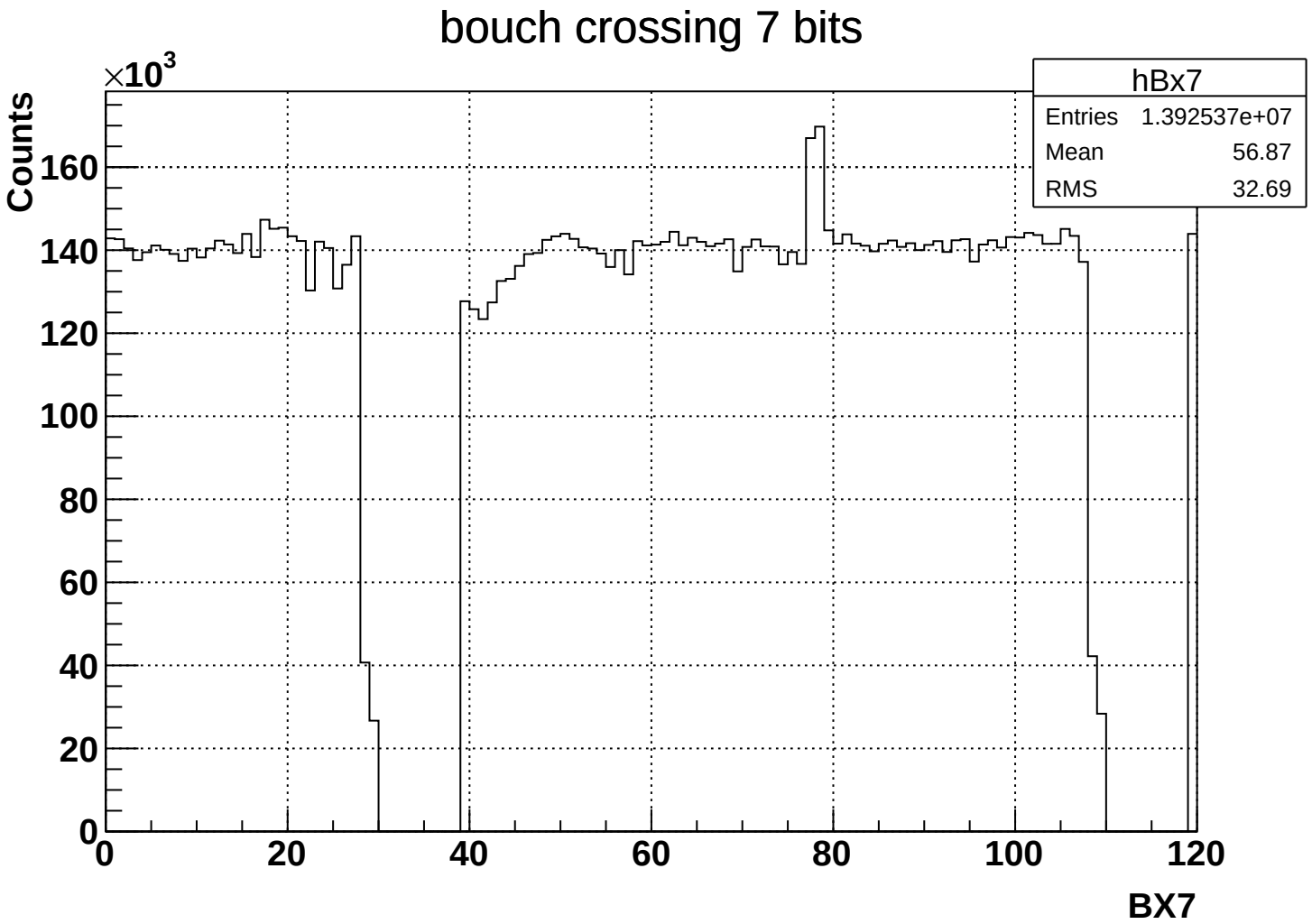
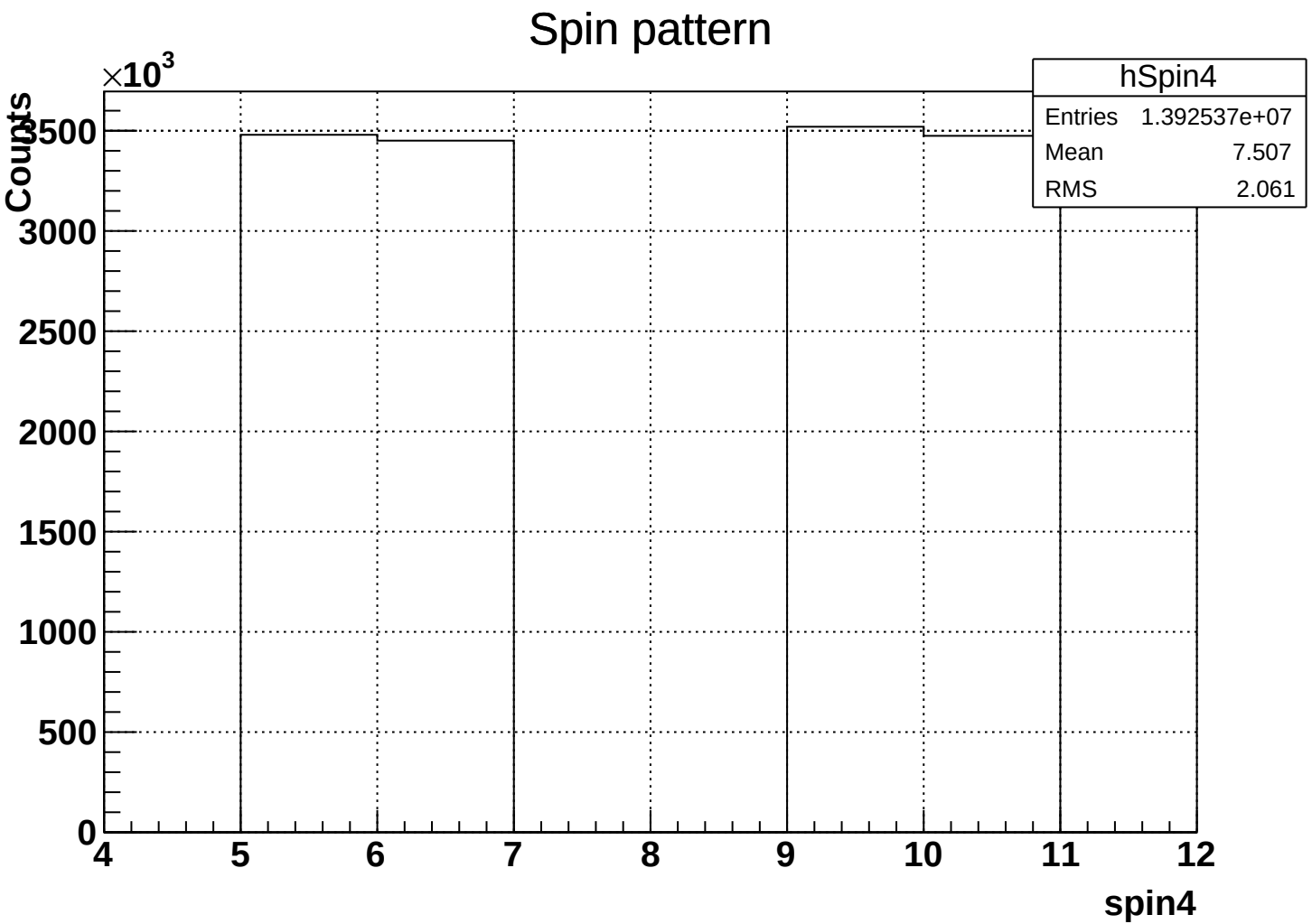
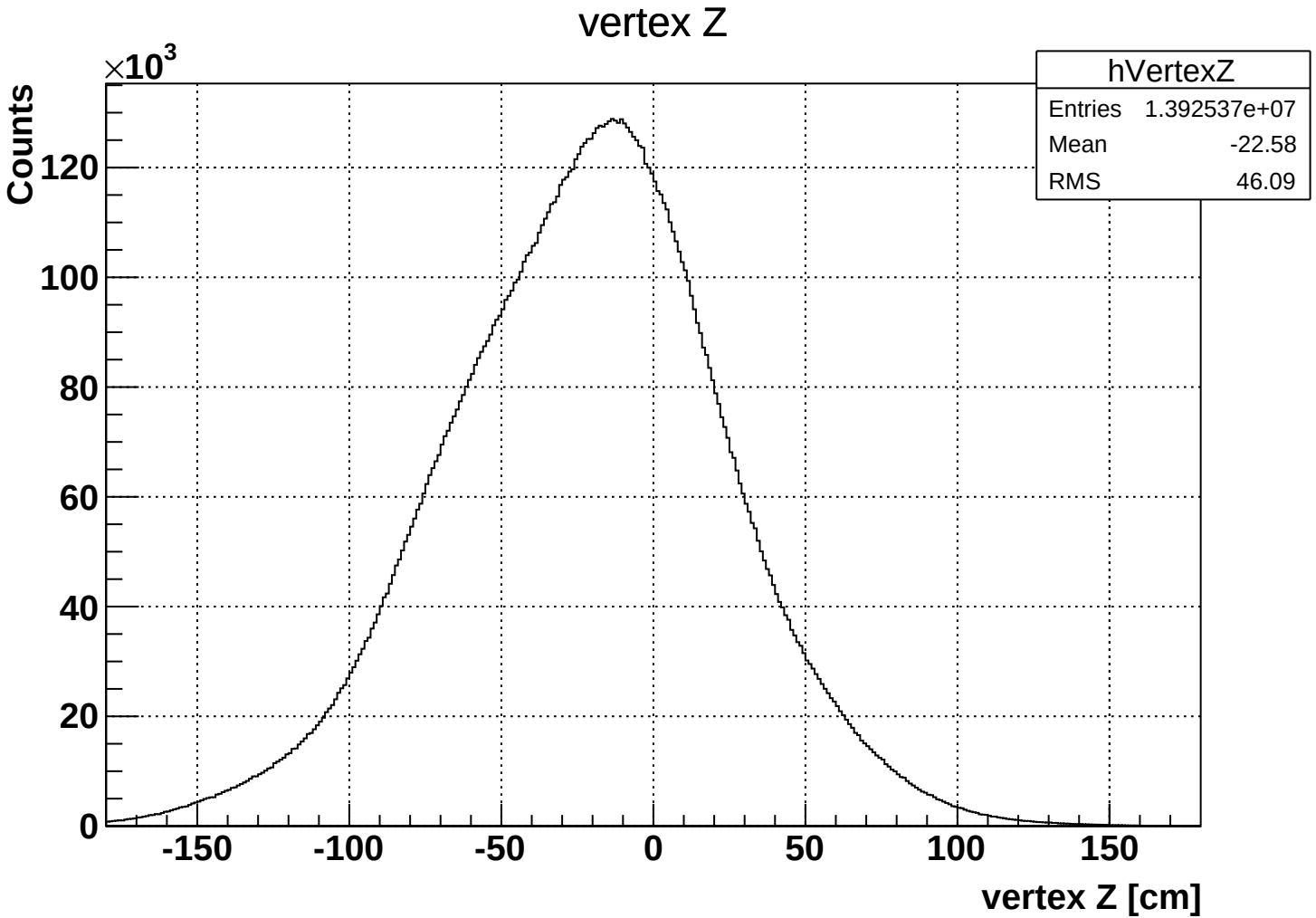
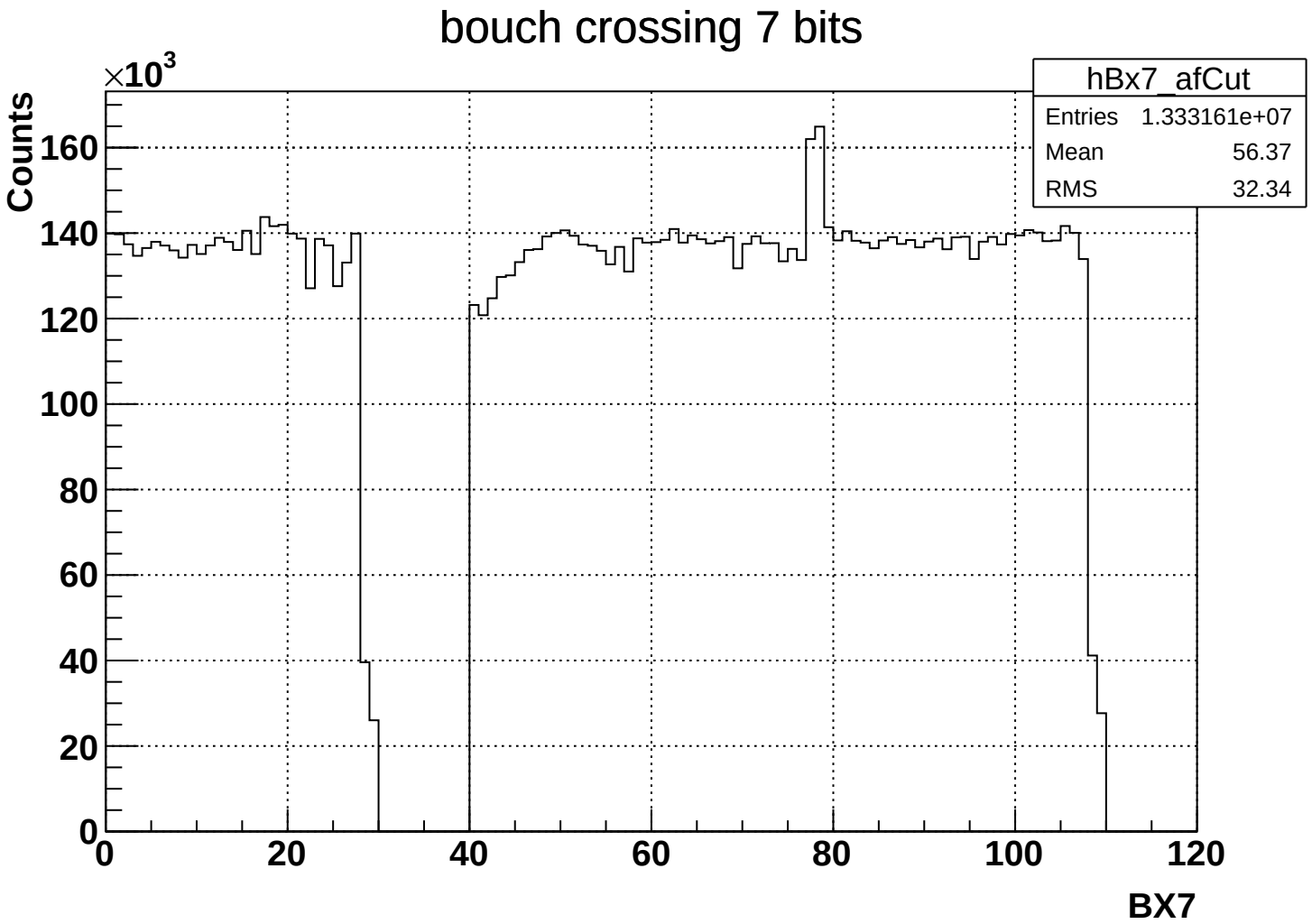
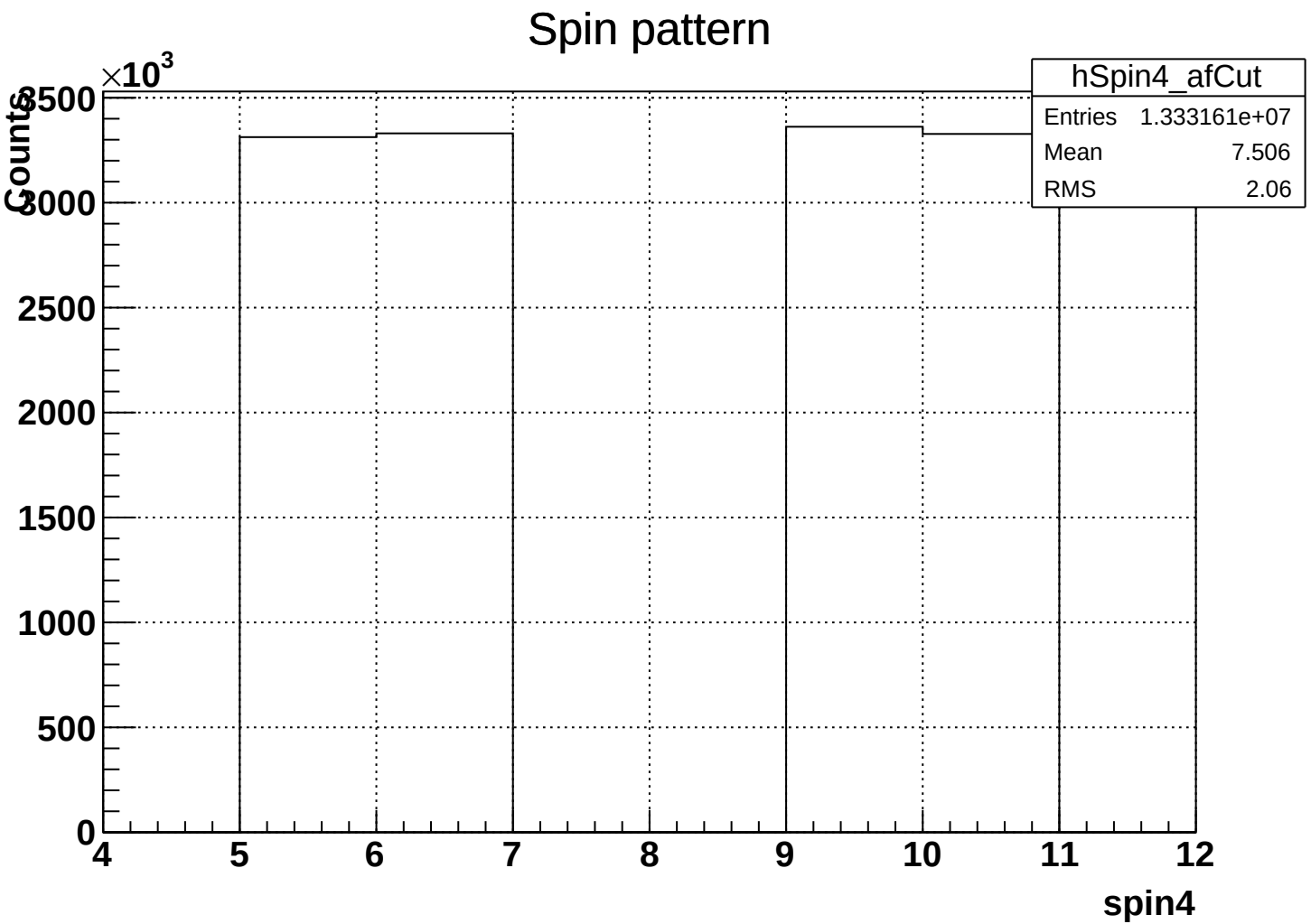
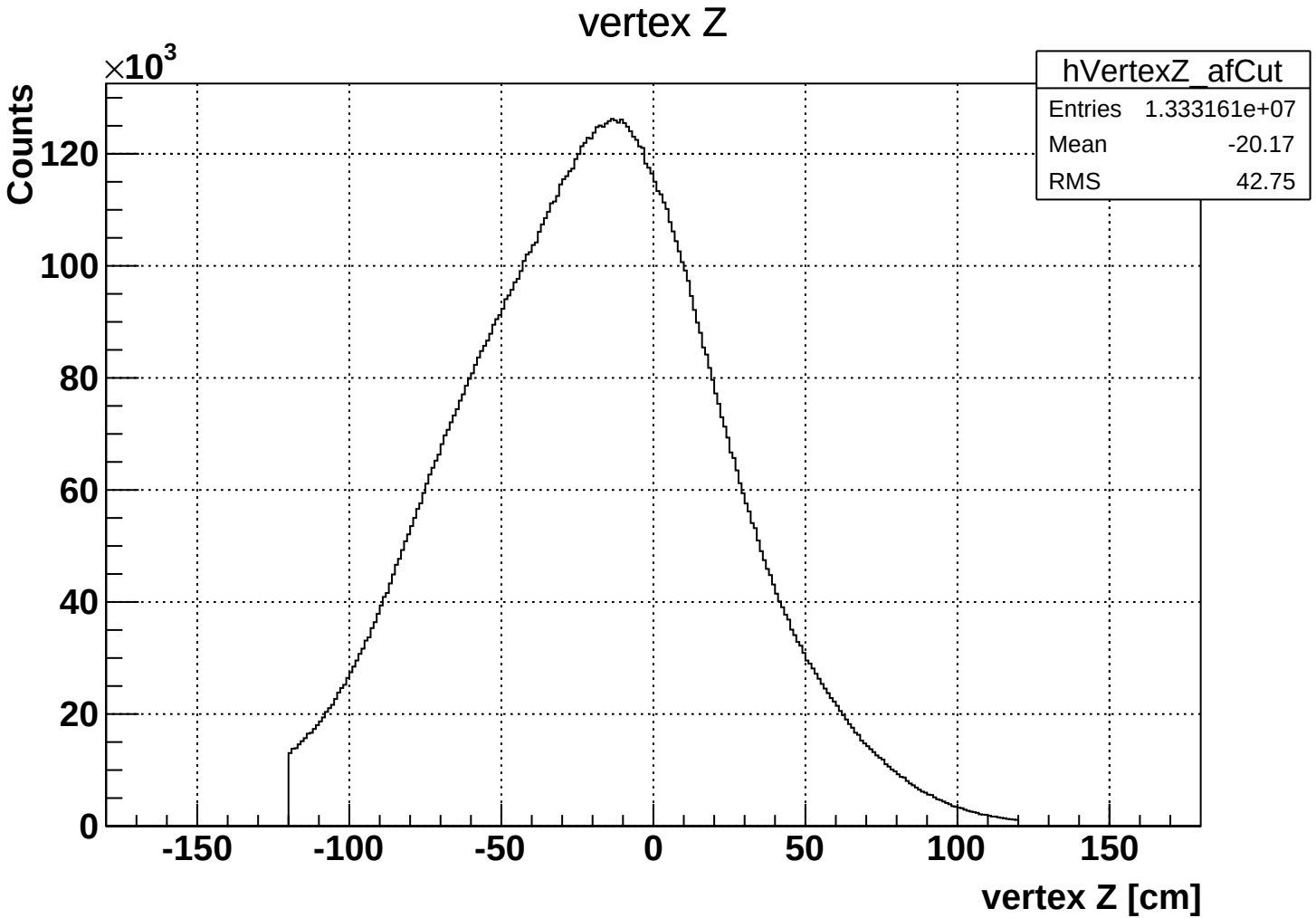

bouch crossing 7 bits
hBx7
Entries 1.392537e+07
Mean 56.87
RMS 32.69
×10^3
Counts
160
140
120
100
80
60
40
20
0
0
20
40
60
80
100
120
BX7

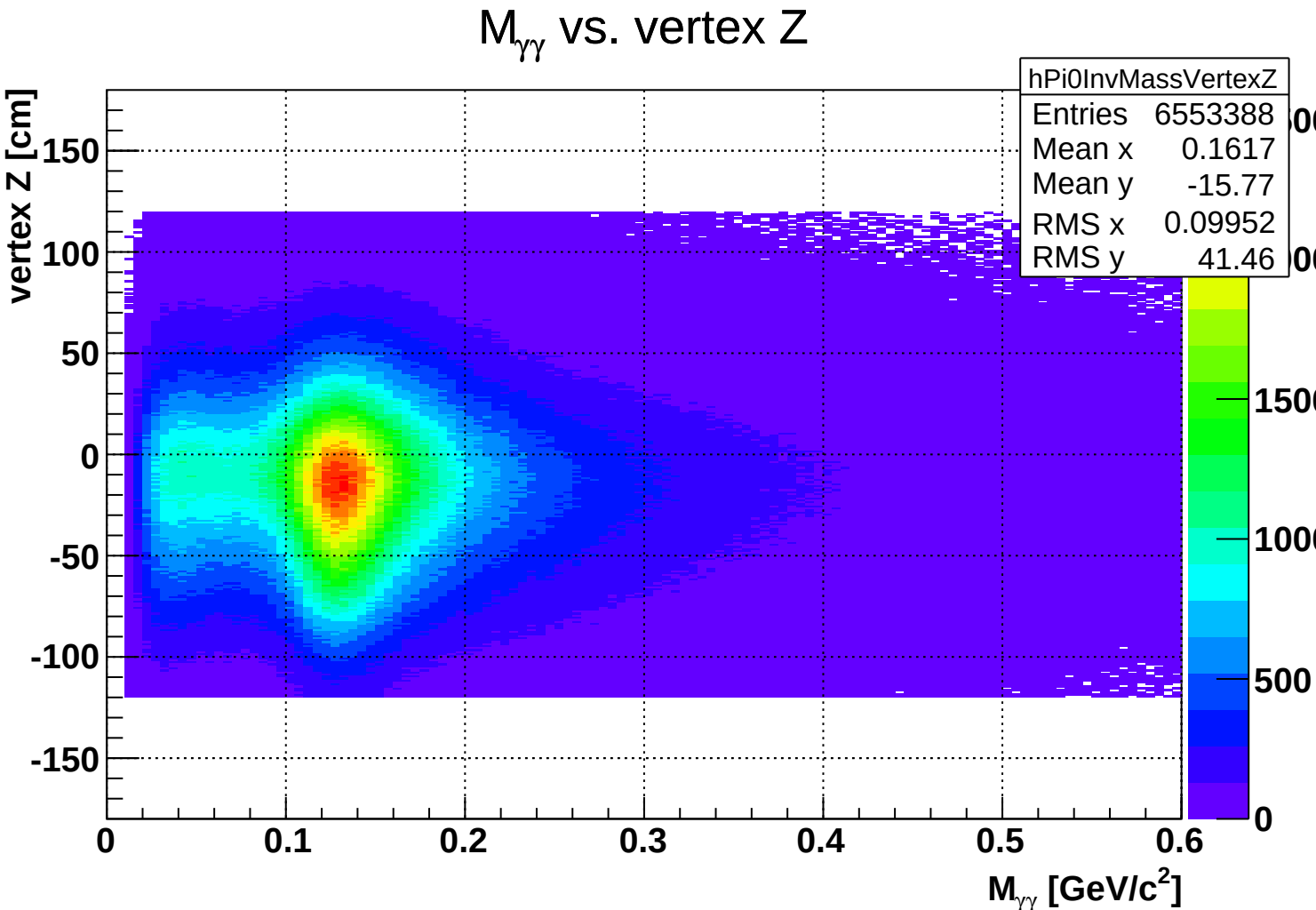

Spin pattern
hSpin4
Entries 1.392537e+07
Mean 7.507
RMS 2.061
×10^3
Counts
3500
3000
2500
2000
1500
1000
500
0
4
5
6
7
8
9
10
11
12
spin4

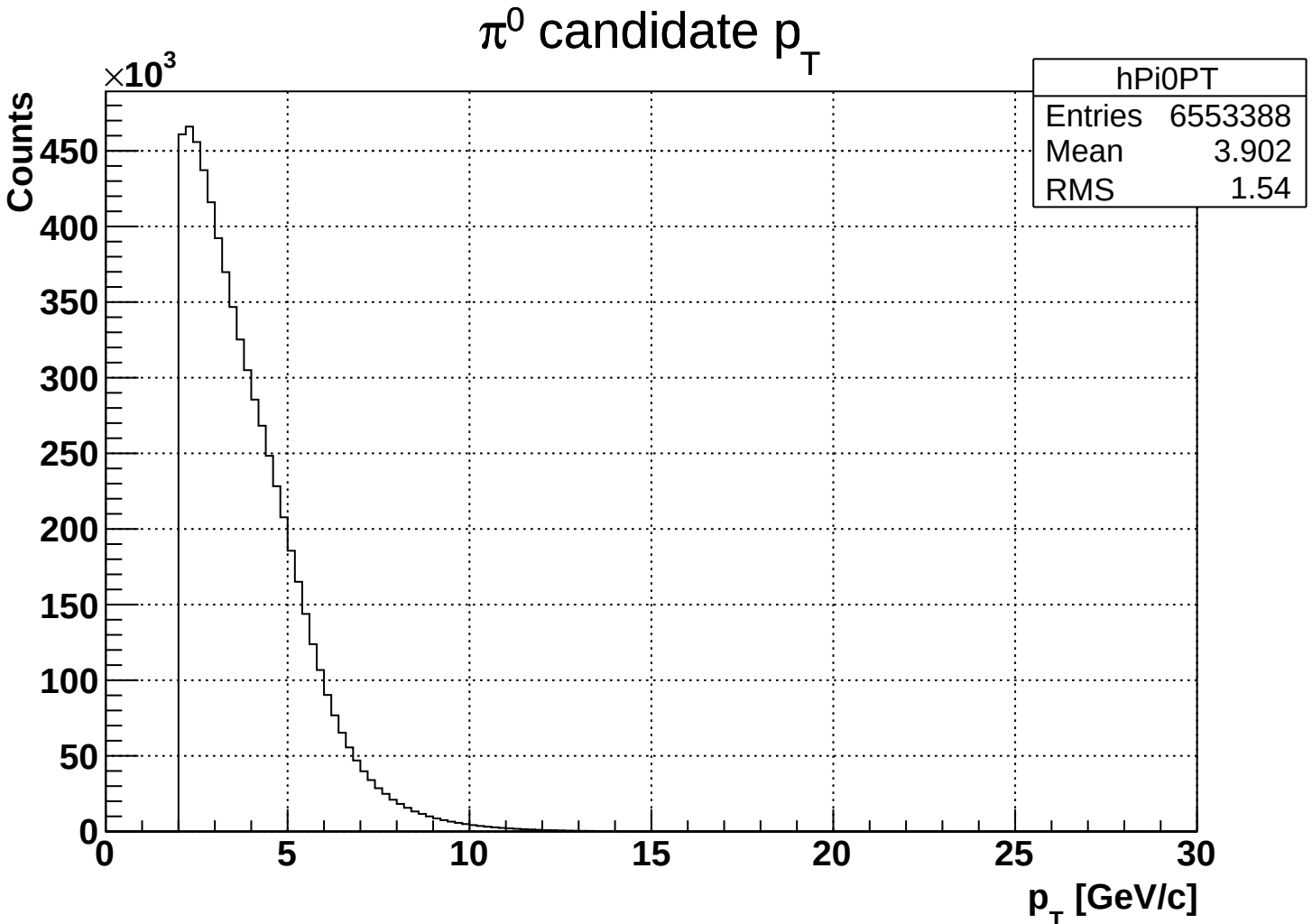

vertex Z
hVertexZ
Entries 1.392537e+07
Mean -22.58
RMS 46.09
Counts
×10^3
120
100
80
60
40
20
0
-150
-100
-50
0
50
100
150
vertex Z [cm]

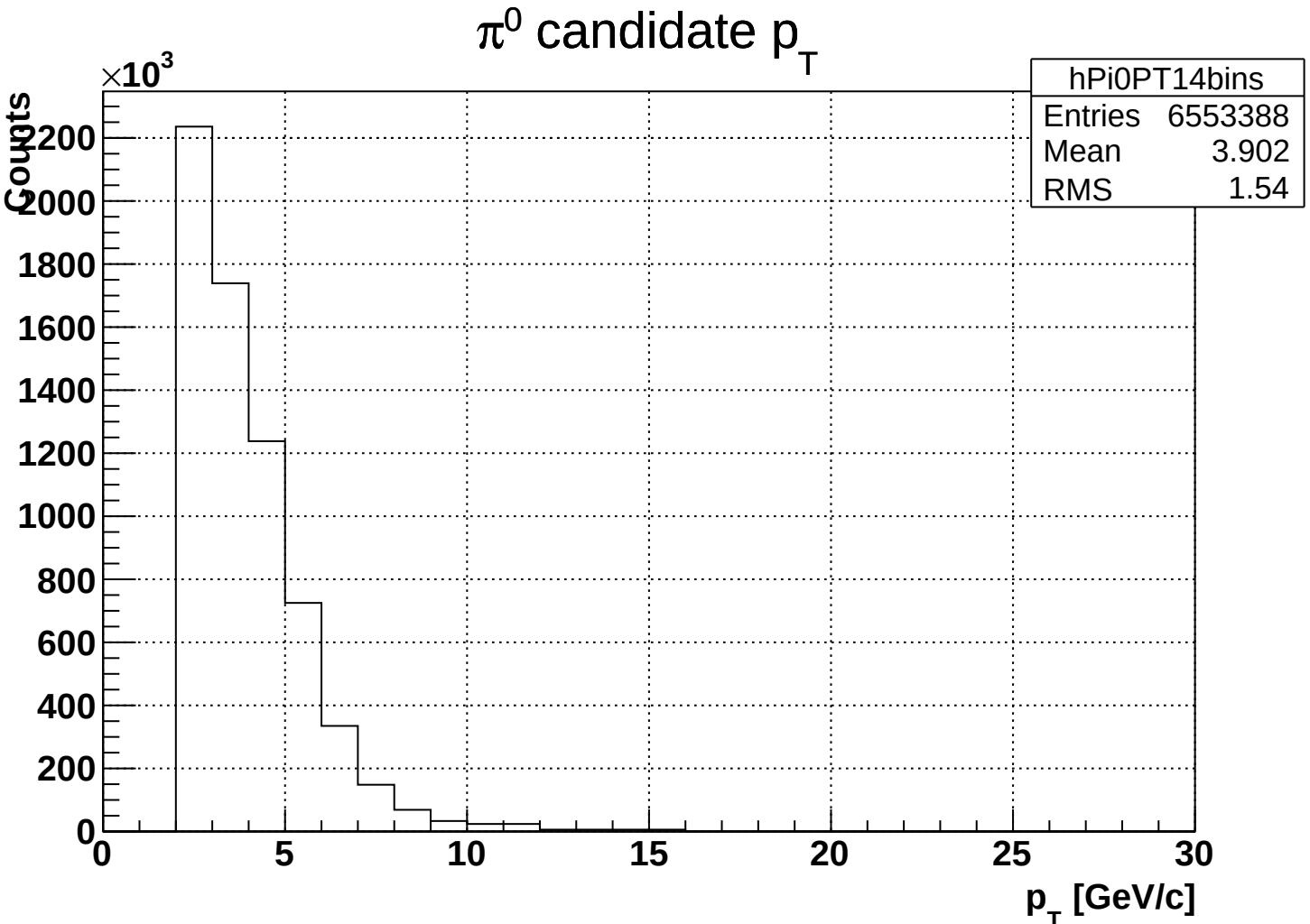

bouch crossing 7 bits
hBx7_afCut
Entries 1.333161e+07
Mean 56.37
RMS 32.34
×10^3
Counts
160
140
120
100
80
60
40
20
0
0
20
40
60
80
100
120
BX7

