Weekly Report

Shuiting Xin

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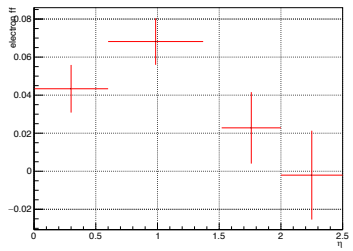
Anti-tight region design

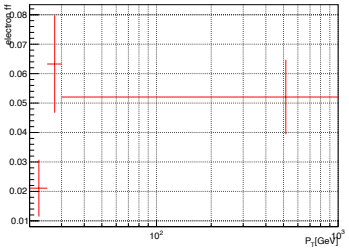
- Motivation
  - The criteria is crucial for fake factor extrapolation
  - $f = \frac{N_{tight}N_{tight}}{N_{tight}N_{anti-tight}}$
  - Hint : relaxing criteria of denominator will increase systematics from CR to SR, but decrease statics uncertainty

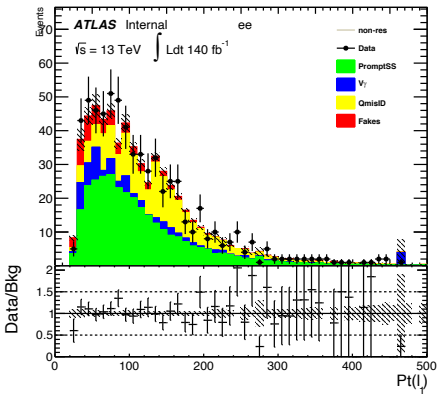
- Tight lepton:
  - e: FCloose, PLVtight, ChargeBDT, TightLH
  - mu: FCloose, PLVtight

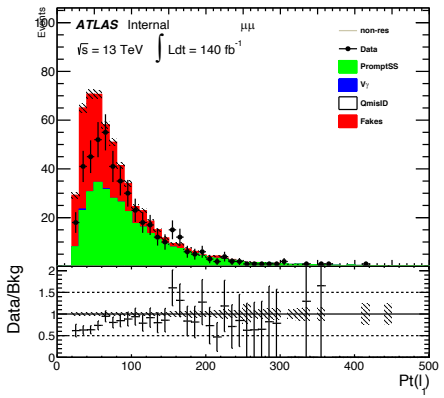
Anti-tight

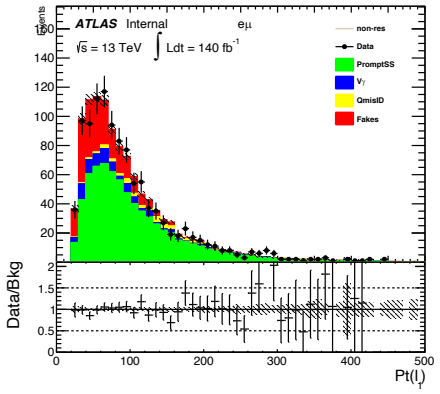
- Basial: no isolation requirement for Loose lepton
  - anti Tight lepton:
    - e: !FCloose or !PLVtight and ChargeBDT or !TightLH
    - mu: !FCloose or !PLVtight











	ee	mm	em
Jet fakes	60.32±1.63	251.17±3.57	275.09±3.68
PromptSS	316.31±3.47	330.33±2.89	714.21±4.81
$V+\gamma$	60.94±7.39	0.80±0.59	82.49±7.26
QmisID	185.26±1.30	0.00±0.00	40.52±0.51
Total backgrounds	622.83±8.42	582.30±4.63	1112.30±9.47
Observed	656.00	468.00	1110.00

