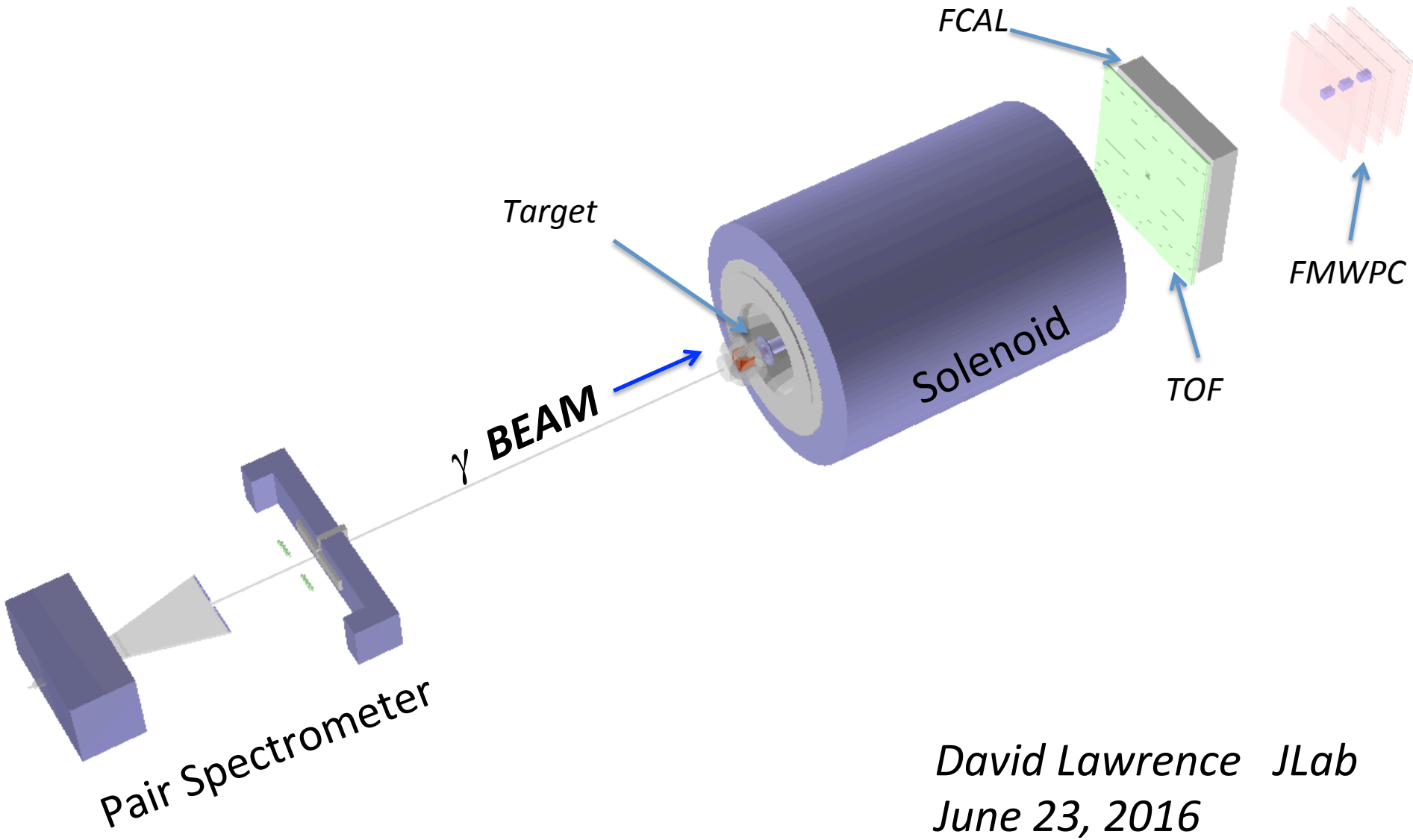
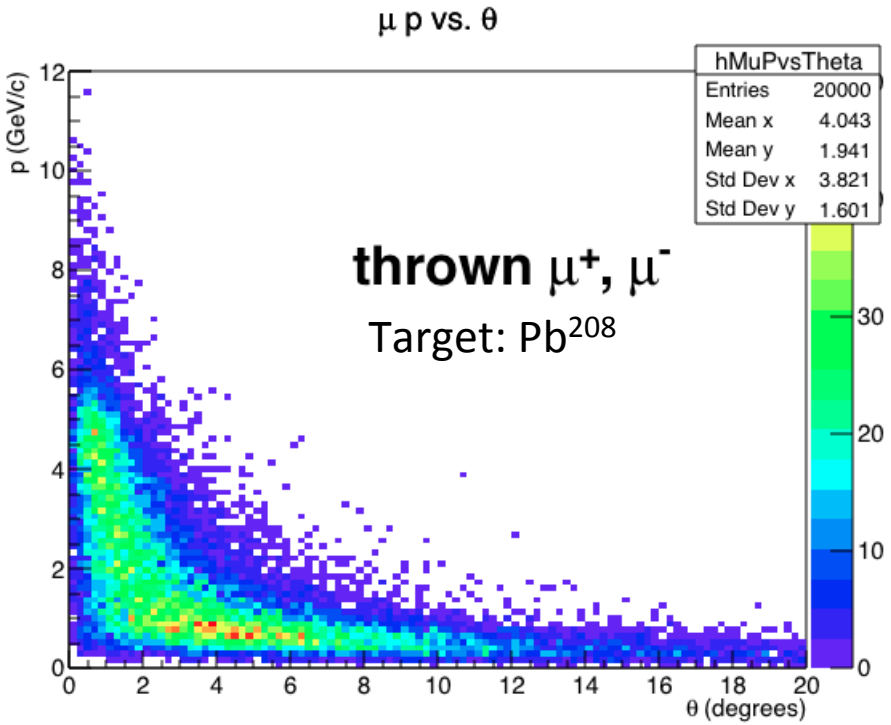
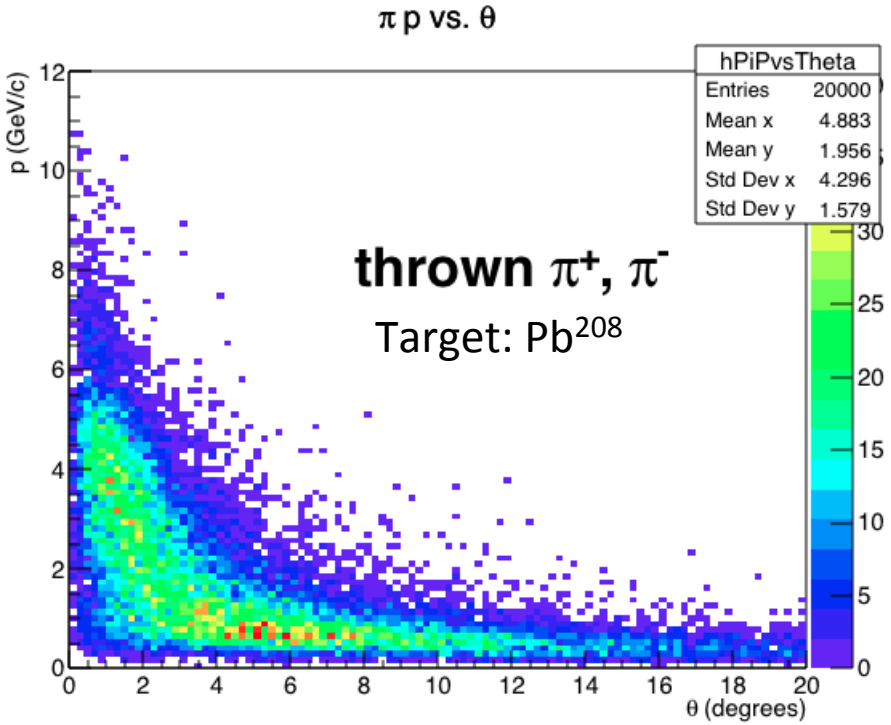
CPPsim = GEANT 4 simulation

