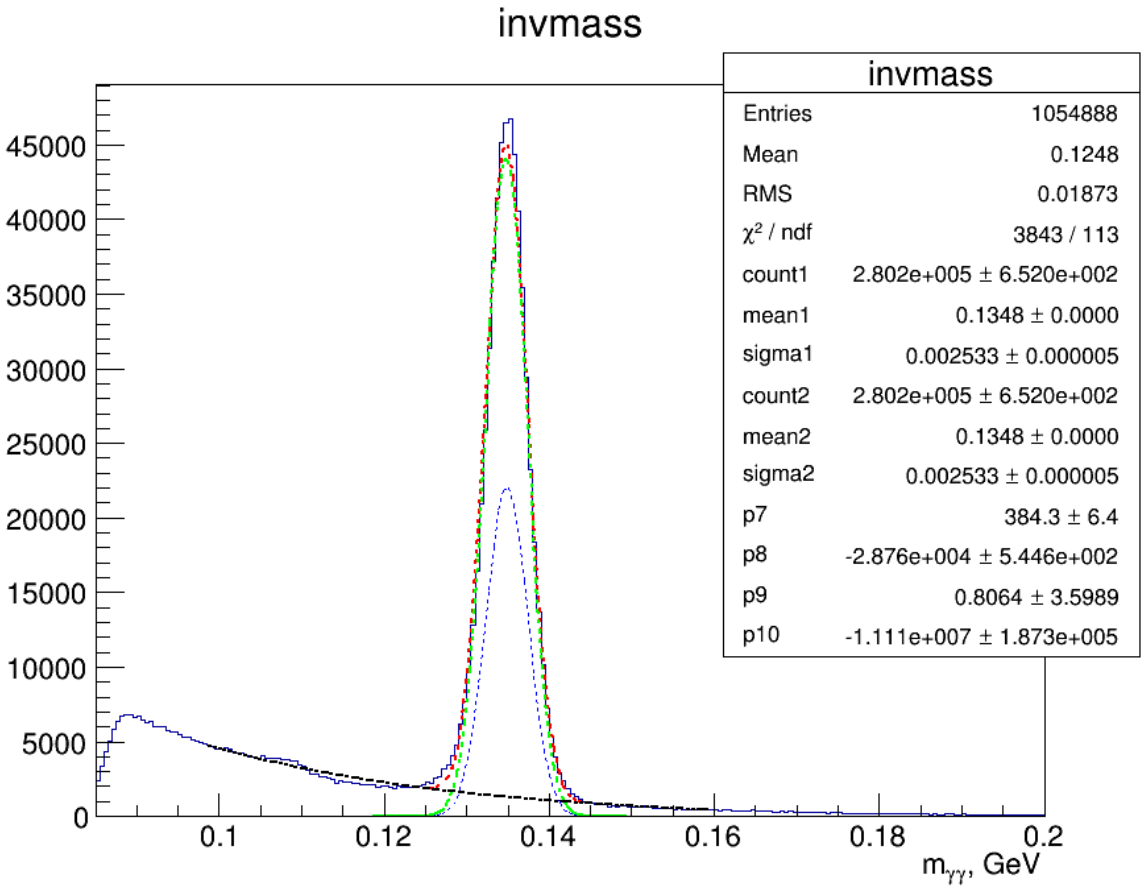
Update 12/6/2013

Yang Zhang

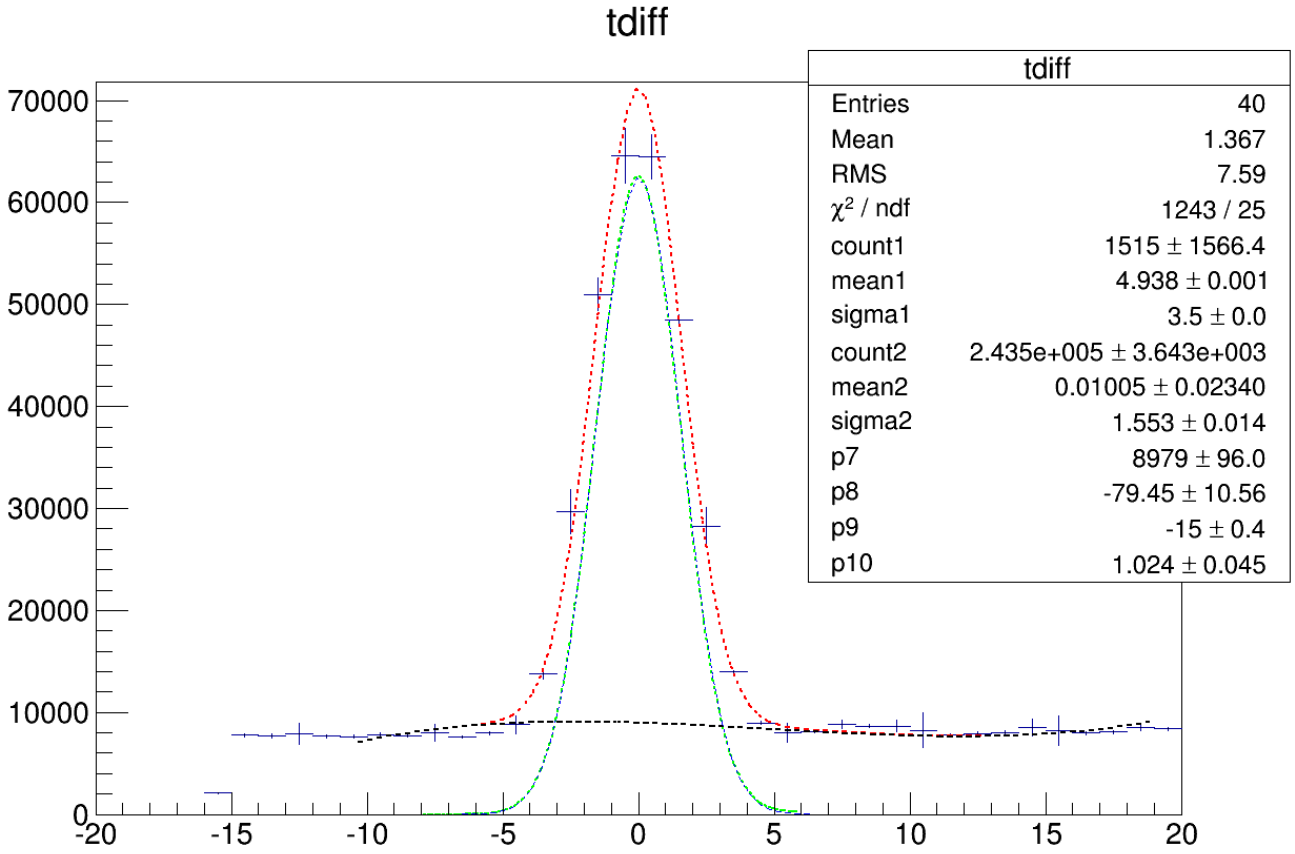
π^0 invariant mass $\theta[0\text{-}3^0]$



Event selection:

1) Exclude beam-trips
2) Hycal trigger
3) Tcounter: 1~18
