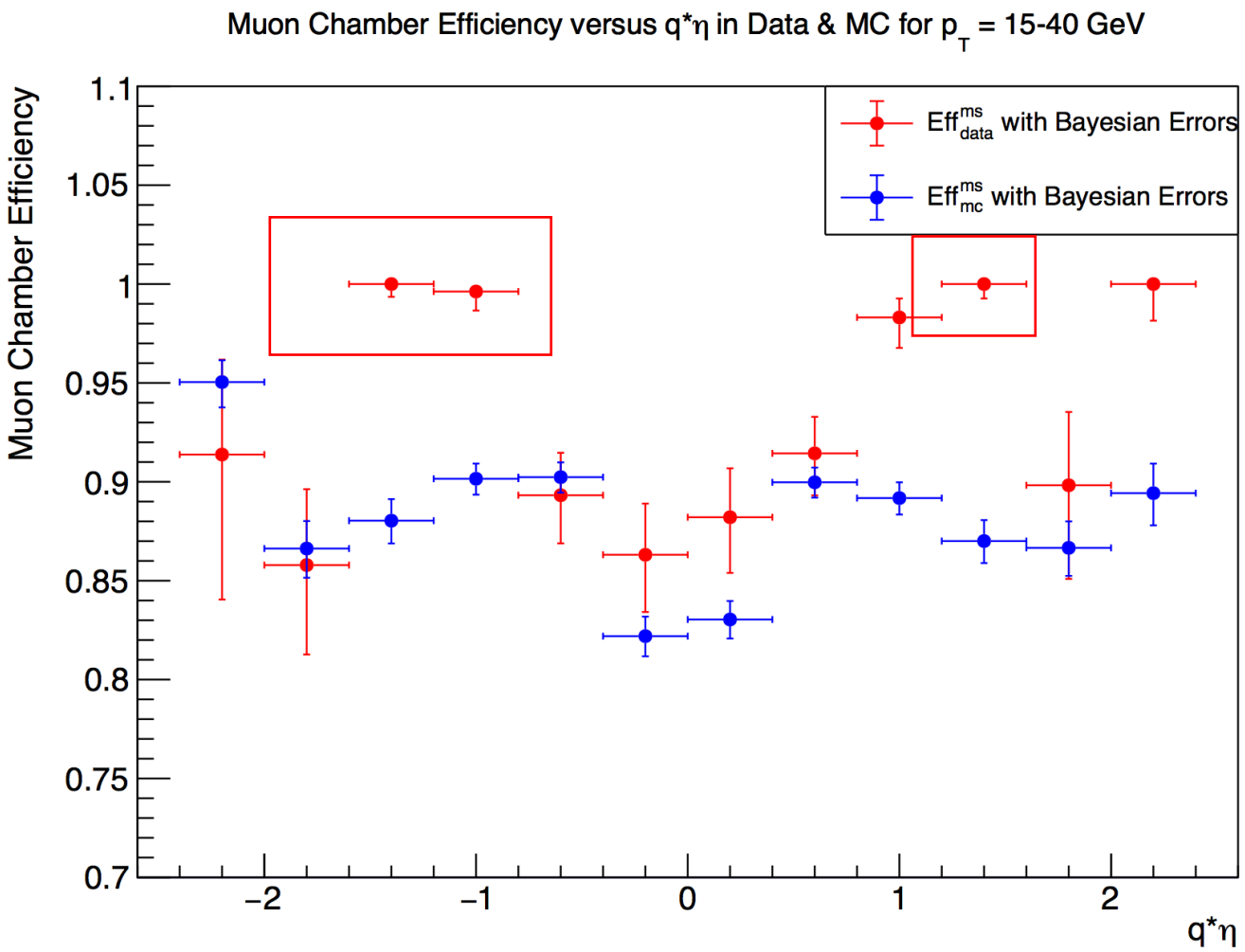
Backup

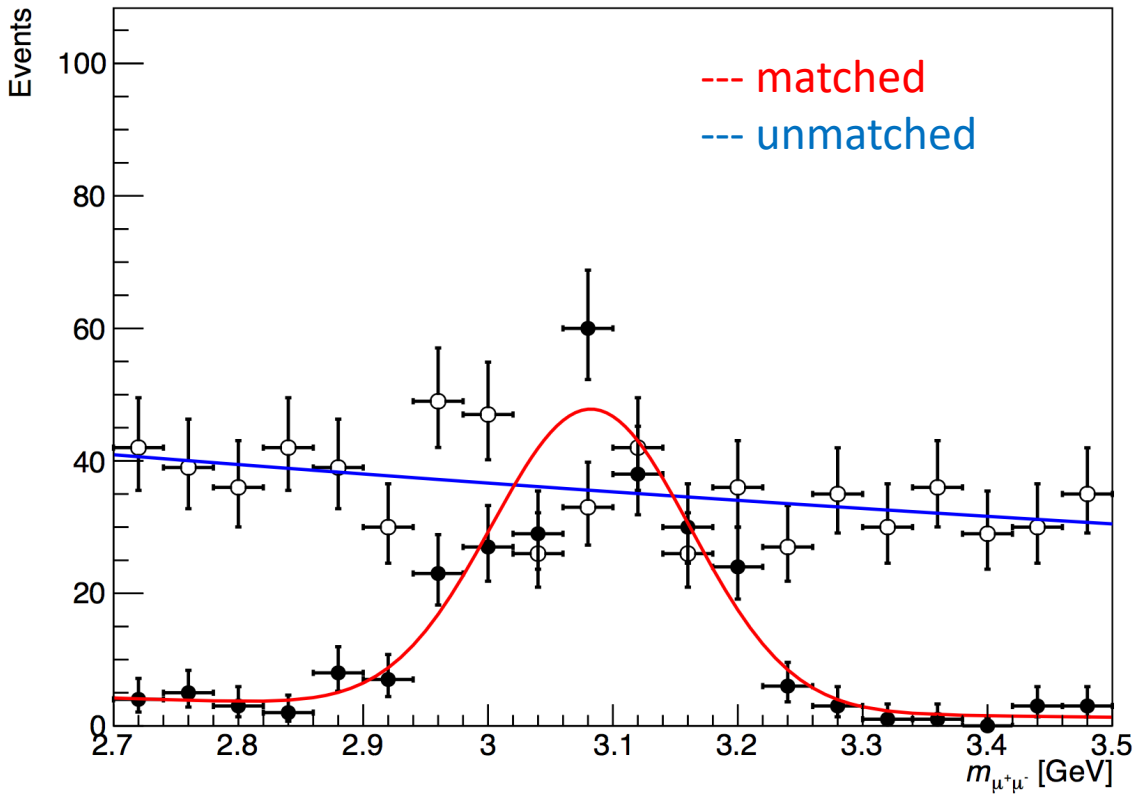
Eff_id for data in Barrel Region p_T = 6-7 GeV