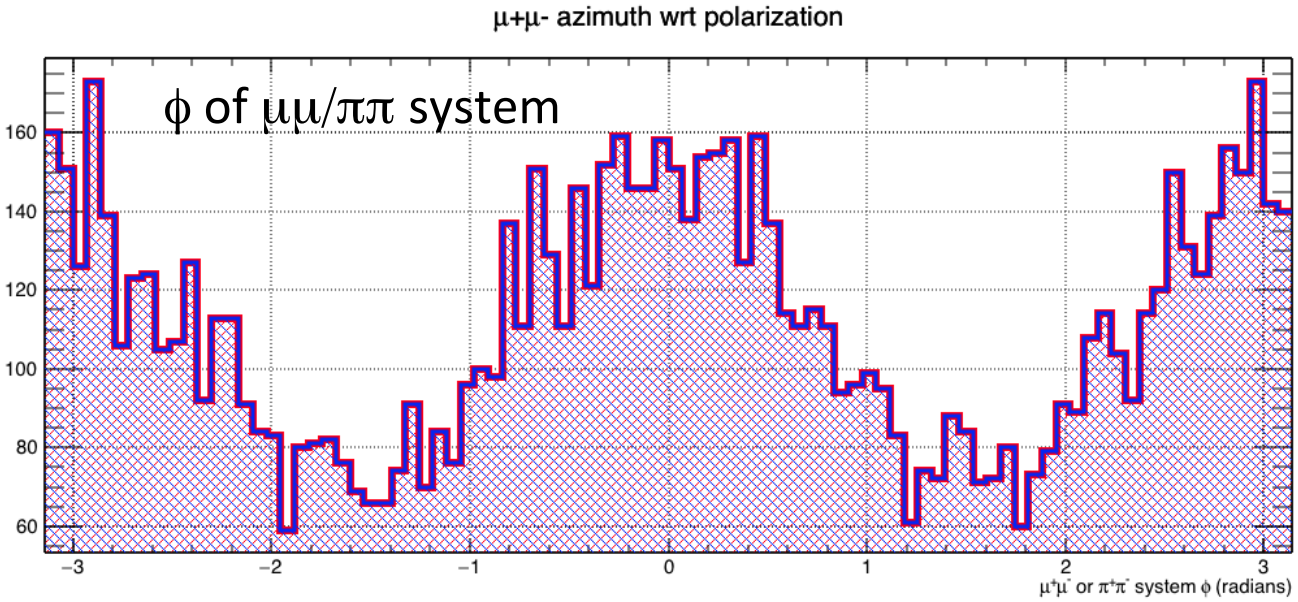


David Lawrence JLab
June 23, 2016

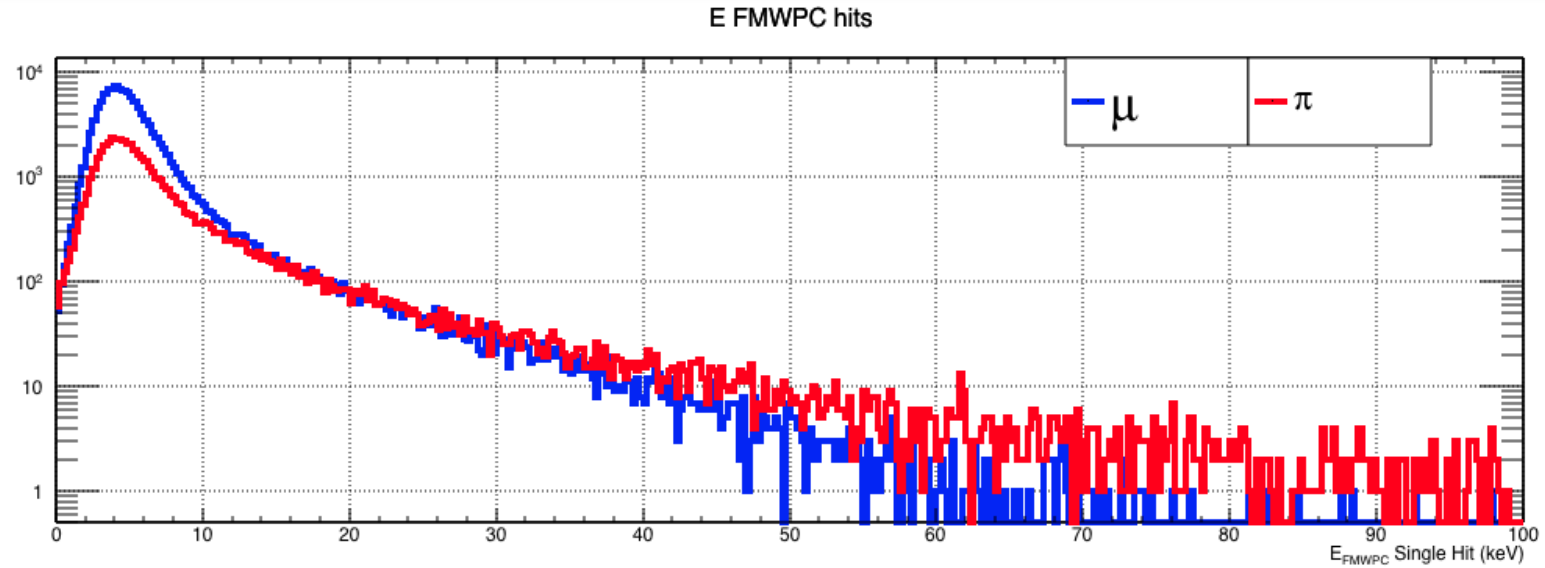
Generated Particles *(gen_2mu)*