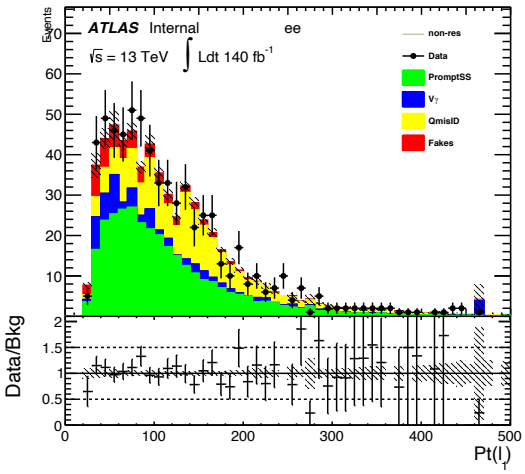
Pt dependent

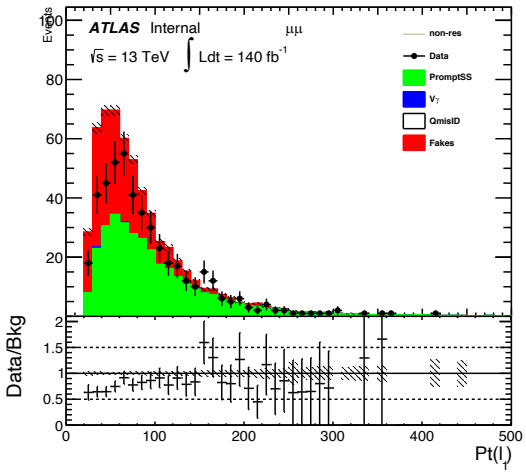
Basial: no isolation requirement for Loose lepton

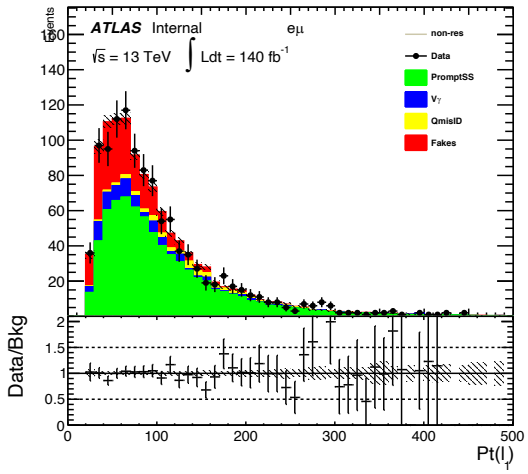
anti Tight lepton:

