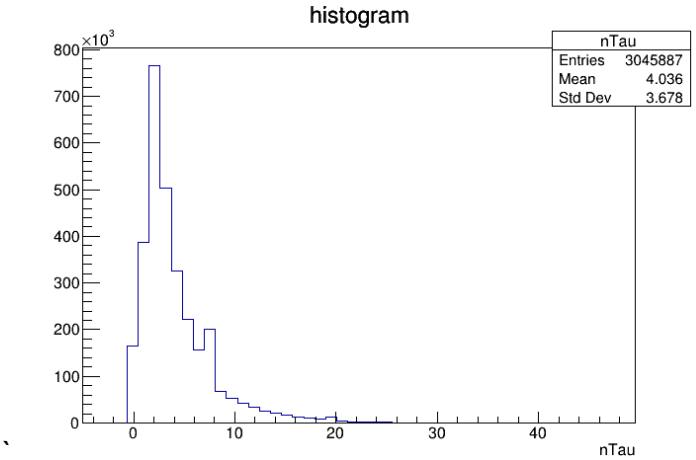
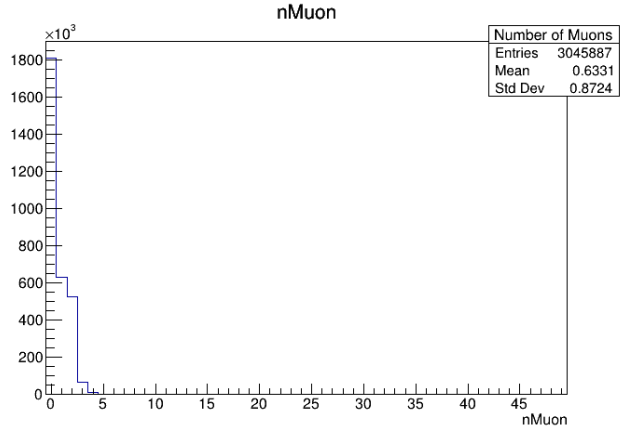
Assignment 1