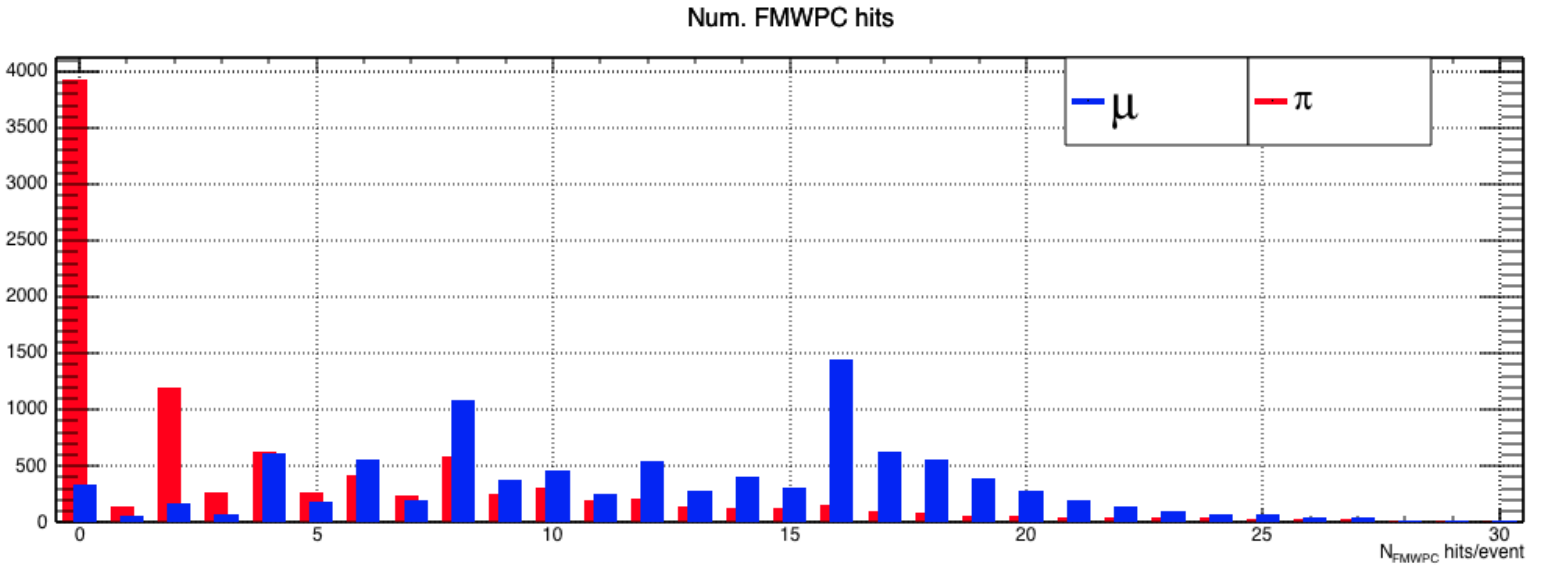




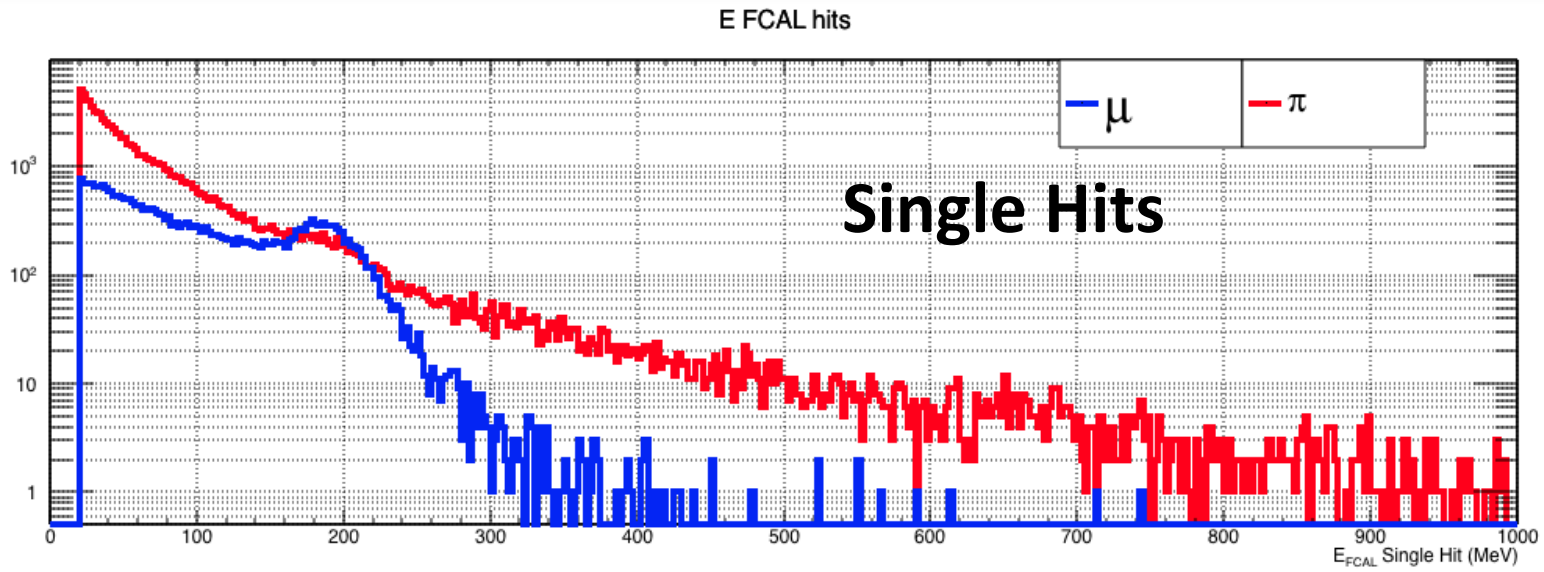


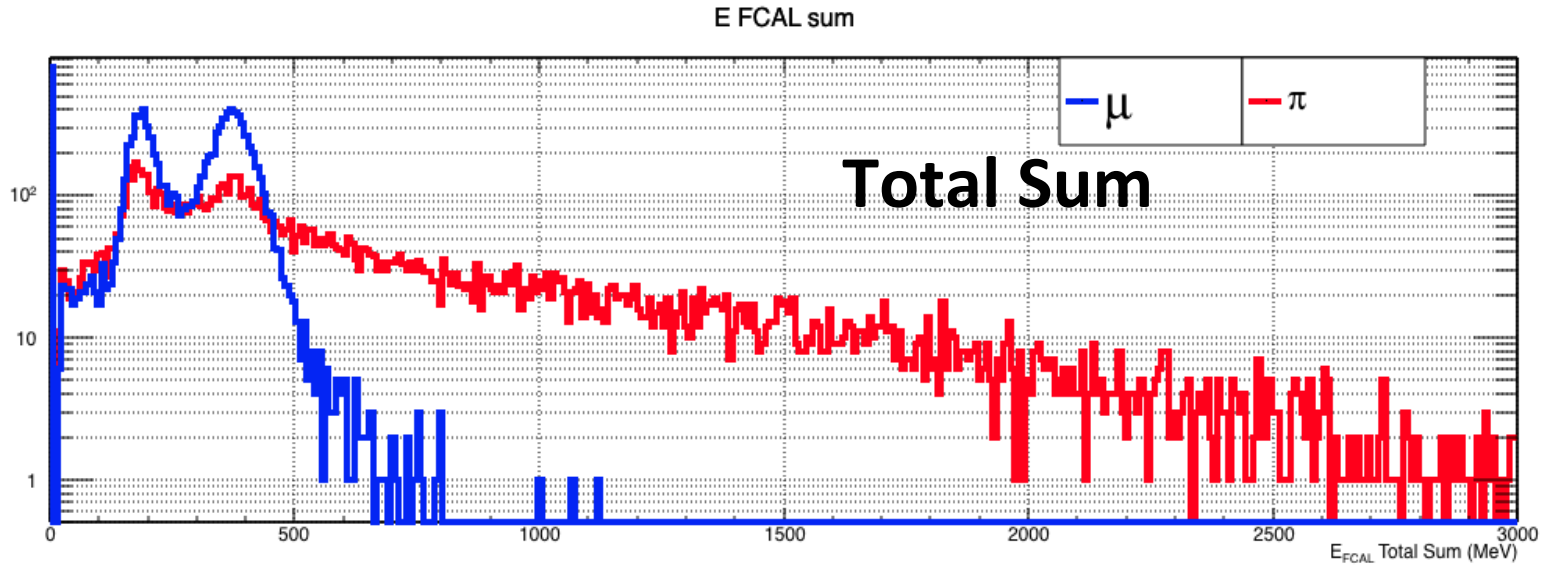
FMWPC – GEANT 4



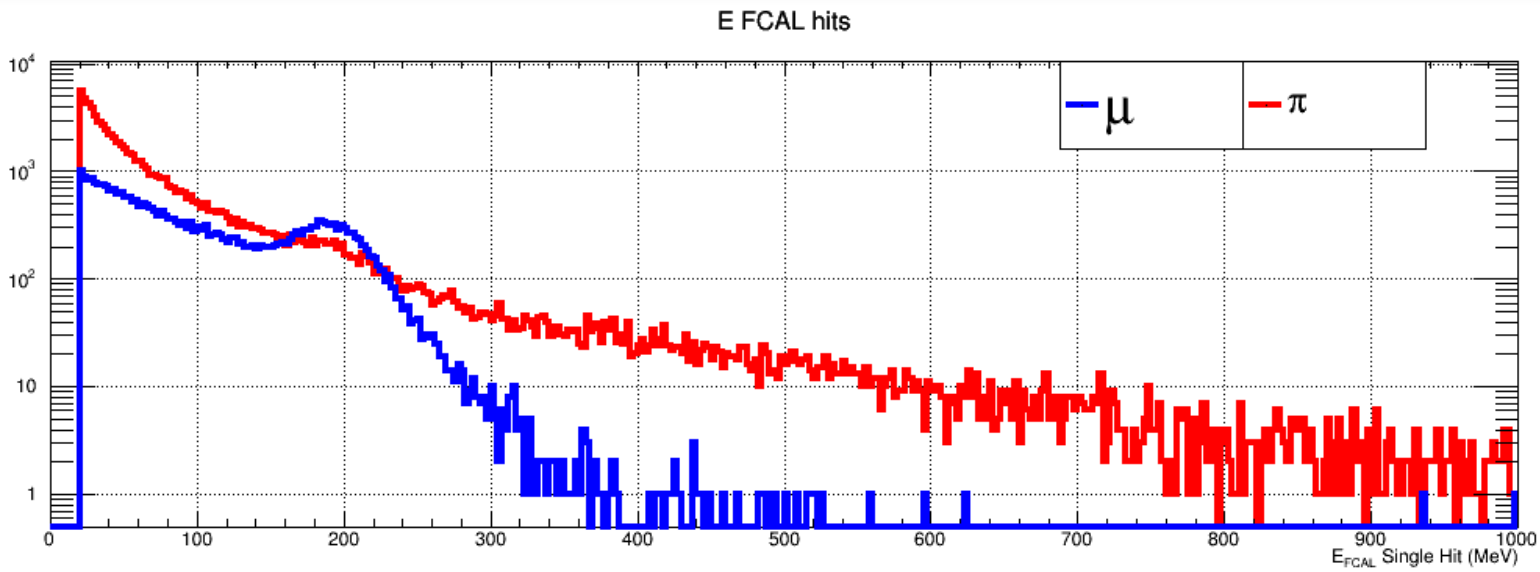