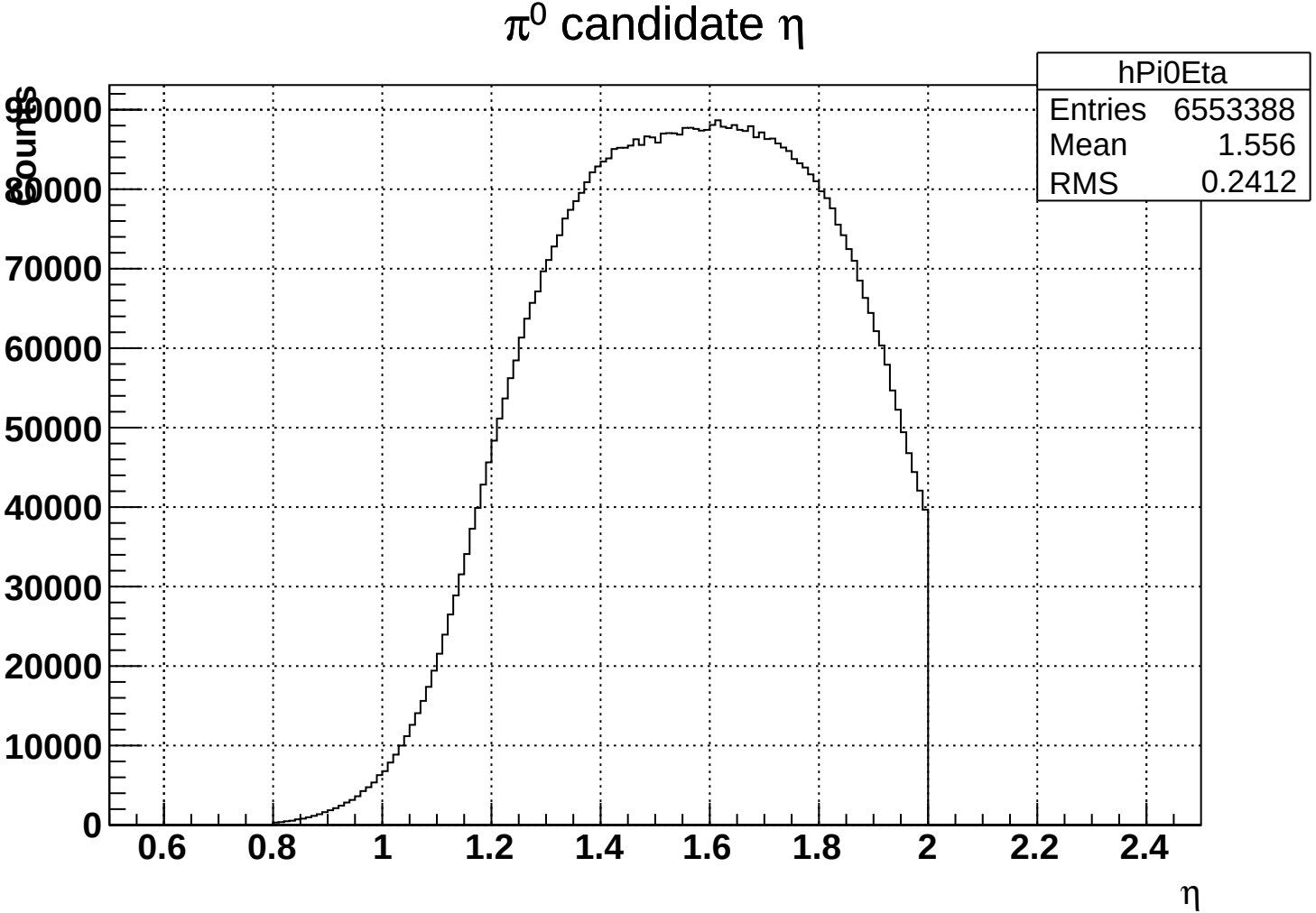

Spin pattern
hSpin4_afCut
Entries 1.333161e+07
Mean 7.506
RMS 2.06
Counts
×10^3
3500
3000
2500
2000
1500
1000
500
0
4
5
6
7
8
9
10
11
12
spin4

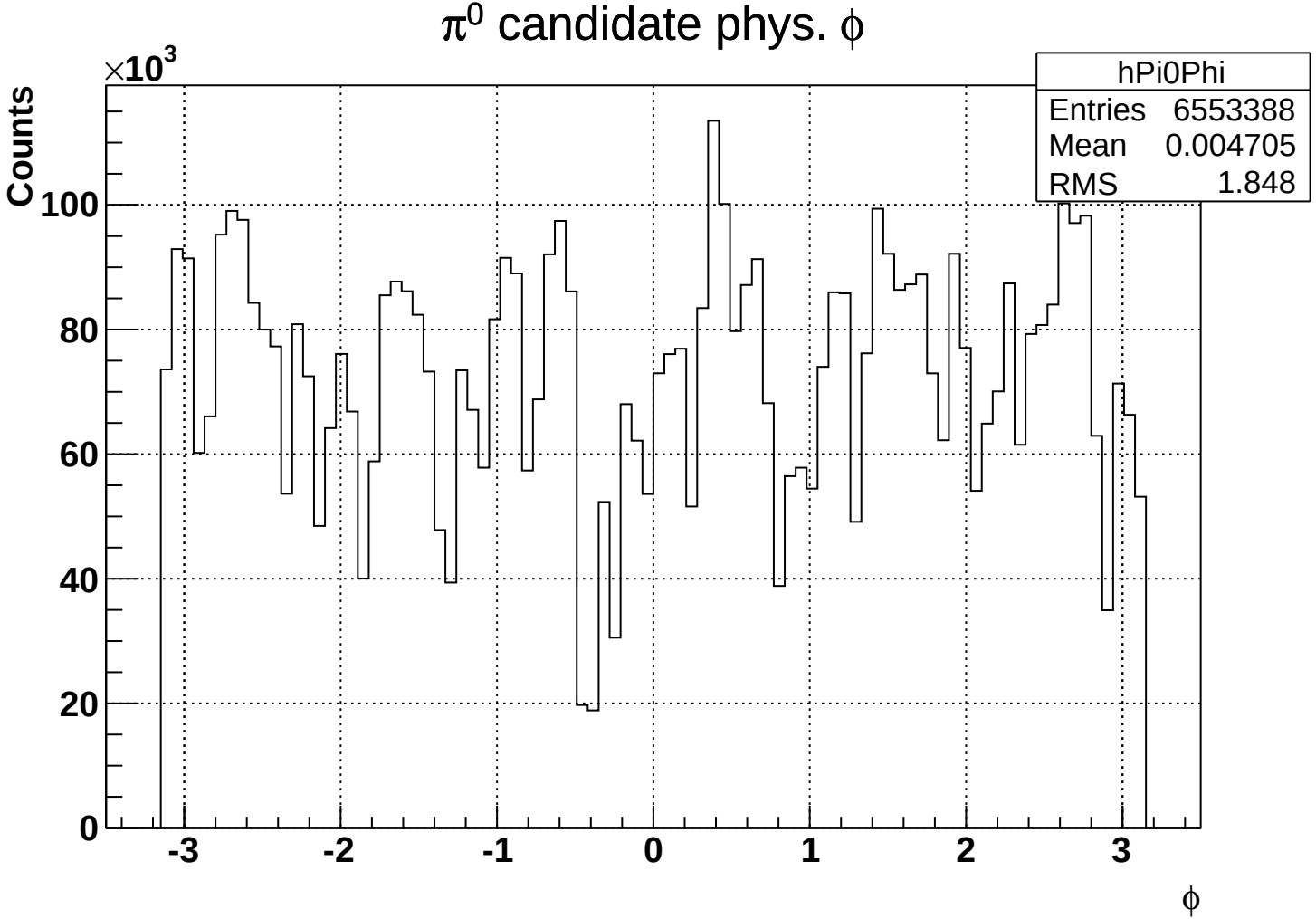

vertex Z
hVertexZ_afCut
Entries 1.333161e+07
Mean -20.17
RMS 42.75
Counts
×10^3
120
100
80
60
40
20
0
-150
-100
-50
0
50
100
150
vertex Z [cm]

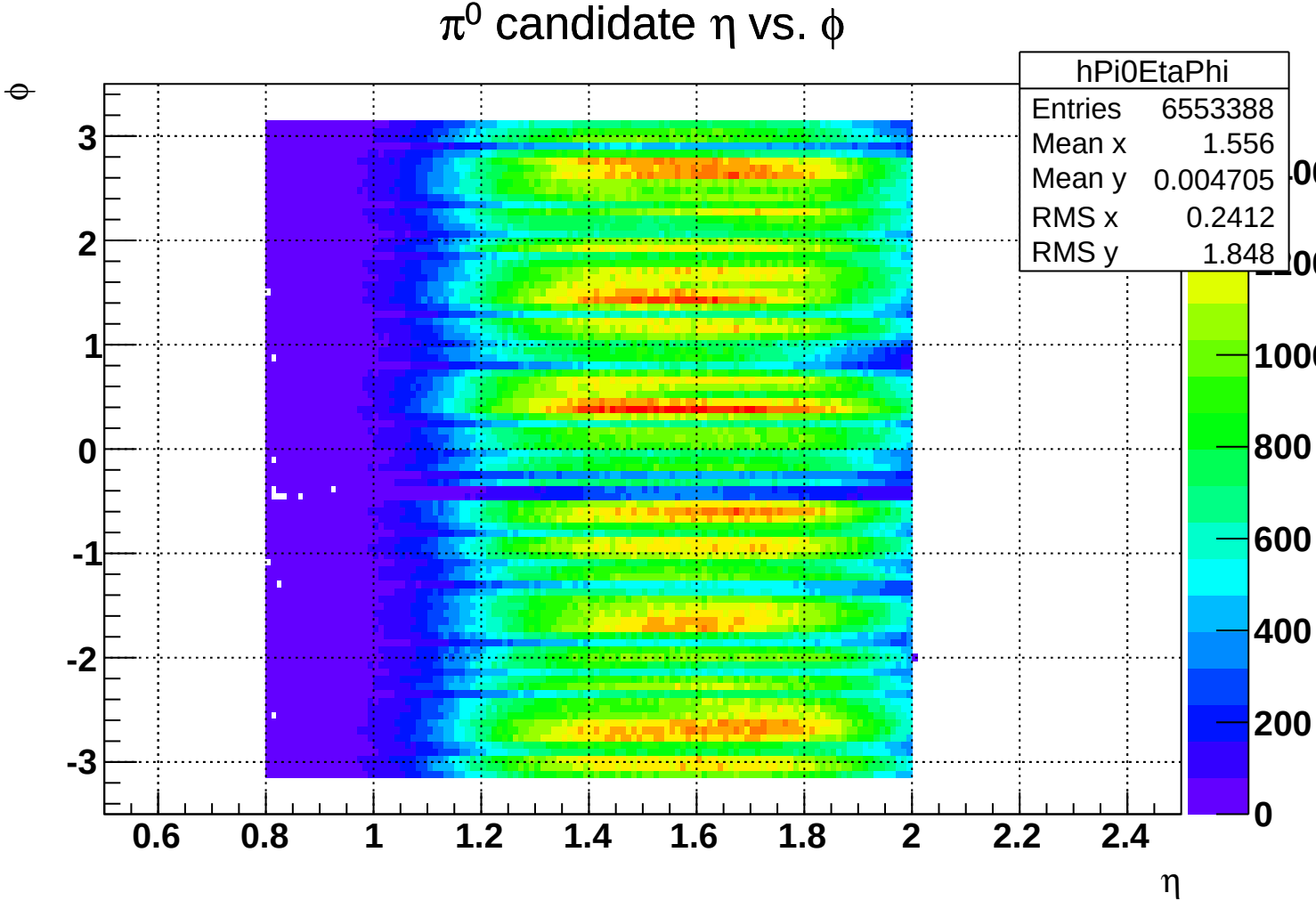

$M_{\gamma\gamma}$ vs. vertex Z
hPi0InvMassVertexZ
Entries 6553388
Mean x 0.1617
Mean y -15.77
RMS x 0.09952
RMS y 41.46
vertex Z [cm]
150
100
50
0
-50
-100
-150
0
0.1
0.2
0.3
0.4
0.5
0.6
$M_{\gamma\gamma}$ [GeV/c$^2$]
1500
1000
500
0

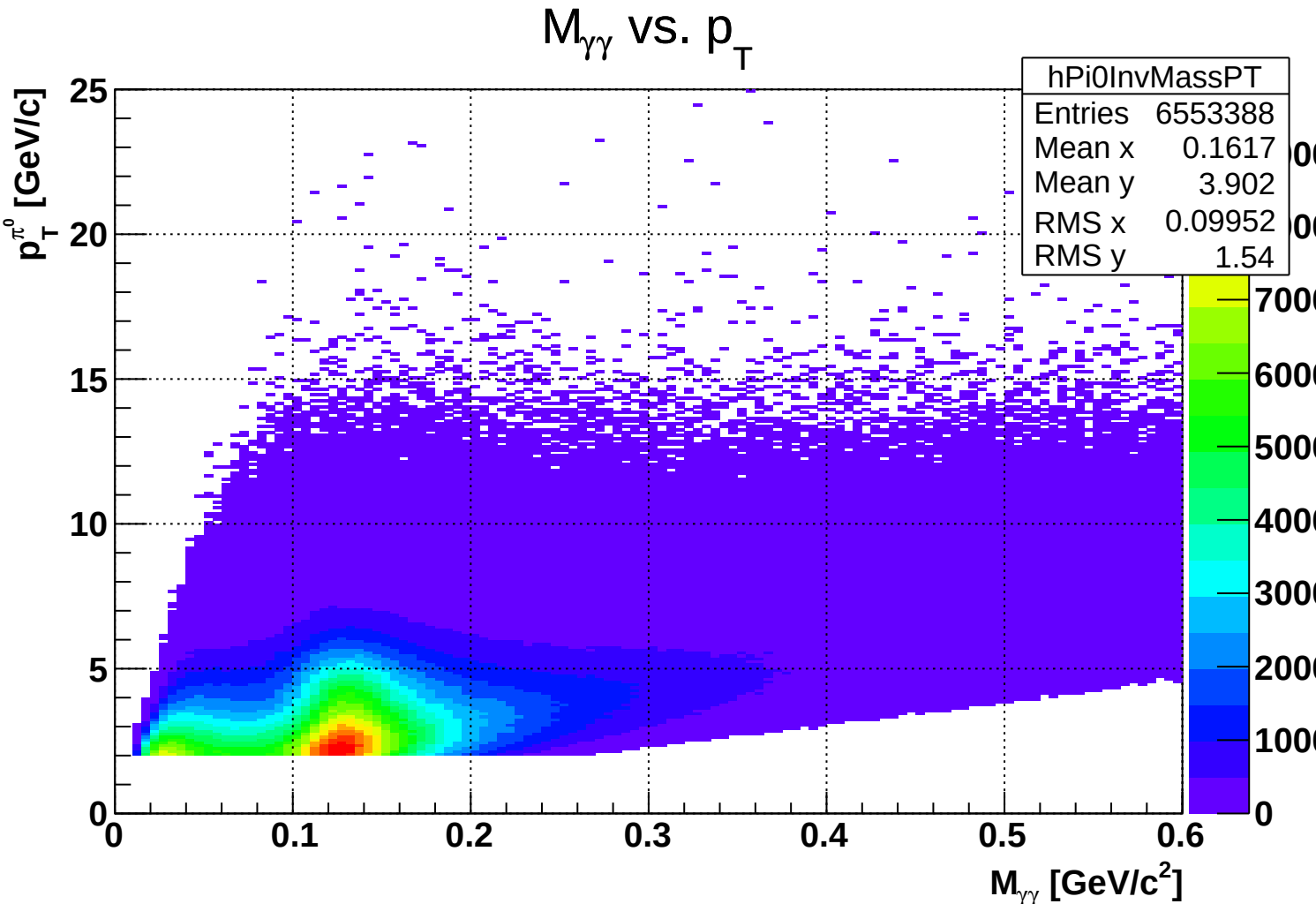

$\pi^0$ candidate $p_T$
hPi0PT
Entries 6553388
Mean 3.902
RMS 1.54
Counts
$\times 10^3$
450
400
350
300
250
200
150
100
50
0
0
5
10
15
20
25
30
$p_T$ [GeV/c]

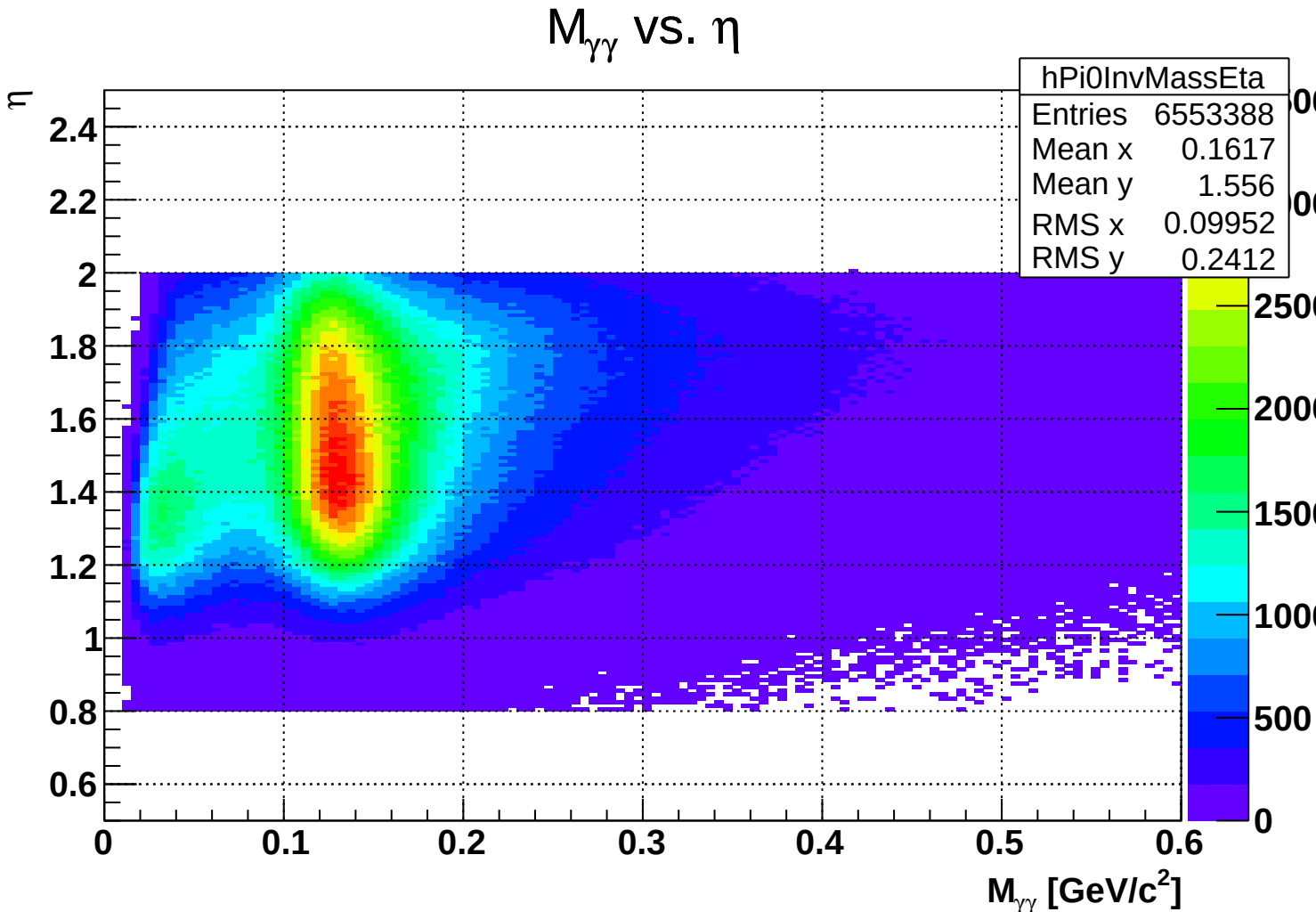

$\pi^0$ candidate $p_T$
hPi0PT14bins
Entries 6553388
Mean 3.902
RMS 1.54
Counts
$\times 10^3$
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
0
5
10
15
20
25
30
$p_T$ [GeV/c]

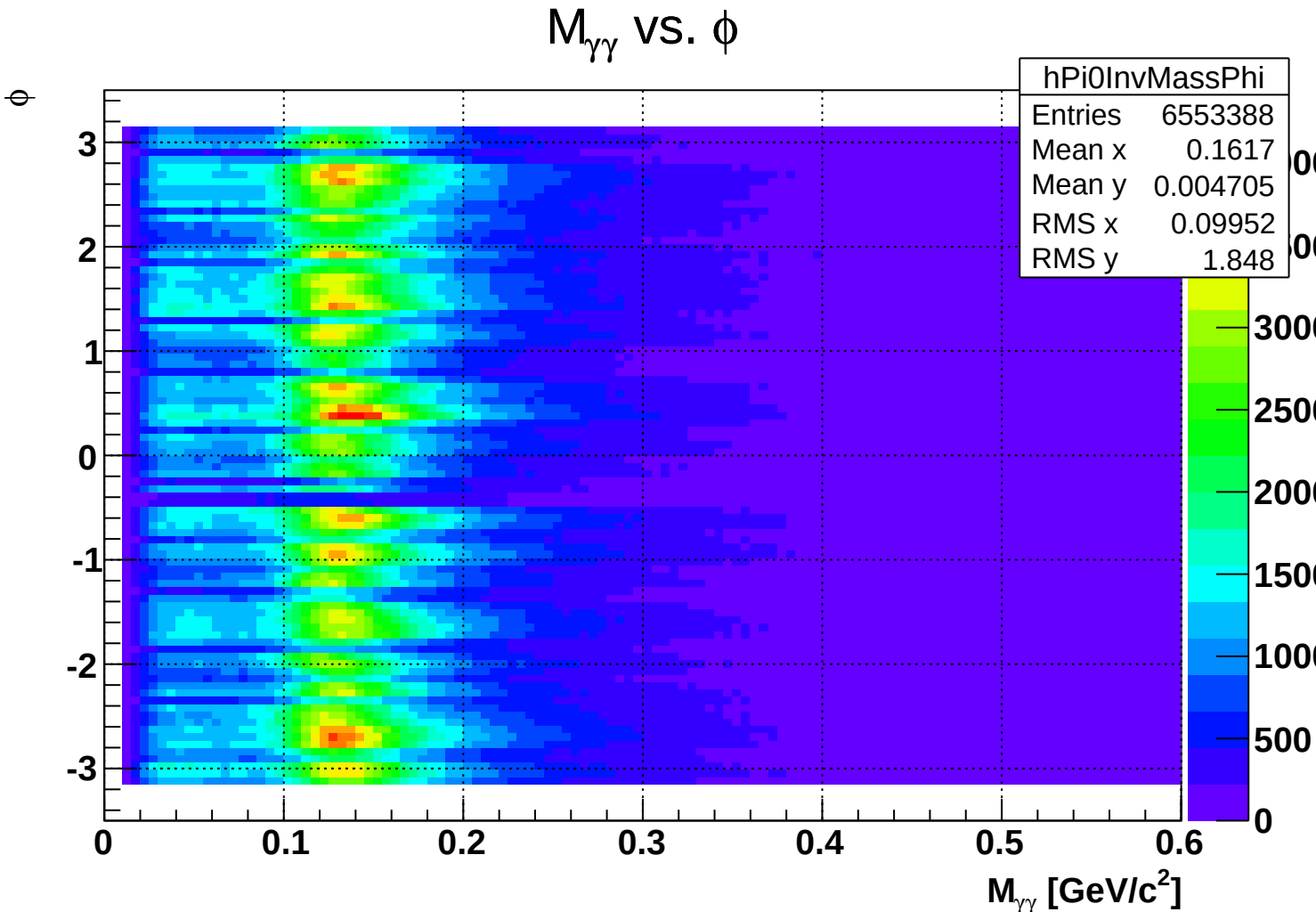

$\pi^0$ candidate $\eta$
hPi0Eta
Entries 6553388
Mean 1.556
RMS 0.2412
Counts
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
$\eta$

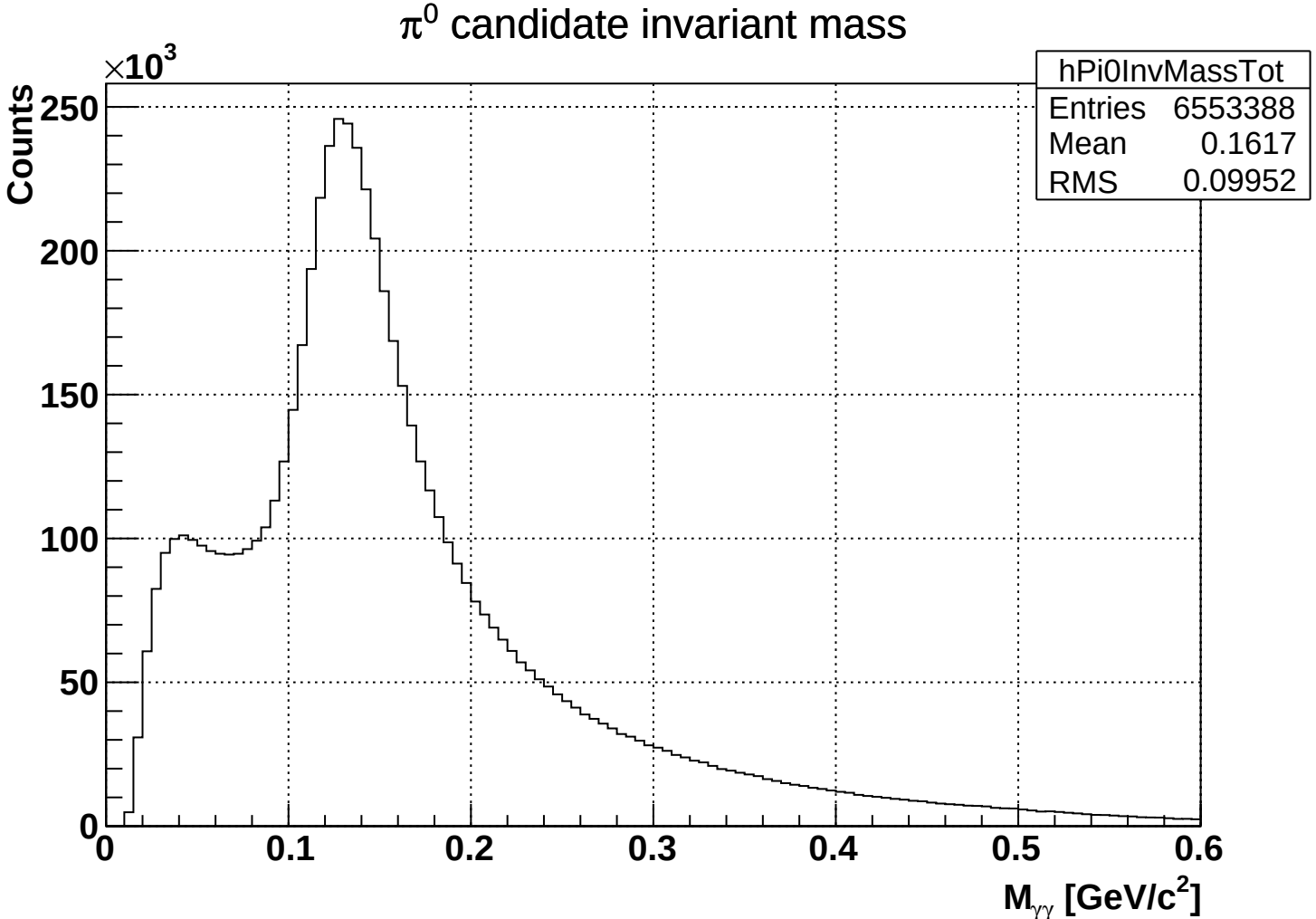

$\pi^0$ candidate phys. $\phi$
hPi0Phi
Entries 6553388
Mean 0.004705
RMS 1.848
Counts
$\times 10^3$
100
80
60
40
20
0
-3
-2
-1
0
1
2
3
$\phi$

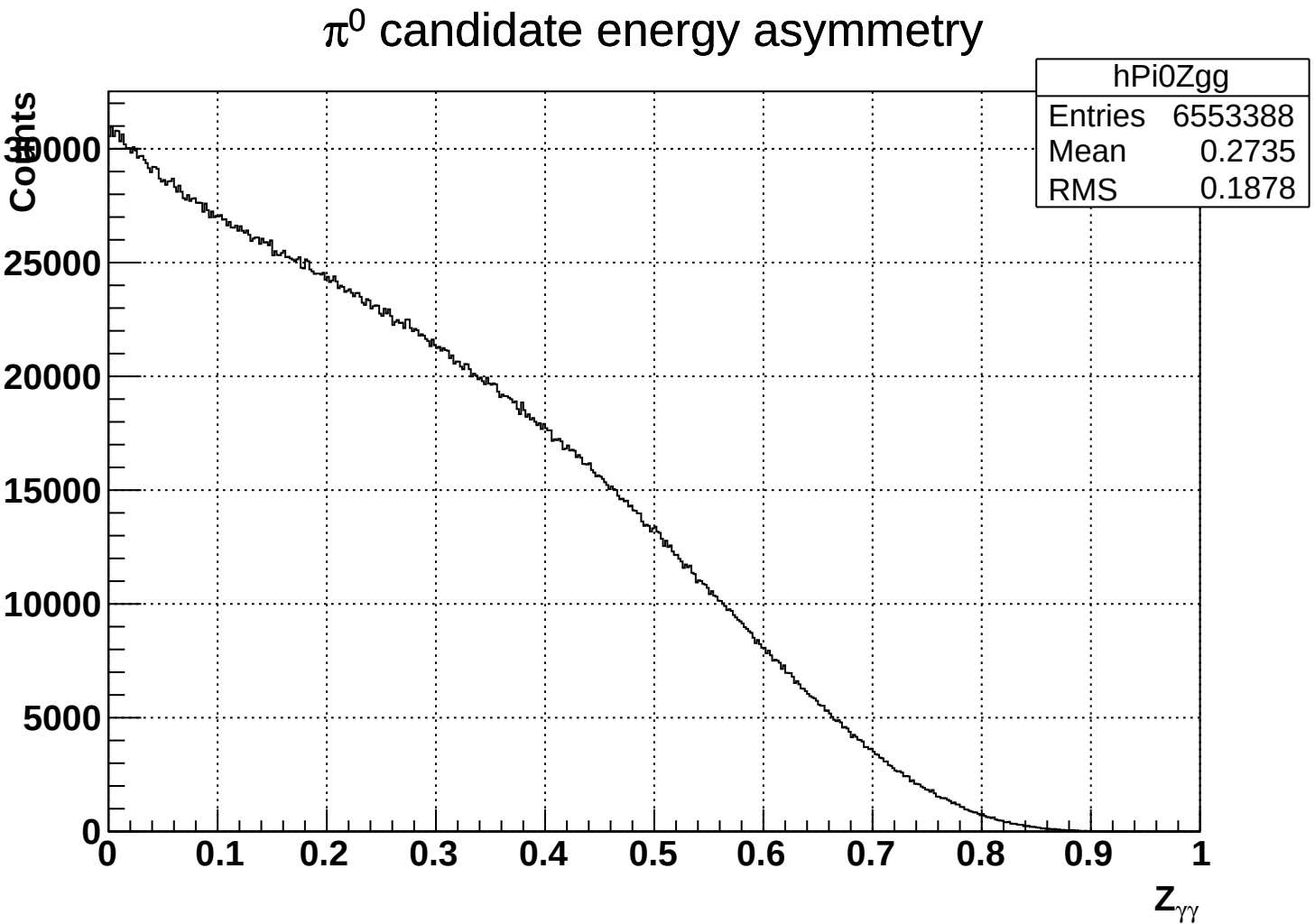

$\pi^0$ candidate η vs. ϕ
hPi0EtaPhi
Entries 6553388
Mean x 1.556
Mean y 0.004705
RMS x 0.2412
RMS y 1.848
ϕ
3
2
1
0
-1
-2
-3
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
η
1000
800
600
400
200
0

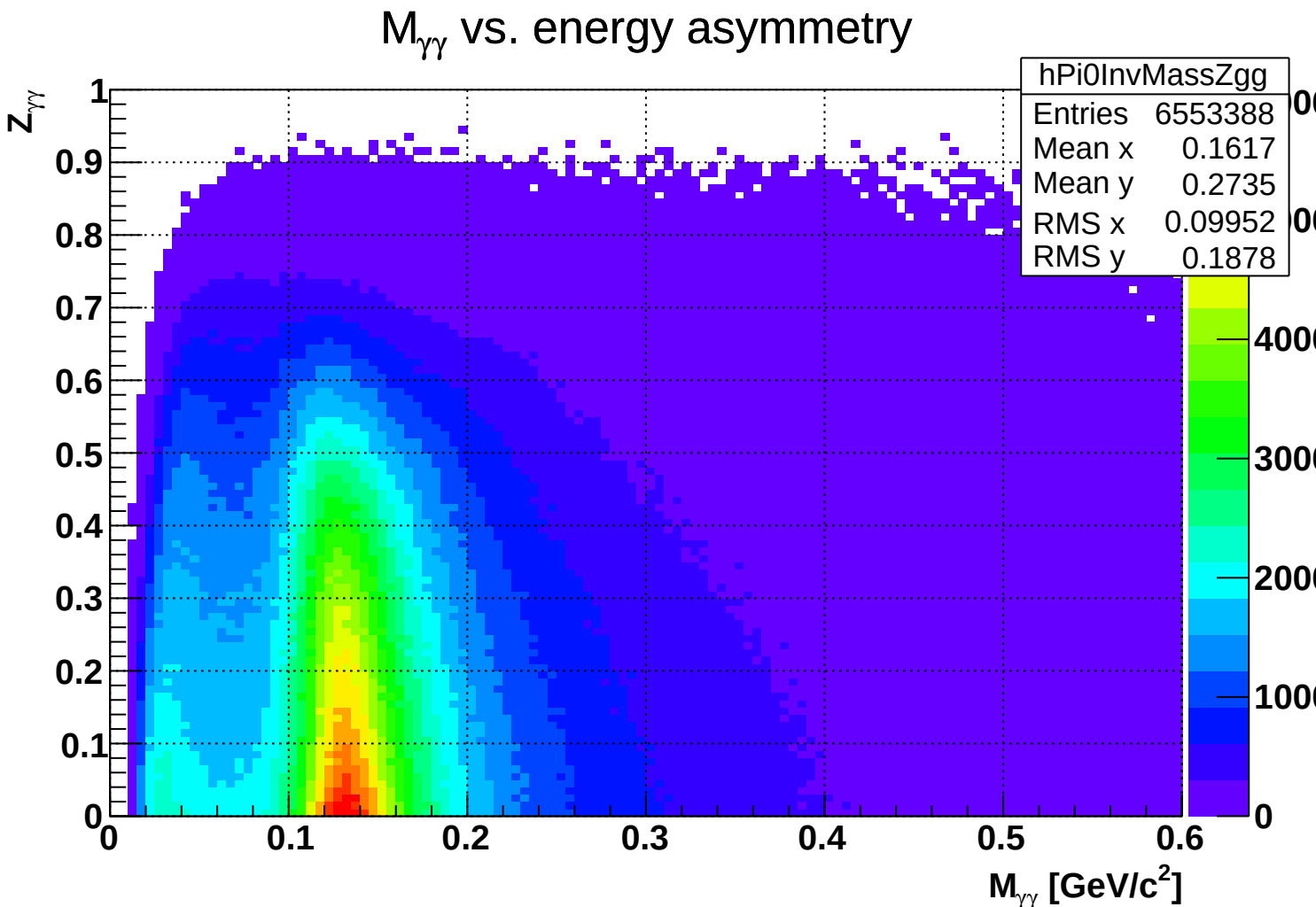

$M_{\gamma\gamma}$ vs. $p_T$
hPi0InvMassPT
Entries 6553388
Mean x 0.1617
Mean y 3.902
RMS x 0.09952
RMS y 1.54
$p_T^{\pi^0}$ [GeV/c]
$M_{\gamma\gamma}$ [GeV/$c^2$]
0
5
10
15
20
25
0.1
0.2
0.3
0.4
0.5
0.6
1000
2000
3000
4000
5000
6000
7000