4) 0.5 GeV < E_γ < 7 GeV
5) 3.5 GeV < $E_{\gamma\gamma}$ < 8 GeV

Study tdiff



Mean = mean1 + ratio*mean2 = 0.13

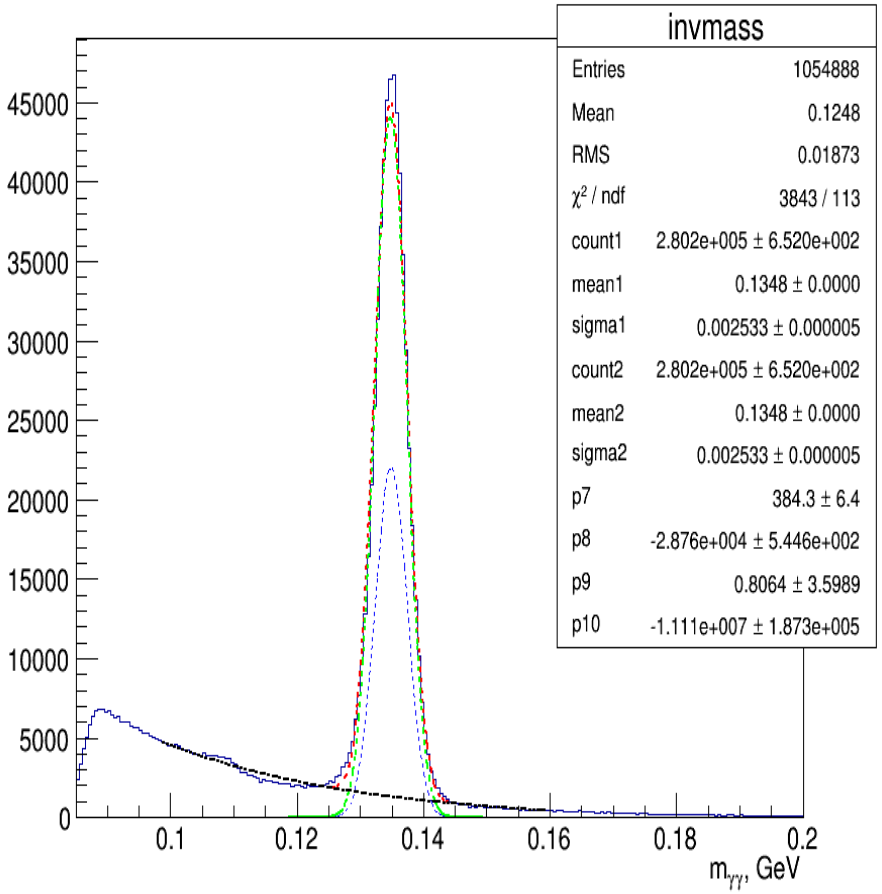
Sigma = $\sqrt{(1-ratio)\left((mean1-mean2)^2 ratio + sigma^2\right) + ratio\ sigma2^2}$