e: !FCloose or !PLVtight and ChargeBDT or !TightLH

mu: !FCloose or !PLVtight

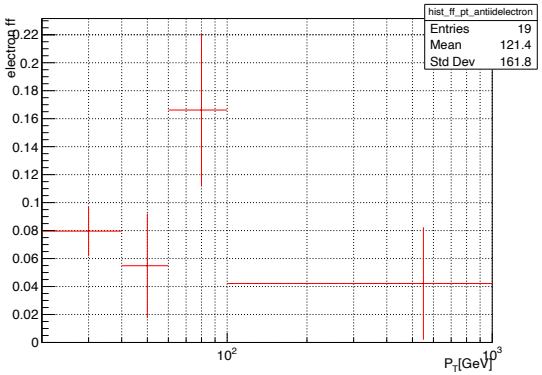


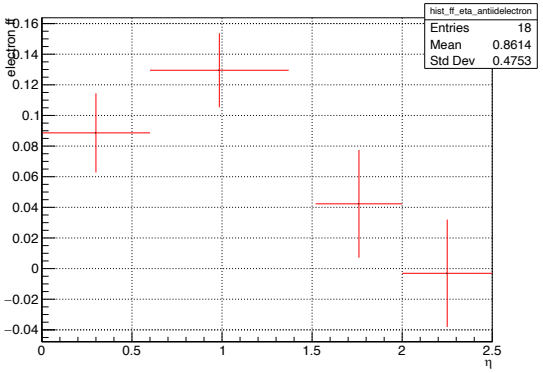


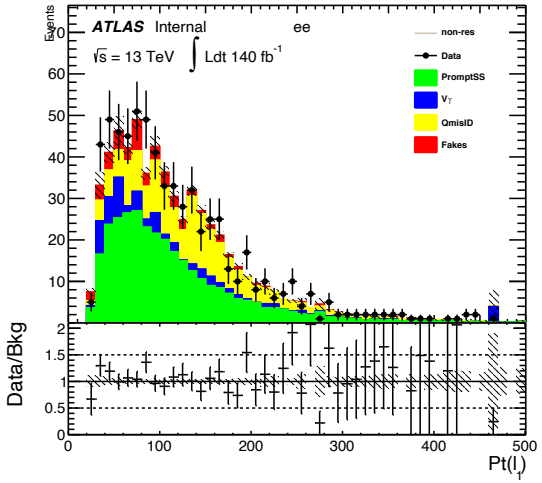


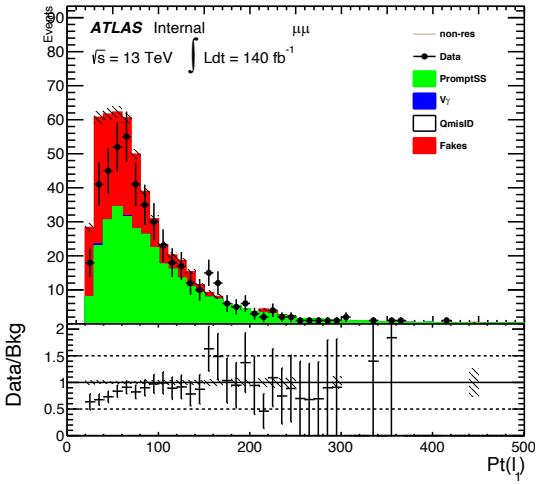
	ee	mm	em
Jet fakes	61.62±1.65	255.76±3.60	277.09±3.70
PromptSS	316.31±3.47	330.33±2.89	714.21±4.81
$V+\gamma$	60.94±7.39	0.80±0.59	82.49±7.26
QmisID	185.26±1.30	0.00±0.00	40.52±0.51
Total backgrounds	624.13±8.43	586.89±4.66	1114.30±9.47
Observed	656.00	468.00	1110.00