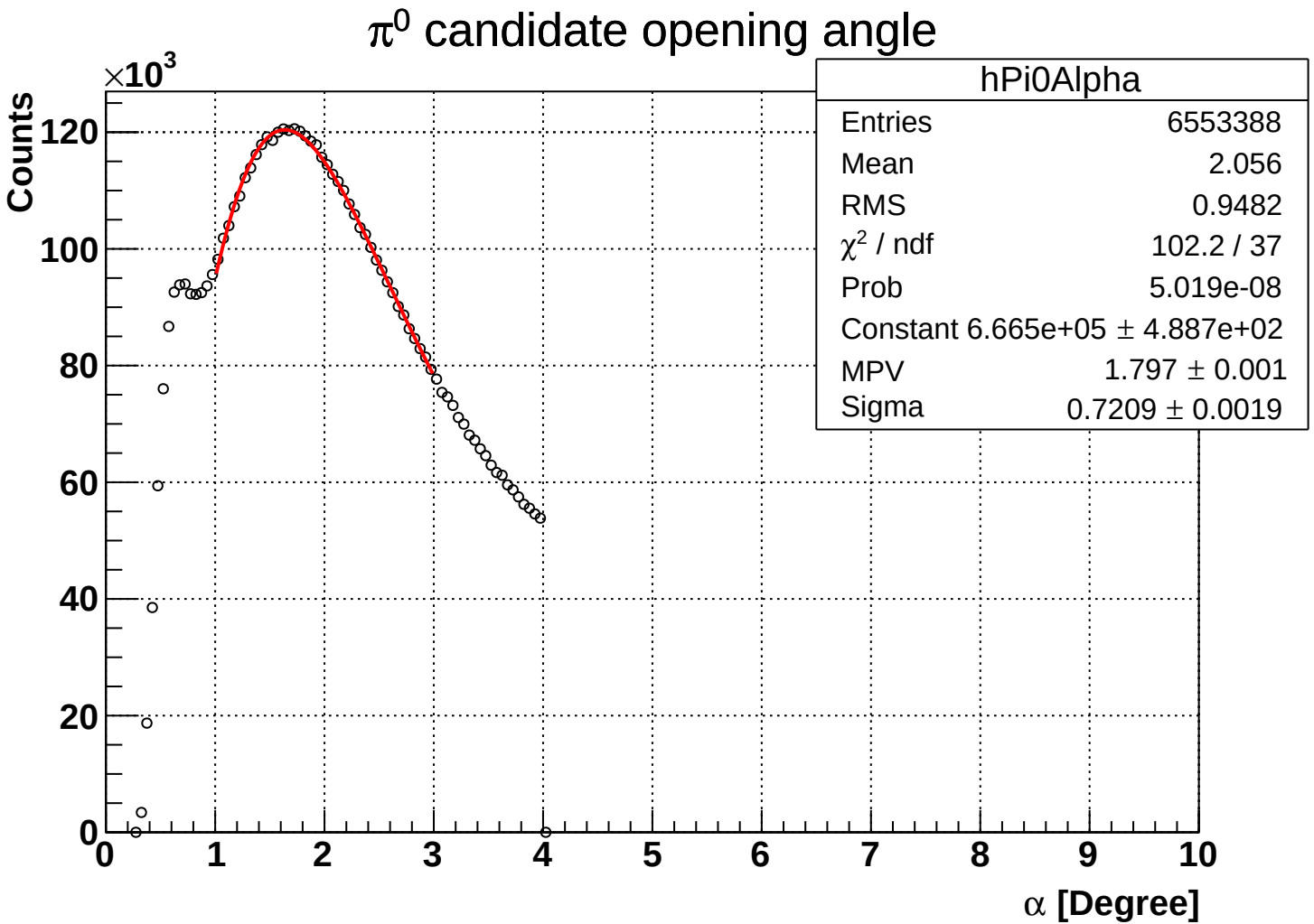

$M_{\gamma\gamma}$ vs. η
hPi0InvMassEta
Entries 6553388
Mean x 0.1617
Mean y 1.556
RMS x 0.09952
RMS y 0.2412
η
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0
0.1
0.2
0.3
0.4
0.5
0.6
$M_{\gamma\gamma}$ [GeV/$c^2$]
2500
2000
1500
1000
500
0

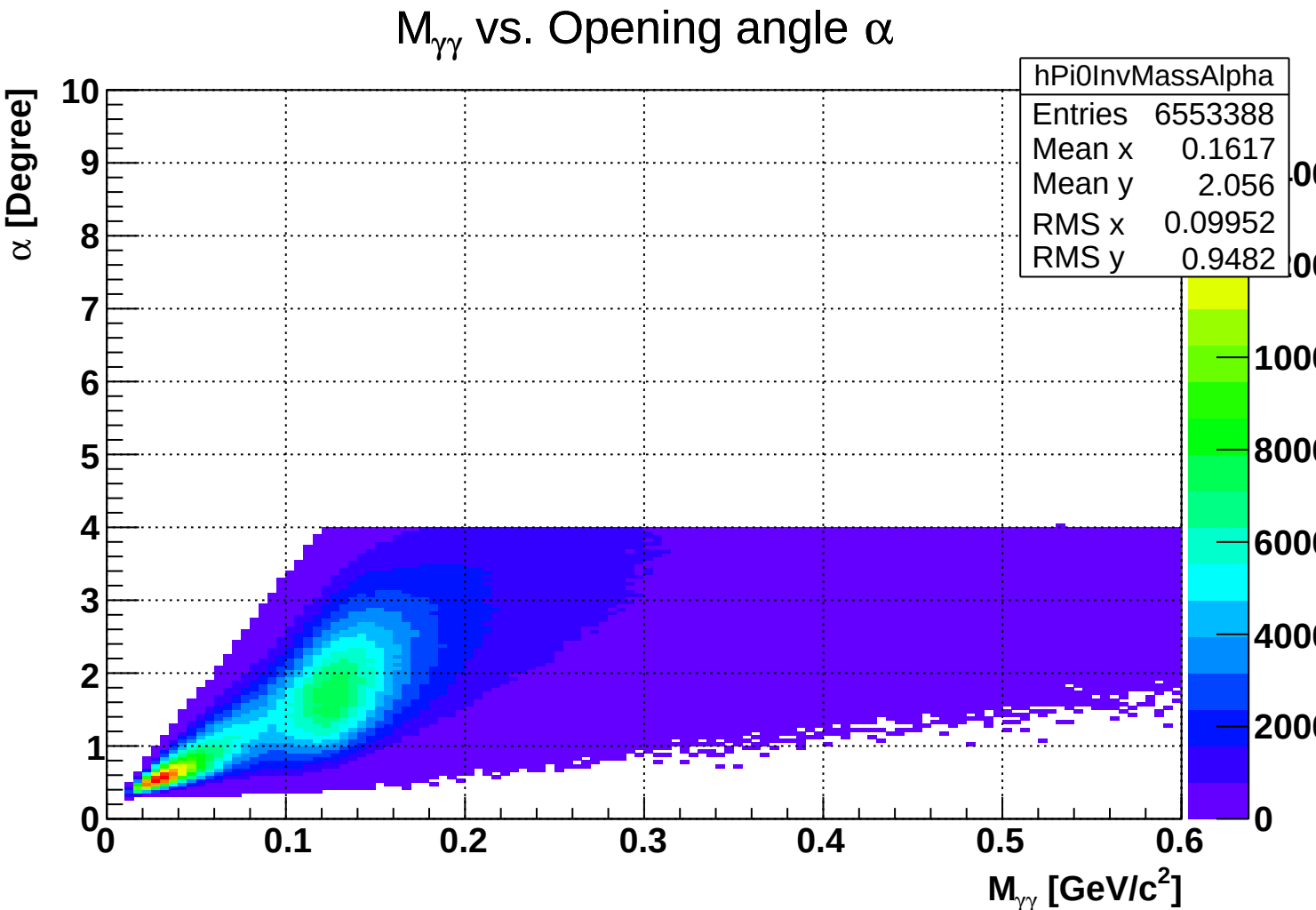

$M_{\gamma\gamma}$ vs. $\phi$
hPi0InvMassPhi
Entries 6553388
Mean x 0.1617
Mean y 0.004705
RMS x 0.09952
RMS y 1.848
$\phi$
3
2
1
0
-1
-2
-3
0
0.1
0.2
0.3
0.4
0.5
0.6
$M_{\gamma\gamma}$ [GeV/c$^2$]
3000
2500
2000
1500
1000
500
0

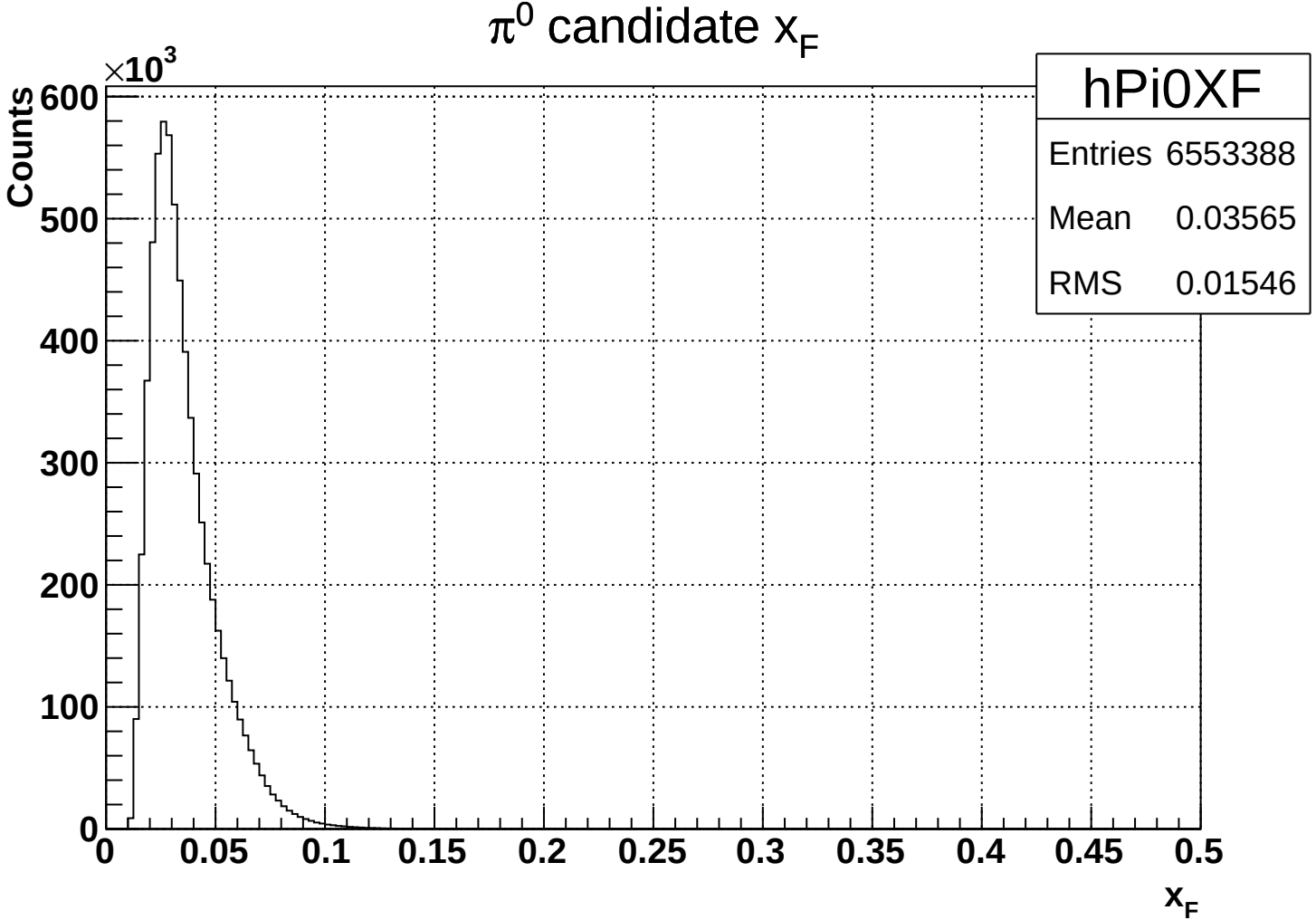

π0 candidate invariant mass
×10^3
Counts
250
200
150
100
50
0
0
0.1
0.2
0.3
0.4
0.5
0.6
Mγγ [GeV/c2]
hPi0InvMassTot
Entries 6553388
Mean 0.1617
RMS 0.09952

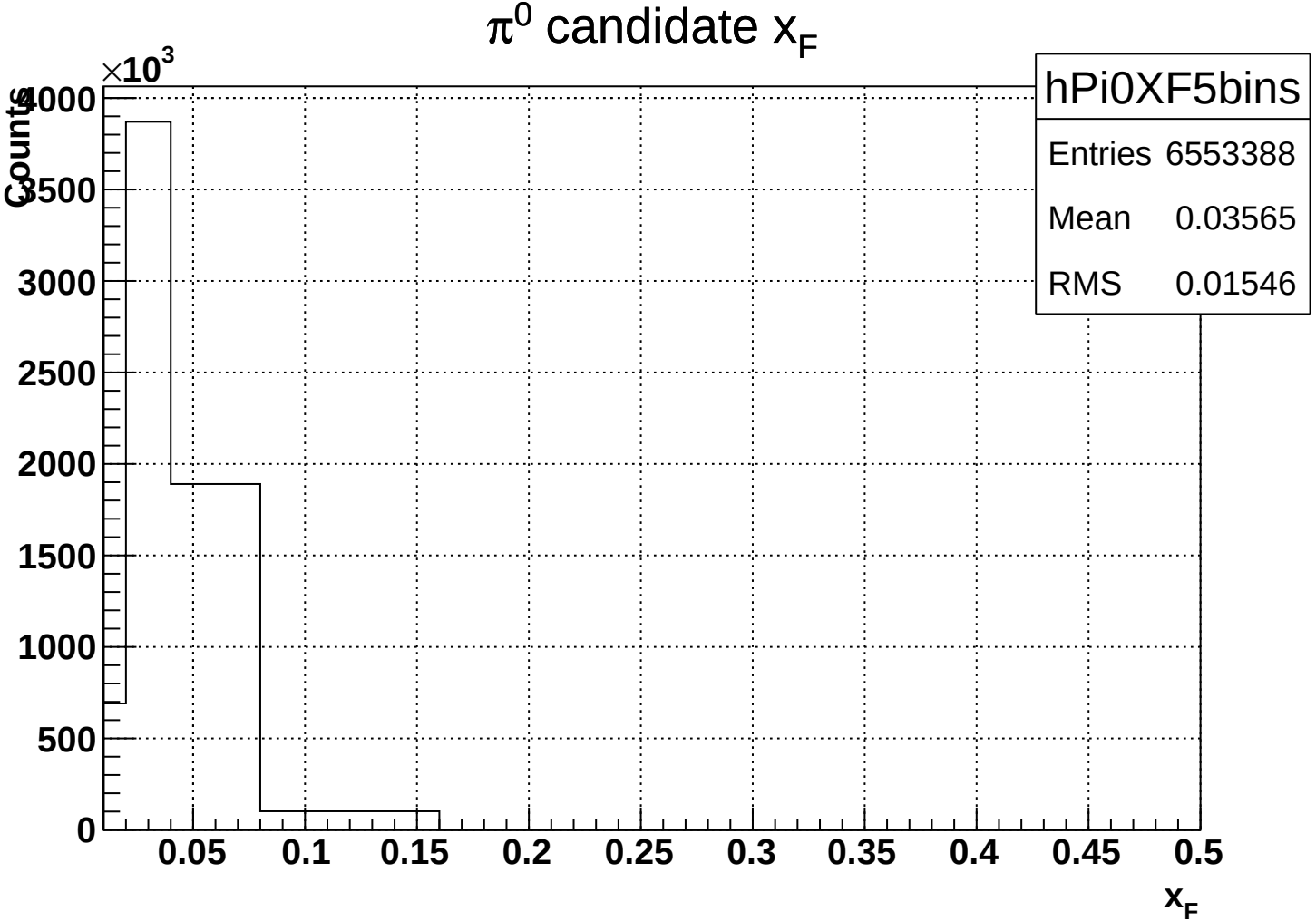

$\pi^0$ candidate energy asymmetry
hPi0Zgg
Entries 6553388
Mean 0.2735
RMS 0.1878
Counts
30000
25000
20000
15000
10000
5000
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
$Z_{\gamma\gamma}$

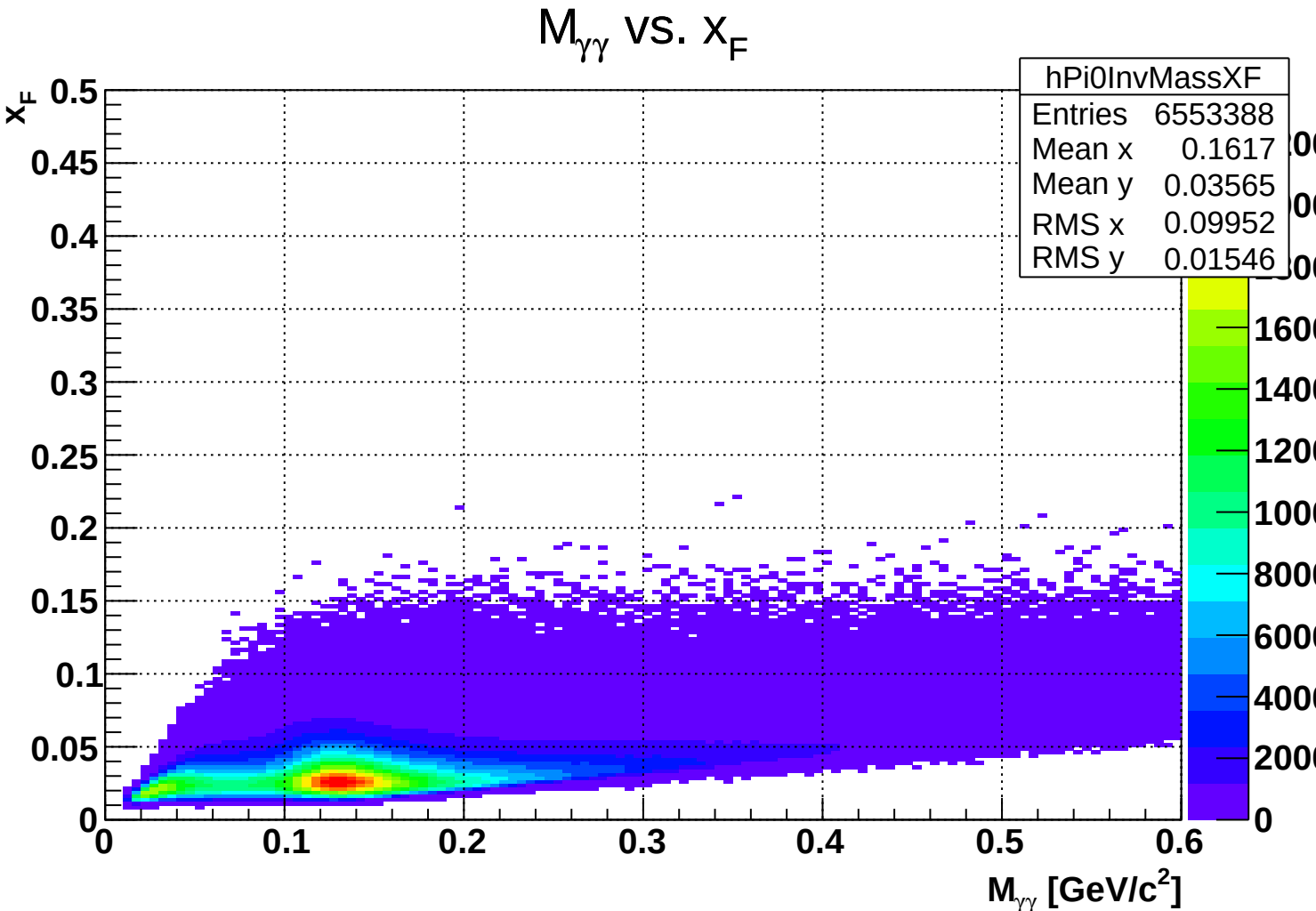

$M_{\gamma\gamma}$ vs. energy asymmetry
hPi0InvMassZgg
Entries 6553388
Mean x 0.1617
Mean y 0.2735
RMS x 0.09952
RMS y 0.1878
$Z_{\gamma\gamma}$
$M_{\gamma\gamma}$ [GeV/c$^2$]
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1000
2000
3000
4000

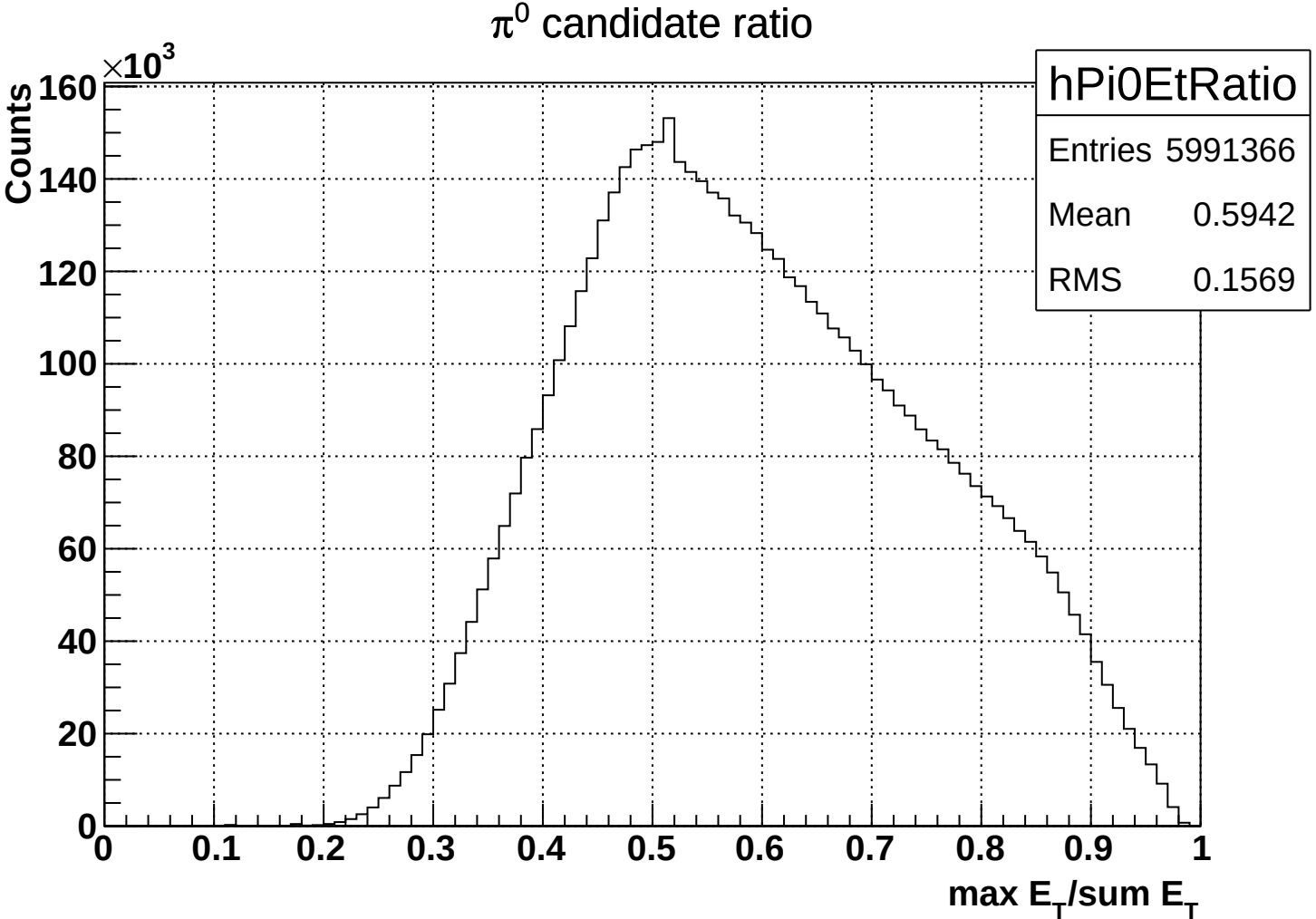

$\pi^0$ candidate opening angle
hPi0Alpha
Entries 6553388
Mean 2.056
RMS 0.9482
$\chi^2$ / ndf 102.2 / 37
Prob 5.019e-08
Constant 6.665e+05 ± 4.887e+02
MPV 1.797 ± 0.001
Sigma 0.7209 ± 0.0019
Counts
$\times 10^3$
0
20
40
60
80
100
120
0
1
2
3
4
5
6
7
8
9
10
$\alpha$ [Degree]

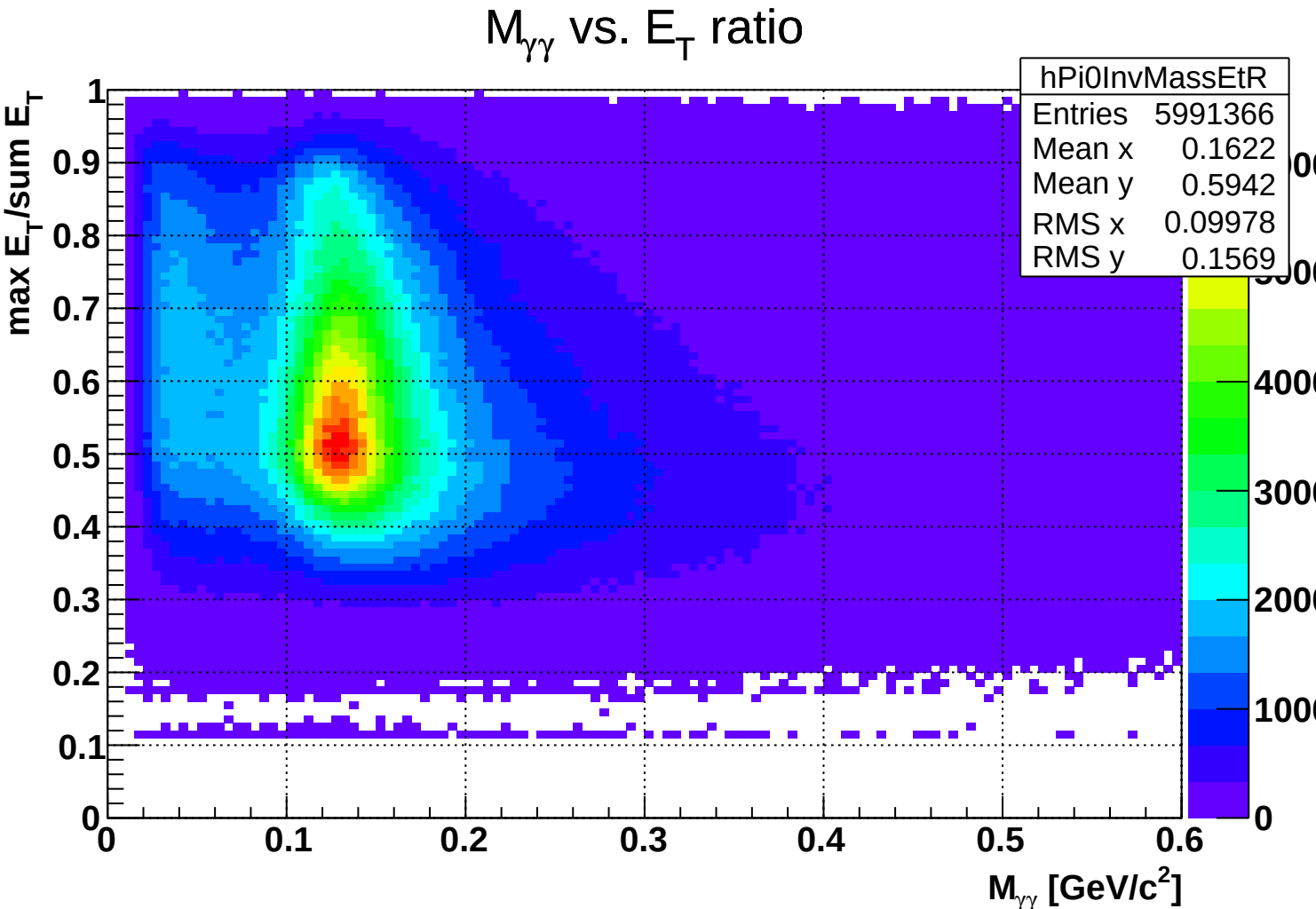

$M_{\gamma\gamma}$ vs. Opening angle $\alpha$
hPi0InvMassAlpha
Entries 6553388
Mean x 0.1617
Mean y 2.056
RMS x 0.09952
RMS y 0.9482
$\alpha$ [Degree]
$M_{\gamma\gamma}$ [GeV/$c^2$]
0
1
2
3
4
5
6
7
8
9
10
0.1
0.2
0.3
0.4
0.5
0.6
2000
4000
6000
8000
1000

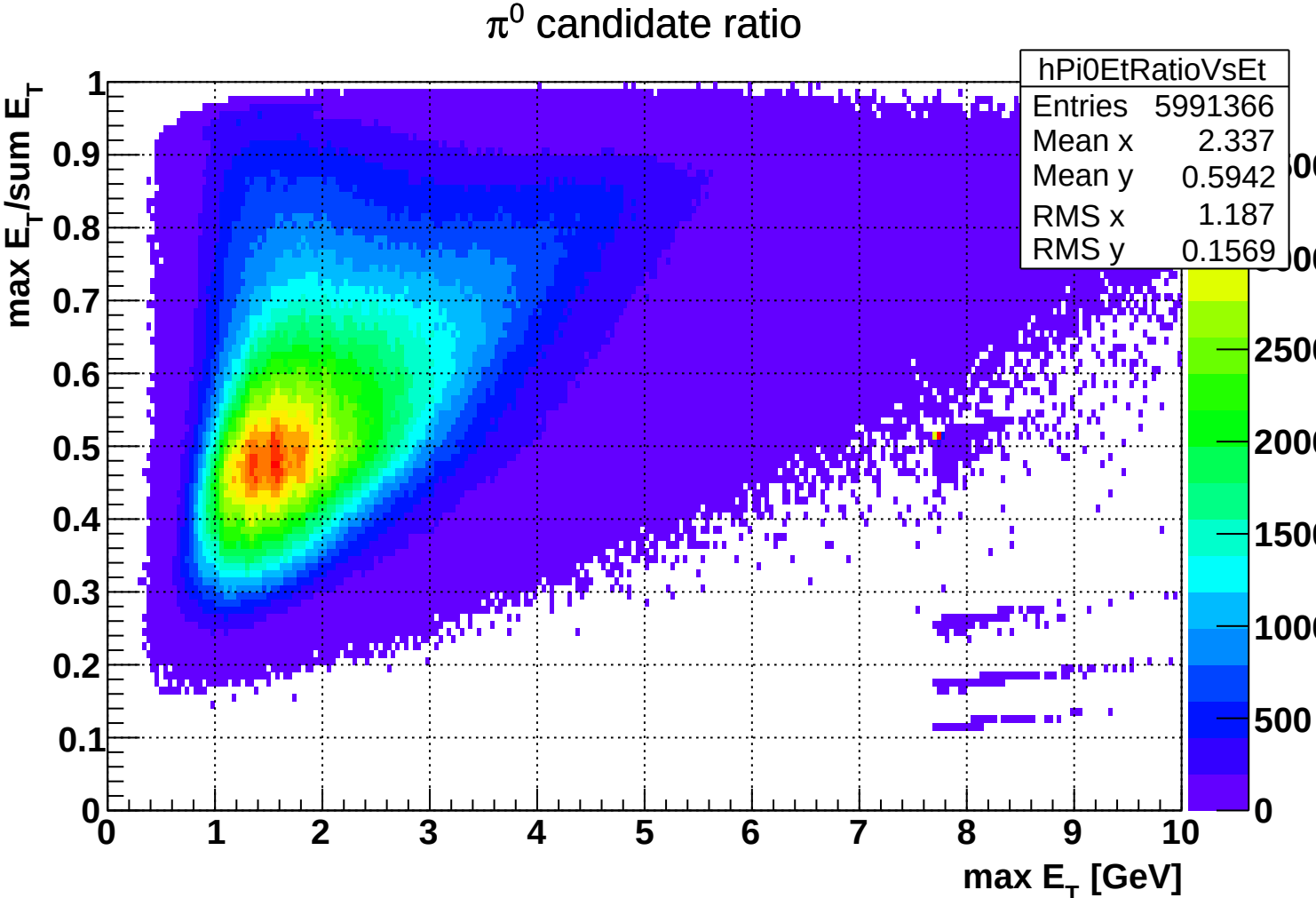

$\pi^0$ candidate $x_F$
hPi0XF
Entries 6553388
Mean 0.03565
RMS 0.01546
Counts
$\times 10^3$
600
500
400
300
200
100
0
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
$x_F$

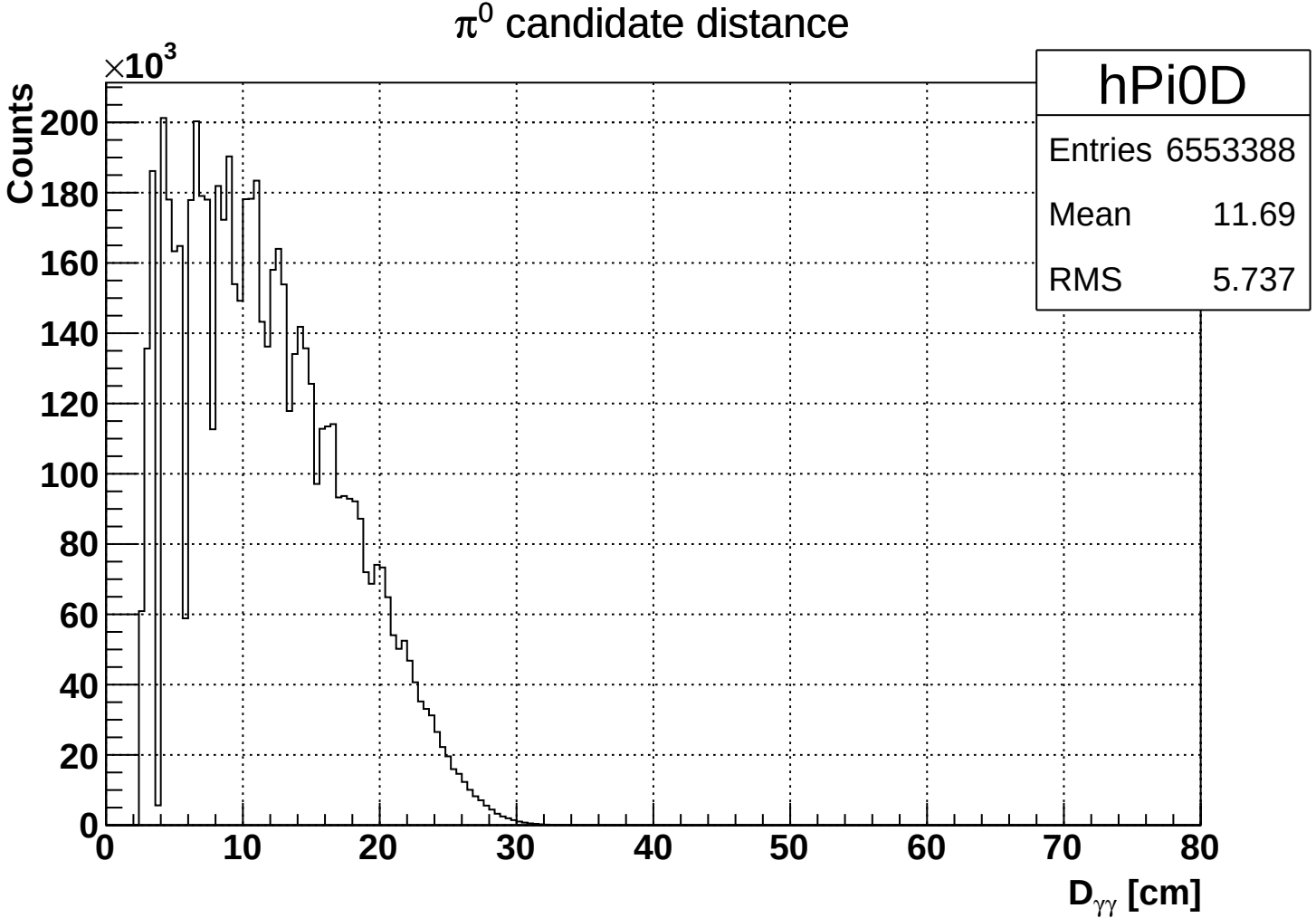

$\pi^0$ candidate $x_F$
hPi0XF5bins
Entries 6553388
Mean 0.03565
RMS 0.01546
Counts
$\times 10^3$
4000
3500
3000
2500
2000
1500
1000
500
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
$x_F$