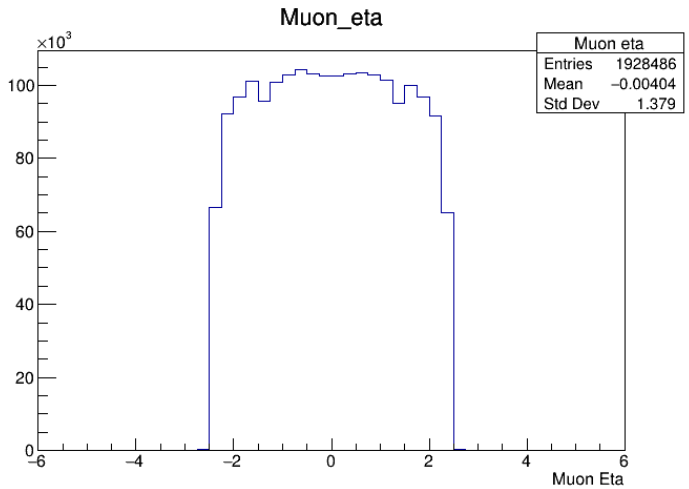
Problem 1



Histogram for nTau

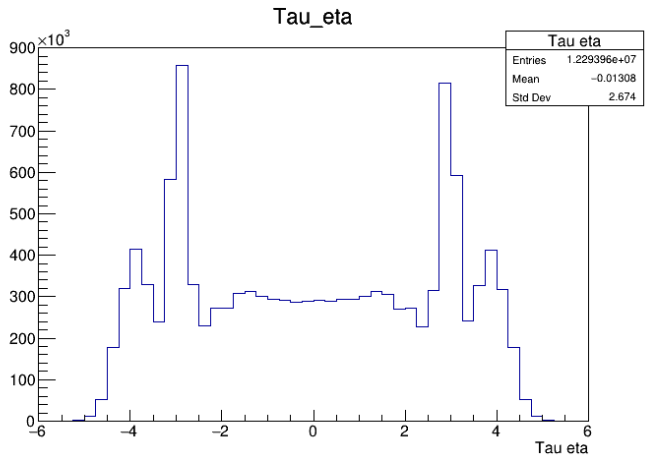


Histogram for nMuon

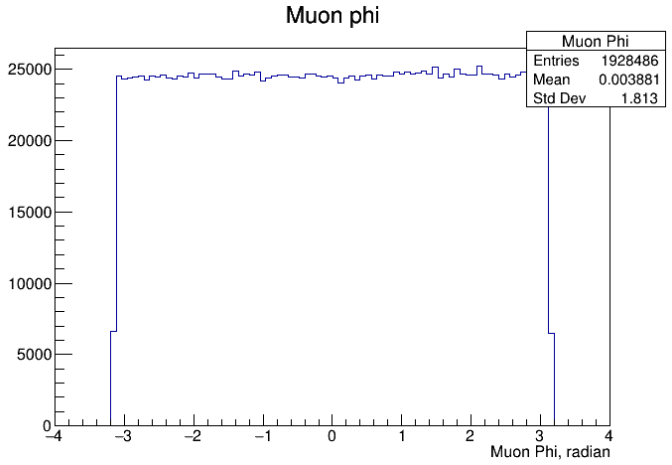


Histogram for Muon eta

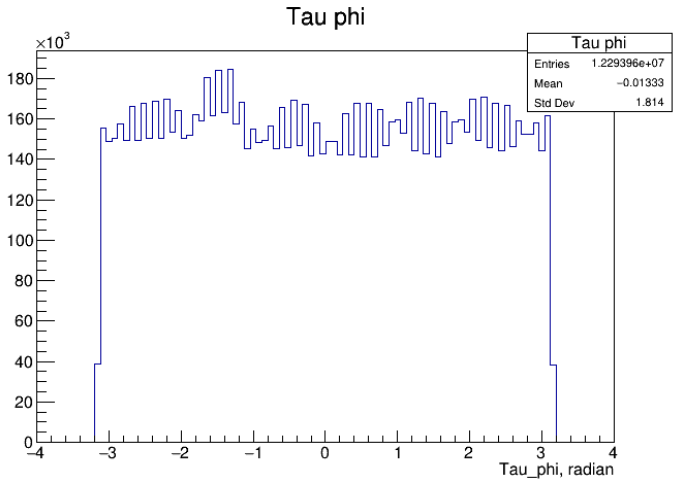
Range -6 to 6
Bins 48



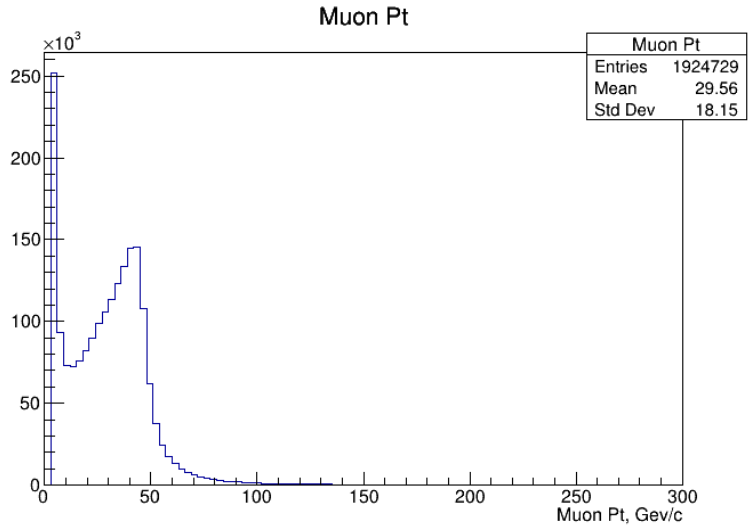
Histogram for Tau eta
Range -6 to 6
Bins 48