= 1.67

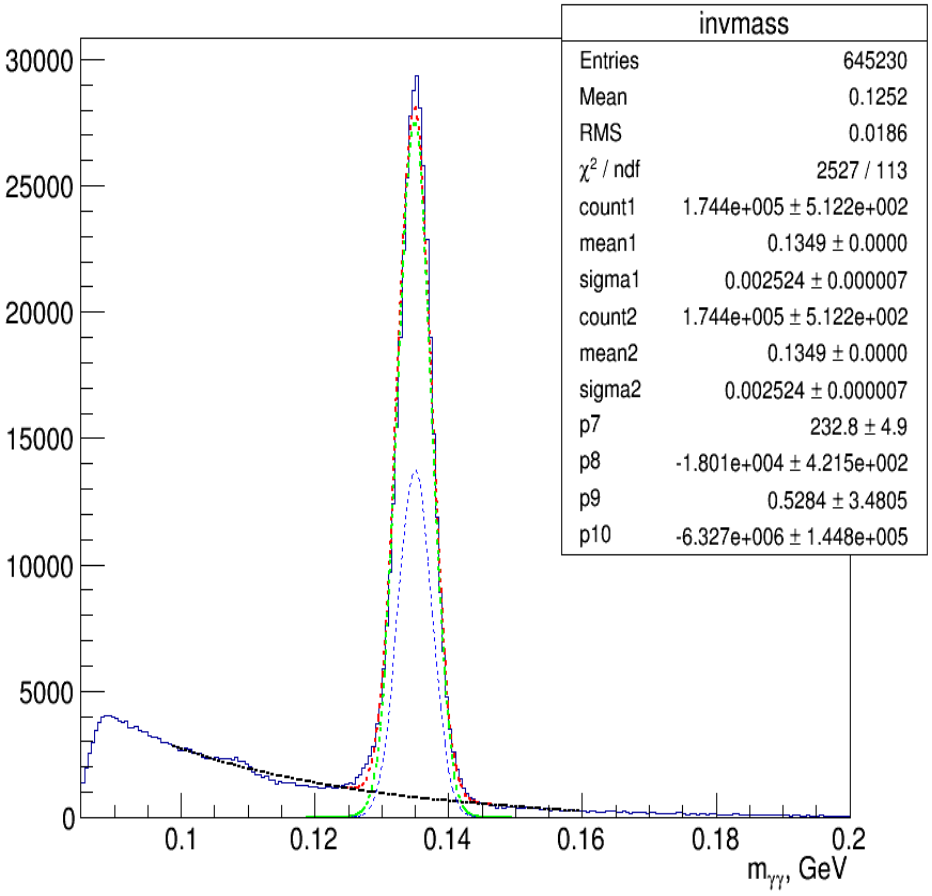
Tdiff cut: 4 sigma, -6.55 ~ 6.81 ns

Before and after tdiff cut

Before Tdiff Cut invmass

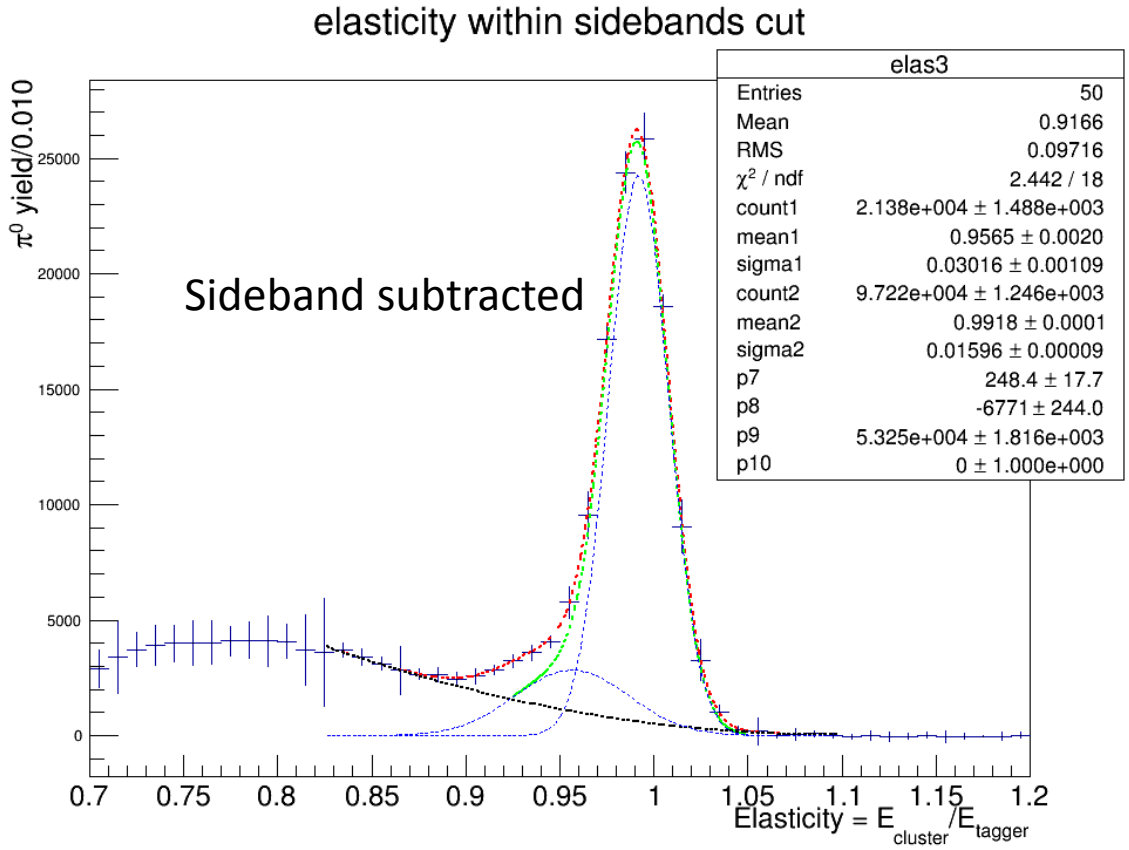


After Tdiff Cut invmass



Maybe relax Tdiff cut?