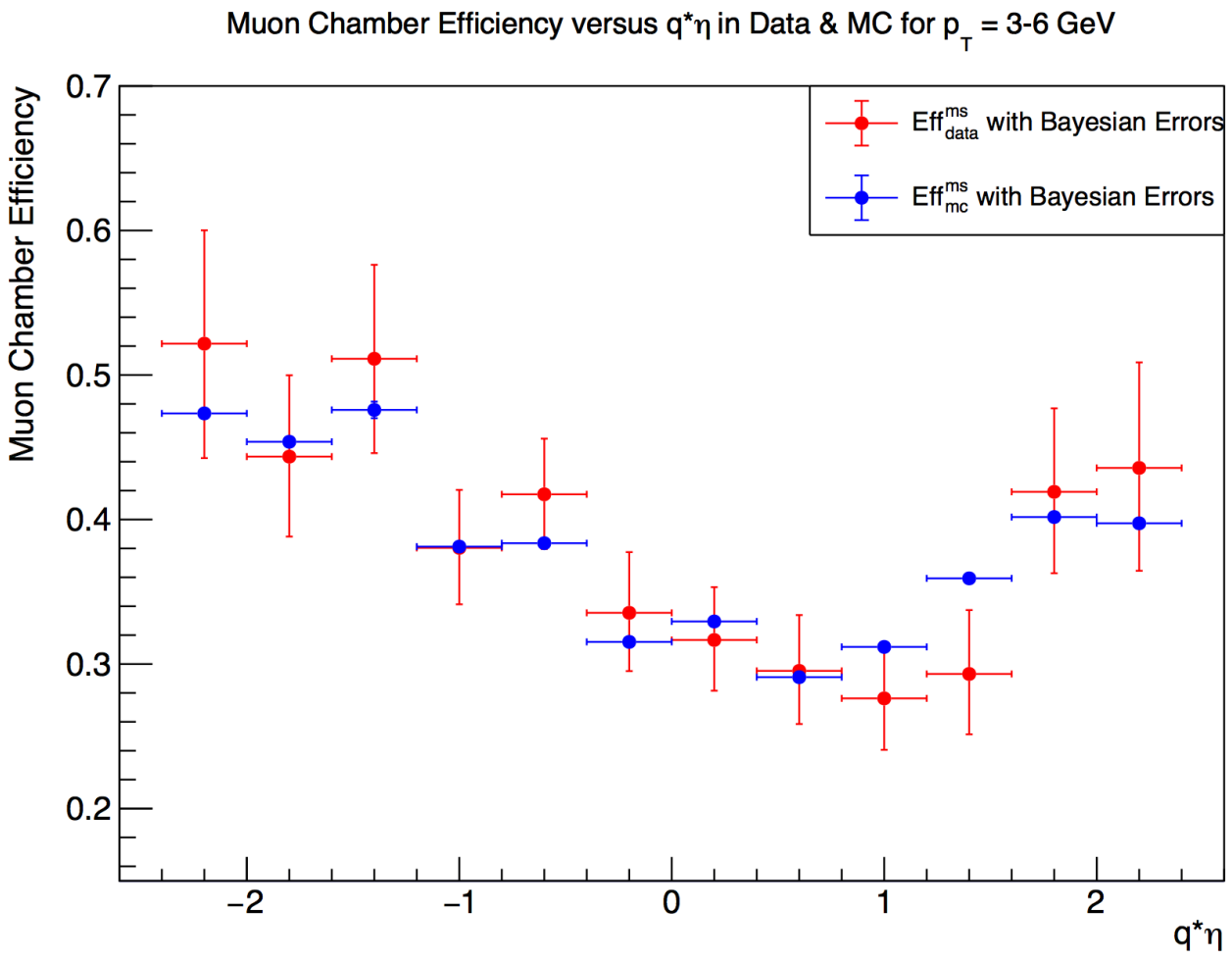


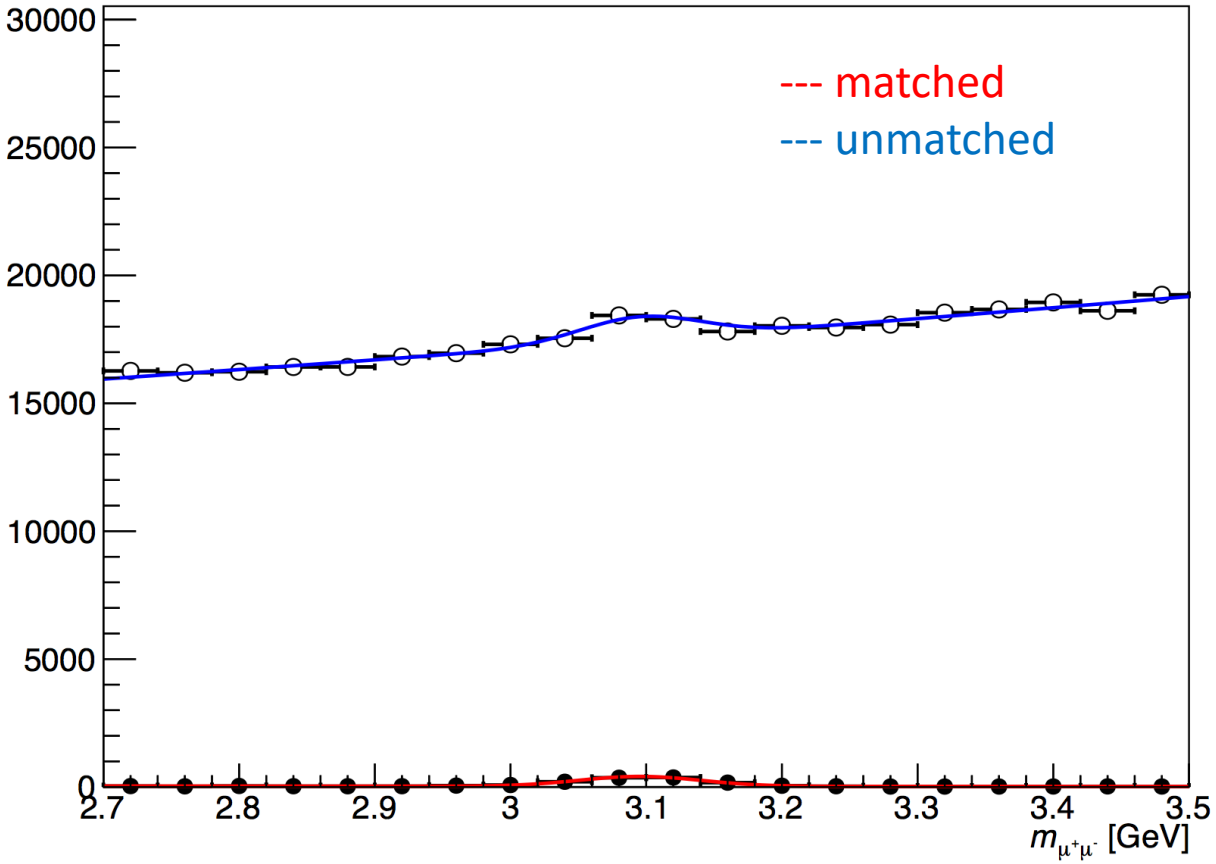
ID efficiency are in general high, signals are high comparing to the background and matched tracks are





- High pT region has very few data and some fake efficiencies are calculated.





- Low pT region has more data and data and MC go the same trend approximately.