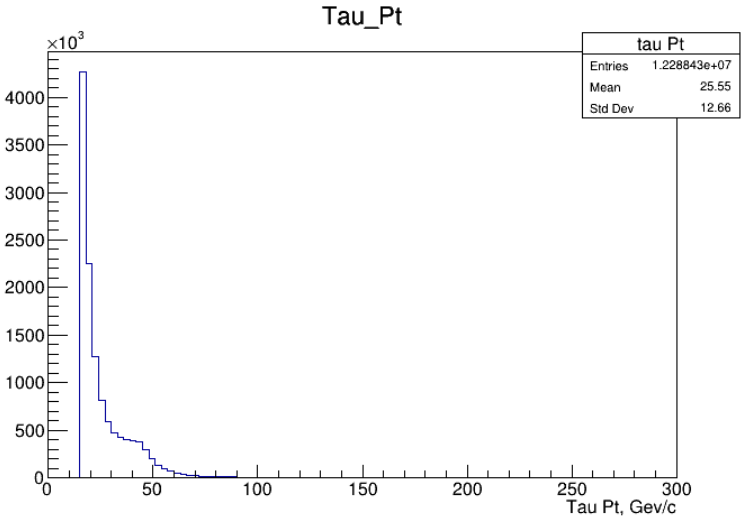
Histogram for Muon Phi
Range -4 to +4
Bins 100



Histogram for Tau phi
Range -4 to +4
Bins 100



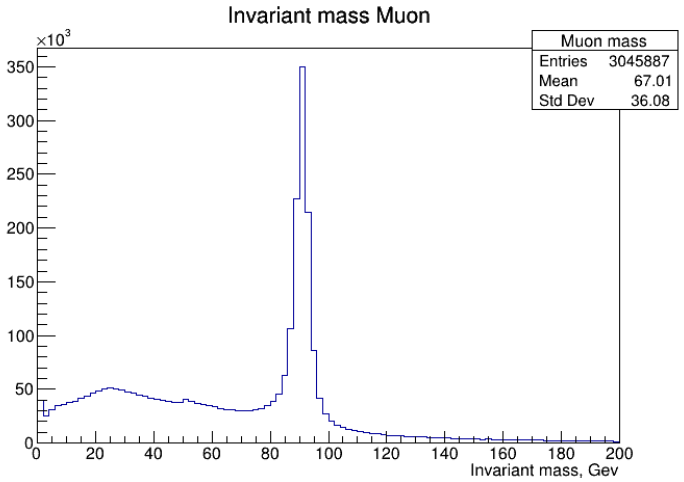
Histogram for Muon Pt up to 150 Gev/c
c=1
Range 0 to 300
Bin 100



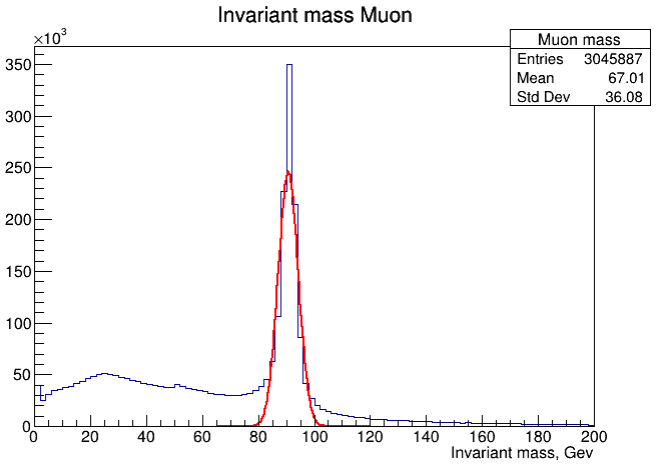
Histogram for Tau Pt up to 150 Gev/c
c=1
Range 0 to 300
Bin 100

Problem 2

Muon Pt



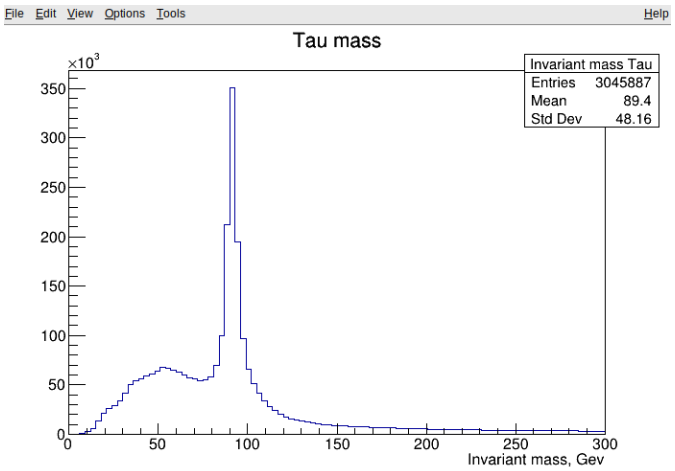
Histogram for invariant mass of Muon
Range 0 to 200
Bin 100