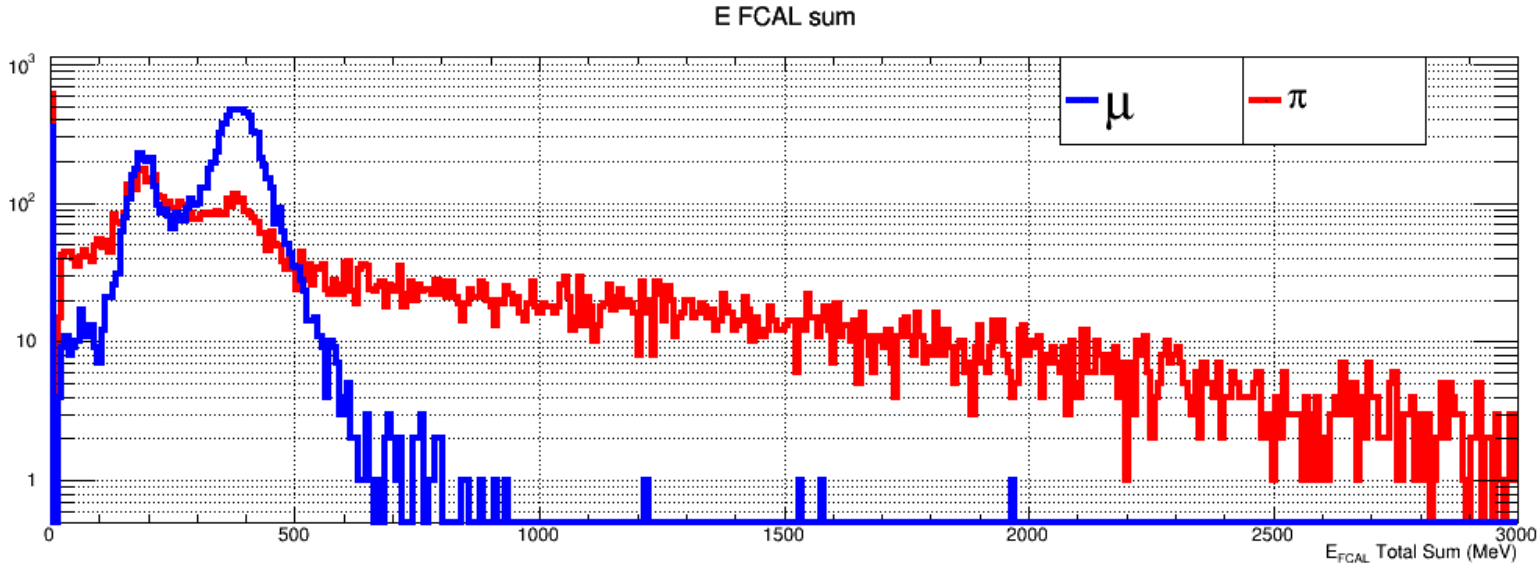
FCAL – GEANT 4


E FCAL hits
μ
π
Single Hits
10^3
10^2
10
1
0
100
200
300
400
500
600
700
800
900
1000
E_{FCAL} Single Hit (MeV)