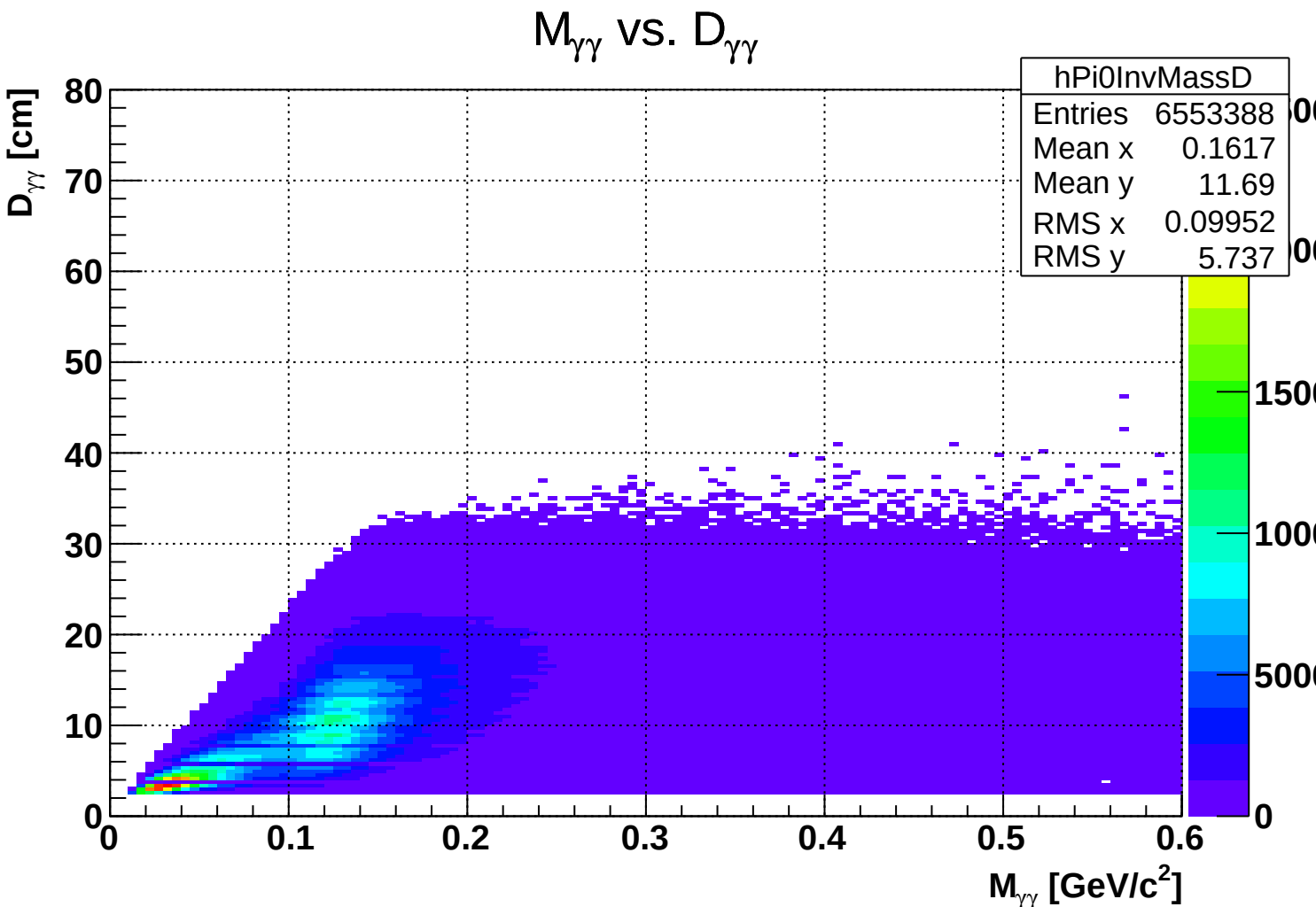

$M_{\gamma\gamma}$ vs. $x_F$
hPi0InvMassXF
Entries 6553388
Mean x 0.1617
Mean y 0.03565
RMS x 0.09952
RMS y 0.01546
$x_F$
$M_{\gamma\gamma}$ [GeV/$c^2$]
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.1
0.2
0.3
0.4
0.5
0.6
2000
4000
6000
8000
1000
1200
1400
1600

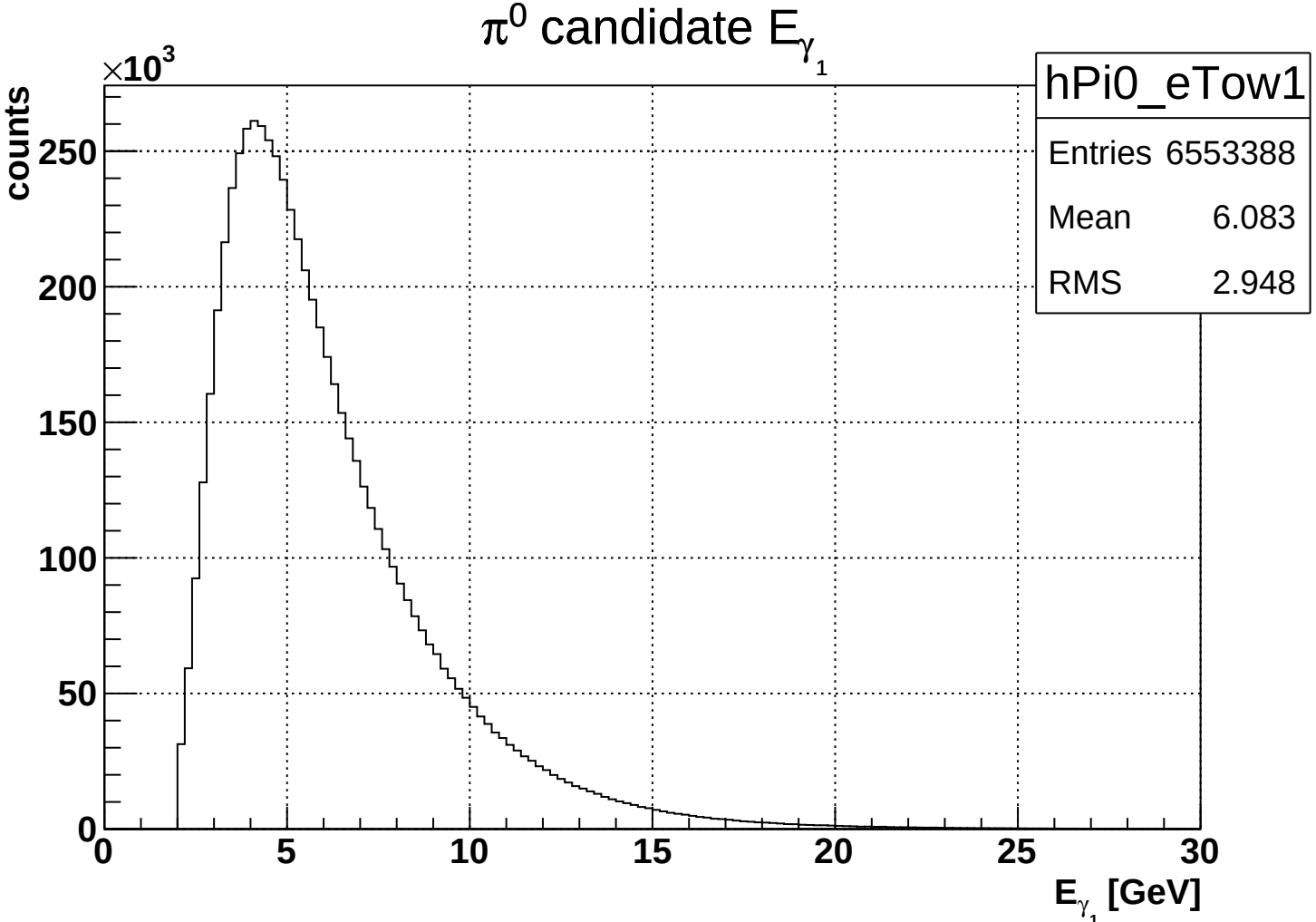

$\pi^0$ candidate ratio
hPi0EtRatio
Entries 5991366
Mean 0.5942
RMS 0.1569
Counts
$\times 10^3$
160
140
120
100
80
60
40
20
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
max $E_T$/sum $E_T$

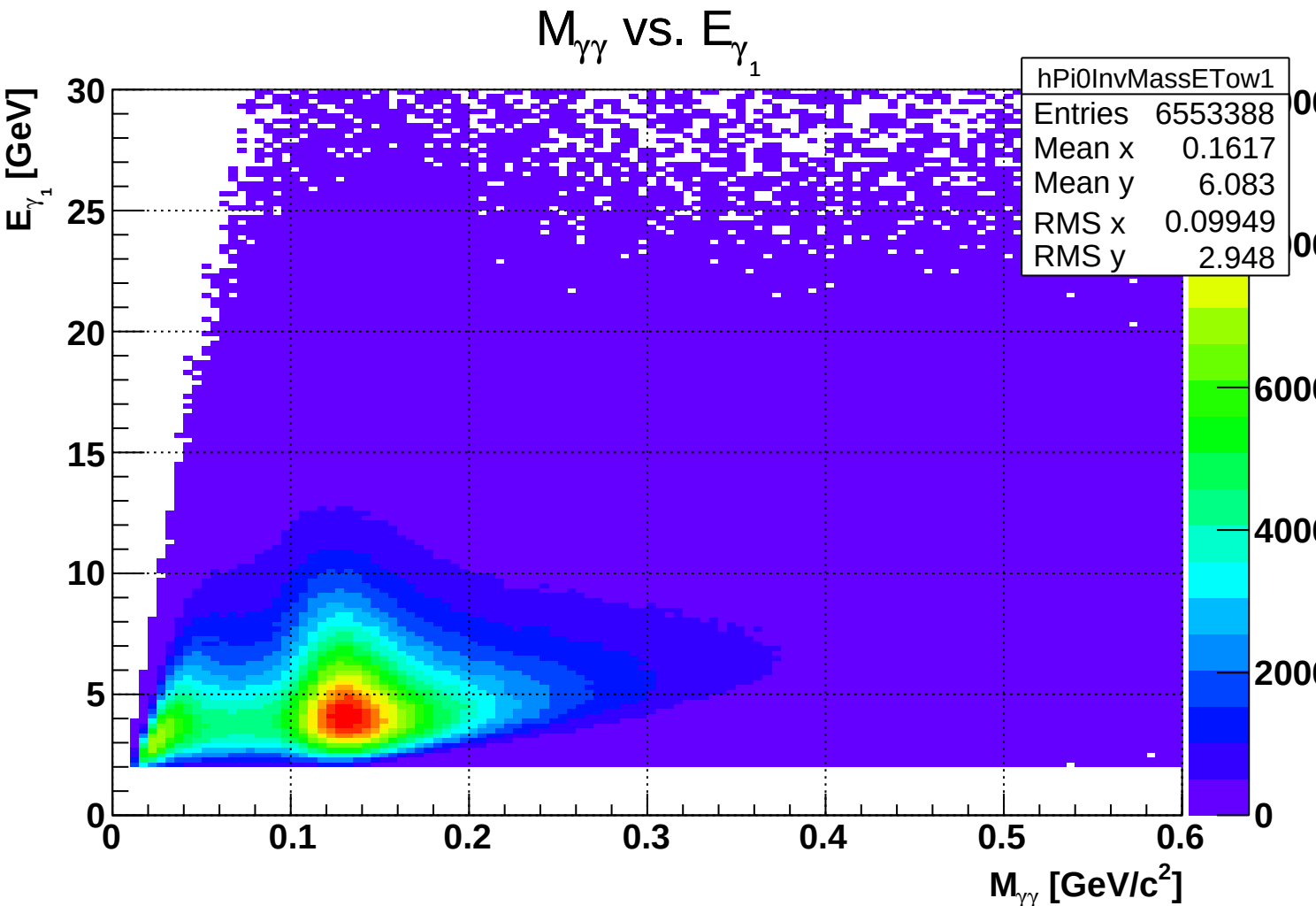

$M_{\gamma\gamma}$ vs. $E_T$ ratio
hPi0InvMassEtR
Entries 5991366
Mean x 0.1622
Mean y 0.5942
RMS x 0.09978
RMS y 0.1569
max $E_T$/sum $E_T$
$M_{\gamma\gamma}$ [GeV/$c^2$]
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1000
2000
3000
4000

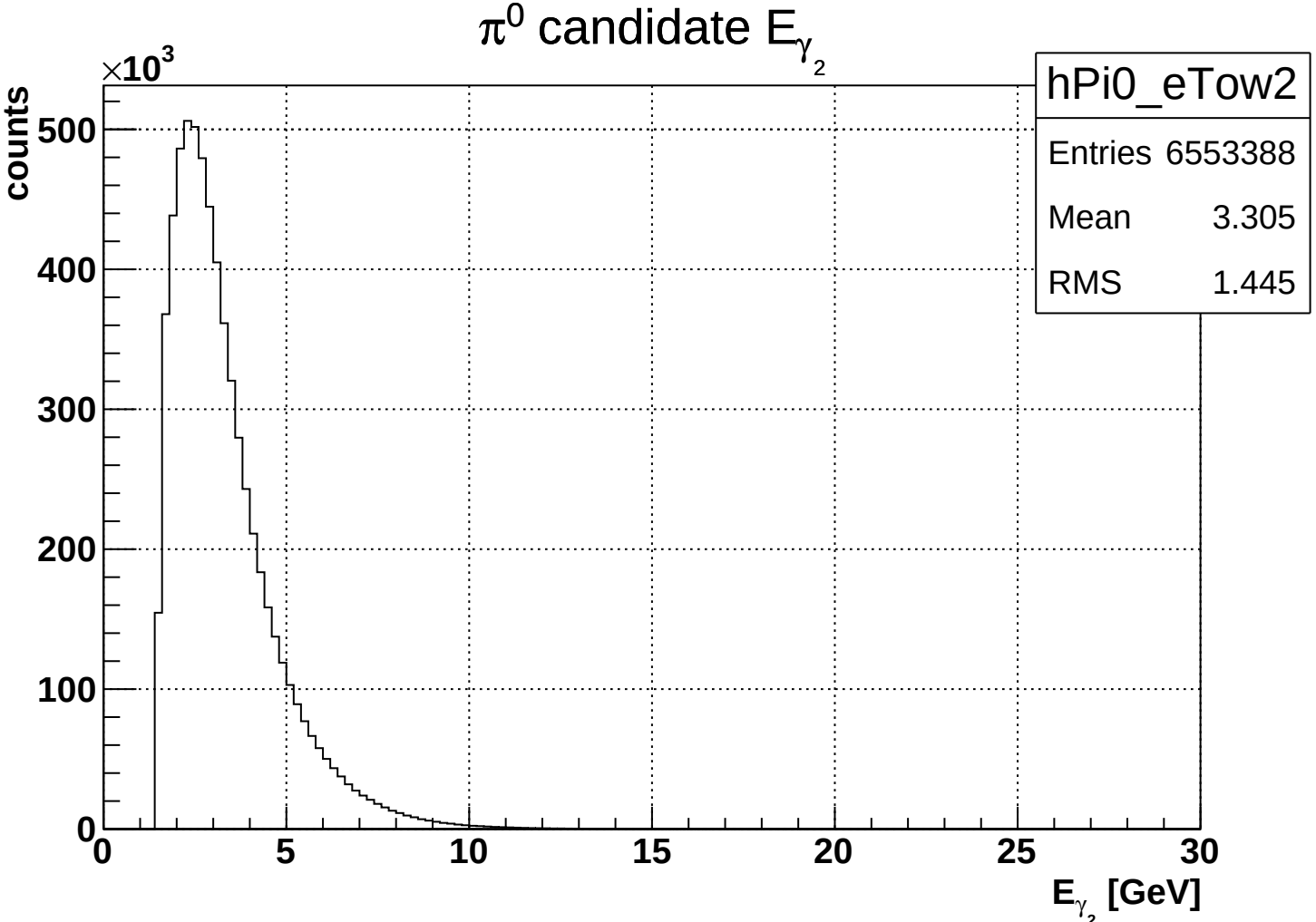

$\pi^0$ candidate ratio
hPi0EtRatioVsEt
Entries 5991366
Mean x 2.337
Mean y 0.5942
RMS x 1.187
RMS y 0.1569
max $E_T$/sum $E_T$
max $E_T$ [GeV]
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
1
2
3
4
5
6
7
8
9
10
0
500
1000
1500
2000
2500

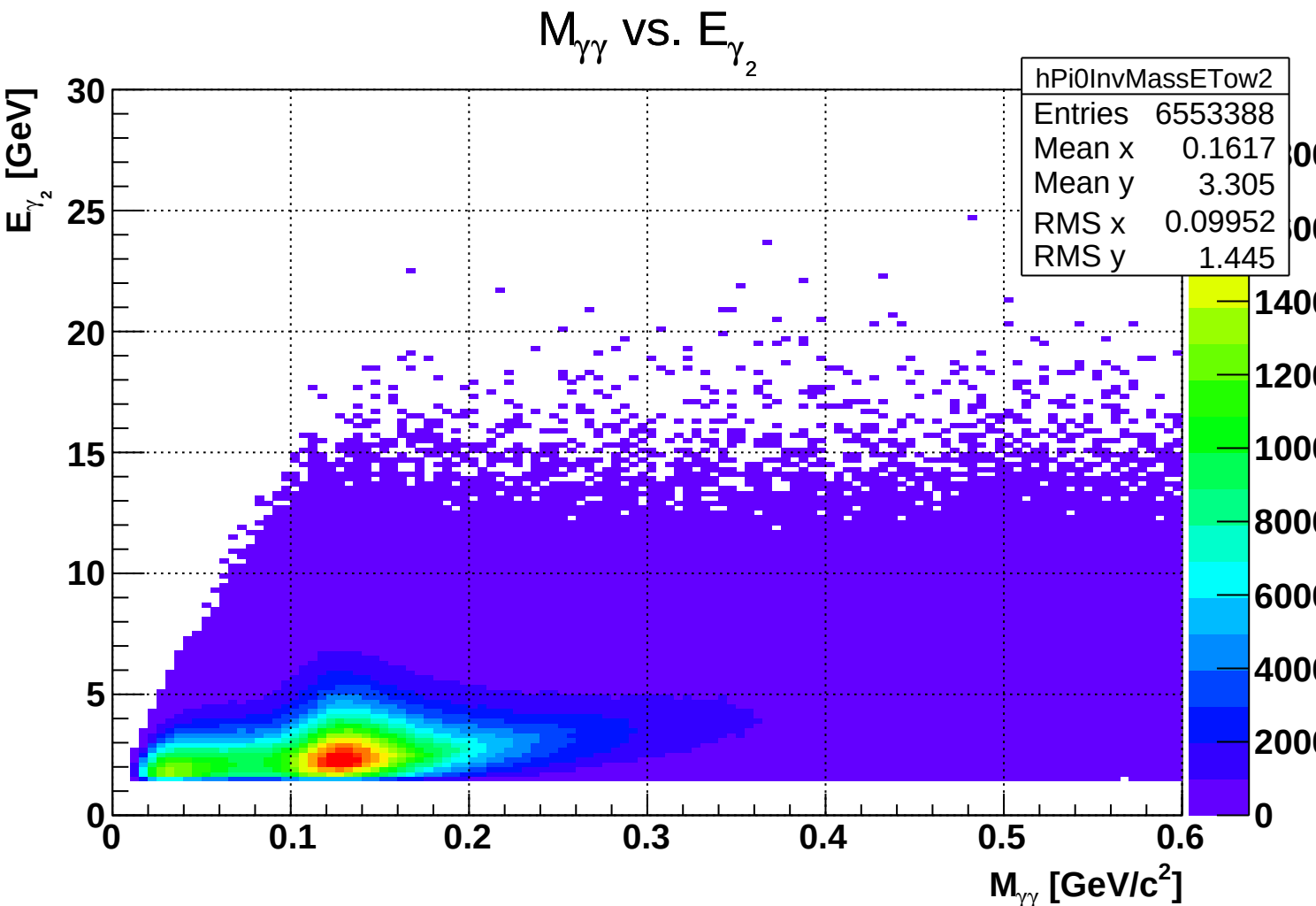

$\pi^0$ candidate distance
hPi0D
Entries 6553388
Mean 11.69
RMS 5.737
Counts
$\times 10^3$
0
20
40
60
80
100
120
140
160
180
200
0
10
20
30
40
50
60
70
80
$D_{\gamma\gamma}$ [cm]

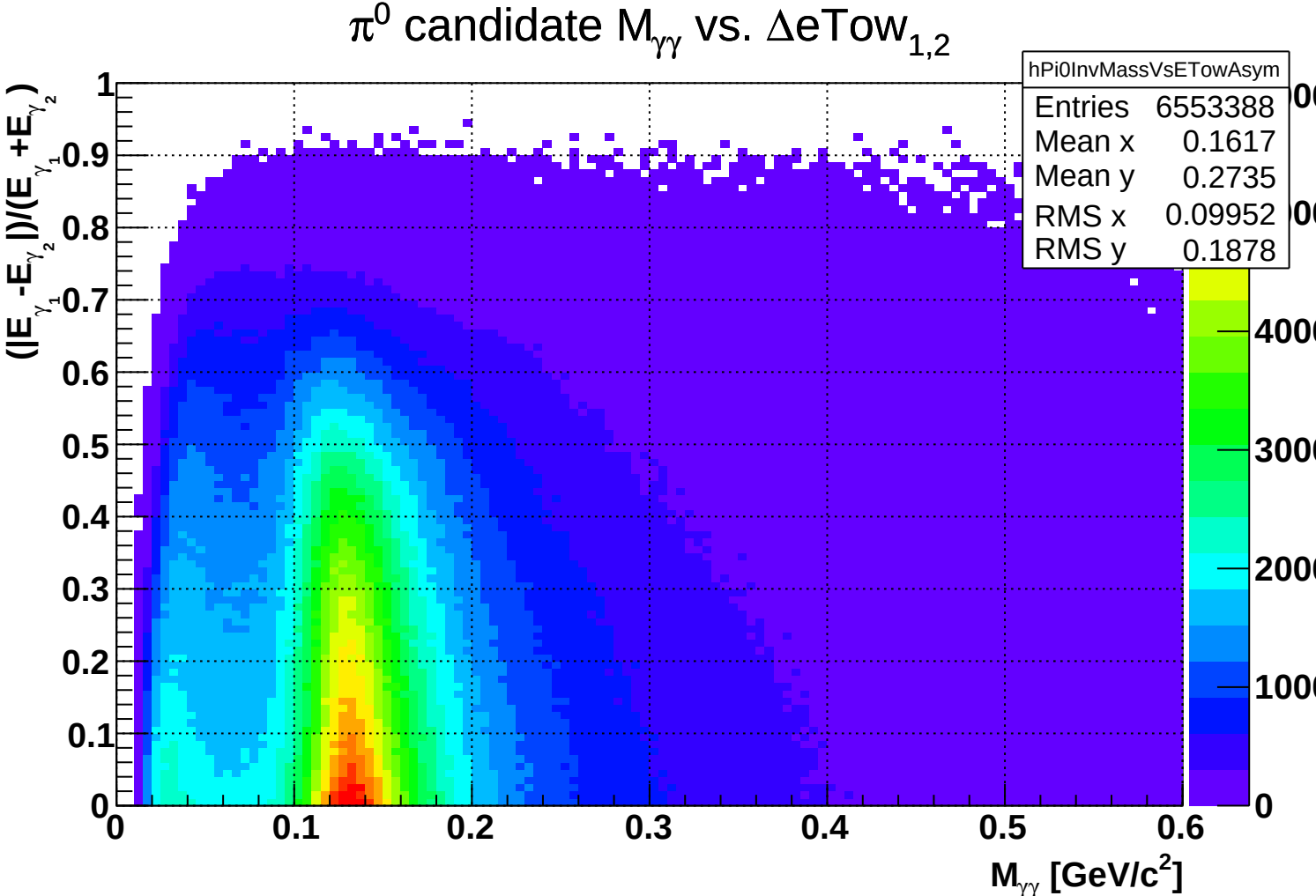

$M_{\gamma\gamma}$ vs. $D_{\gamma\gamma}$
hPi0InvMassD
Entries 6553388
Mean x 0.1617
Mean y 11.69
RMS x 0.09952
RMS y 5.737
$D_{\gamma\gamma}$ [cm]
$M_{\gamma\gamma}$ [GeV/c$^2$]
0
10
20
30
40
50
60
70
80
0.1
0.2
0.3
0.4
0.5
0.6
1500
1000
5000

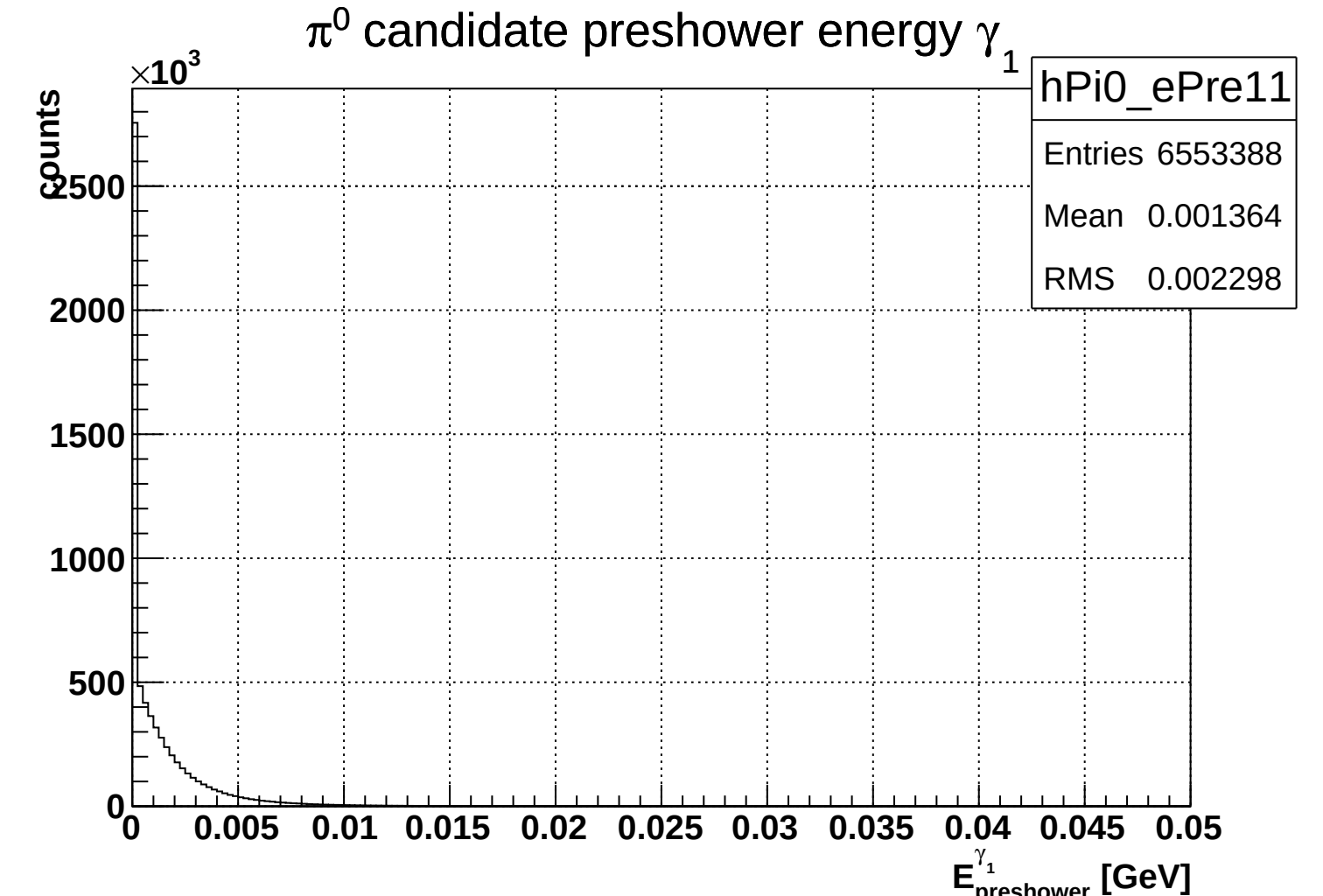

$\pi^0$ candidate $E_{\gamma_1}$
hPi0_eTow1
Entries 6553388
Mean 6.083
RMS 2.948
counts
$\times 10^3$
250
200
150
100
50
0
0
5
10
15
20
25
30
$E_{\gamma_1}$ [GeV]

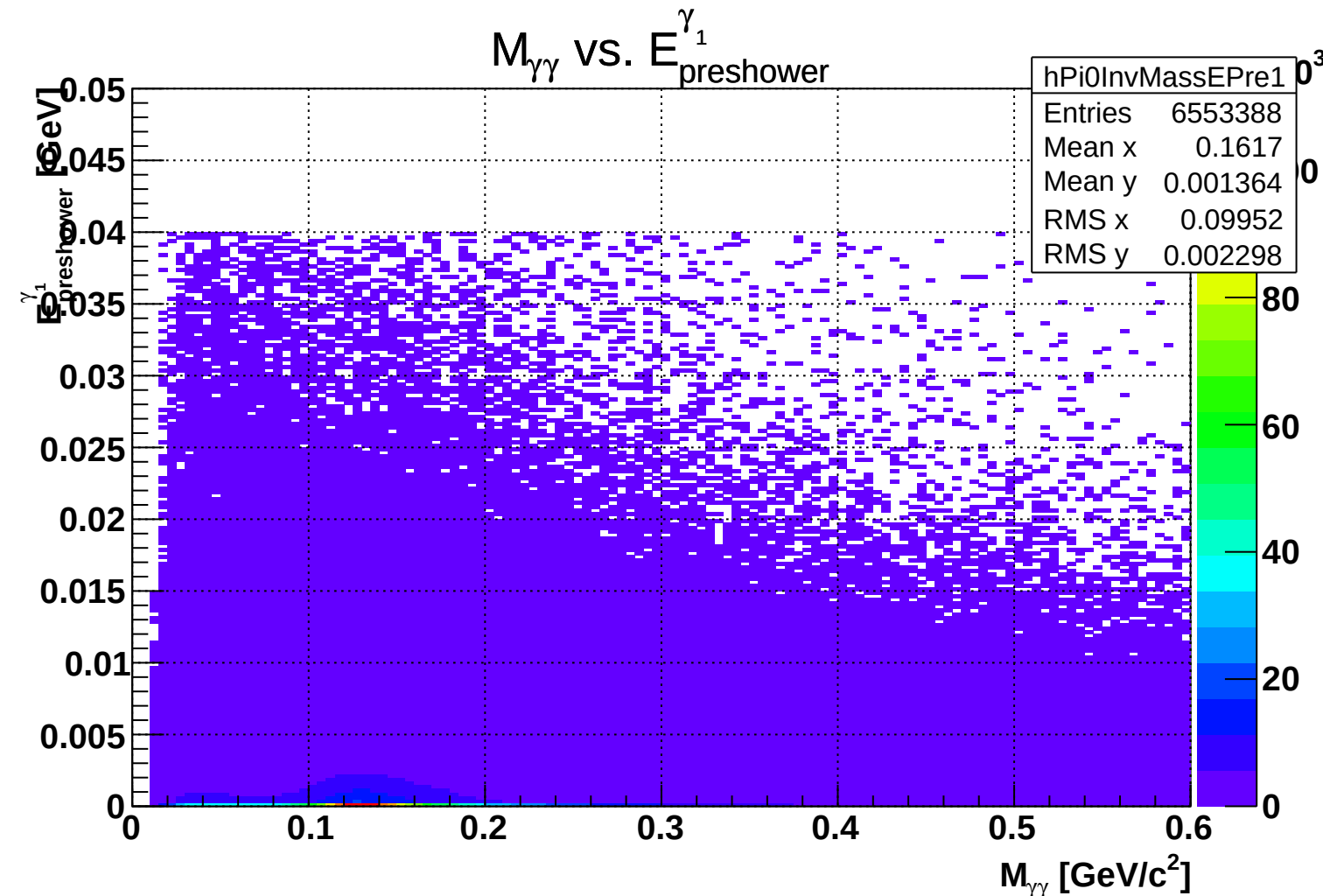

$M_{\gamma\gamma}$ vs. $E_{\gamma_1}$
hPi0InvMassETow1
Entries 6553388
Mean x 0.1617
Mean y 6.083
RMS x 0.09949
RMS y 2.948
$E_{\gamma_1}$ [GeV]
$M_{\gamma\gamma}$ [GeV/c$^2$]
0
5
10
15
20
25
30
0.1
0.2
0.3
0.4
0.5
0.6
2000
4000
6000

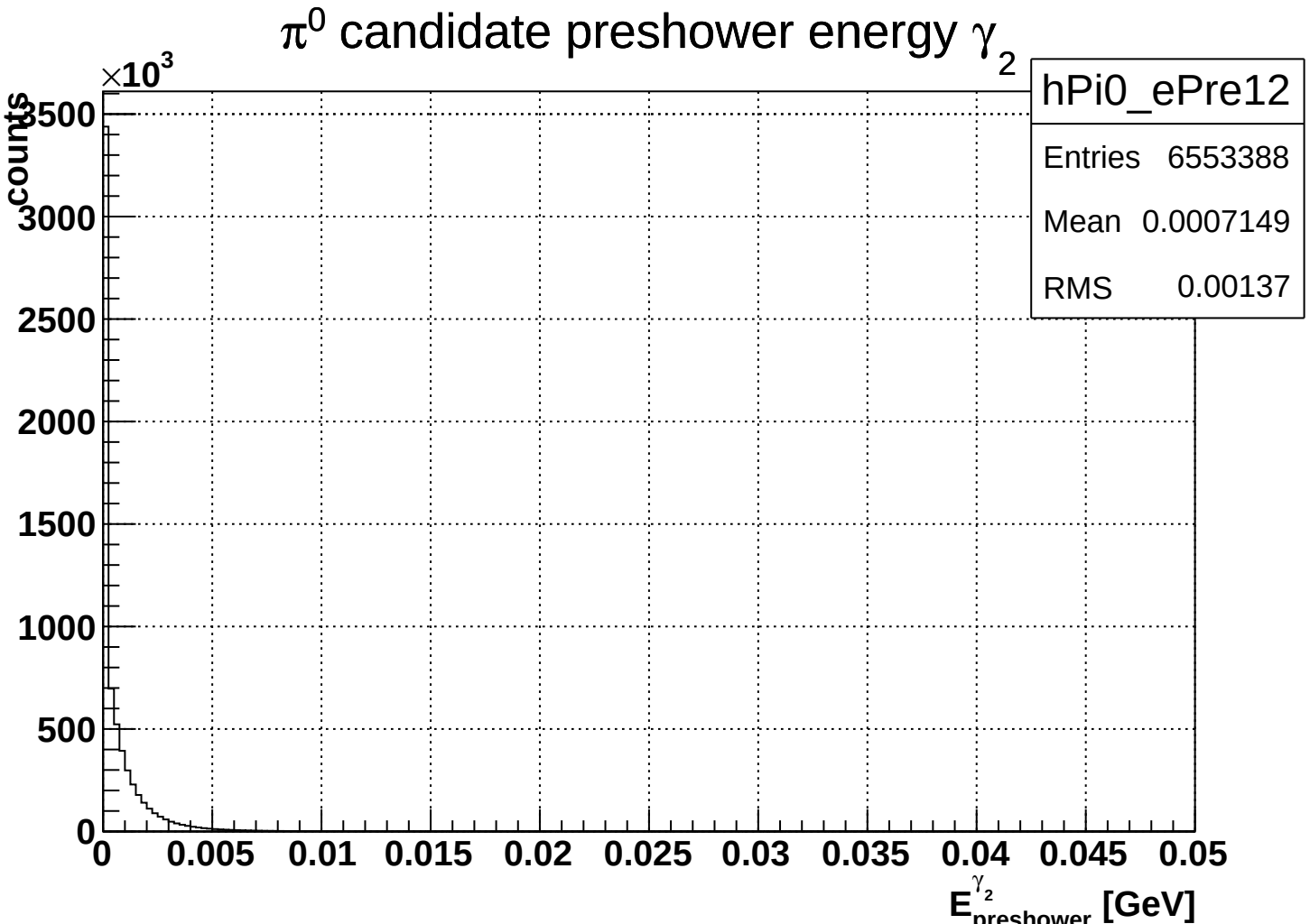

$\pi^0$ candidate $E_{\gamma_2}$
hPi0_eTow2
Entries 6553388
Mean 3.305
RMS 1.445
counts
$\times 10^3$
500
400
300
200
100
0
0
5
10
15
20
25
30
$E_{\gamma_2}$ [GeV]