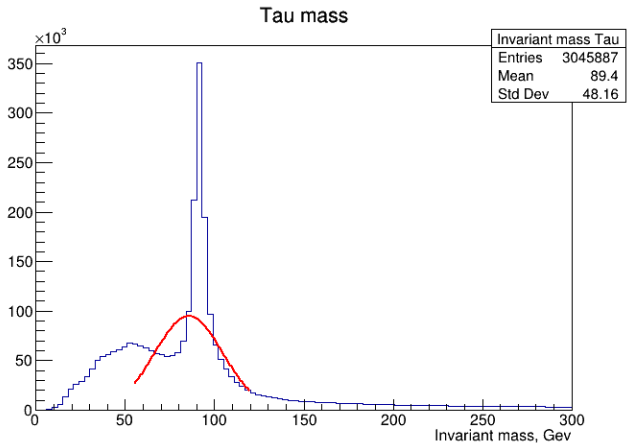
After fitting Gaussian in the distribution
Gaussian fits b/w 65 to 120

NO.	NAME	VALUE	ERROR
1	Constant	2.46095e+05	4.57190e+02
2	Mean	9.06237e+01	3.63266e-03
3	Sigma	3.58783e+00	5.72278e-03

Tau Pt



Histogram of invariant mass of Tau
Range 0 to 300
Bins 100



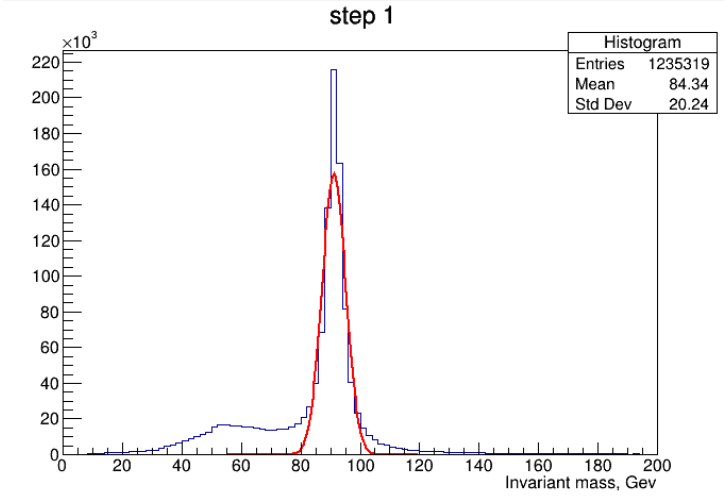
After fitting gaussian in the distribution
Gaussian fits b/w 55 to 120

NO.	NAME	VALUE	ERROR
1	Constant	9.48465e+04	1.30473e+02
2	Mean	8.55199e+01	2.69934e-02
3	Sigma	1.92035e+01	3.23438e-02

Problem 3

Gauss range 55 to 120

Step 1

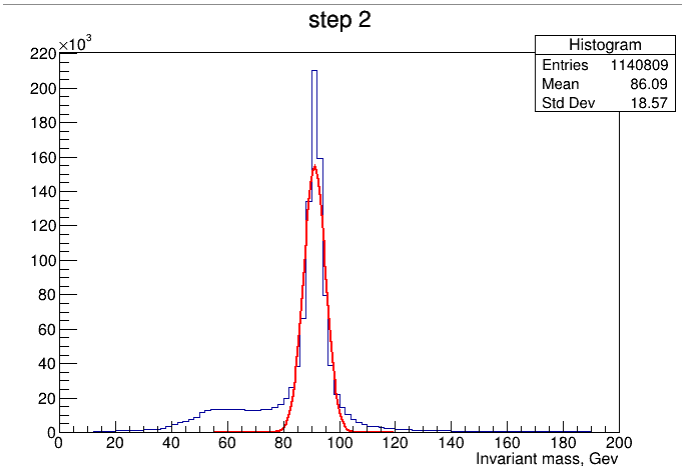


Charges on tau are opposite

NO.	NAME	VALUE	ERROR
1	Constant	1.57609e+05	3.15149e+02
2	Mean	9.11353e+01	4.57367e-03
3	Sigma	3.99230e+00	6.59679e-03