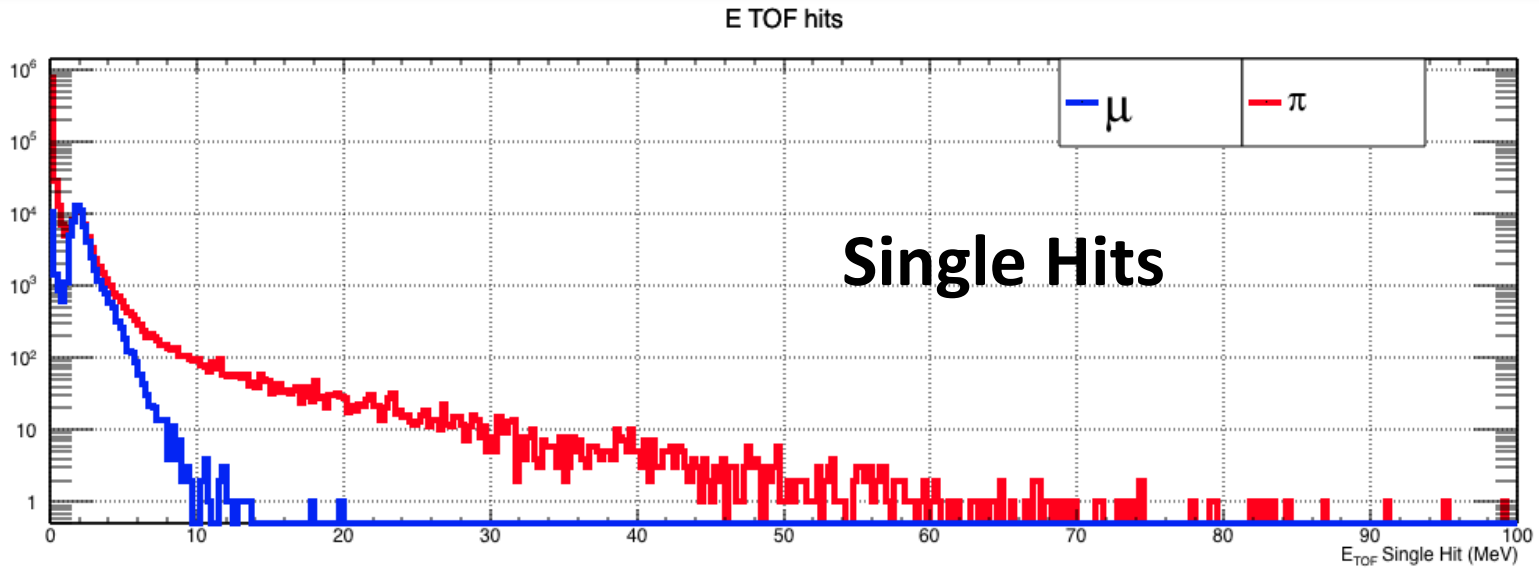

E FCAL sum
μ
π
Total Sum
10^2
10
1
0
500
1000
1500
2000
2500
3000
E_{FCAL} Total Sum (MeV)

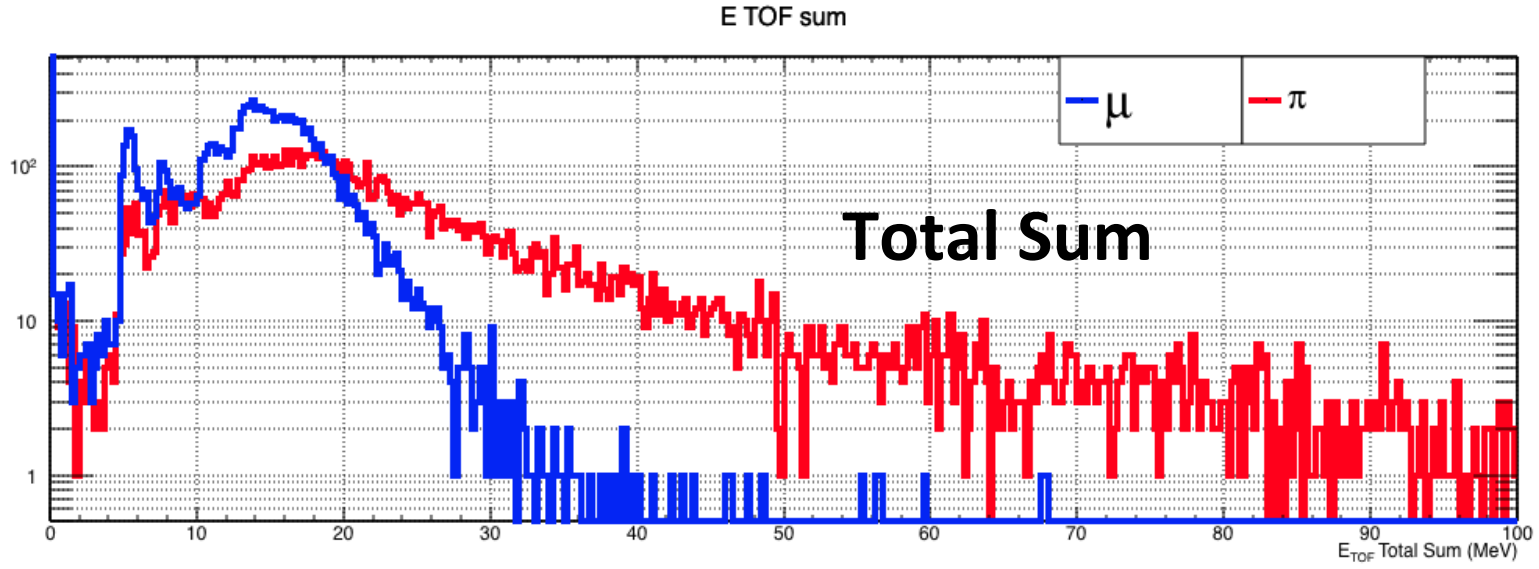
FCAL – GEANT 3


E FCAL hits
μ
π
10^4
10^3
10^2
10
1
0
100
200
300
400
500
600
700
800
900
1000
E_{FCAL} Single Hit (MeV)