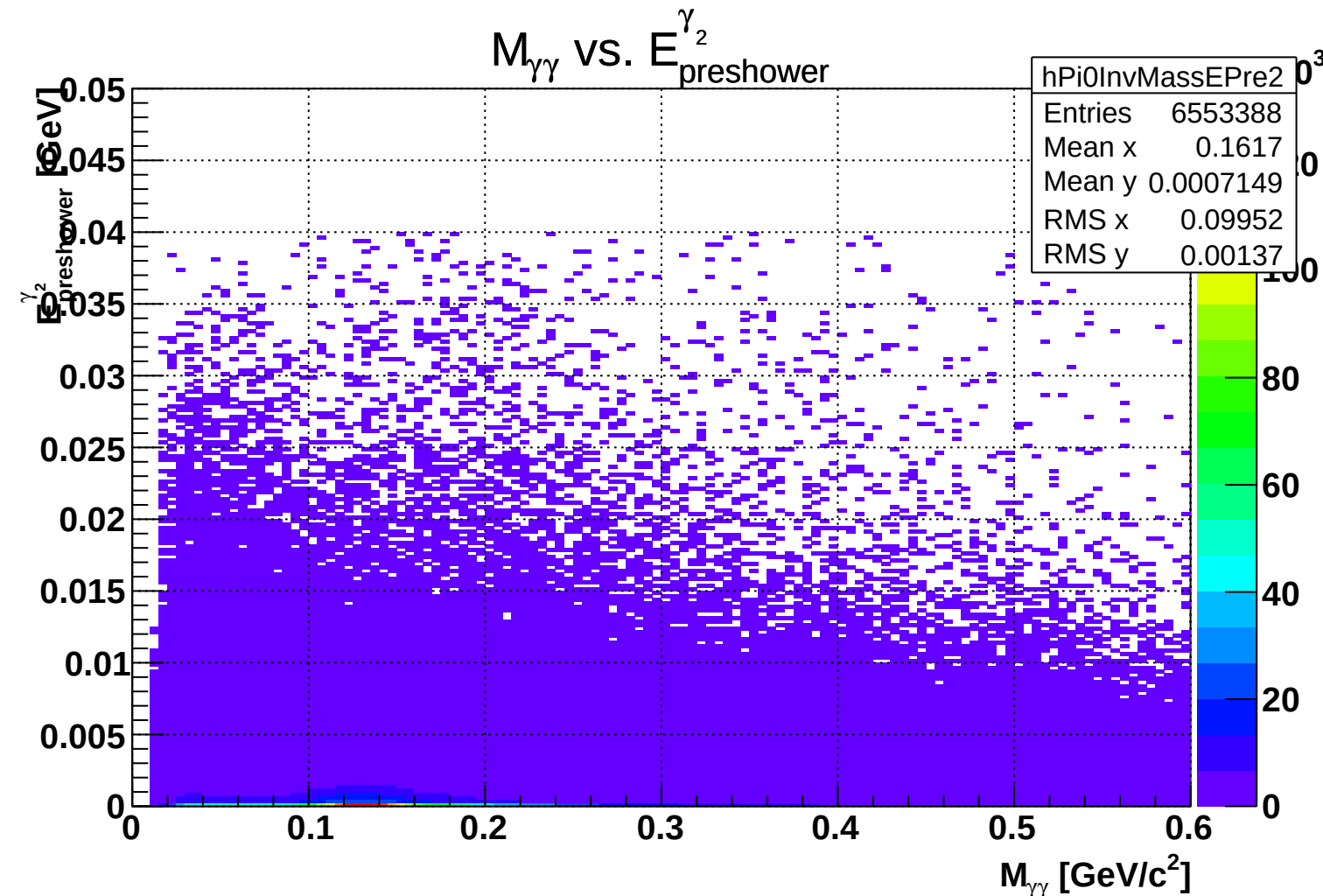

$M_{\gamma\gamma}$ vs. $E_{\gamma_2}$
hPi0InvMassETow2
Entries 6553388
Mean x 0.1617
Mean y 3.305
RMS x 0.09952
RMS y 1.445
$E_{\gamma_2}$ [GeV]
$M_{\gamma\gamma}$ [GeV/c$^2$]
0
5
10
15
20
25
30
0.1
0.2
0.3
0.4
0.5
0.6
2000
4000
6000
8000
1000
1200
1400

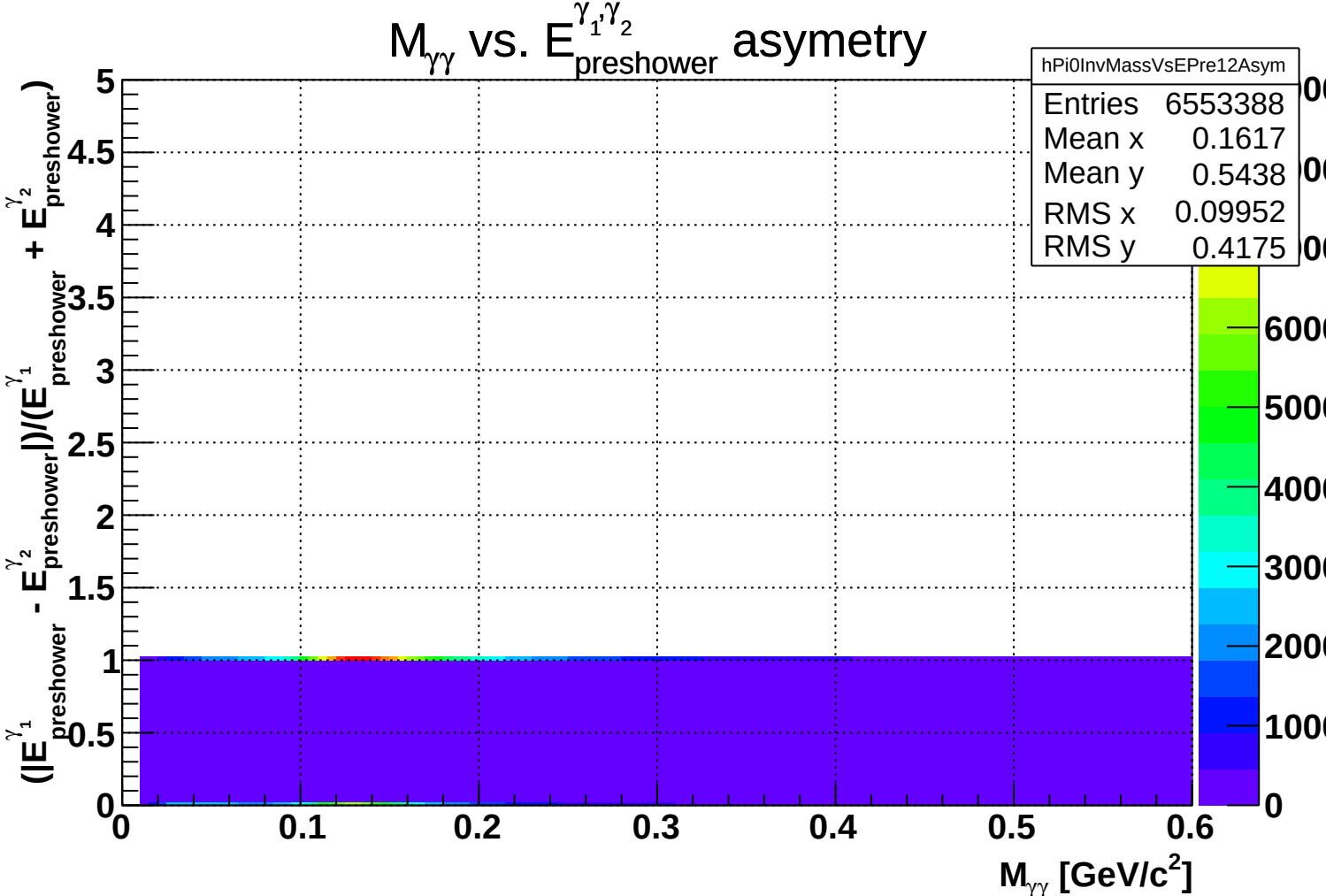

$\pi^0$ candidate $M_{\gamma\gamma}$ vs. $\Delta eTow_{1,2}$
hPi0InvMassVsETowAsym
Entries 6553388
Mean x 0.1617
Mean y 0.2735
RMS x 0.09952
RMS y 0.1878
$(|E_{\gamma_1}-E_{\gamma_2}|)/(E_{\gamma_1}+E_{\gamma_2})$
$M_{\gamma\gamma}$ [GeV/$c^2$]
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1000
2000
3000
4000

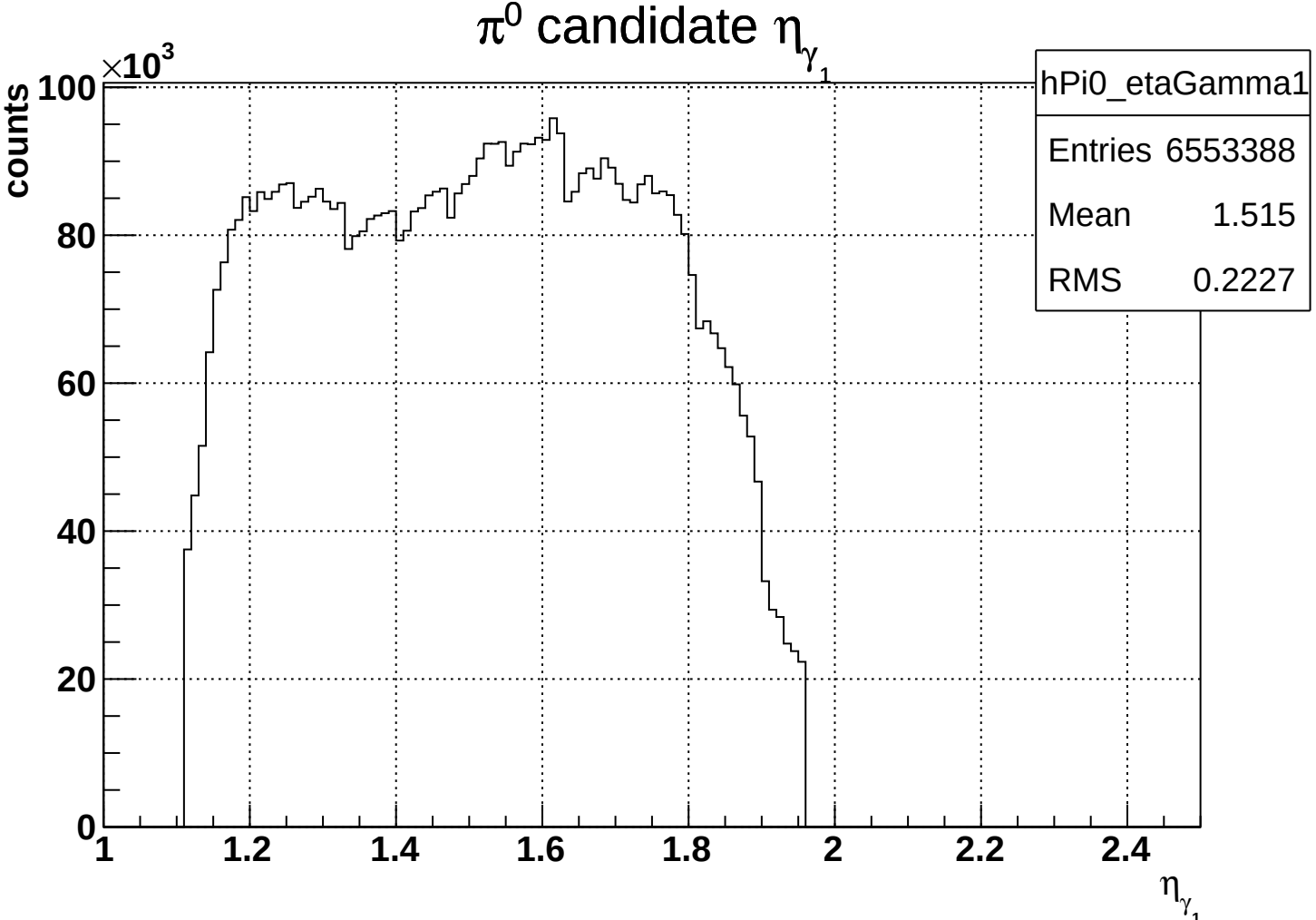

$\pi^0$ candidate preshower energy $\gamma_1$
hPi0_ePre11
Entries 6553388
Mean 0.001364
RMS 0.002298
counts
$\times 10^3$
2500
2000
1500
1000
500
0
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
$E^{\gamma_1}_{preshower}$ [GeV]

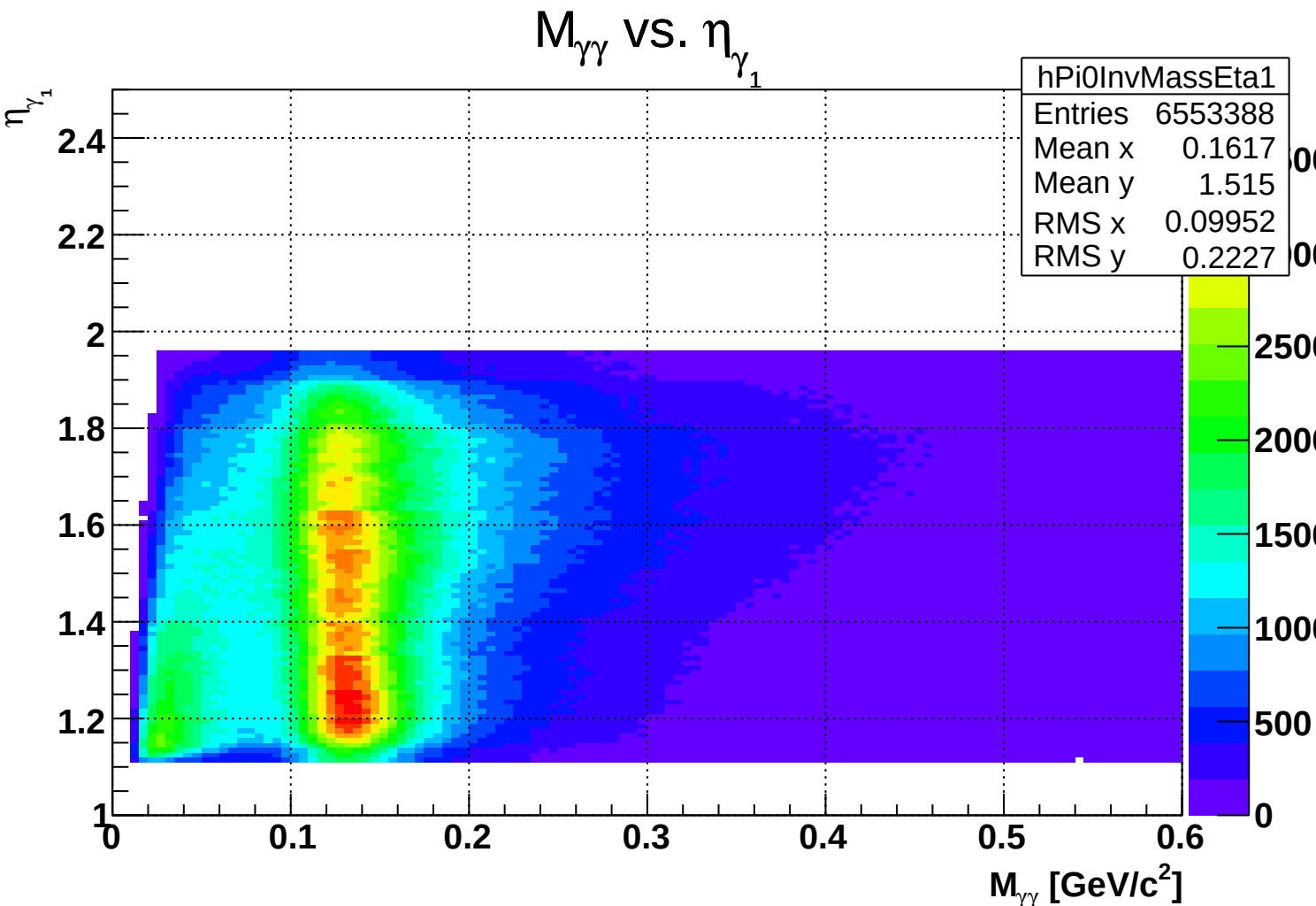

$M_{\gamma\gamma}$ vs. $E^{\gamma_1}_{preshower}$
hPi0InvMassEPre1
Entries 6553388
Mean x 0.1617
Mean y 0.001364
RMS x 0.09952
RMS y 0.002298
$E^{\gamma_1}_{preshower}$ [GeV]
$M_{\gamma\gamma}$ [GeV/c$^2$]
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
0.1
0.2
0.3
0.4
0.5
0.6
20
40
60
80

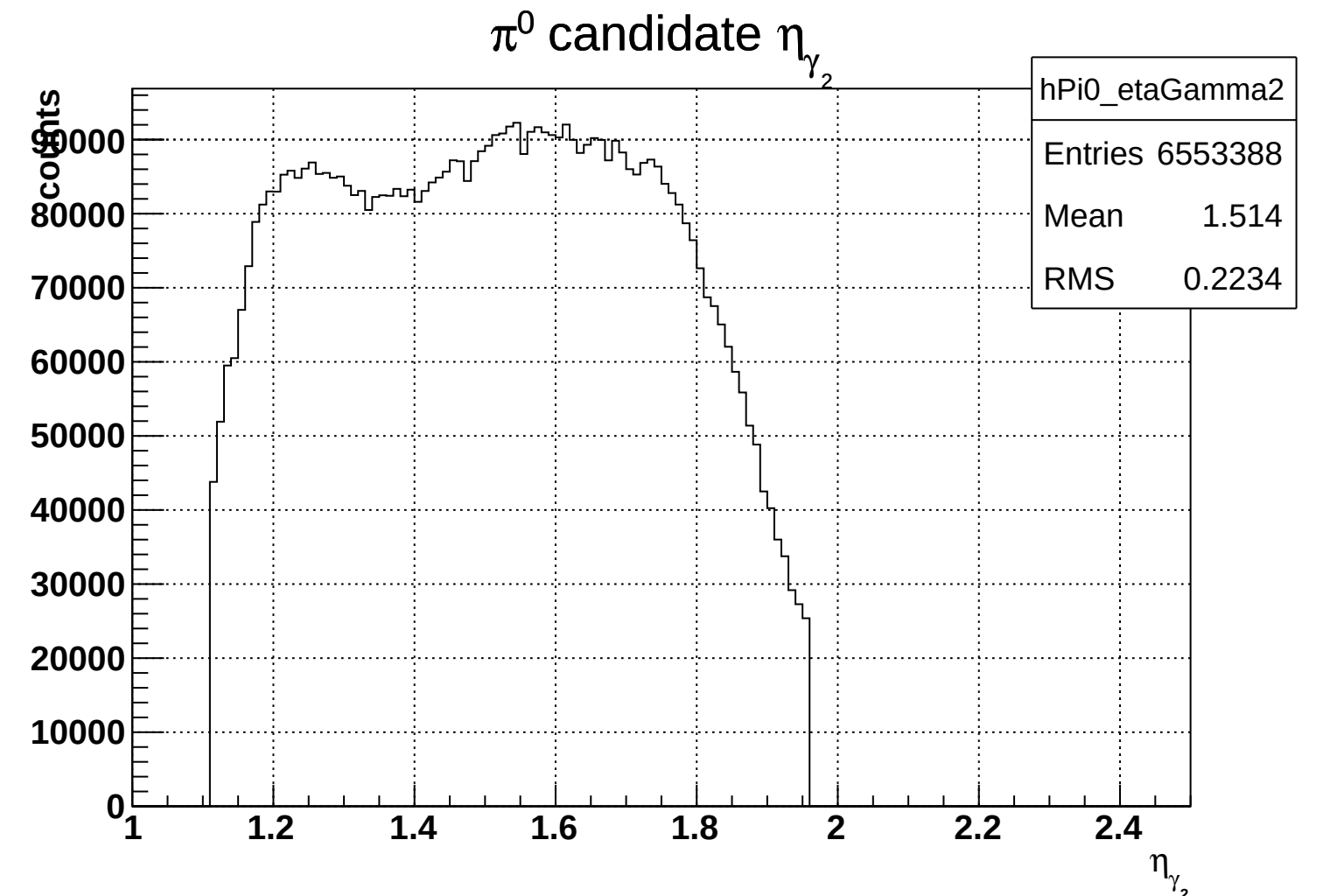

$\pi^0$ candidate preshower energy $\gamma_2$
hPi0_ePre12
Entries 6553388
Mean 0.0007149
RMS 0.00137
counts
$\times 10^3$
3500
3000
2500
2000
1500
1000
500
0
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
$E^{\gamma_2}_{preshower}$ [GeV]

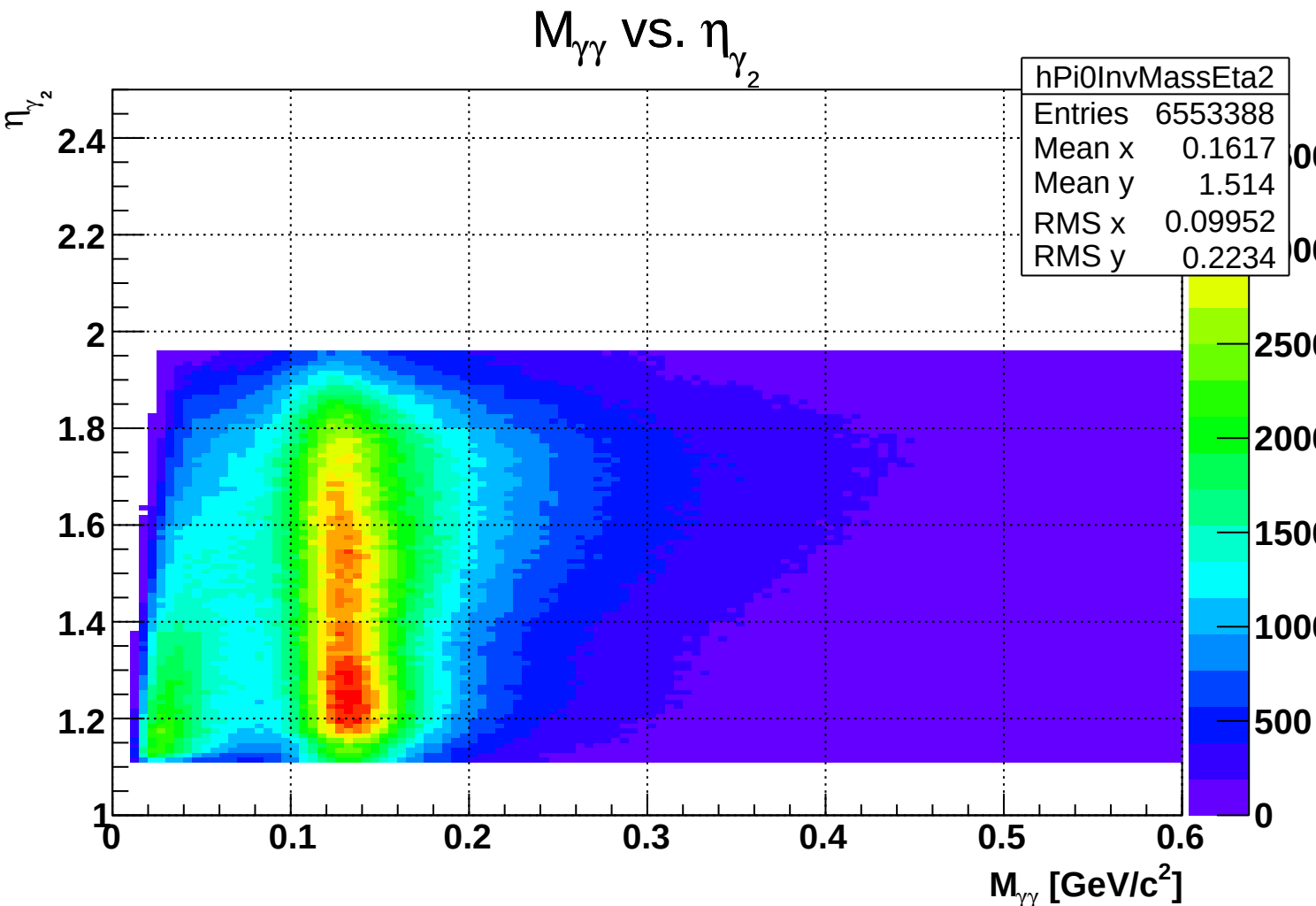

$M_{\gamma\gamma}$ vs. $E^{\gamma_2}_{preshower}$
hPi0InvMassEPre2
Entries 6553388
Mean x 0.1617
Mean y 0.0007149
RMS x 0.09952
RMS y 0.00137
$E^{\gamma_2}_{preshower}$ [GeV]
$M_{\gamma\gamma}$ [GeV/c$^2$]
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
0.1
0.2
0.3
0.4
0.5
0.6
20
40
60
80
100

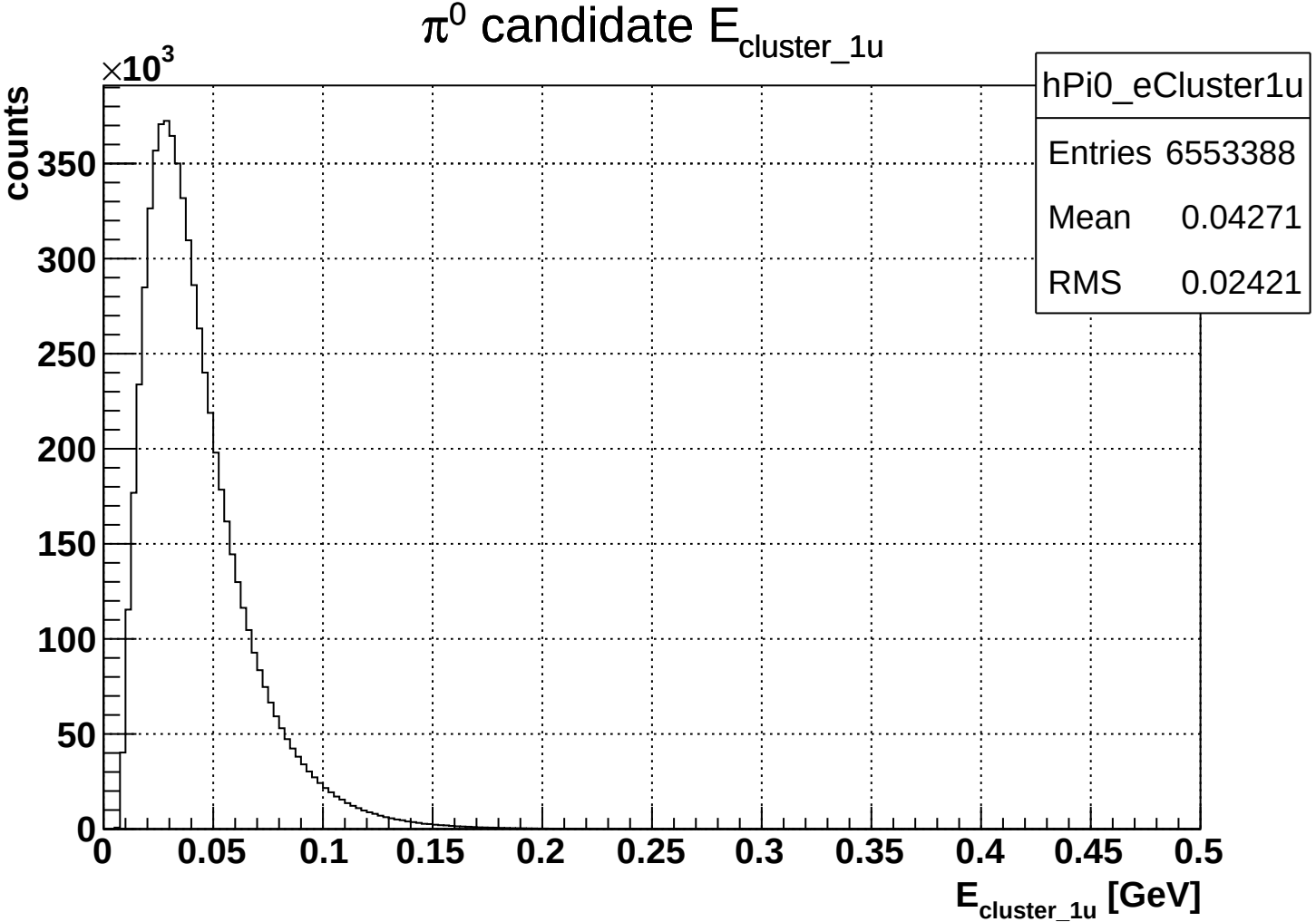

$M_{\gamma\gamma}$ vs. $E^{\gamma_1,\gamma_2}_{preshower}$ asymetry
hPi0InvMassVsEPre12Asym
Entries 6553388
Mean x 0.1617
Mean y 0.5438
RMS x 0.09952
RMS y 0.4175
$(|E^{\gamma_1}_{preshower} - E^{\gamma_2}_{preshower}|)/(E^{\gamma_1}_{preshower} + E^{\gamma_2}_{preshower})$
$M_{\gamma\gamma}$ [GeV/$c^2$]
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
0.1
0.2
0.3
0.4
0.5
0.6
1000
2000
3000
4000
5000
6000

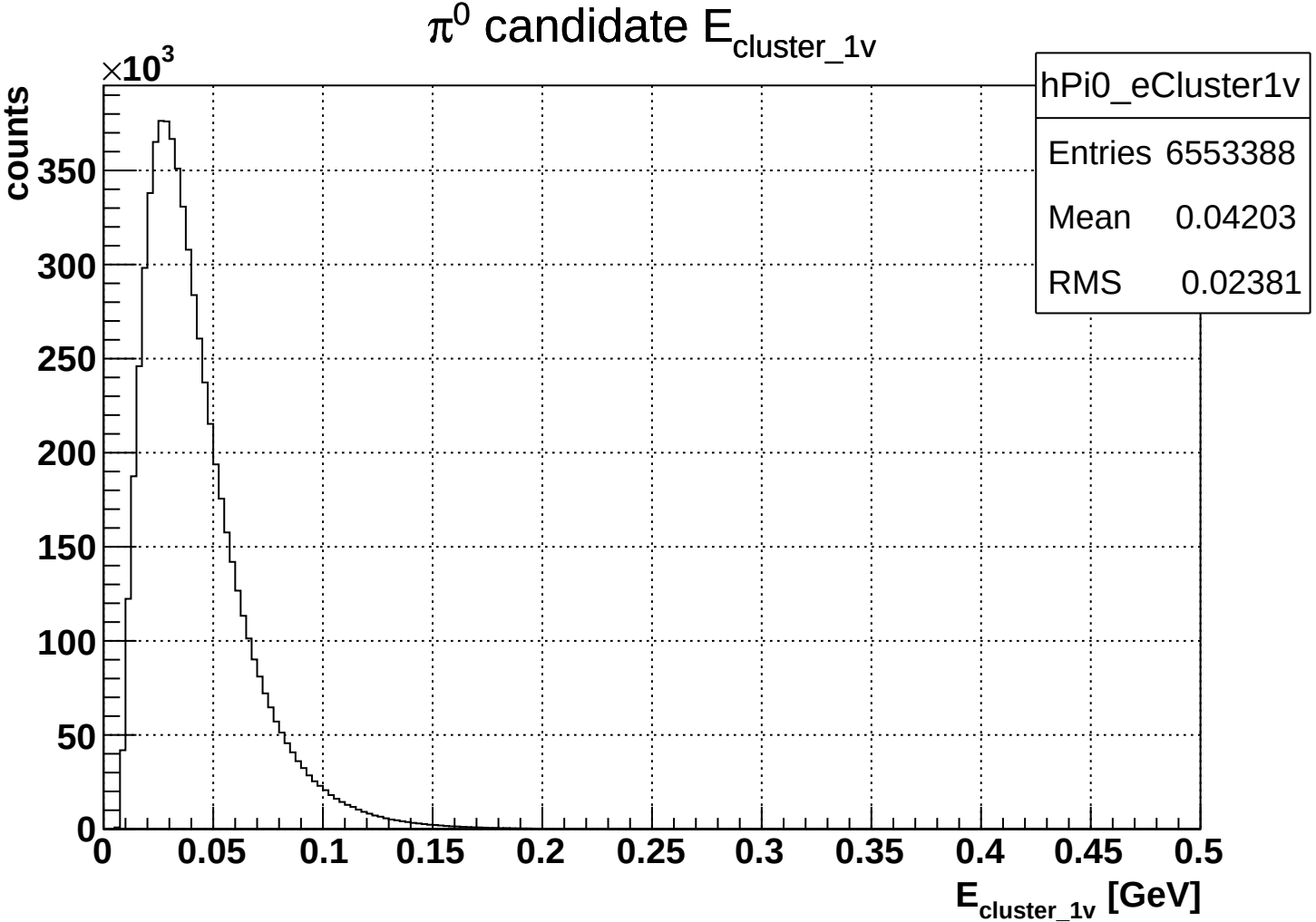

$\pi^0$ candidate $\eta_{\gamma_1}$
hPi0_etaGamma1
Entries 6553388
Mean 1.515
RMS 0.2227
counts
$\times 10^3$
100
80
60
40
20
0
1
1.2
1.4
1.6
1.8
2
2.2
2.4
$\eta_{\gamma_1}$

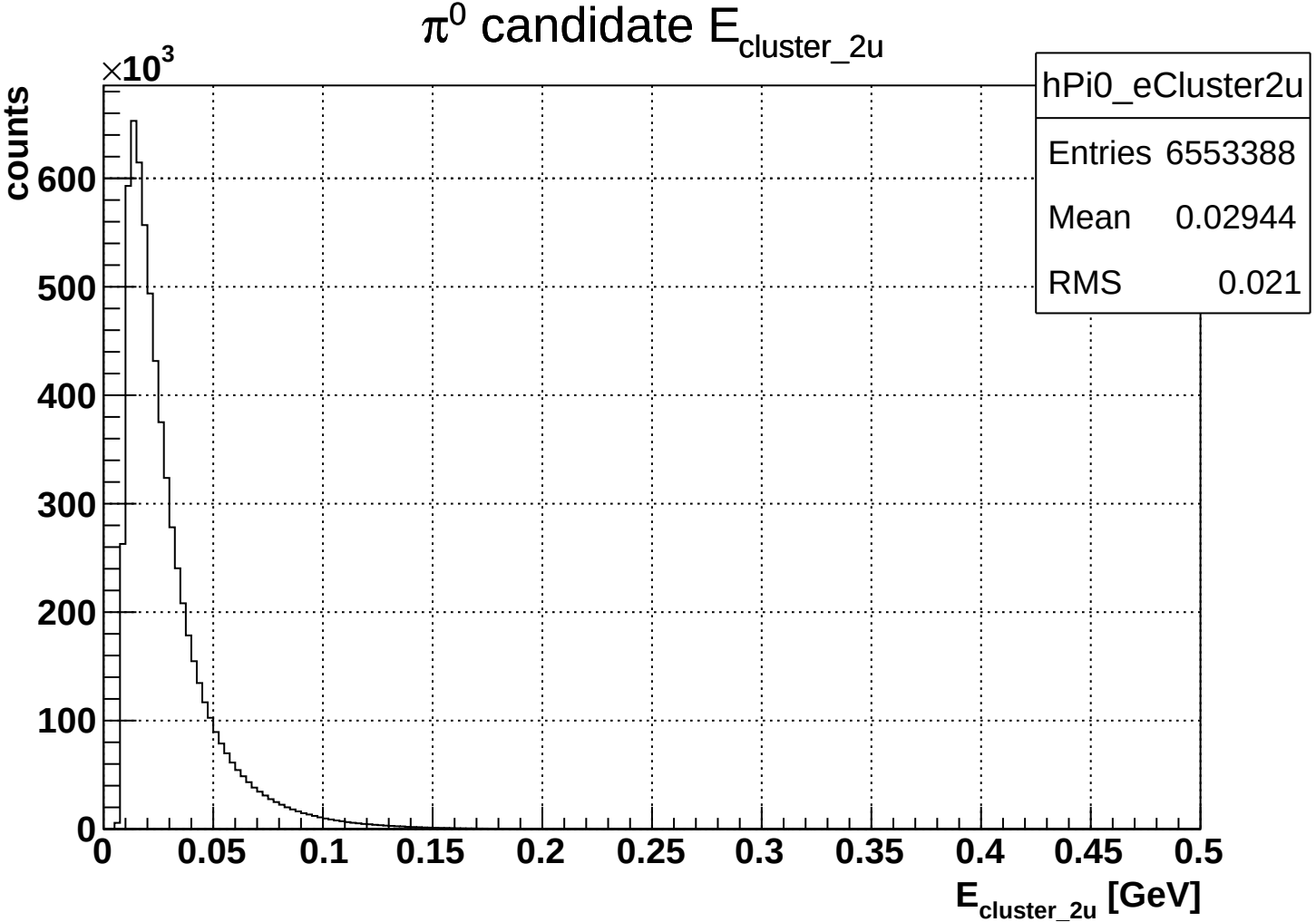

$M_{\gamma\gamma}$ vs. $\eta_{\gamma_1}$
hPi0InvMassEta1
Entries 6553388
Mean x 0.1617
Mean y 1.515
RMS x 0.09952
RMS y 0.2227
$\eta_{\gamma_1}$
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0
0.1
0.2
0.3
0.4
0.5
0.6
$M_{\gamma\gamma}$ [GeV/$c^2$]
2500
2000
1500
1000
500
0