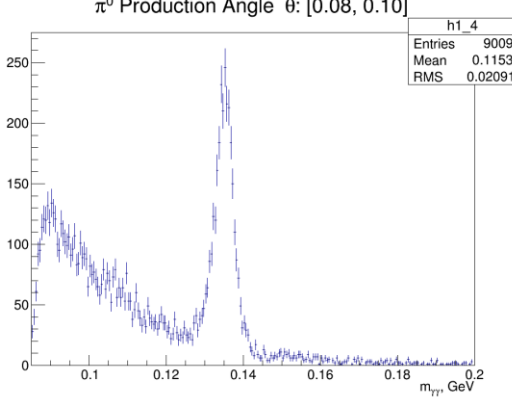
Study elasticity

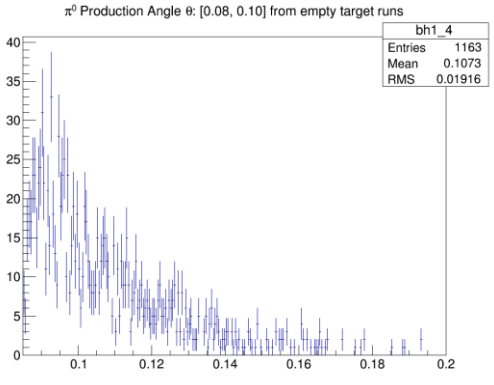


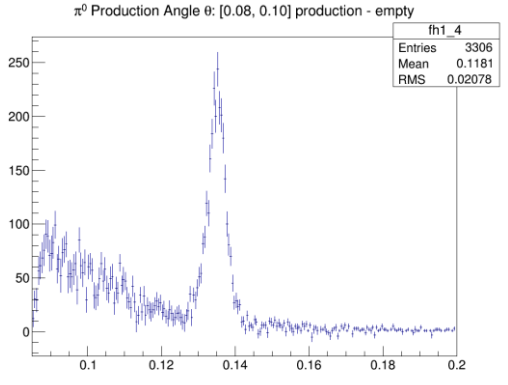
Mean = 0.9854

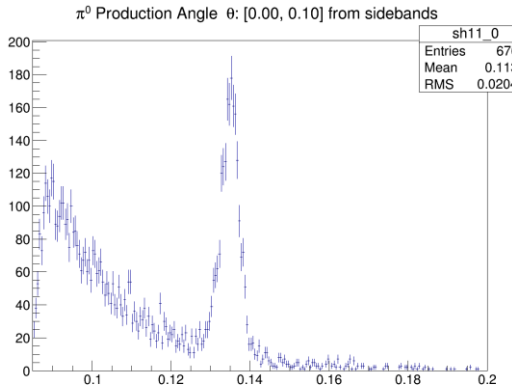
Sigma = 0.0236