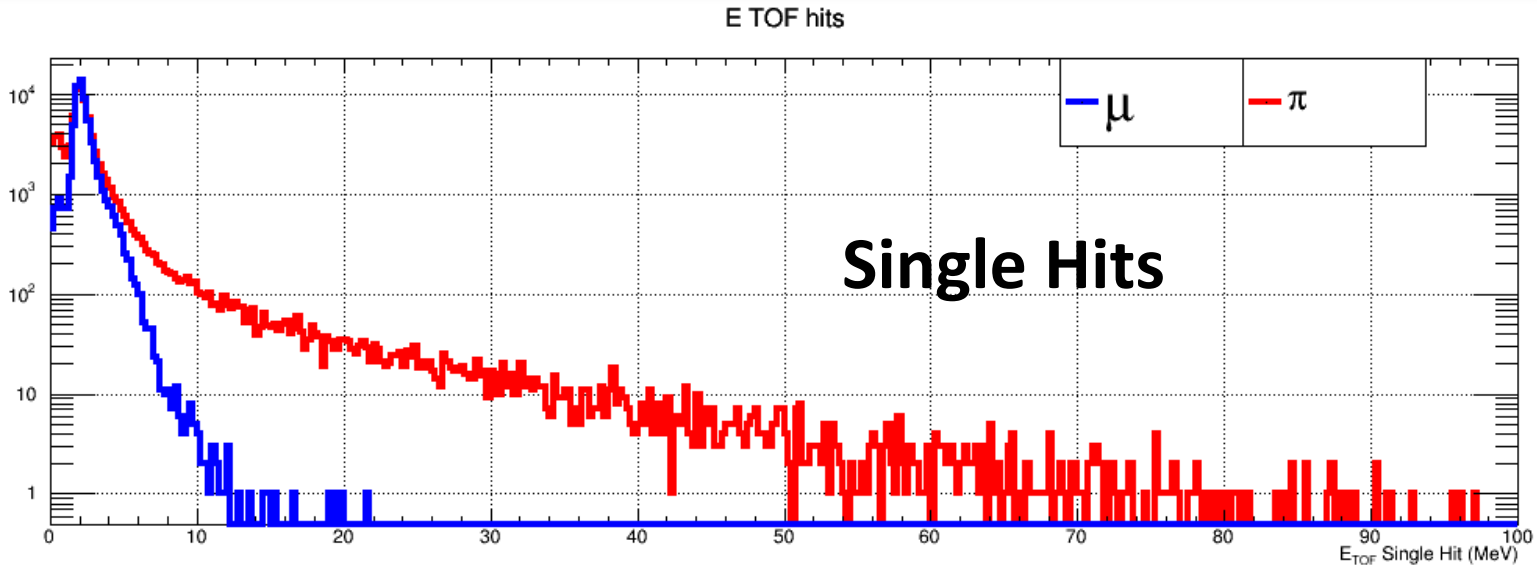

E FCAL sum
μ
π
10^3
10^2
10
1
0
500
1000
1500
2000
2500
3000
E_{FCAL} Total Sum (MeV)

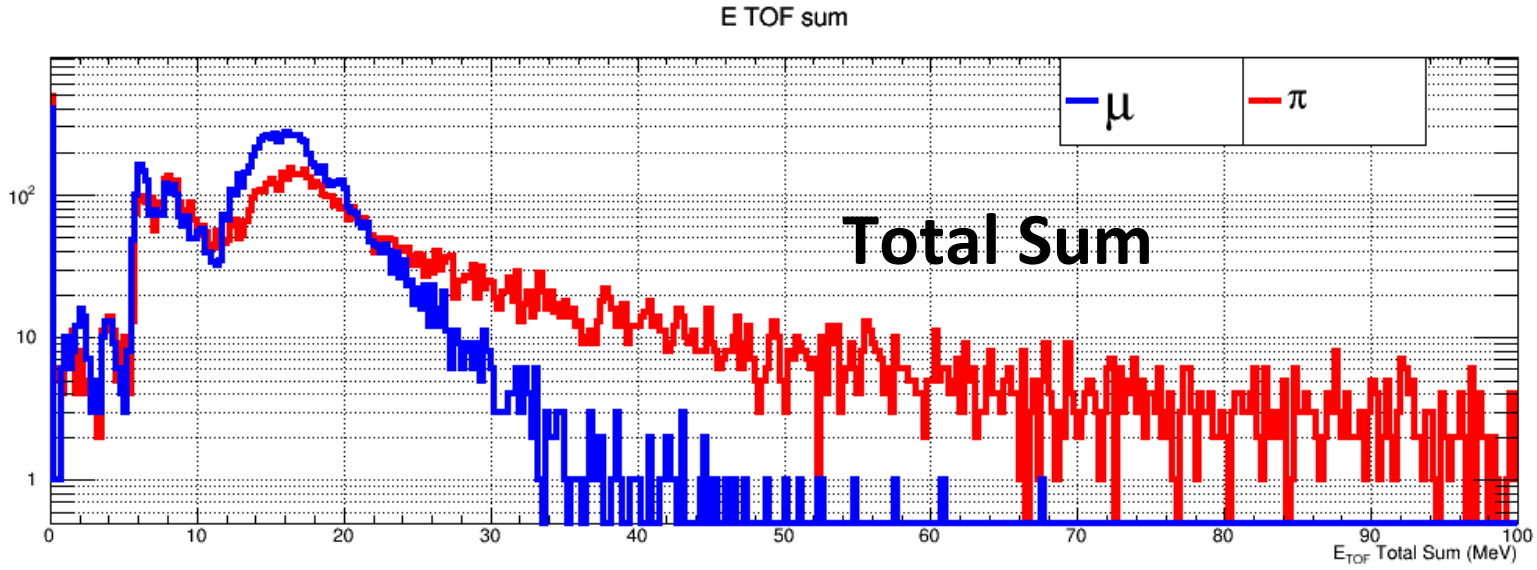
TOF - GEANT 4


E TOF hits
μ
π
Single Hits
E_{TOF} Single Hit (MeV)


E TOF sum
μ
π
Total Sum
E_{TOF} Total Sum (MeV)