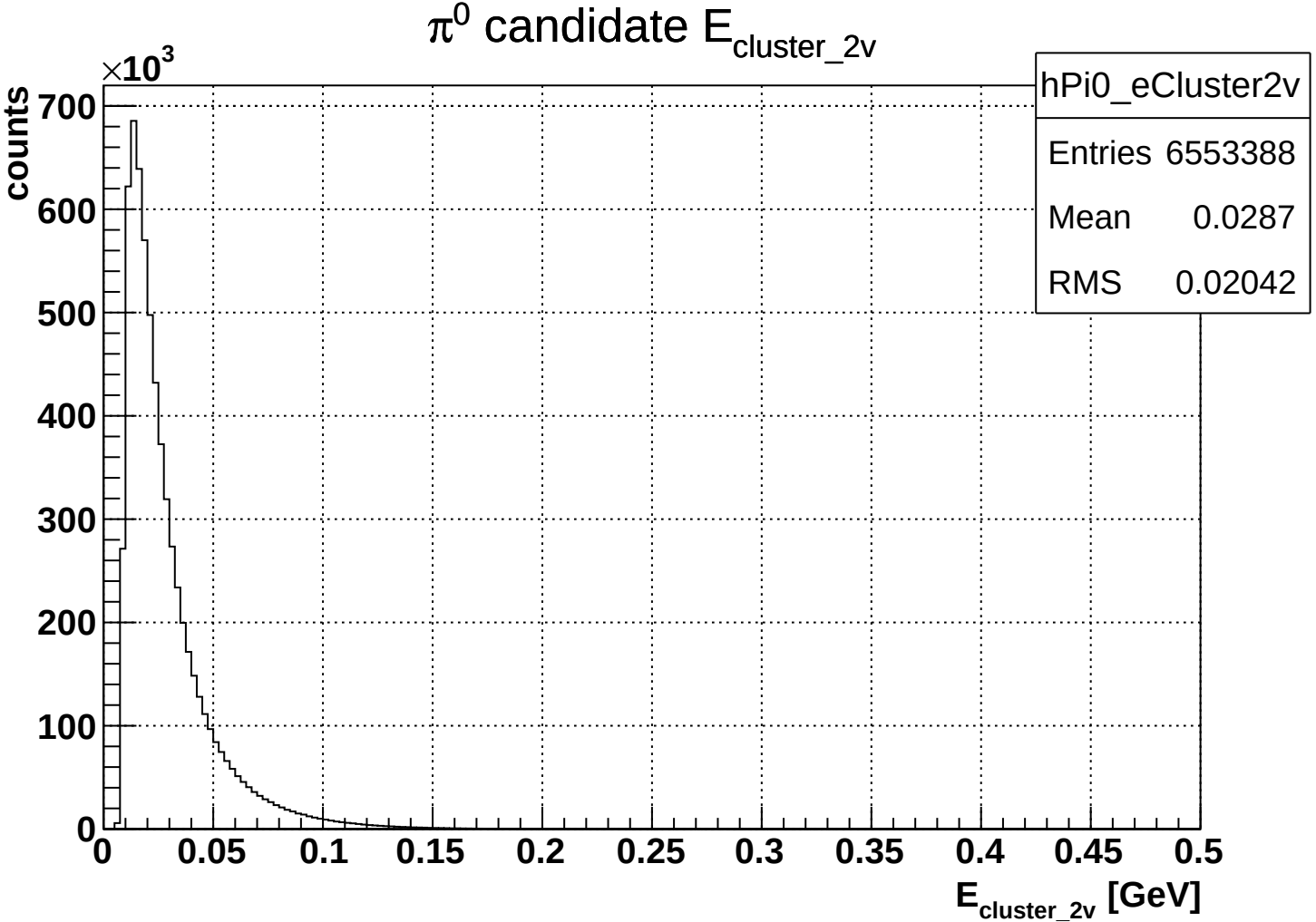

$\pi^0$ candidate $\eta_{\gamma_2}$
hPi0_etaGamma2
Entries 6553388
Mean 1.514
RMS 0.2234
counts
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
1
1.2
1.4
1.6
1.8
2
2.2
2.4
$\eta_{\gamma_2}$

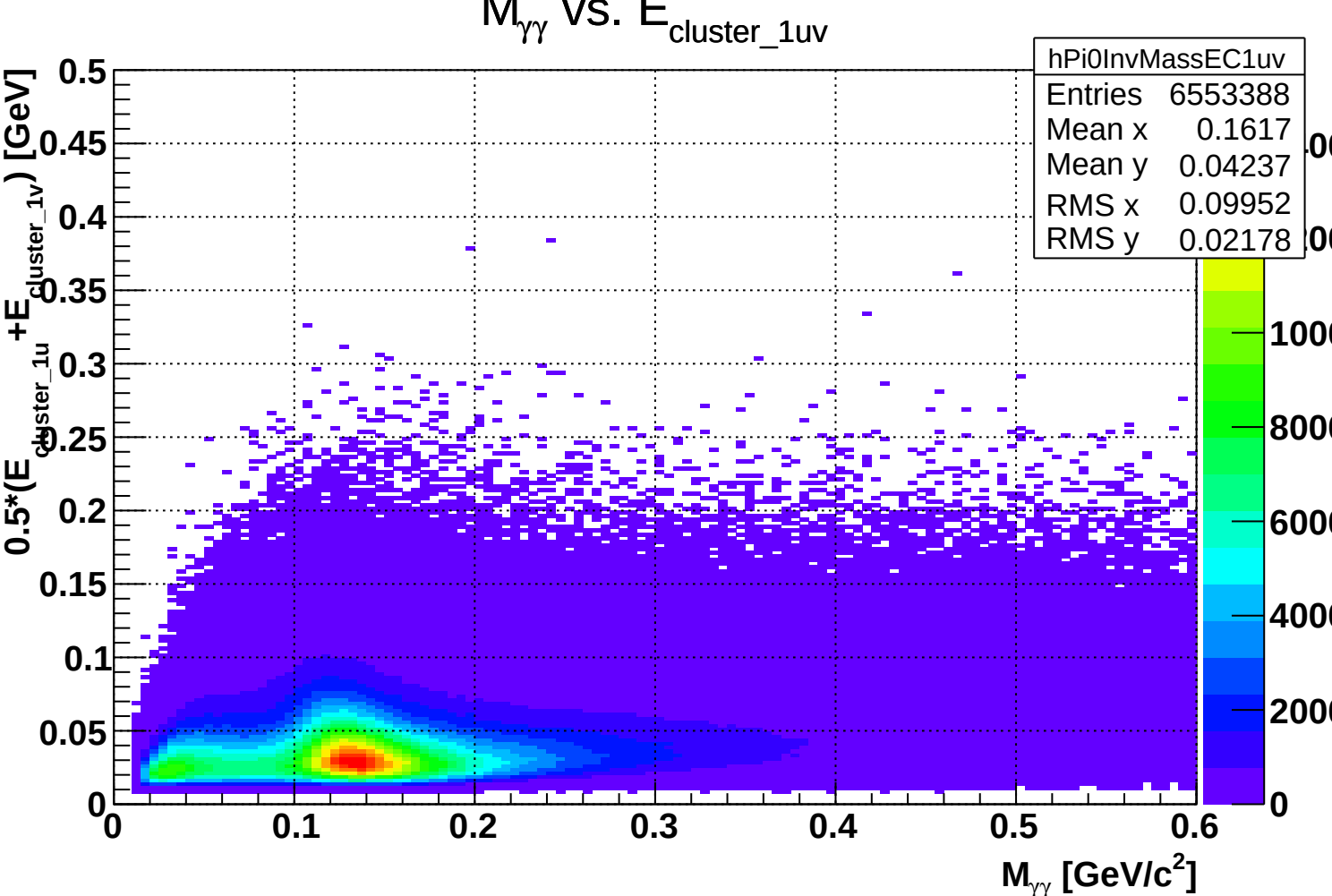

$M_{\gamma\gamma}$ vs. $\eta_{\gamma_2}$
hPi0InvMassEta2
Entries 6553388
Mean x 0.1617
Mean y 1.514
RMS x 0.09952
RMS y 0.2234
$\eta_{\gamma_2}$
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0
0.1
0.2
0.3
0.4
0.5
0.6
$M_{\gamma\gamma}$ [GeV/c$^2$]
2500
2000
1500
1000
500
0

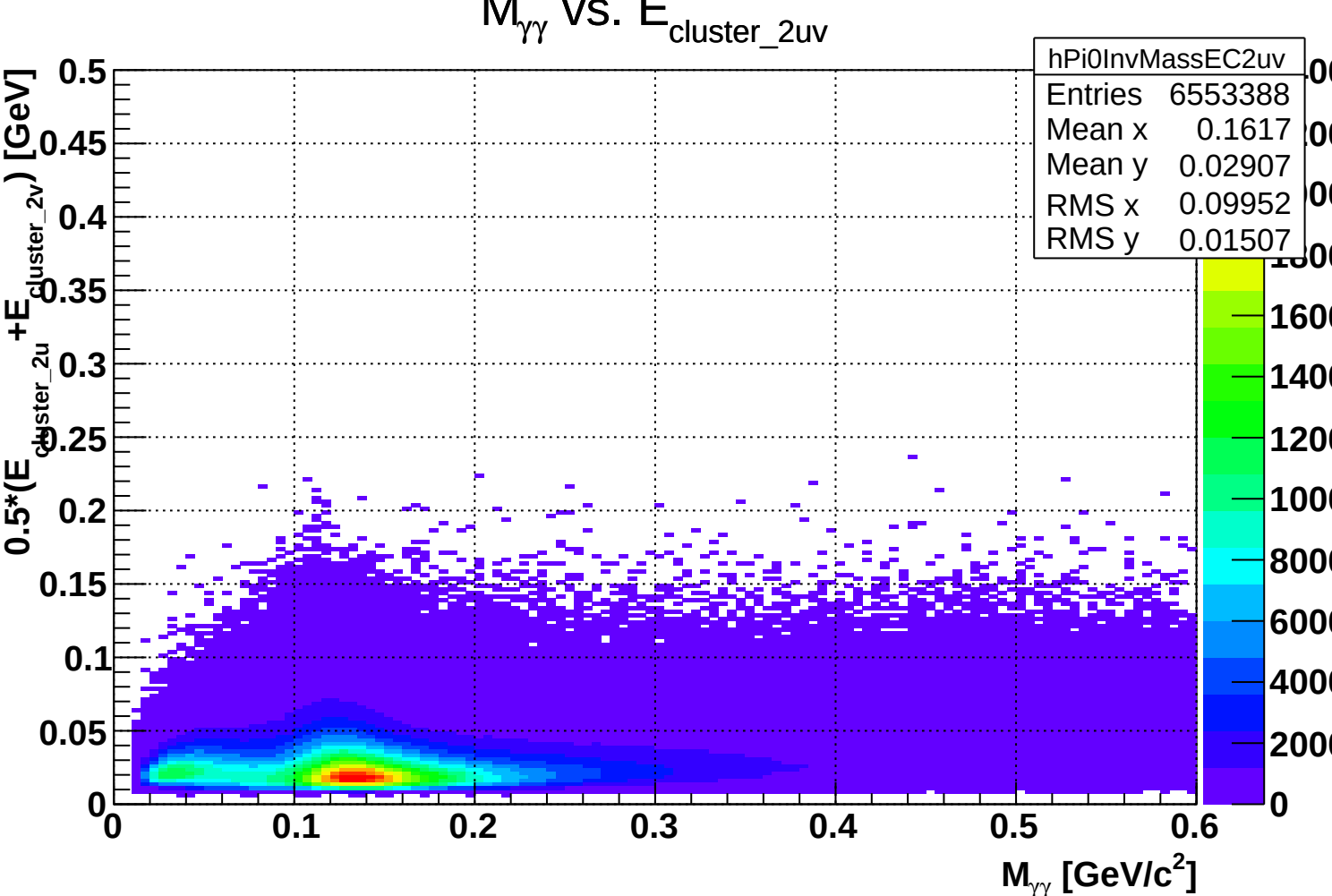

$\pi^0$ candidate $E_{cluster_1u}$
hPi0_eCluster1u
Entries 6553388
Mean 0.04271
RMS 0.02421
counts
$\times 10^3$
350
300
250
200
150
100
50
0
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
$E_{cluster_1u}$ [GeV]


$\pi^0$ candidate $E_{cluster_1v}$
hPi0_eCluster1v
Entries 6553388
Mean 0.04203
RMS 0.02381
counts
$\times 10^3$
350
300
250
200
150
100
50
0
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
$E_{cluster_1v}$ [GeV]

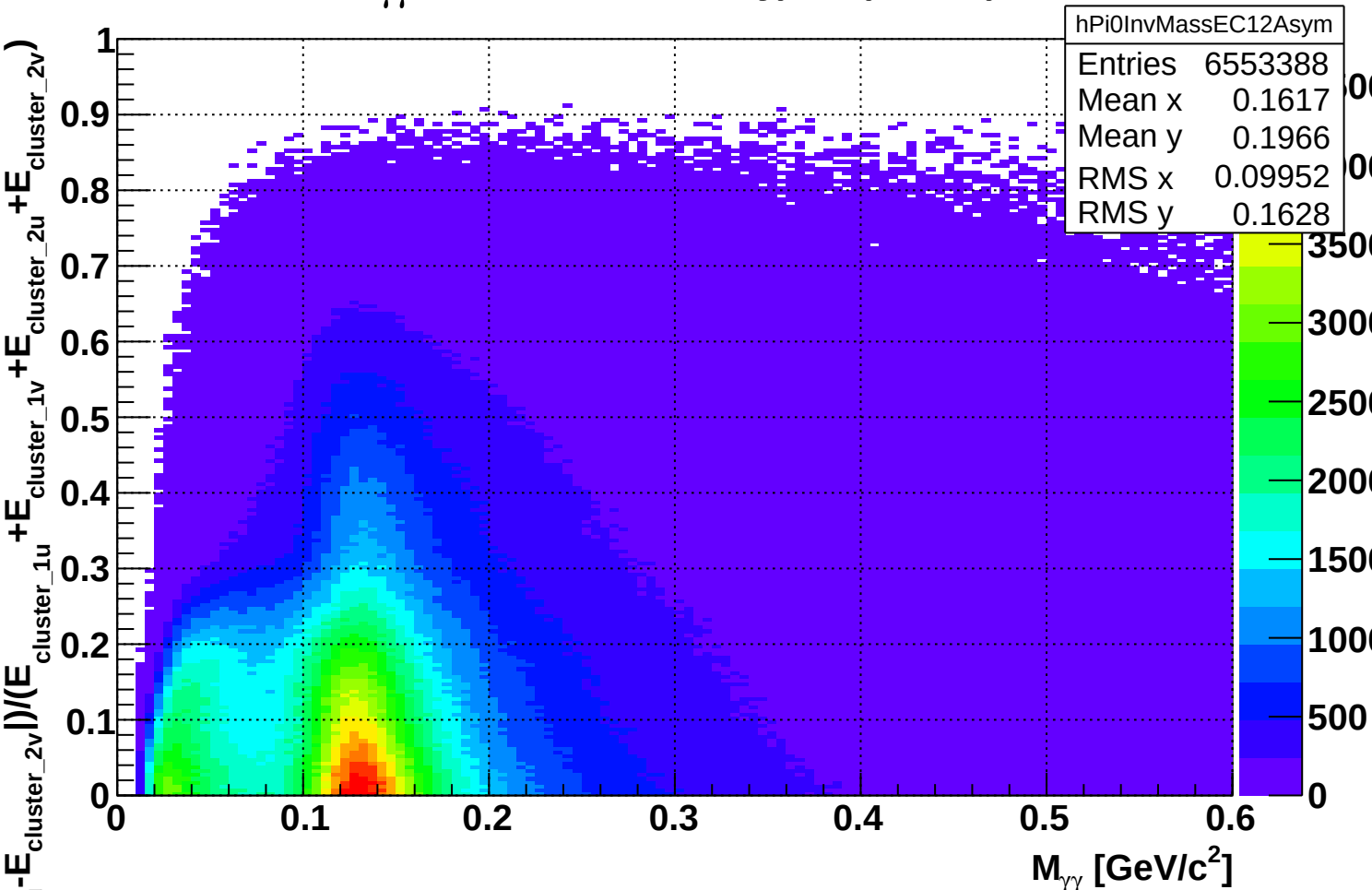

$\pi^0$ candidate $E_{cluster_2u}$
hPi0_eCluster2u
Entries 6553388
Mean 0.02944
RMS 0.021
counts
$\times 10^3$
600
500
400
300
200
100
0
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
$E_{cluster_2u}$ [GeV]

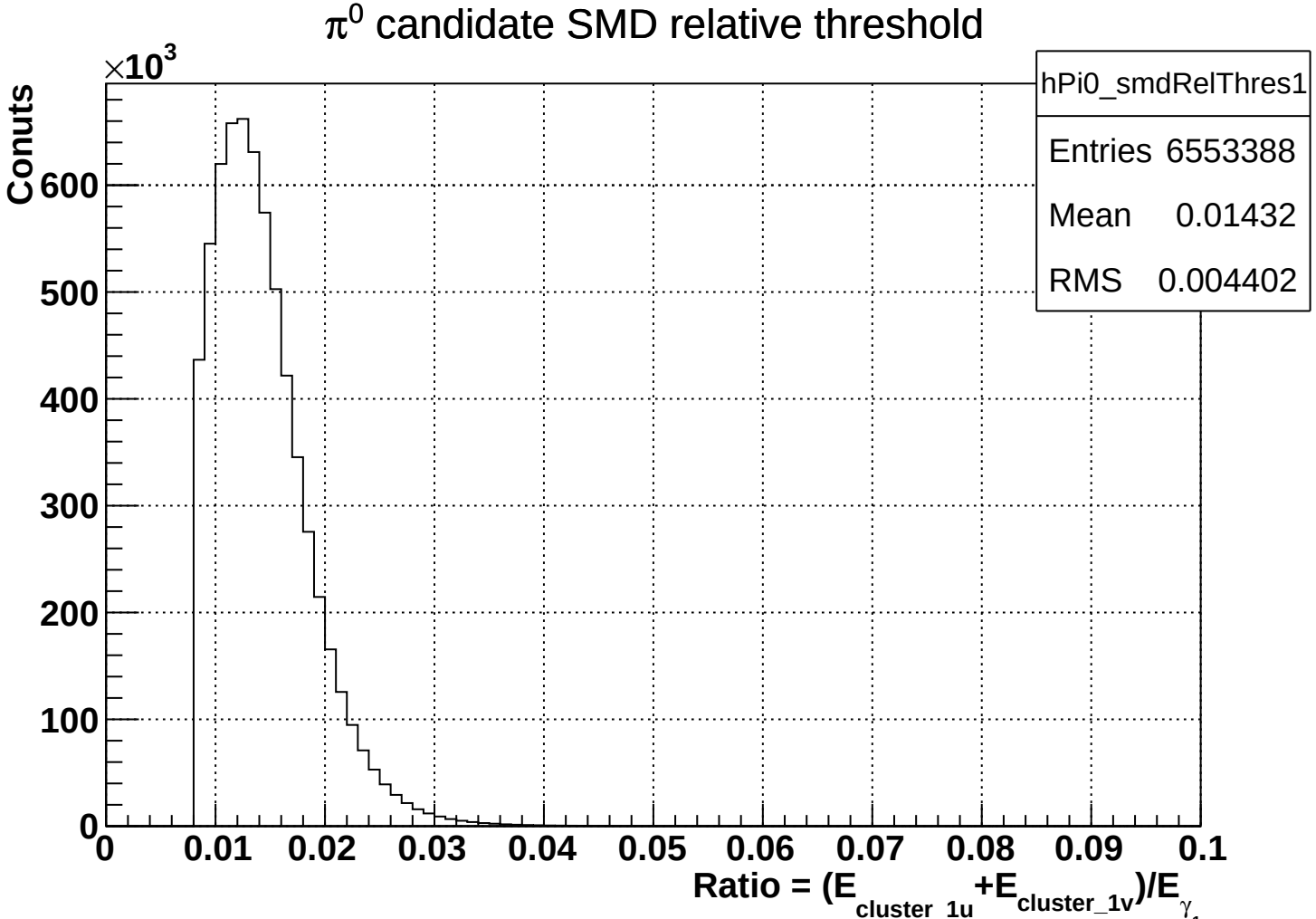

$\pi^0$ candidate $E_{cluster_2v}$
hPi0_eCluster2v
Entries 6553388
Mean 0.0287
RMS 0.02042
counts
$\times 10^3$
700
600
500
400
300
200
100
0
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
$E_{cluster_2v}$ [GeV]

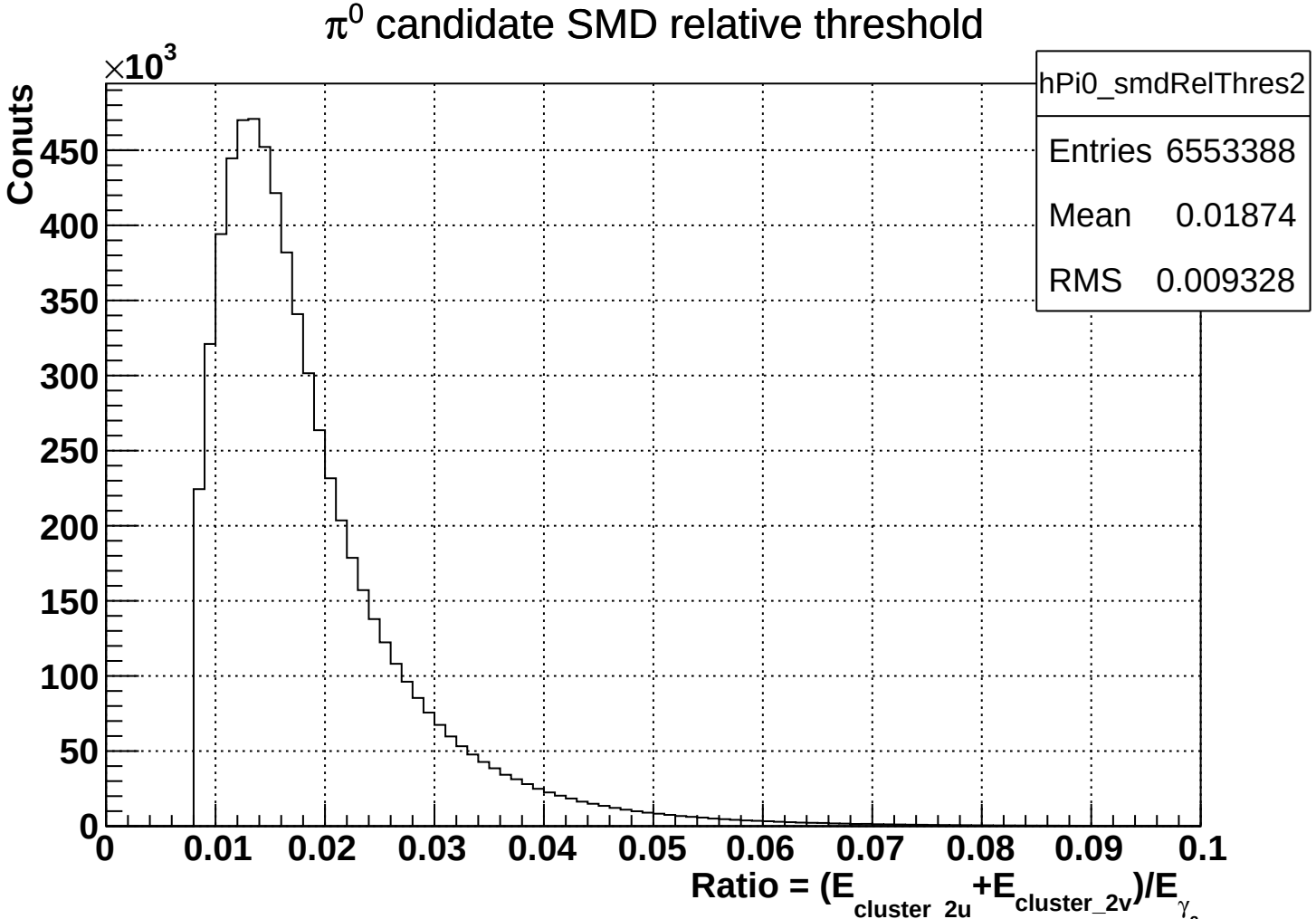

$M_{\gamma\gamma}$ vs. $E_{cluster_1uv}$
hPi0InvMassEC1uv
Entries 6553388
Mean x 0.1617
Mean y 0.04237
RMS x 0.09952
RMS y 0.02178
$0.5*(E_{cluster_1u}+E_{cluster_1v})$ [GeV]
$M_{\gamma\gamma}$ [GeV/c$^2$]
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.6
2000
4000
6000
8000
1000


$M_{\gamma\gamma}$ vs. $E_{cluster_2uv}$
hPi0InvMassEC2uv
Entries 6553388
Mean x 0.1617
Mean y 0.02907
RMS x 0.09952
RMS y 0.01507
$0.5*(E_{cluster_2u}+E_{cluster_2v})$ [GeV]
$M_{\gamma\gamma}$ [GeV/$c^2$]
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.6
2000
4000
6000
8000
1000
1200
1400
1600

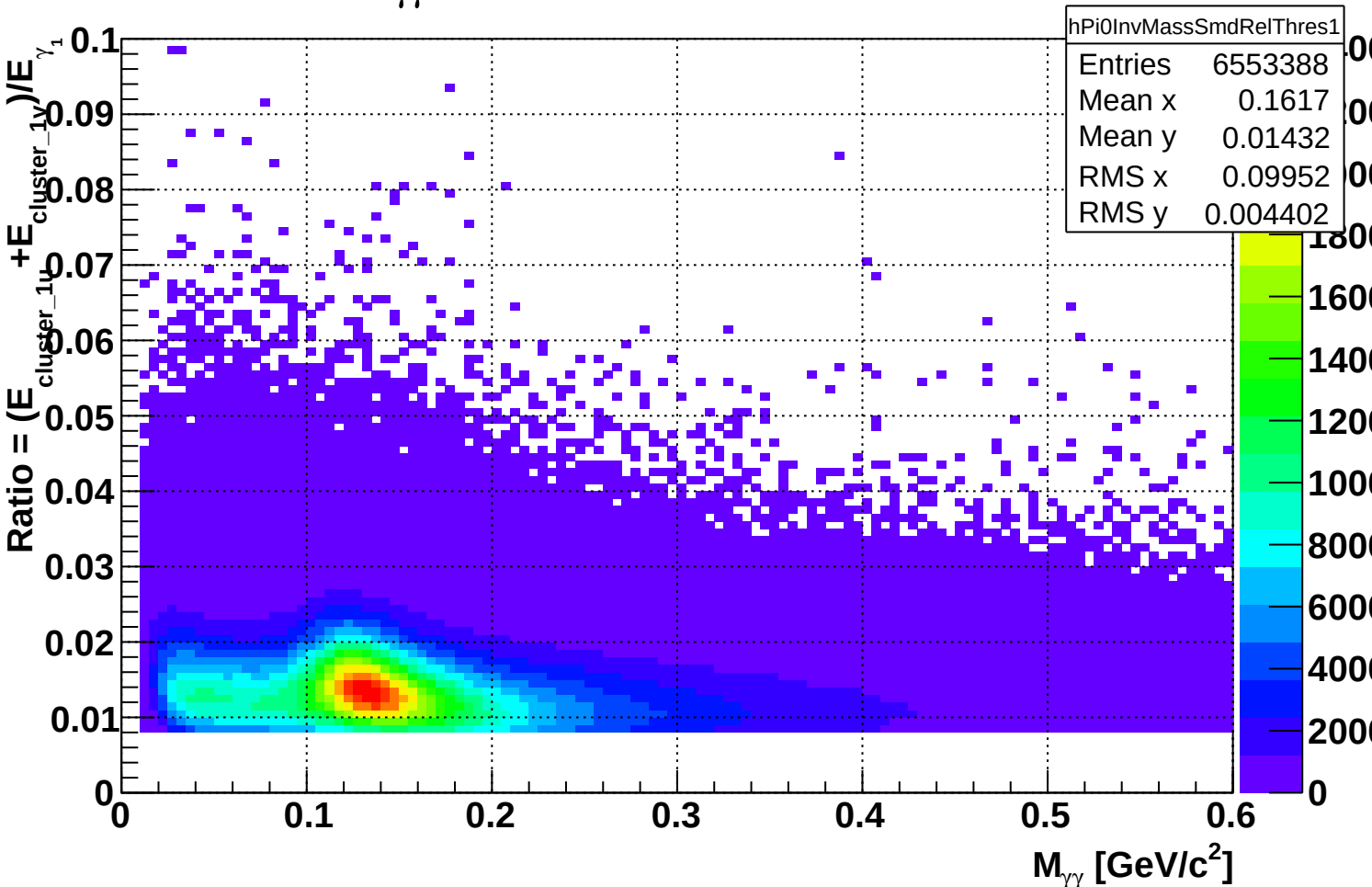
# $M_{\gamma\gamma}$ vs. cluster energy asymetry



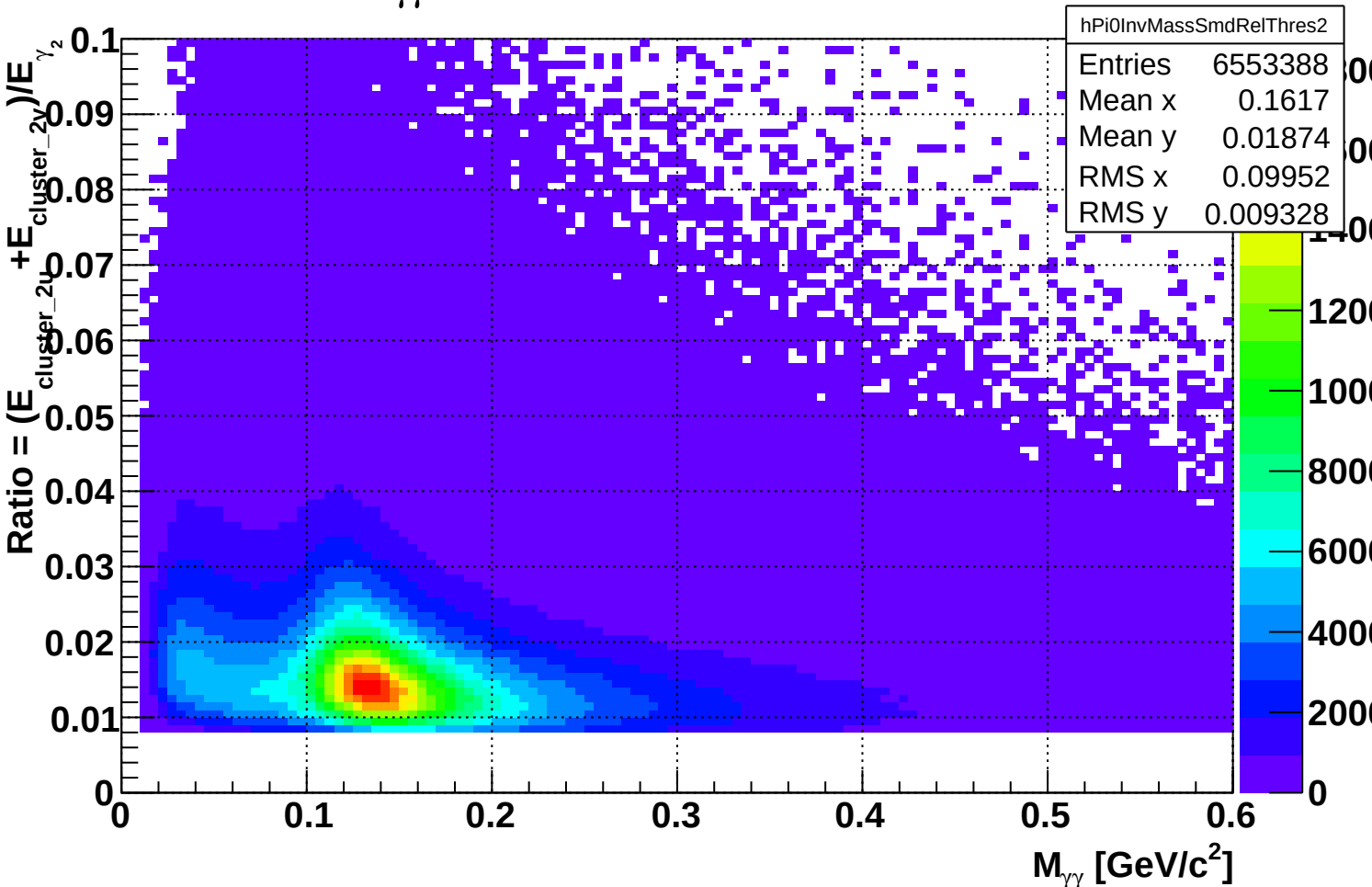

$\pi^0$ candidate SMD relative threshold
hPi0_smdRelThres1
Entries 6553388
Mean 0.01432
RMS 0.004402
Conuts
$\times 10^3$
600
500
400
300
200
100
0
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
Ratio = $(E_{cluster_1u}+E_{cluster_1v})/E_{\gamma}$

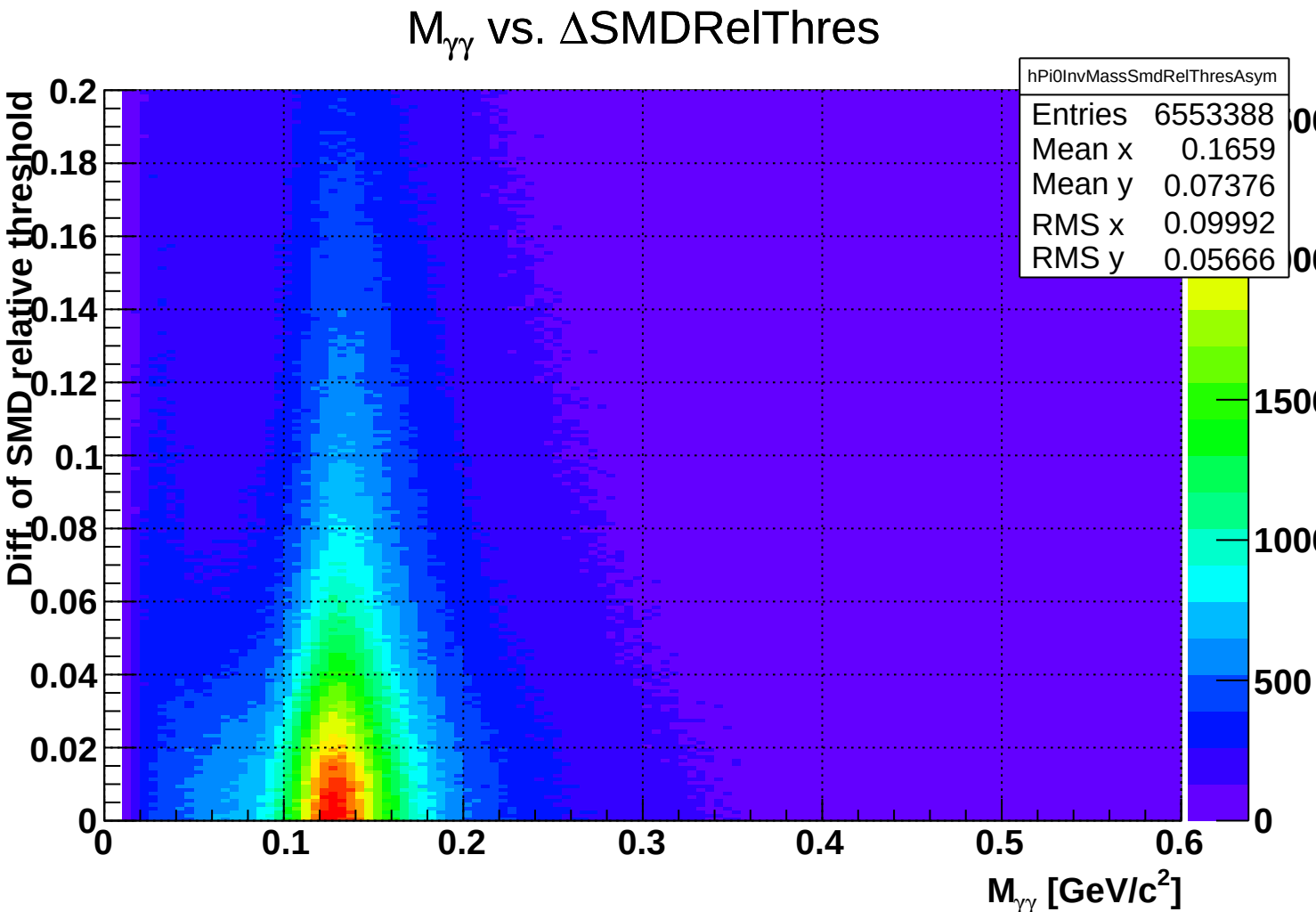

$\pi^0$ candidate SMD relative threshold
hPi0_smdRelThres2
Entries 6553388
Mean 0.01874
RMS 0.009328
Conuts
$\times 10^3$
450
400
350
300
250
200
150
100
50
0
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
Ratio = $(E_{cluster_2u}+E_{cluster_2v})/E_{\gamma}$