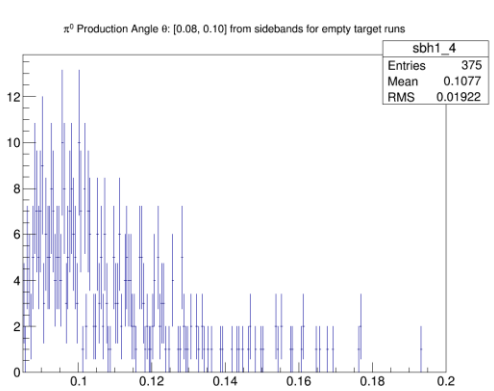
Elasticity Cut: 4 sigma, 0.891~1.0798

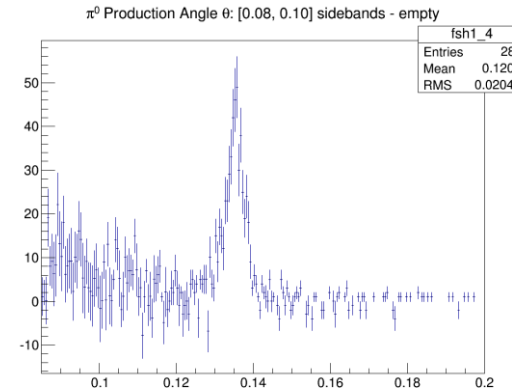


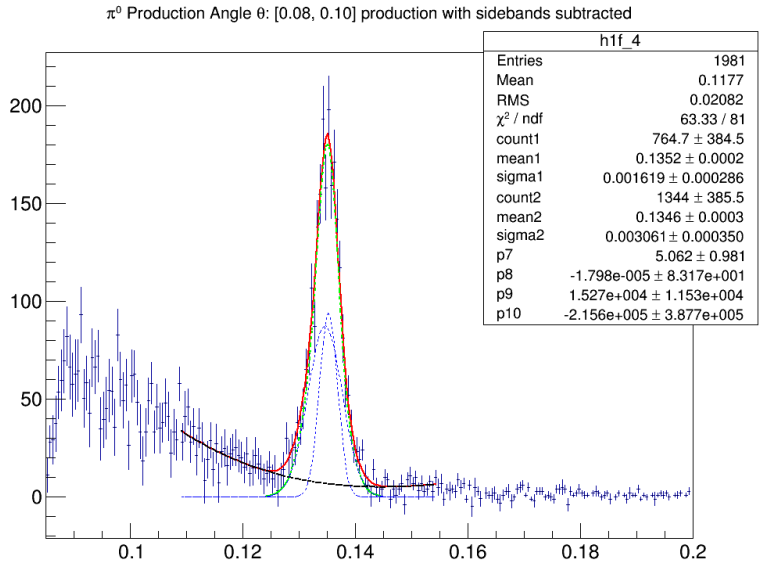












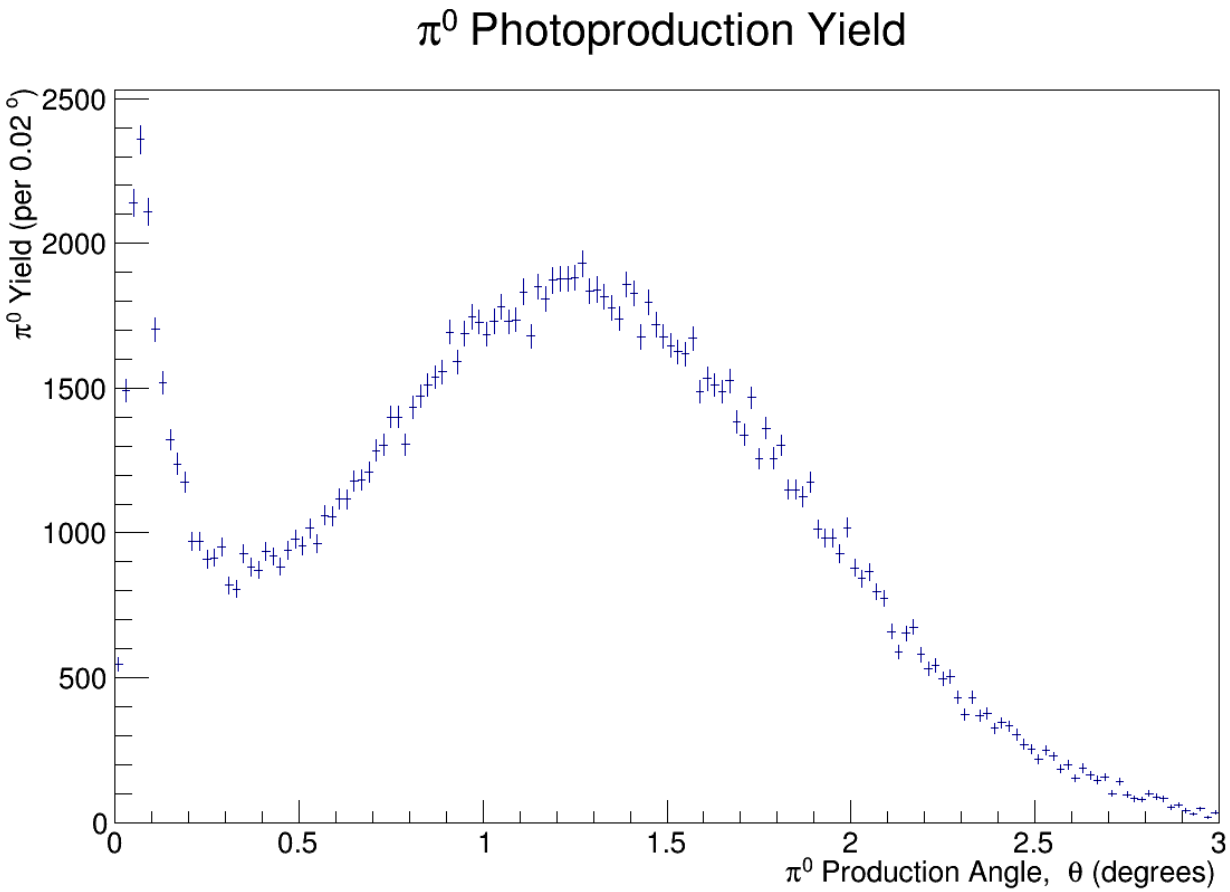
Procedure:

In time: h1 = π^0 – empty

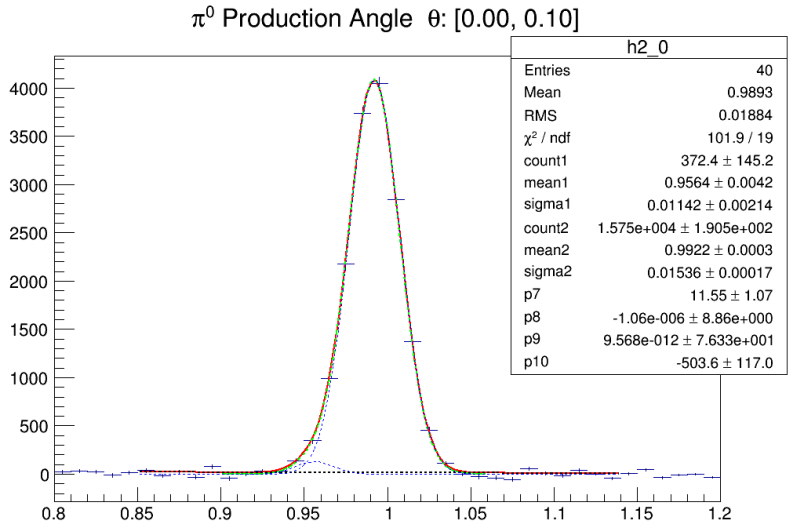
Out of time: h2 = π^0 – empty

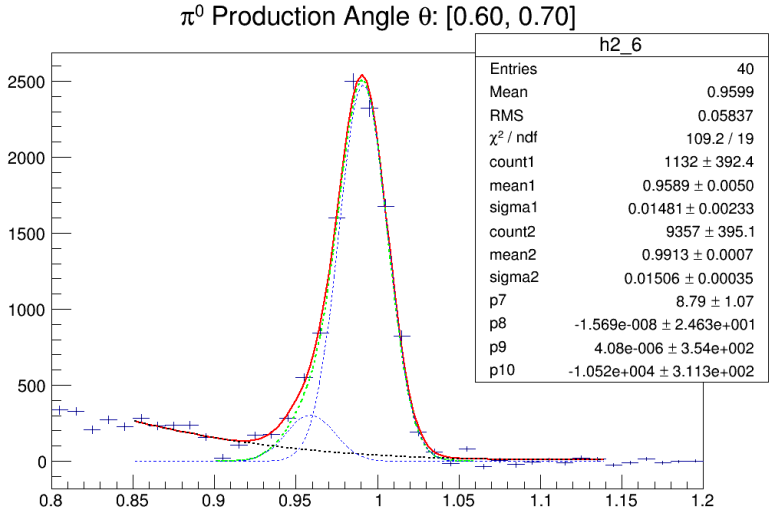
In time – Out of time: h1 – h2

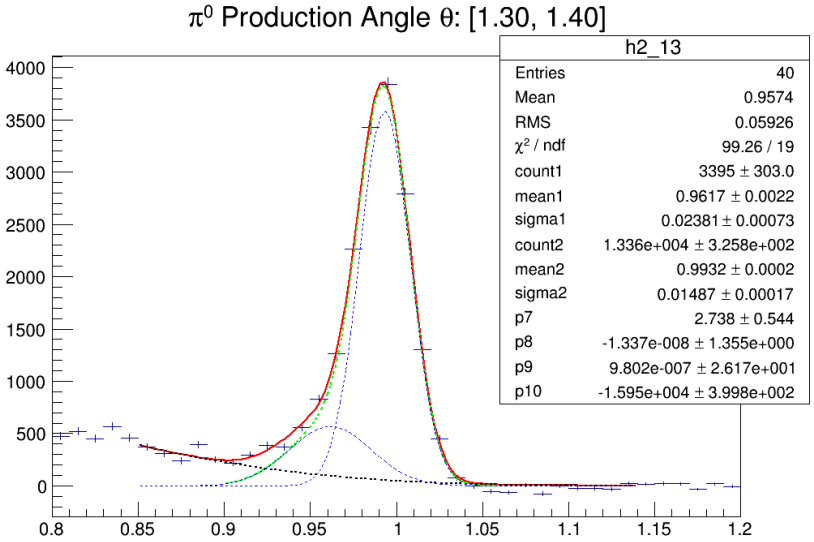
π^0 yield

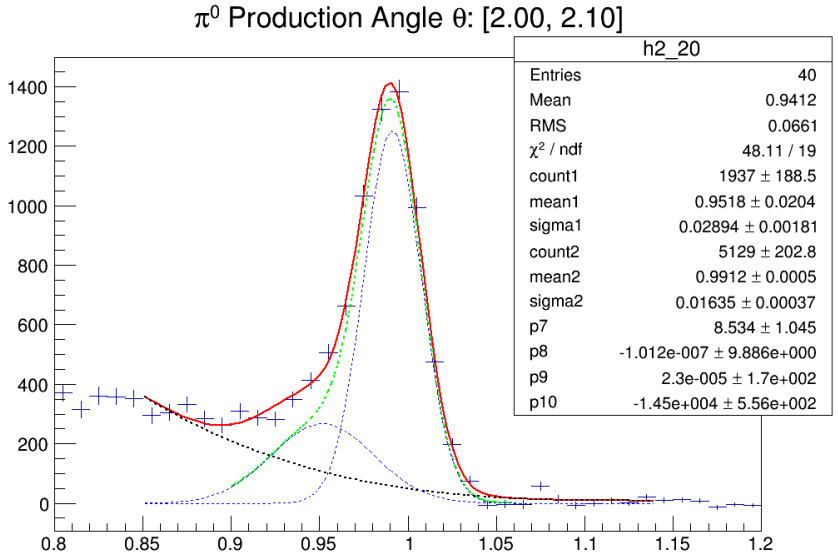

π0 Photoproduction Yield
π0 Yield (per 0.02 °)
2500
2000
1500
1000
500
0
0
0.5
1
1.5
2
2.5
3
π0 Production Angle, θ (degrees)