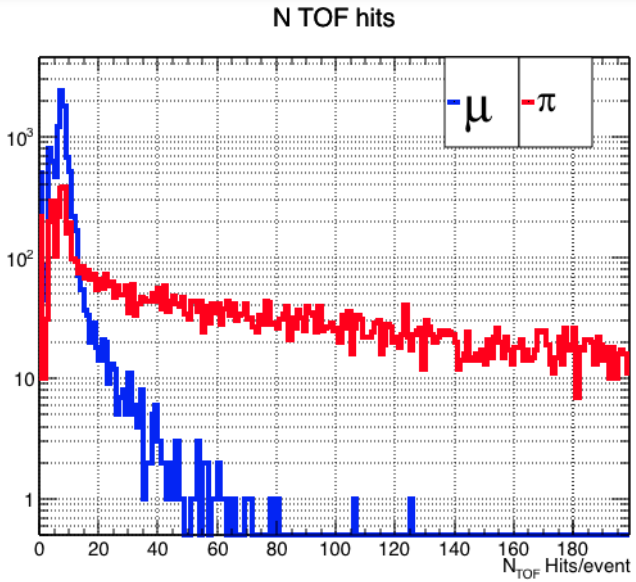
TOF - GEANT 3

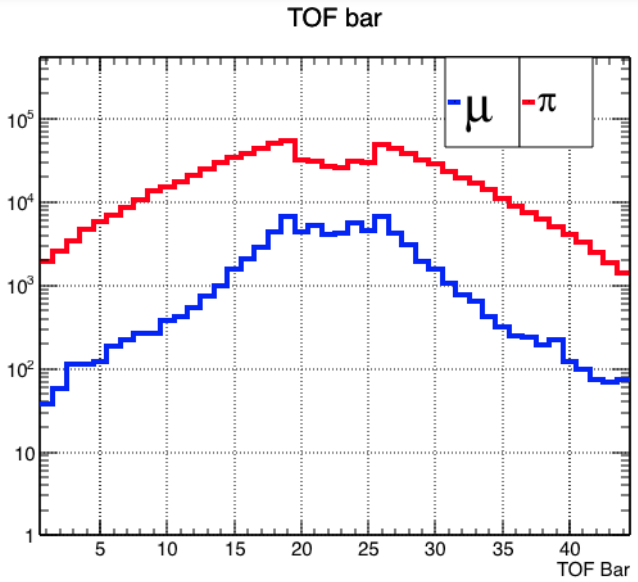

E TOF hits
μ
π
Single Hits
10^4
10^3
10^2
10
1
0
10
20
30
40
50
60
70
80
90
100
E_{TOF} Single Hit (MeV)


E TOF sum
μ
π
Total Sum
10^2
10
1
0
10
20
30
40
50
60
70
80
90
100
E_{TOF} Total Sum (MeV)