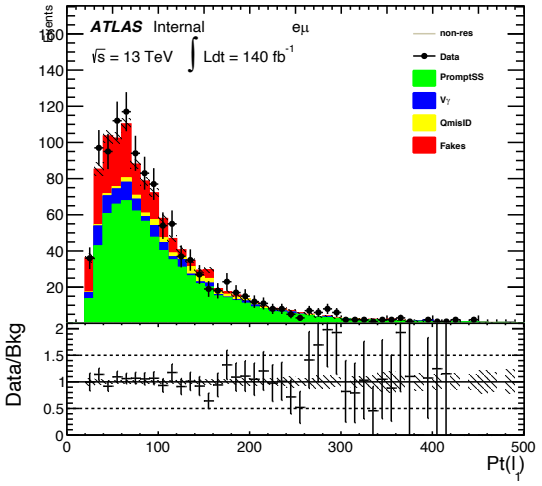
Fix FCLoose to loose lepton





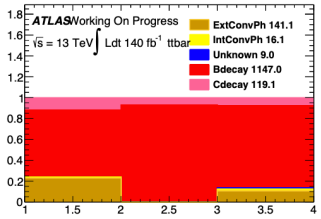




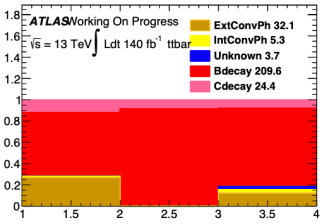


New strategy

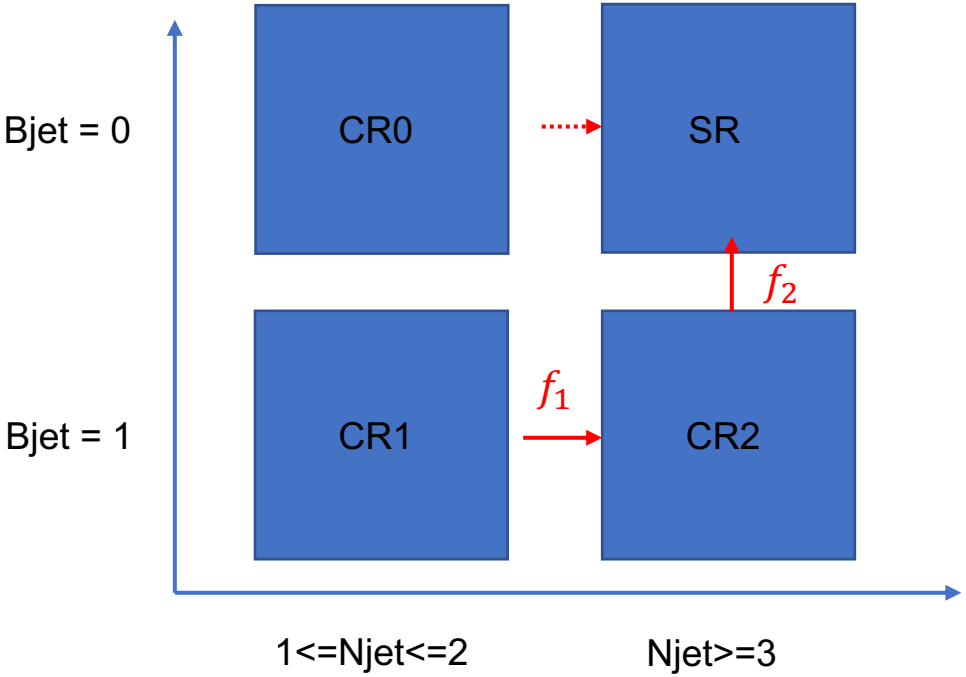
❖



CR1 1||2 jet,0bjet

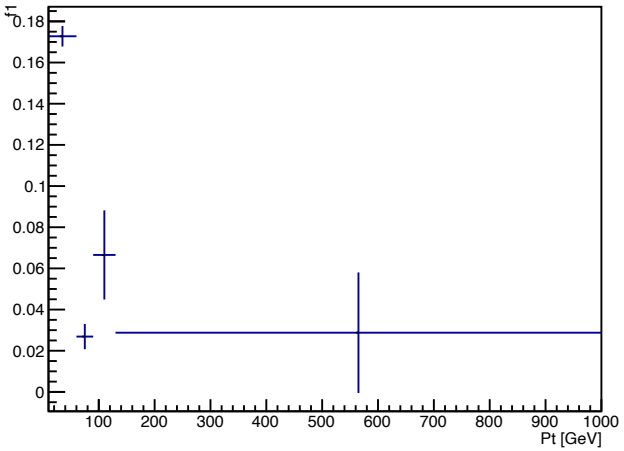


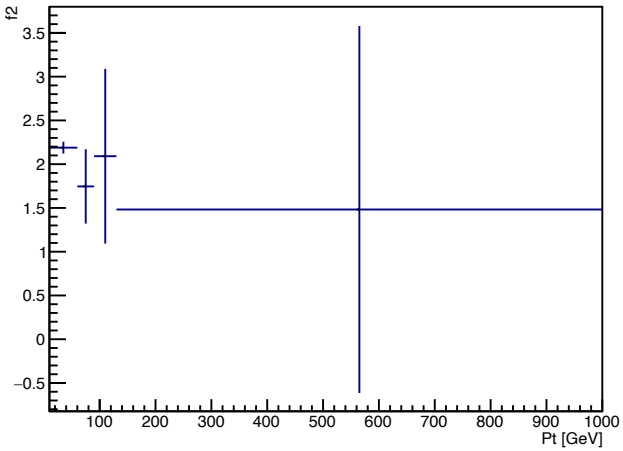
SR >=3jet,0bjet

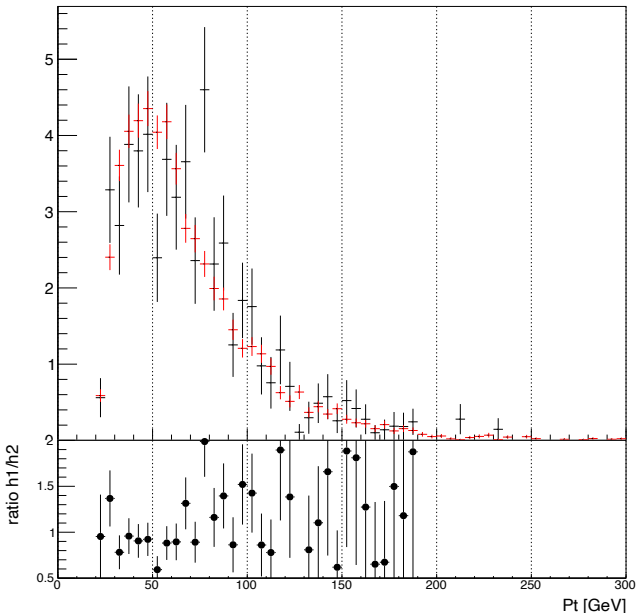


- $f_1 = \frac{N^{CR1}_{tight\ tight}}{N^{CR1}_{tight\ anti-tight}} = \frac{\text{Data}-\text{MC}}{\text{Data}-\text{MC}}$
- $f_2 = \frac{N^{SR}_{tight\ tight}}{N^{CR2}_{tight\ tight}}$
- $N_{predict} = N^{SR}_{tight\ anti-tight} \times f_2 \times f_1$

Ttbar closure test







Summary

- The data/MC in mumu is not very good.
- Tuning anti-tight definition do not effect much.
- The closure test shows better agreements with ttbar process.
- suspect the the PLV ruins the #Njets dependence. The PLV explicit information of
- Will check ff vs njets with/wo plv.