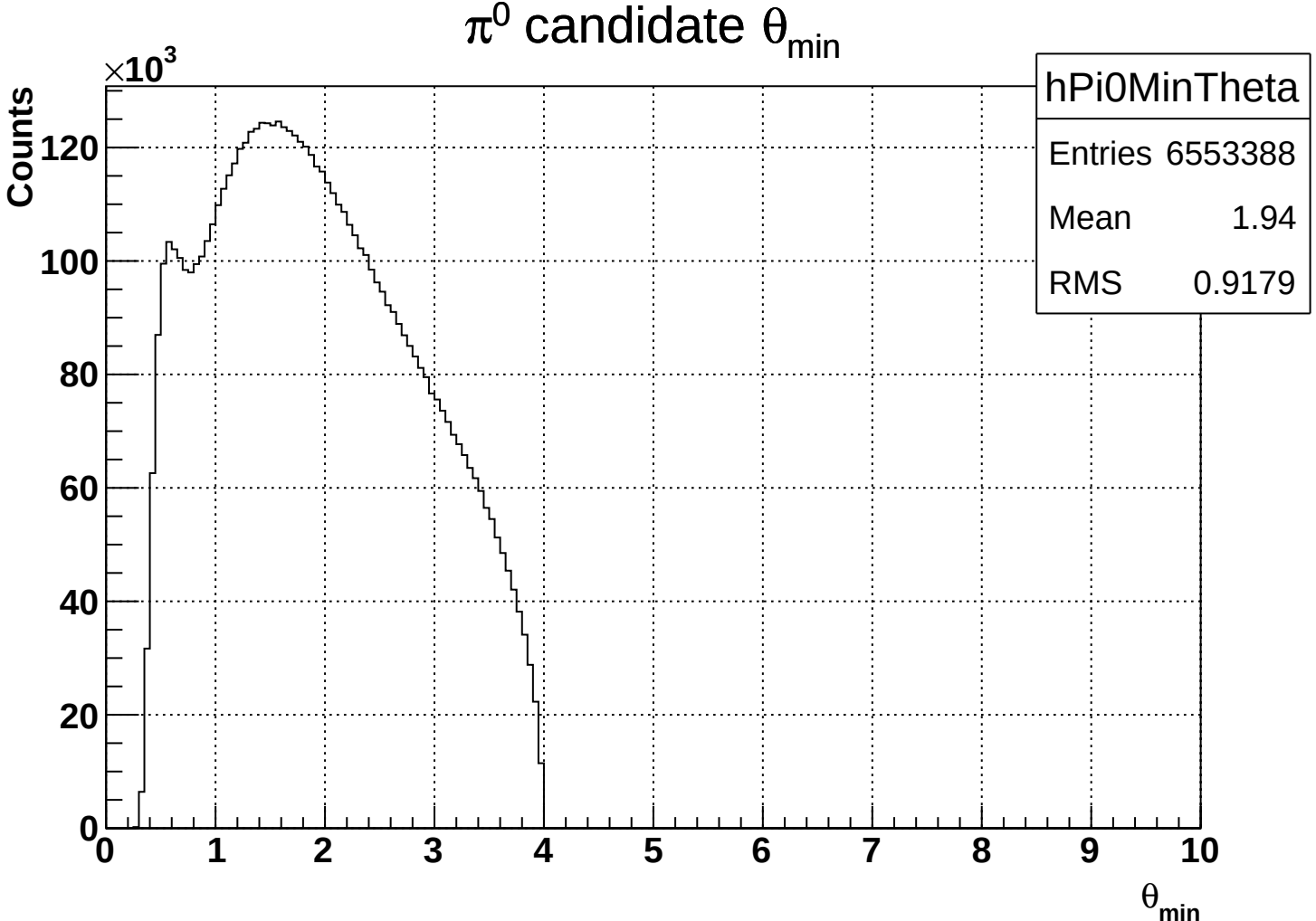
# $M_{\gamma\gamma}$ vs. SMD relative threshold

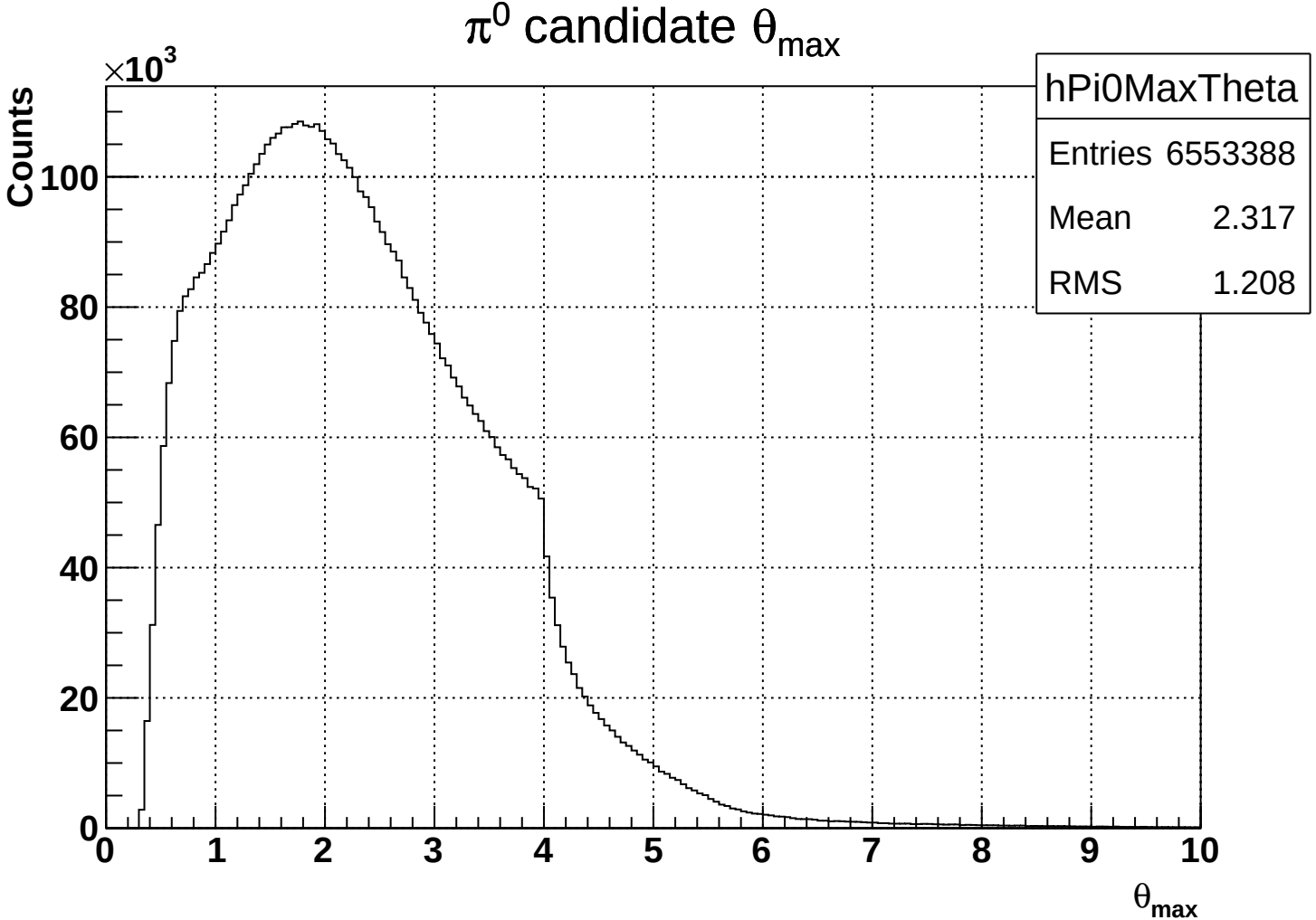


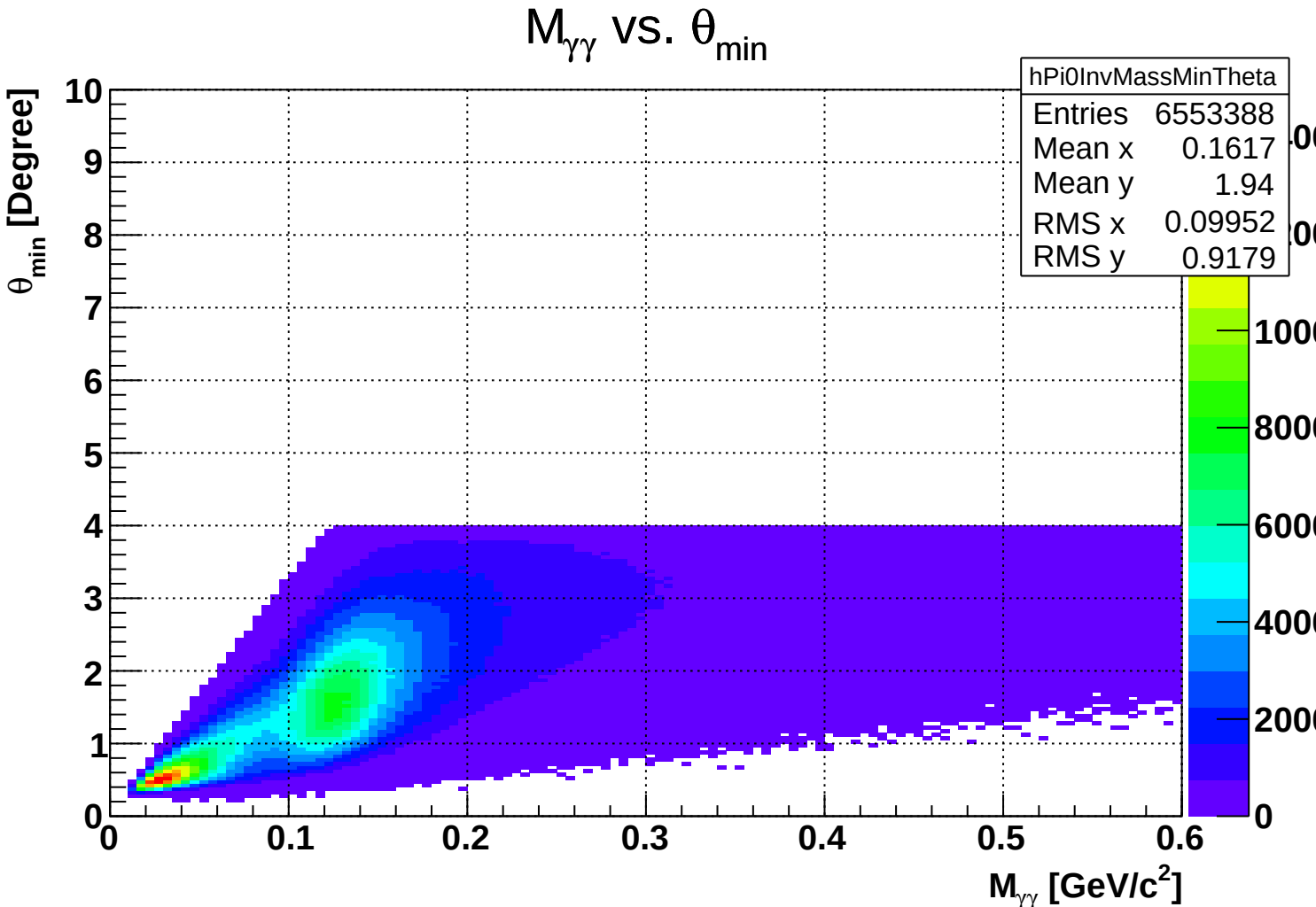
# $M_{\gamma\gamma}$ vs. SMD relative threshold

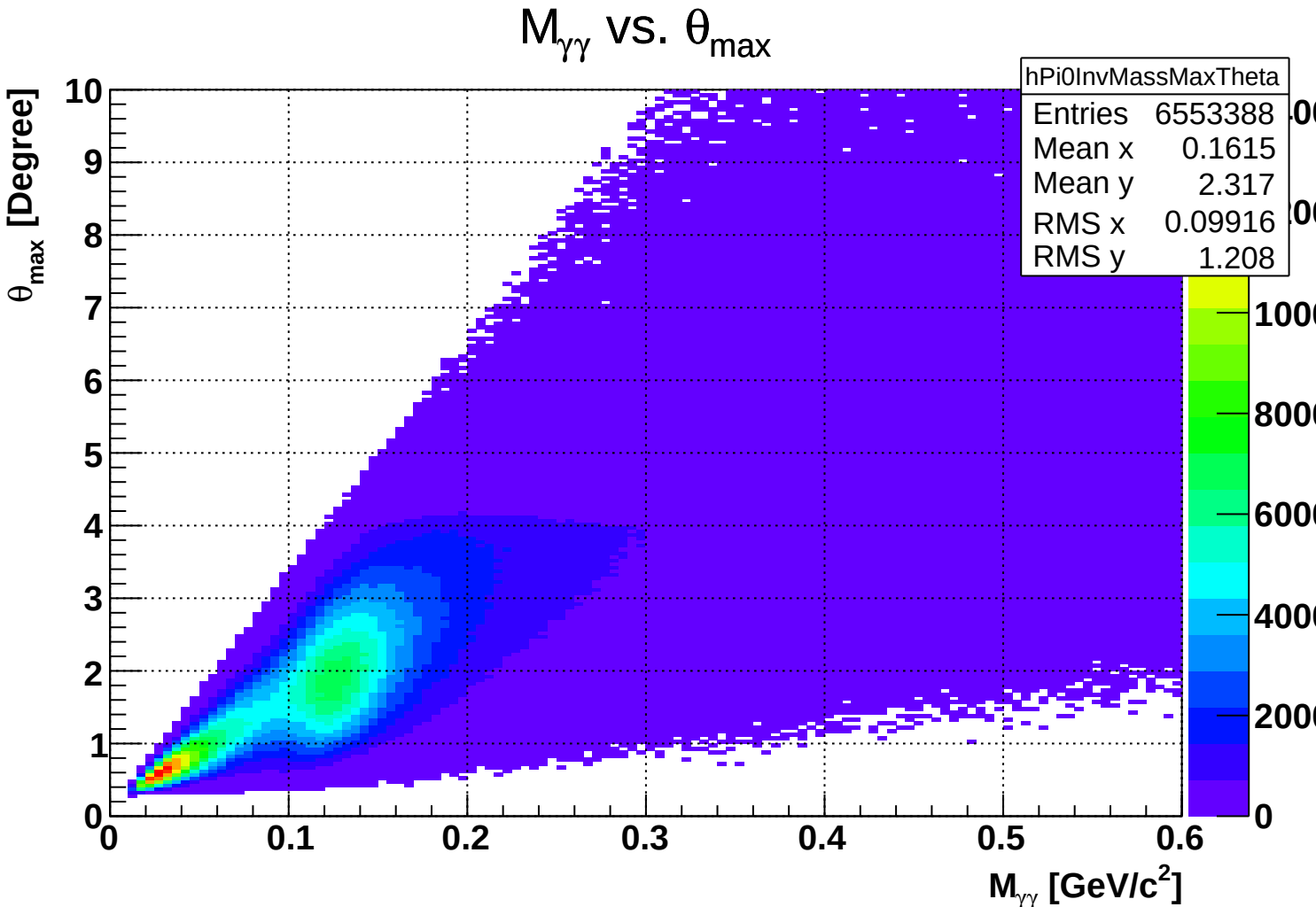


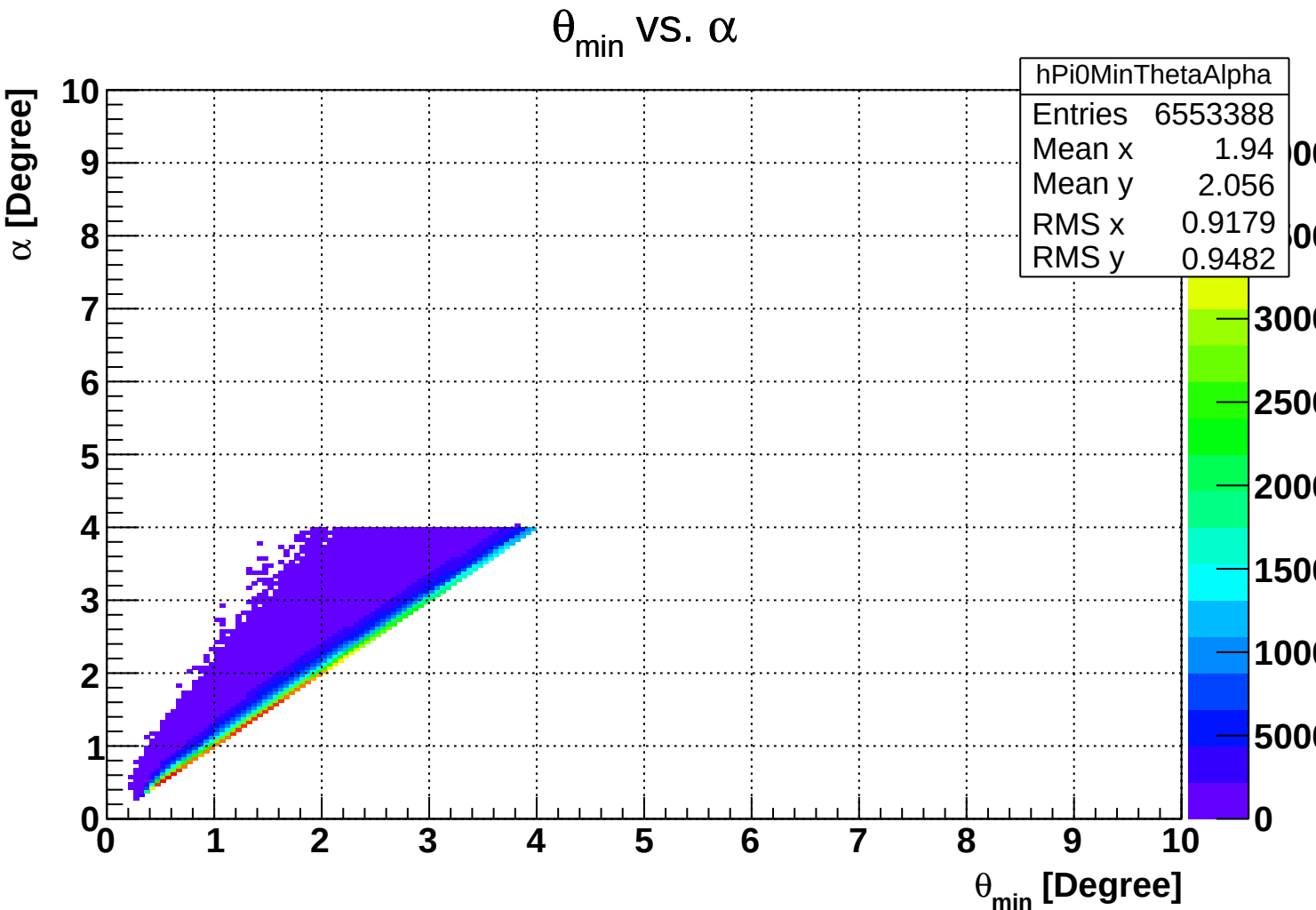

$M_{\gamma\gamma}$ vs. ΔSMDRelThres
hPi0InvMassSmdRelThresAsym
Entries 6553388
Mean x 0.1659
Mean y 0.07376
RMS x 0.09992
RMS y 0.05666
Diff. of SMD relative threshold
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0.1
0.2
0.3
0.4
0.5
0.6
1500
1000
500
$M_{\gamma\gamma}$ [GeV/$c^2$]

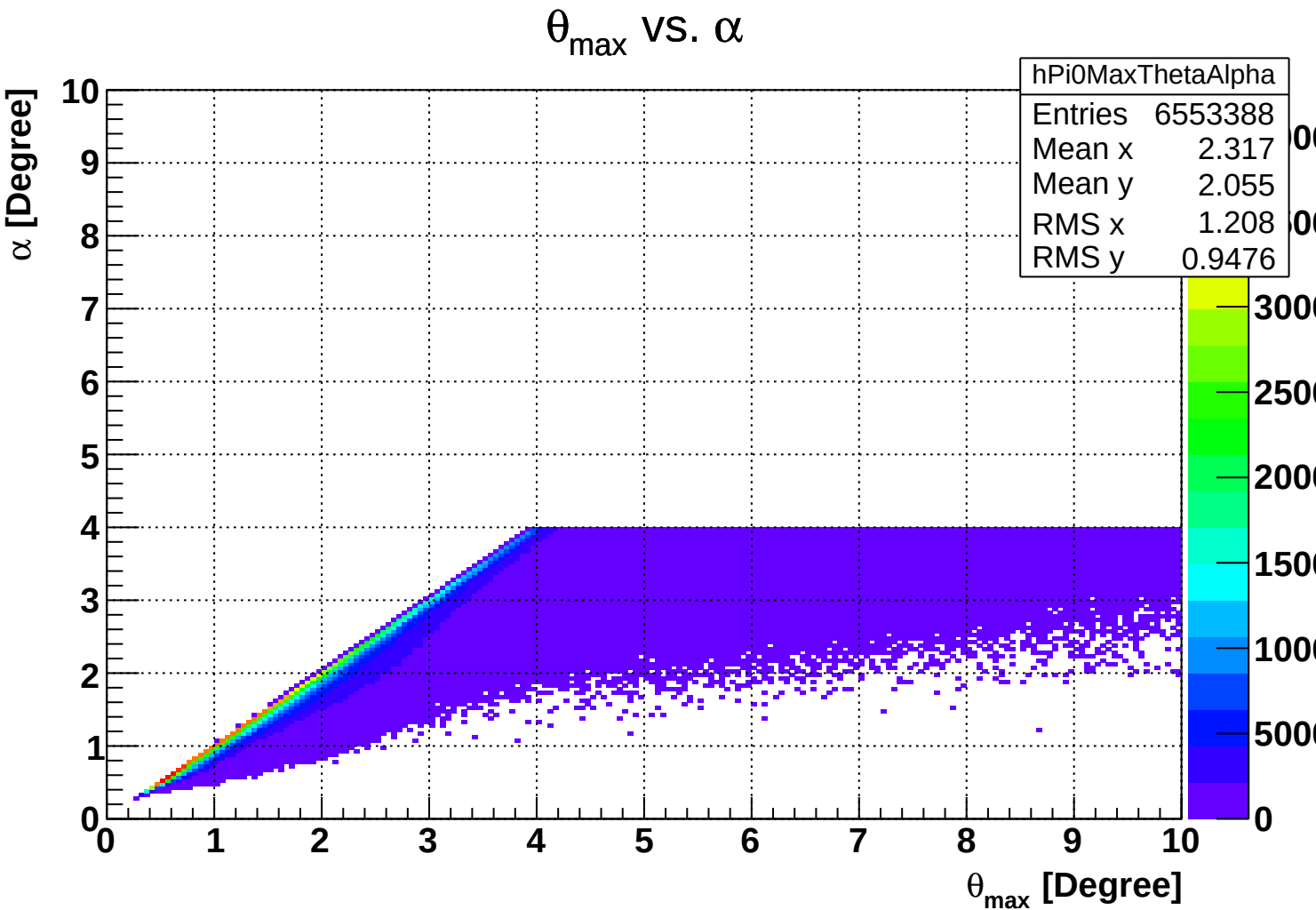

$\pi^0$ candidate $\theta_{min}$
hPi0MinTheta
Entries 6553388
Mean 1.94
RMS 0.9179
Counts
$\times 10^3$
0
20
40
60
80
100
120
0
1
2
3
4
5
6
7
8
9
10
$\theta_{min}$

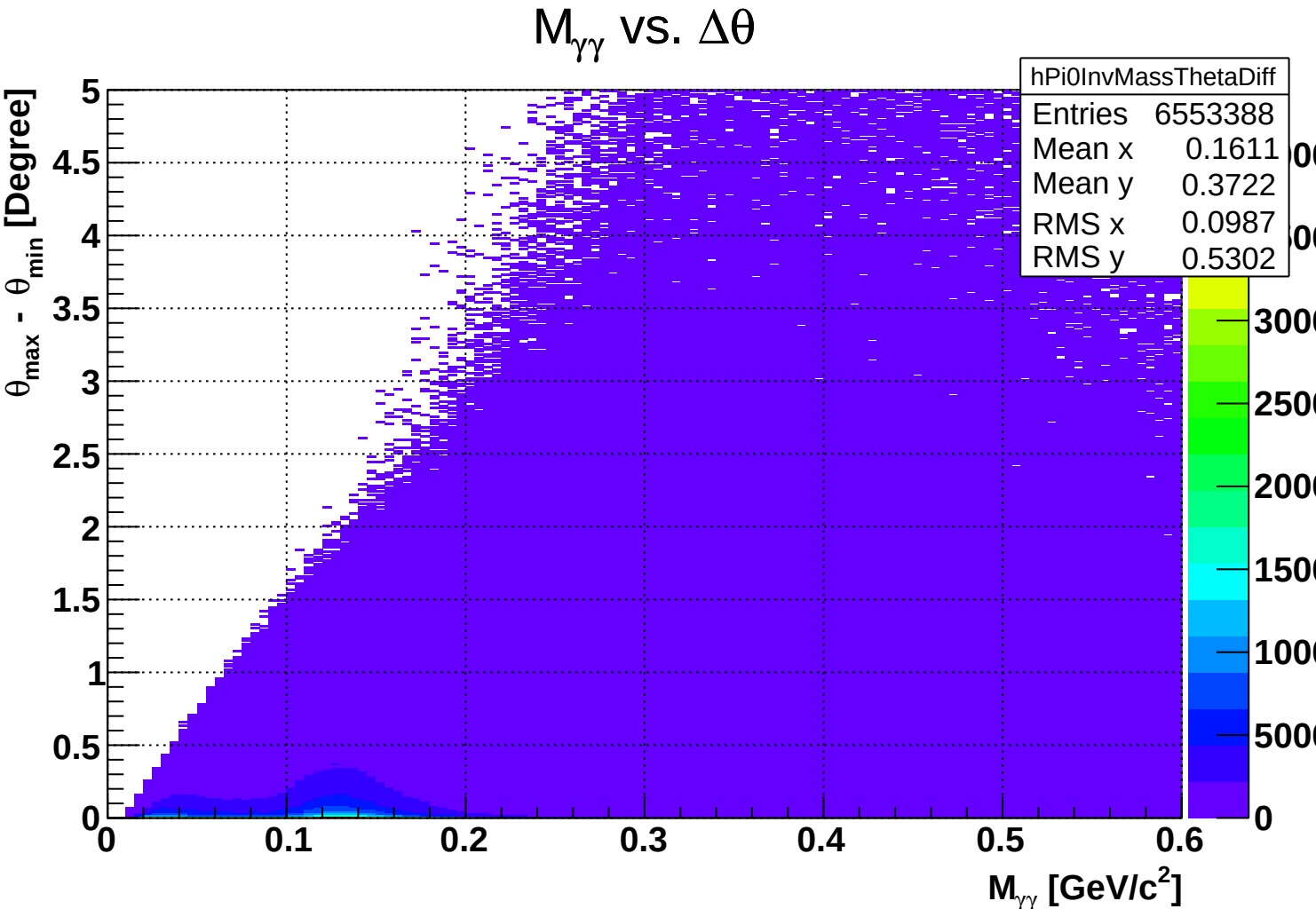

$\pi^0$ candidate $\theta_{max}$
hPi0MaxTheta
Entries 6553388
Mean 2.317
RMS 1.208
Counts
$\times 10^3$
0
20
40
60
80
100
0
1
2
3
4
5
6
7
8
9
10
$\theta_{max}$

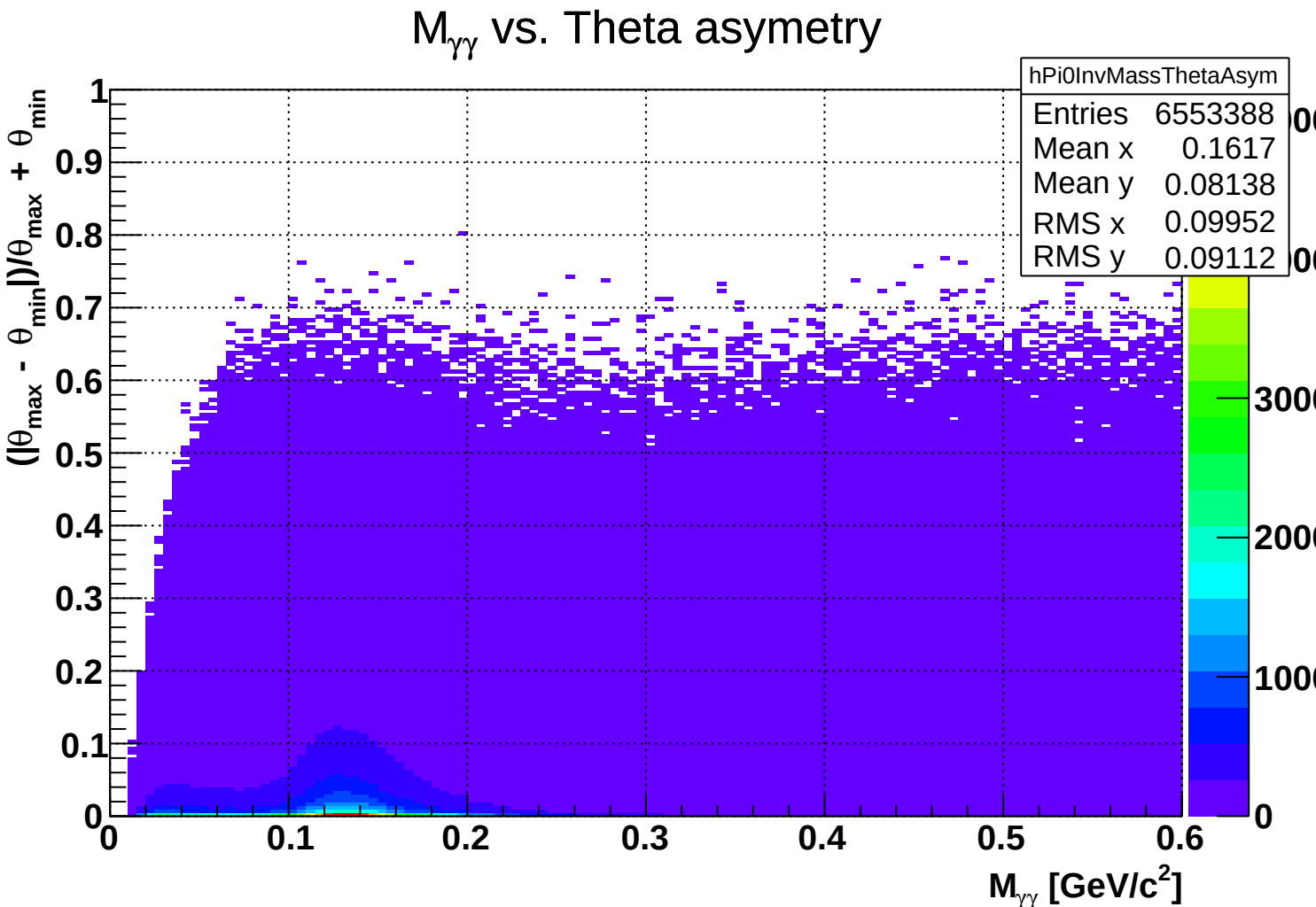

$M_{\gamma\gamma}$ vs. $\theta_{min}$
hPi0InvMassMinTheta
Entries 6553388
Mean x 0.1617
Mean y 1.94
RMS x 0.09952
RMS y 0.9179
$\theta_{min}$ [Degree]
$M_{\gamma\gamma}$ [GeV/c$^2$]
0
1
2
3
4
5
6
7
8
9
10
0.1
0.2
0.3
0.4
0.5
0.6
2000
4000
6000
8000
1000

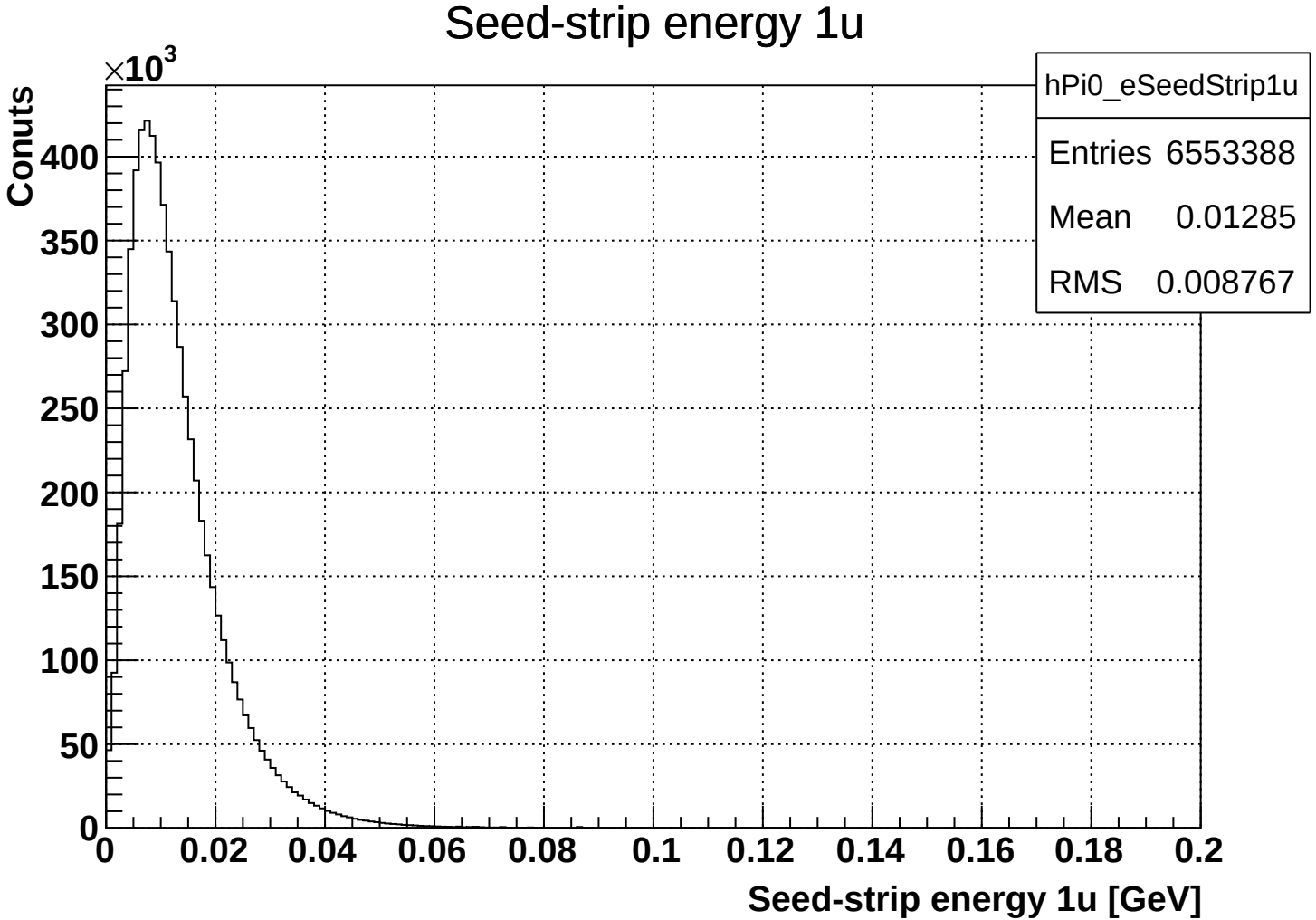

$M_{\gamma\gamma}$ vs. $\theta_{max}$
hPi0InvMassMaxTheta
Entries 6553388
Mean x 0.1615
Mean y 2.317
RMS x 0.09916
RMS y 1.208
$\theta_{max}$ [Degree]
$M_{\gamma\gamma}$ [GeV/c$^2$]
0
1
2
3
4
5
6
7
8
9
10
0.1
0.2
0.3
0.4
0.5
0.6
2000
4000
6000
8000
1000