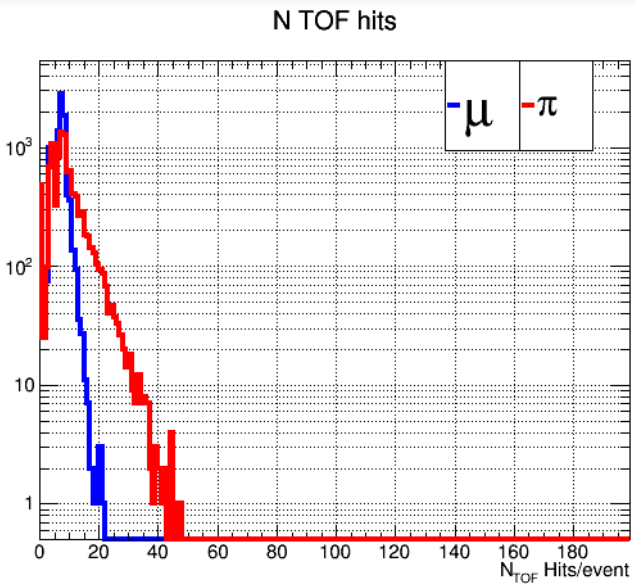
TOF

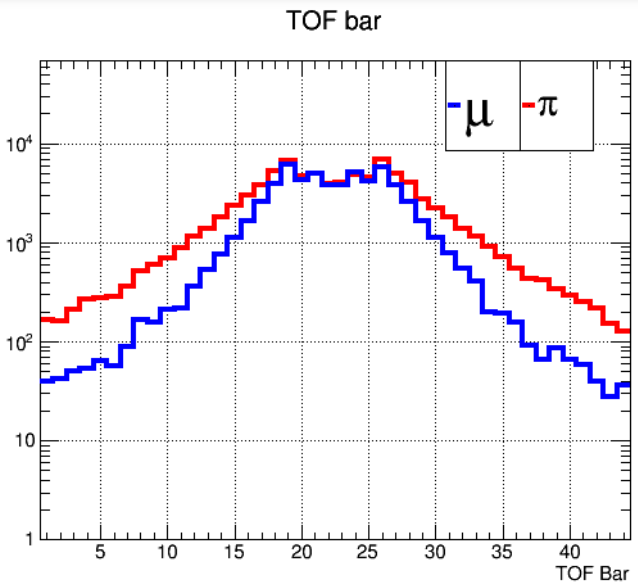
GEANT 4



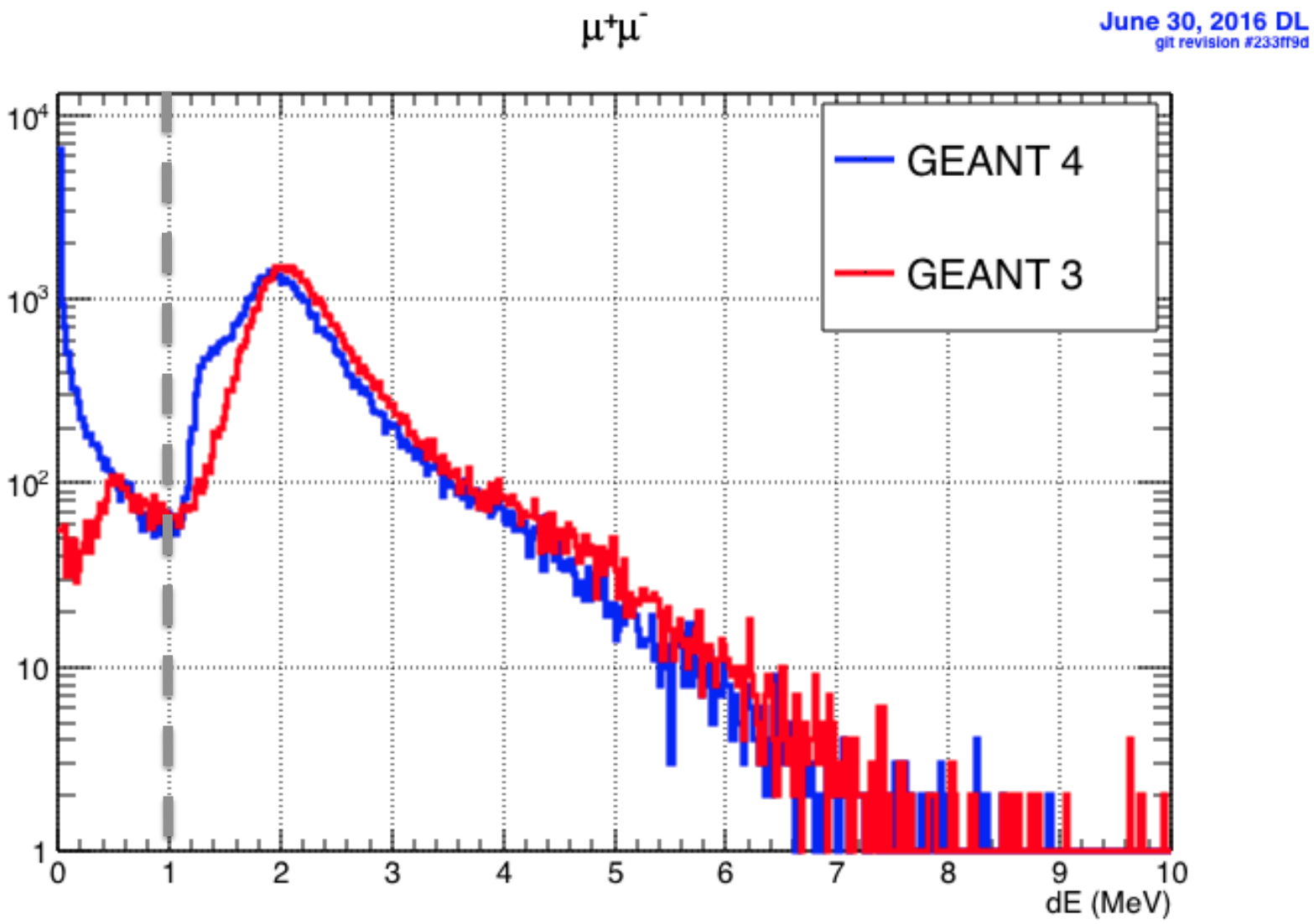


GEANT 3



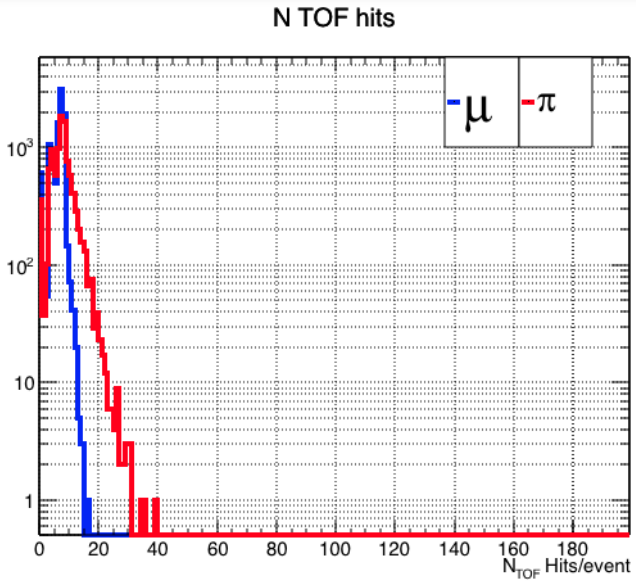


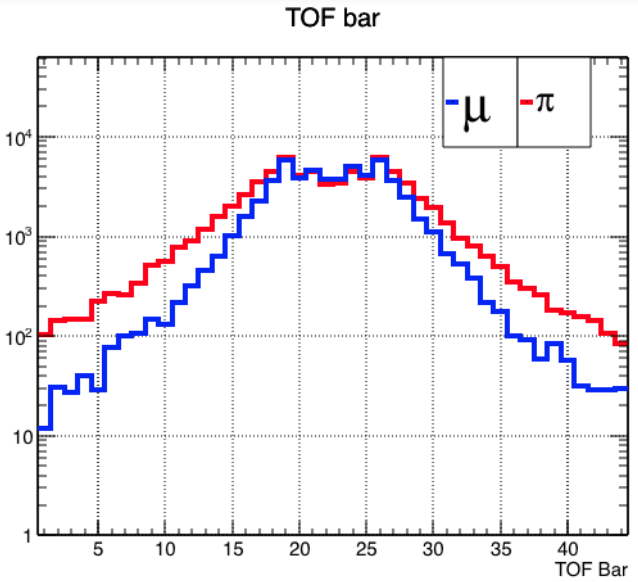
TOF dE


μ+μ-
June 30, 2016 DL
git revision #233ff9d
GEANT 4
GEANT 3
10^4
10^3
10^2
10
1
0
1
2
3
4
5
6
7
8
9
10
dE (MeV)

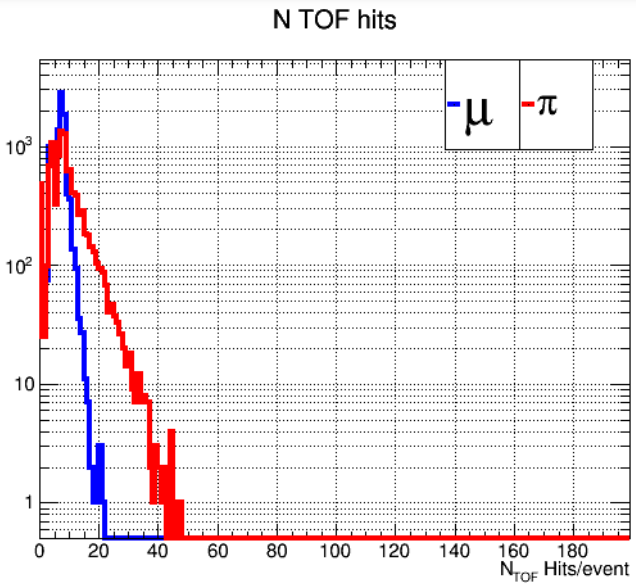
TOF

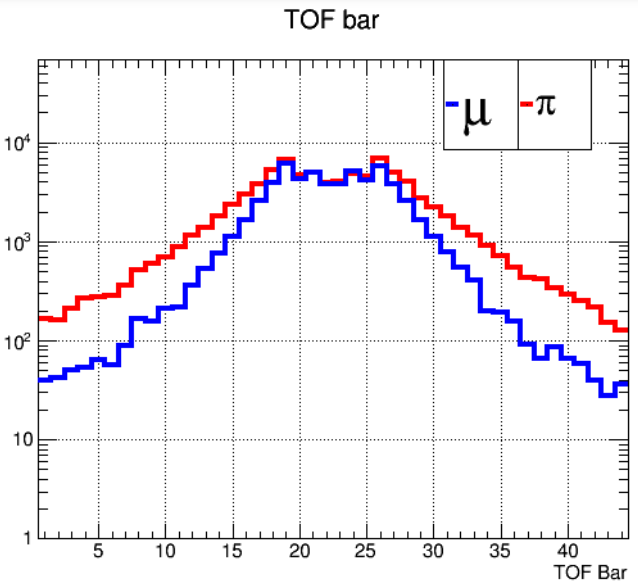
GEANT 4





GEANT 3





Summary

- Several areas of good agreement between G3 and G4 simulations
- Next Steps
  - Change target to Sn^{116}(?)
  - Map locations of hadronic showers
  - Apply threshold for TOF hits
  - Train MVA to classify event as μ or π