Resolution is 3.9923
Error in invariant mass is 4.5736e-3

Step 2

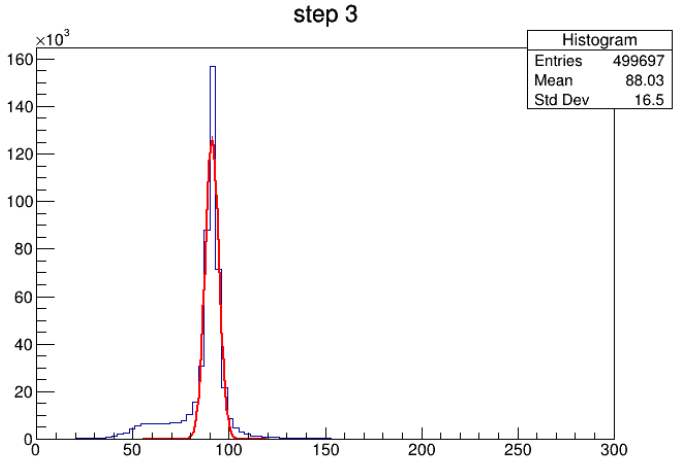


Charge of tau are opposite
absolute(tau_eta[0]) < 2.3 && tau_pt[0] > 20

NO.	NAME	VALUE	ERROR
1	Constant	1.54735e+05	3.11790e+02
2	Mean	9.11460e+01	4.58321e-03
3	Sigma	3.94316e+00	6.54289e-03

Resolution Decreased from 3.9923 to 3.9431
Error in invariant mass increased from 4.5736e-3 to 4.5832e-3

Step 3



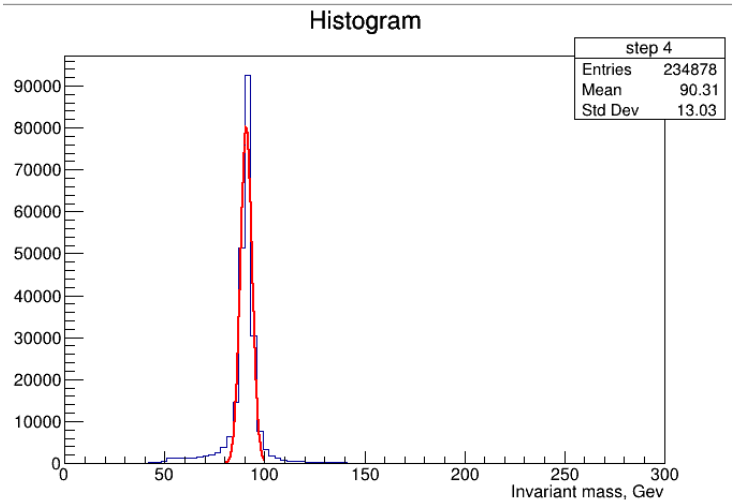
Charge of tau are opposite
absolute(tau_eta[0]) < 2.3 && tau_pt[0] > 20

Tau_idDecayMode == true && Tau_idIsoTight == true

NO.	NAME	VALUE	ERROR
1	Constant	1.25707e+05	3.28148e+02
2	Mean	9.10917e+01	5.95819e-03
3	Sigma	3.59992e+00	7.25860e-03

Resolution Decreased from 3.9431 to 3.5999
Error in invariant mass increased from 4.5832e-3 to 5.9581e-3

Step 4



Charge of tau are opposite
absolute(tau_eta[0]) < 2.3 && tau_pt[0] > 20
Tau_idDecayMode == true && Tau_idIsoTight == true
Tau_idAntiEleTight == true && Tau_idAntiMuTight == true

NO.	NAME	VALUE	ERROR
1	Constant	8.00792e+04	2.63438e+02
2	Mean	9.08457e+01	6.73123e-03
3	Sigma	2.91028e+00	7.07201e-03

Note
The range for the Fit is changed here from (55,120) to (80,100) in step 4

Resolution Decreased from 3.5999 to 2.9102
Error in invariant mass increased from 5.9581e-3 to 6.7312e-3