Inelastic π^0

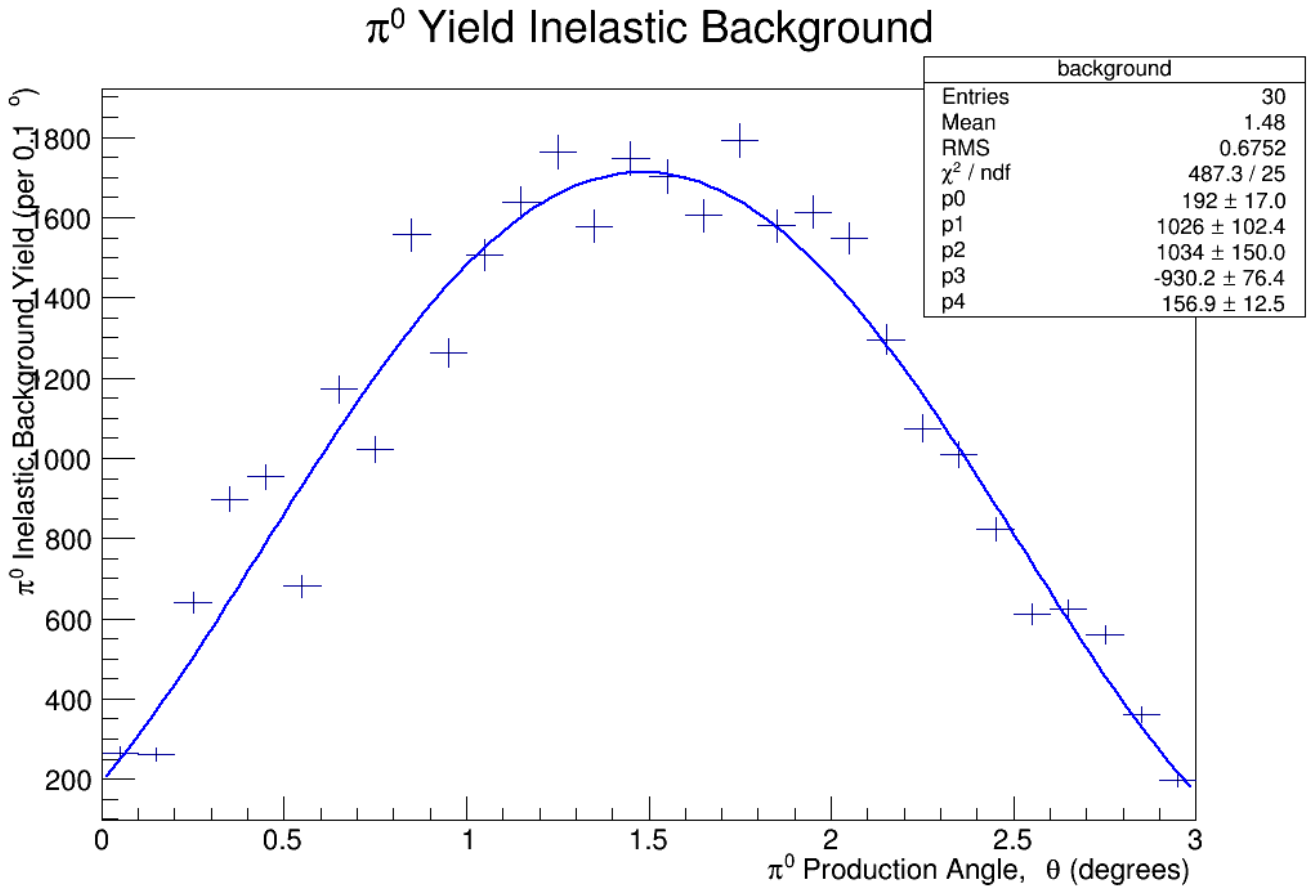


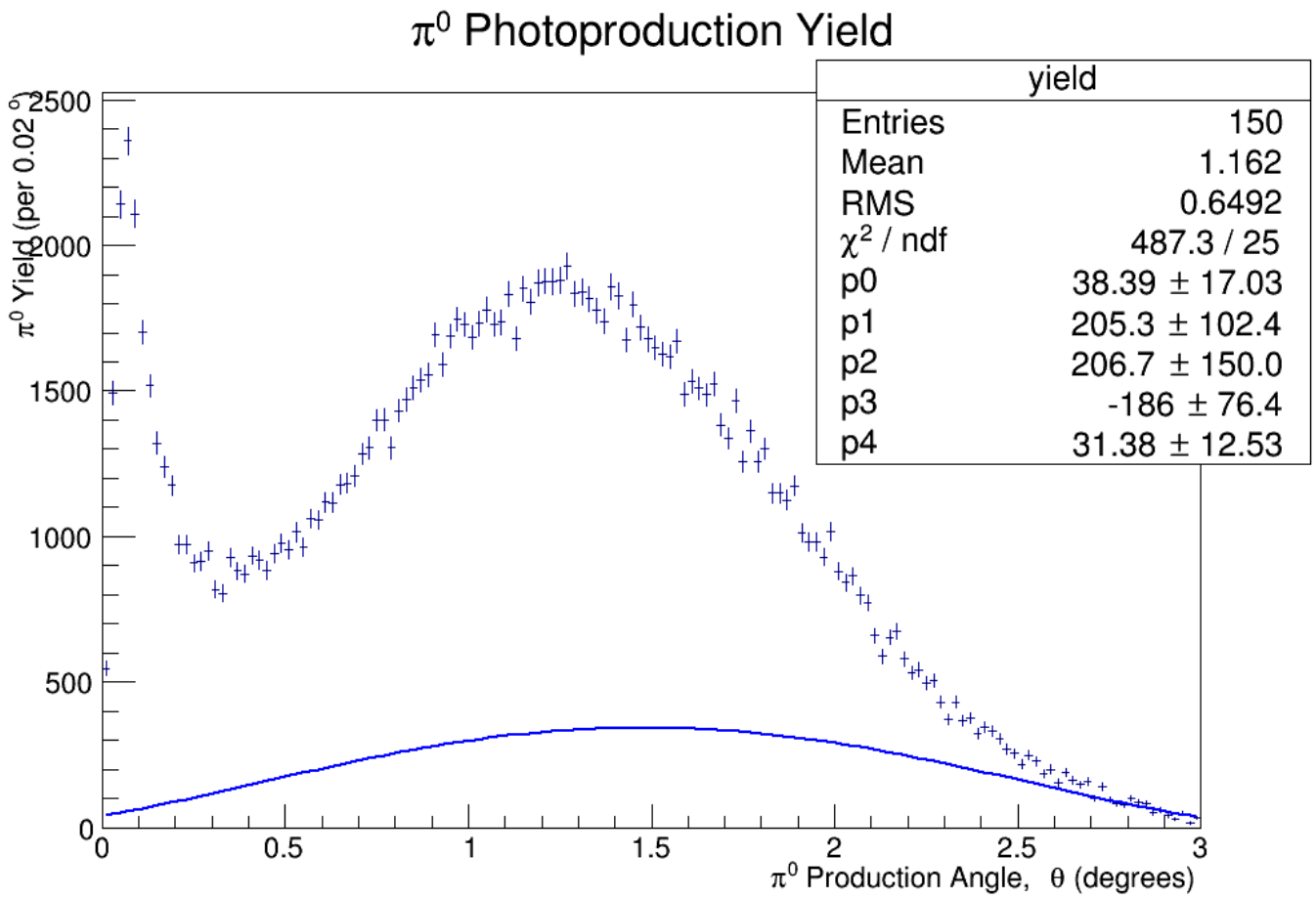






Inelastic π^0




π0 Photoproduction Yield
yield
Entries 150
Mean 1.162
RMS 0.6492
χ2 / ndf 487.3 / 25
p0 38.39 ± 17.03
p1 205.3 ± 102.4
p2 206.7 ± 150.0
p3 -186 ± 76.4
p4 31.38 ± 12.53
π0 Yield (per 0.02 °)
0
500
1000
1500
2000
2500
0
0.5
1
1.5
2
2.5
3
π0 Production Angle, θ (degrees)

After removing inelastic π^0