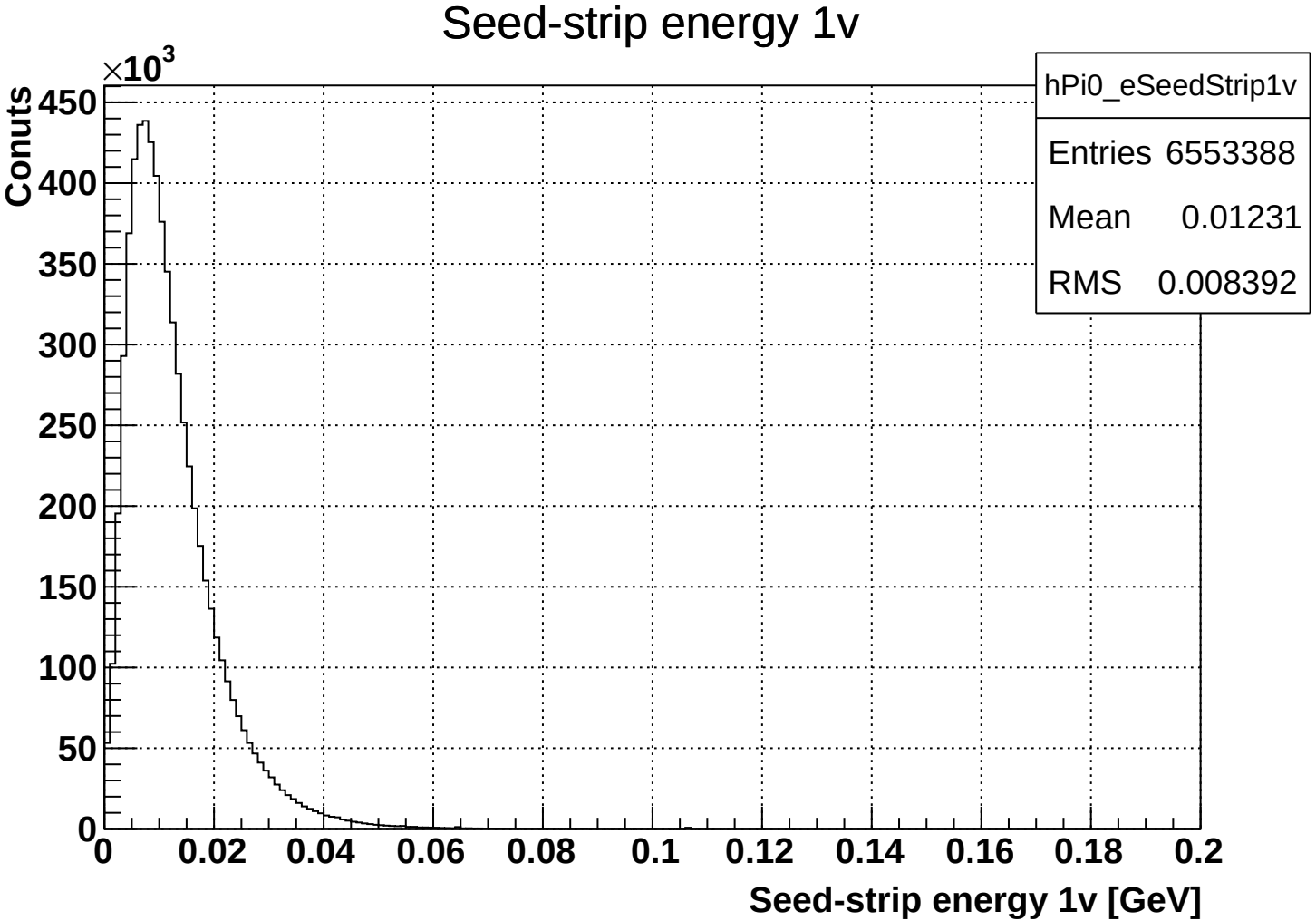

θmin vs. α
hPi0MinThetaAlpha
Entries 6553388
Mean x 1.94
Mean y 2.056
RMS x 0.9179
RMS y 0.9482
α [Degree]
θmin [Degree]
0
1
2
3
4
5
6
7
8
9
10
500
1000
1500
2000
2500
3000

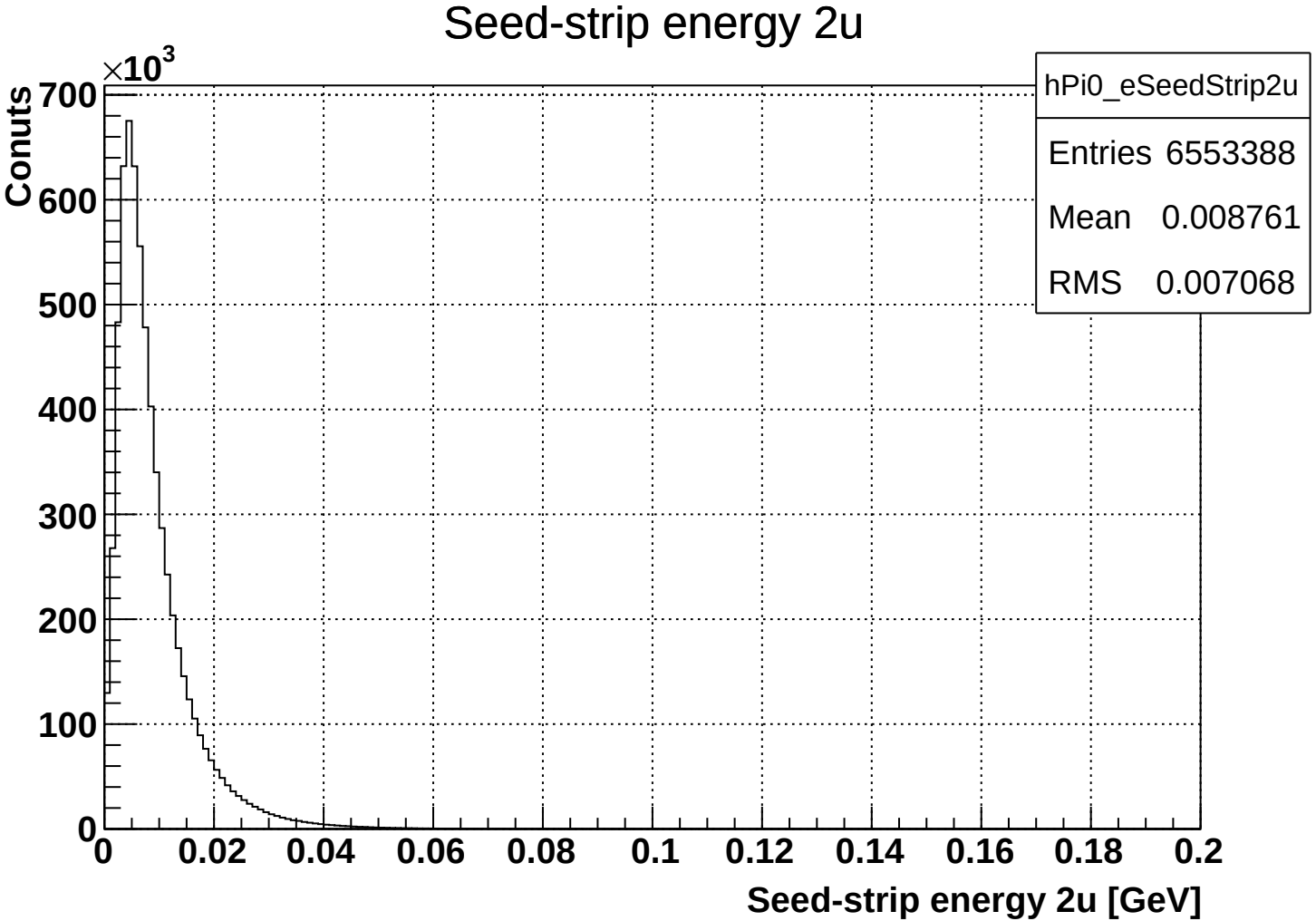

θmax vs. α
hPi0MaxThetaAlpha
Entries 6553388
Mean x 2.317
Mean y 2.055
RMS x 1.208
RMS y 0.9476
α [Degree]
θmax [Degree]
0
1
2
3
4
5
6
7
8
9
10
500
1000
1500
2000
2500
3000

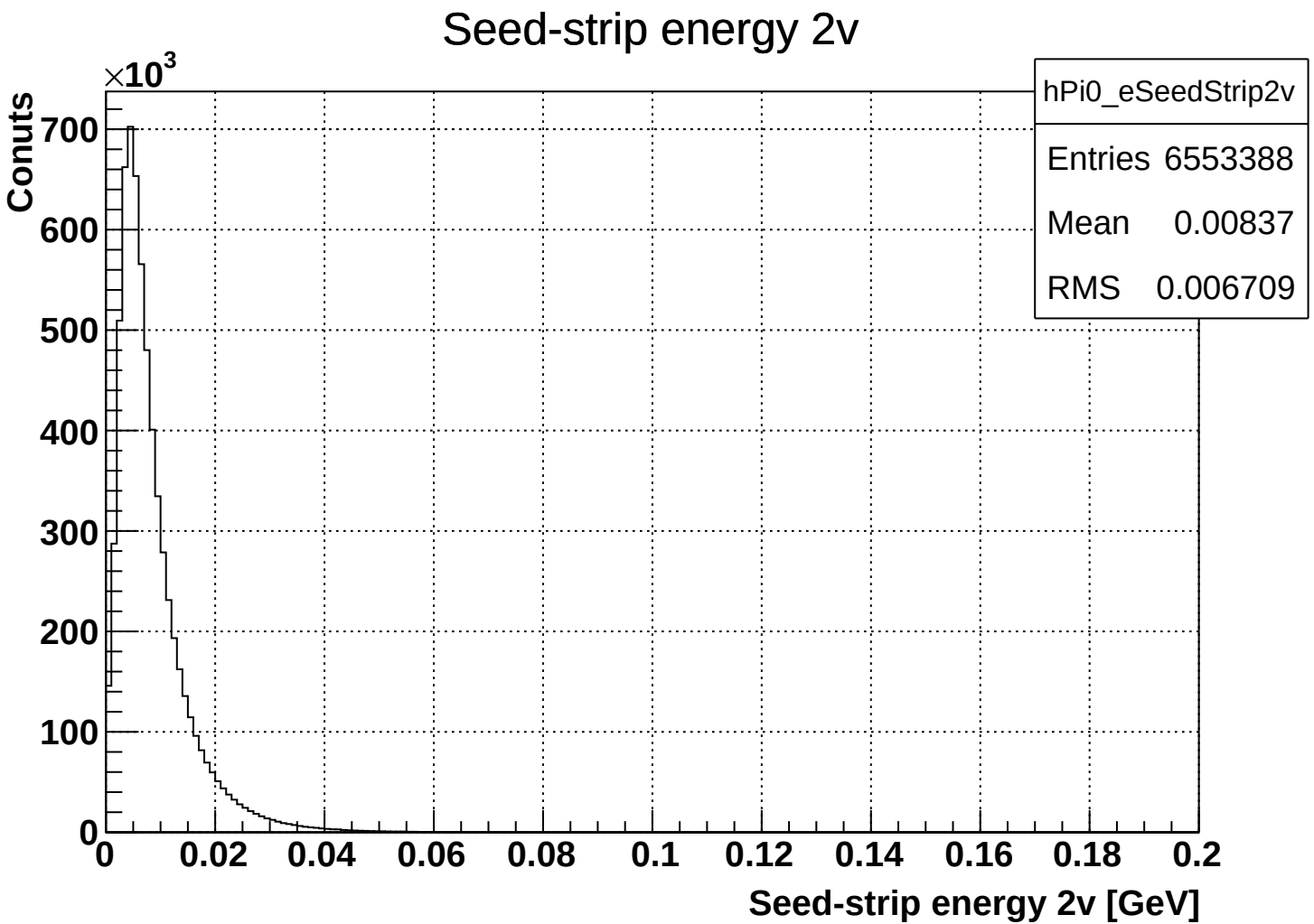

$M_{\gamma\gamma}$ vs. $\Delta\theta$
hPi0InvMassThetaDiff
Entries 6553388
Mean x 0.1611
Mean y 0.3722
RMS x 0.0987
RMS y 0.5302
$\theta_{max} - \theta_{min}$ [Degree]
$M_{\gamma\gamma}$ [GeV/c$^2$]
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
0.1
0.2
0.3
0.4
0.5
0.6
500
1000
1500
2000
2500
3000

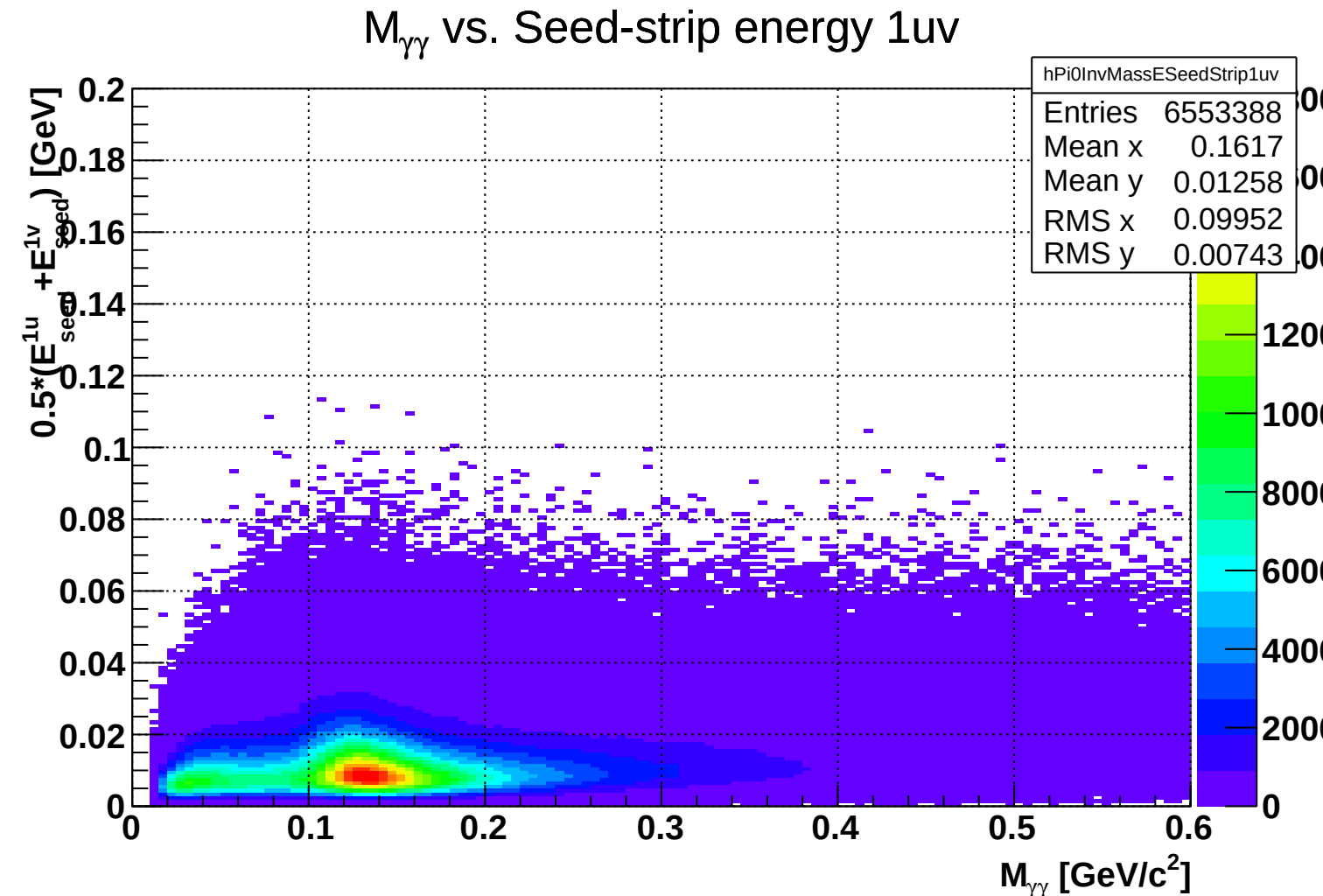

$M_{\gamma\gamma}$ vs. Theta asymetry
hPi0InvMassThetaAsym
Entries 6553388
Mean x 0.1617
Mean y 0.08138
RMS x 0.09952
RMS y 0.09112
$(|\theta_{max} - \theta_{min}|)/\theta_{max} + \theta_{min}$
$M_{\gamma\gamma}$ [GeV/$c^2$]
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1000
2000
3000

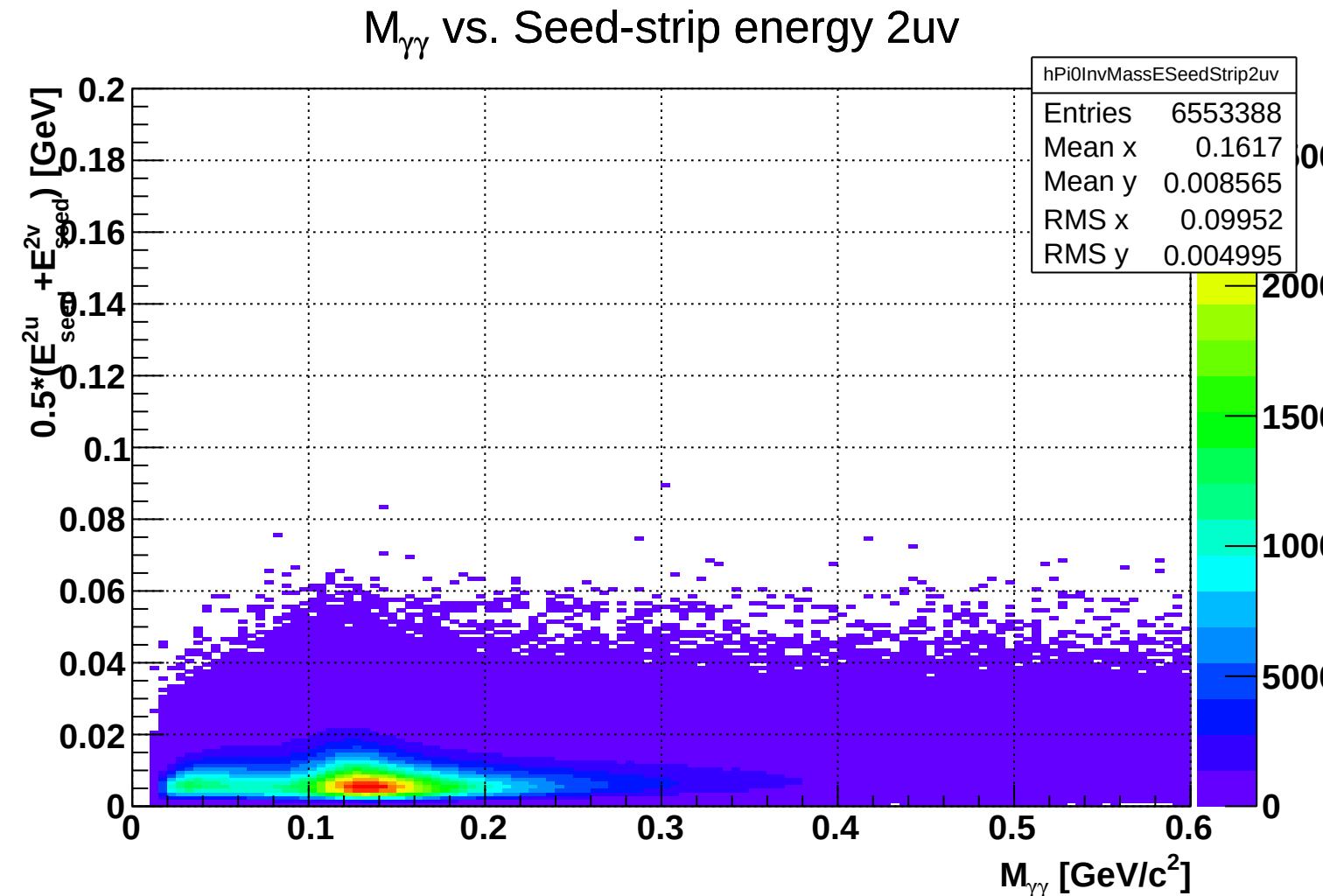

Seed-strip energy 1u
hPi0_eSeedStrip1u
Entries 6553388
Mean 0.01285
RMS 0.008767
×10^3
Conuts
400
350
300
250
200
150
100
50
0
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
Seed-strip energy 1u [GeV]


Seed-strip energy 1v
hPi0_eSeedStrip1v
Entries 6553388
Mean 0.01231
RMS 0.008392
×10^3
Conuts
450
400
350
300
250
200
150
100
50
0
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
Seed-strip energy 1v [GeV]

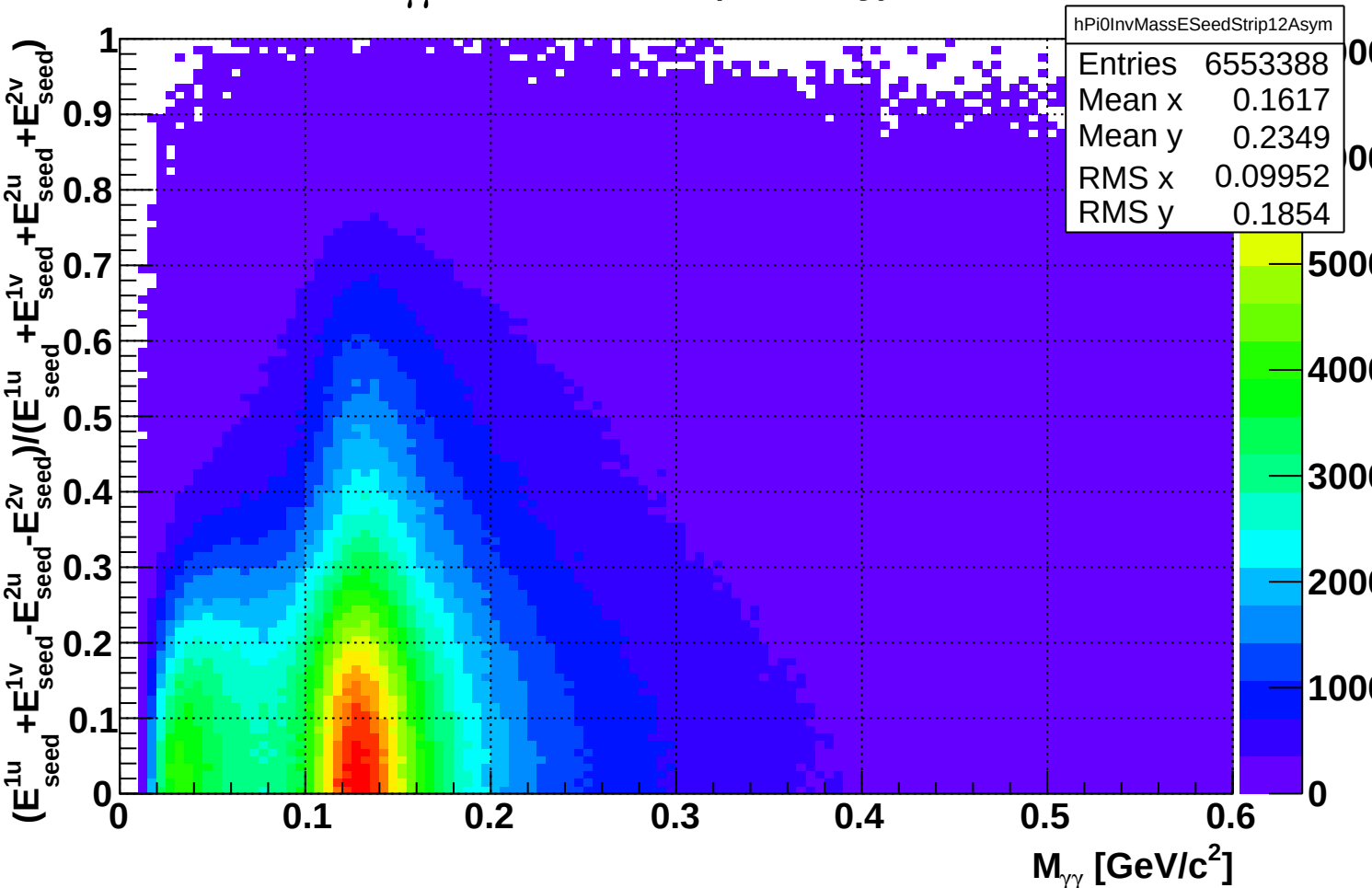

Seed-strip energy 2u
hPi0_eSeedStrip2u
Entries 6553388
Mean 0.008761
RMS 0.007068
Conuts
×10^3
700
600
500
400
300
200
100
0
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
Seed-strip energy 2u [GeV]

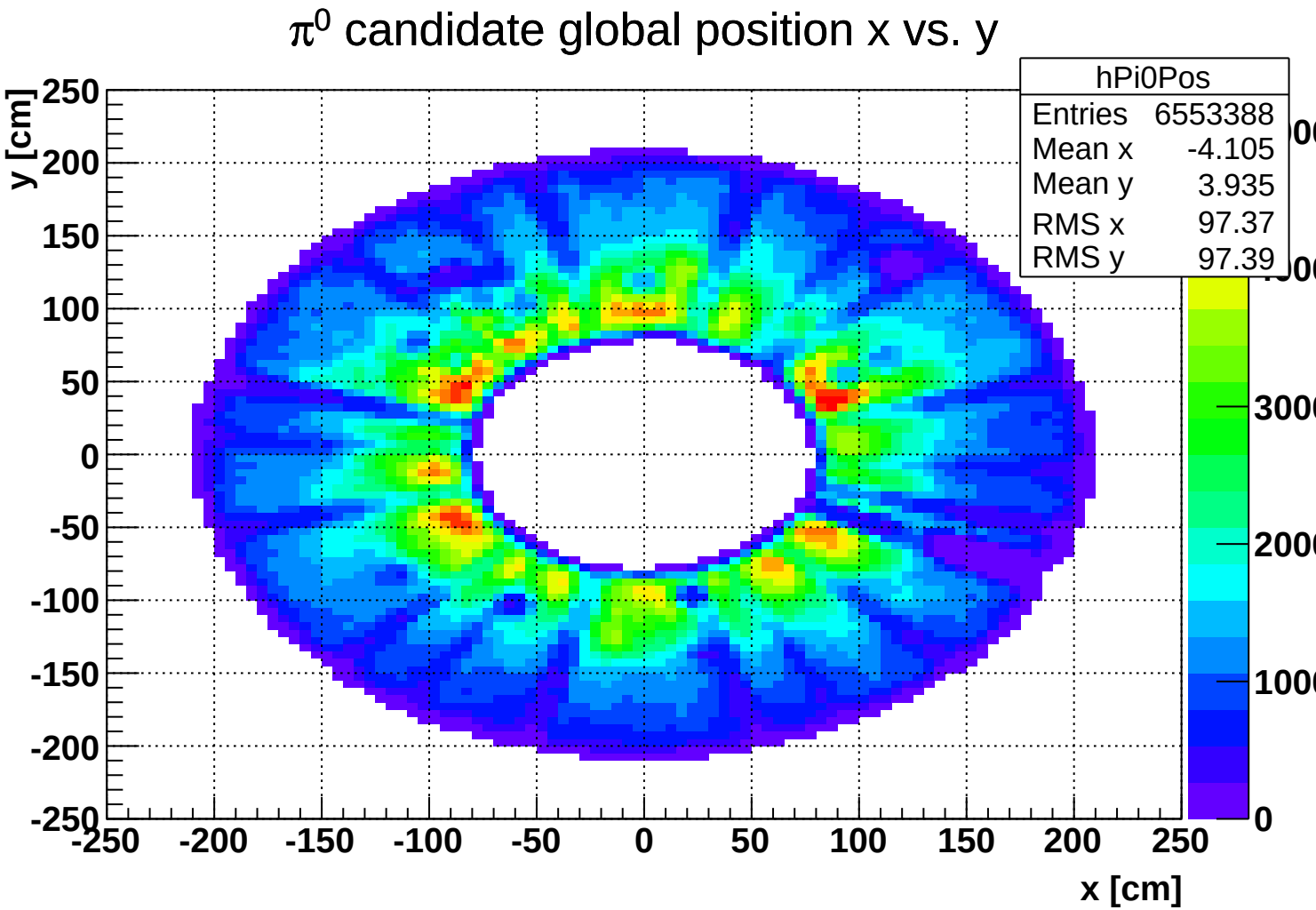

Seed-strip energy 2v
hPi0_eSeedStrip2v
Entries 6553388
Mean 0.00837
RMS 0.006709
×10^3
Conuts
700
600
500
400
300
200
100
0
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
Seed-strip energy 2v [GeV]

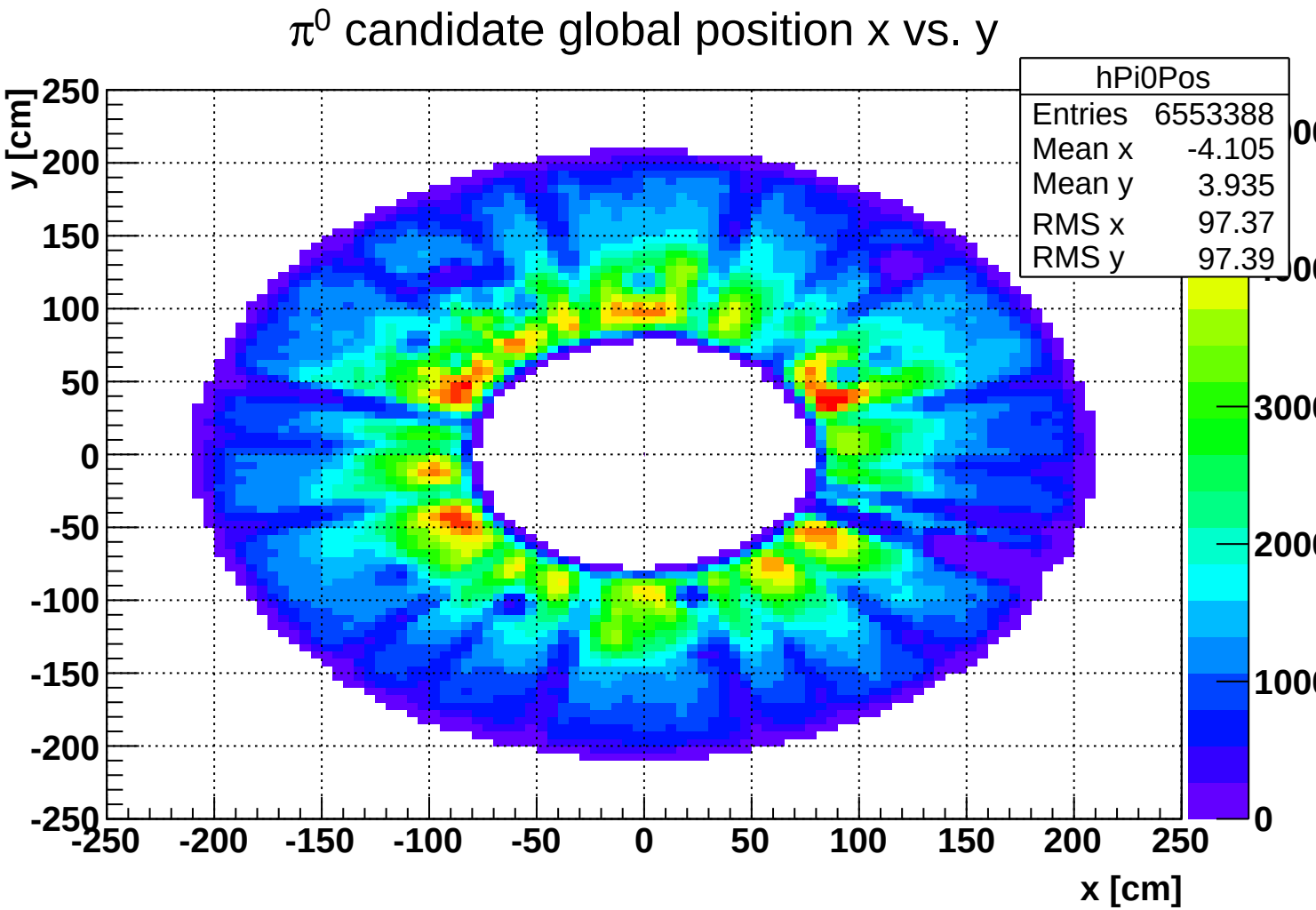

$M_{\gamma\gamma}$ vs. Seed-strip energy 1uv
hPi0InvMassESeedStrip1uv
Entries 6553388
Mean x 0.1617
Mean y 0.01258
RMS x 0.09952
RMS y 0.00743
$0.5*(E^{1u}_{seed}+E^{1v}_{seed})$ [GeV]
$M_{\gamma\gamma}$ [GeV/$c^2$]
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0.1
0.2
0.3
0.4
0.5
0.6
2000
4000
6000
8000
1000
1200

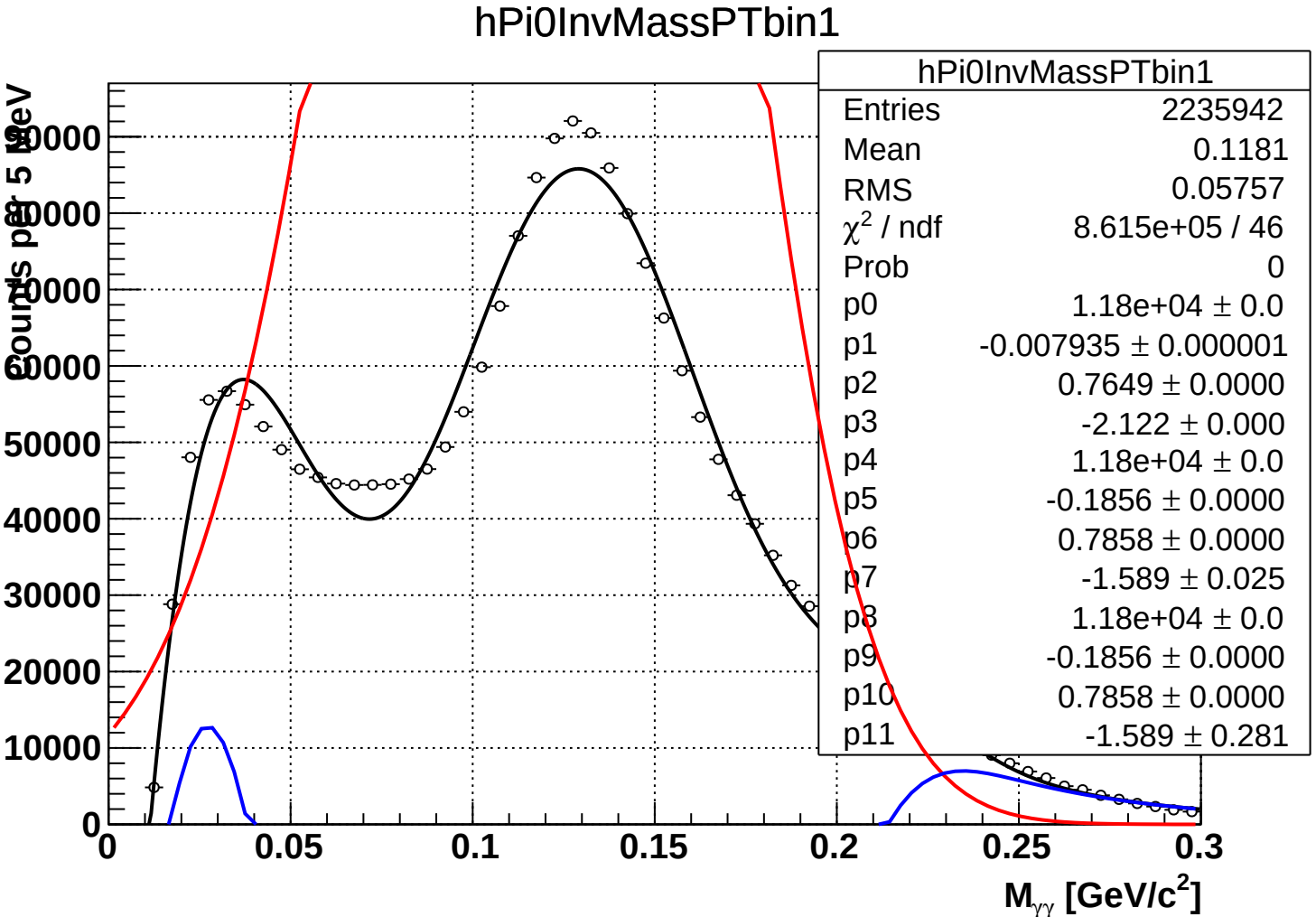

$M_{\gamma\gamma}$ vs. Seed-strip energy 2uv
hPi0InvMassESeedStrip2uv
Entries 6553388
Mean x 0.1617
Mean y 0.008565
RMS x 0.09952
RMS y 0.004995
$0.5*(E^{2u}_{seed}+E^{2v}_{seed})$ [GeV]
$M_{\gamma\gamma}$ [GeV/$c^2$]
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0.1
0.2
0.3
0.4
0.5
0.6
5000
1000
1500
2000

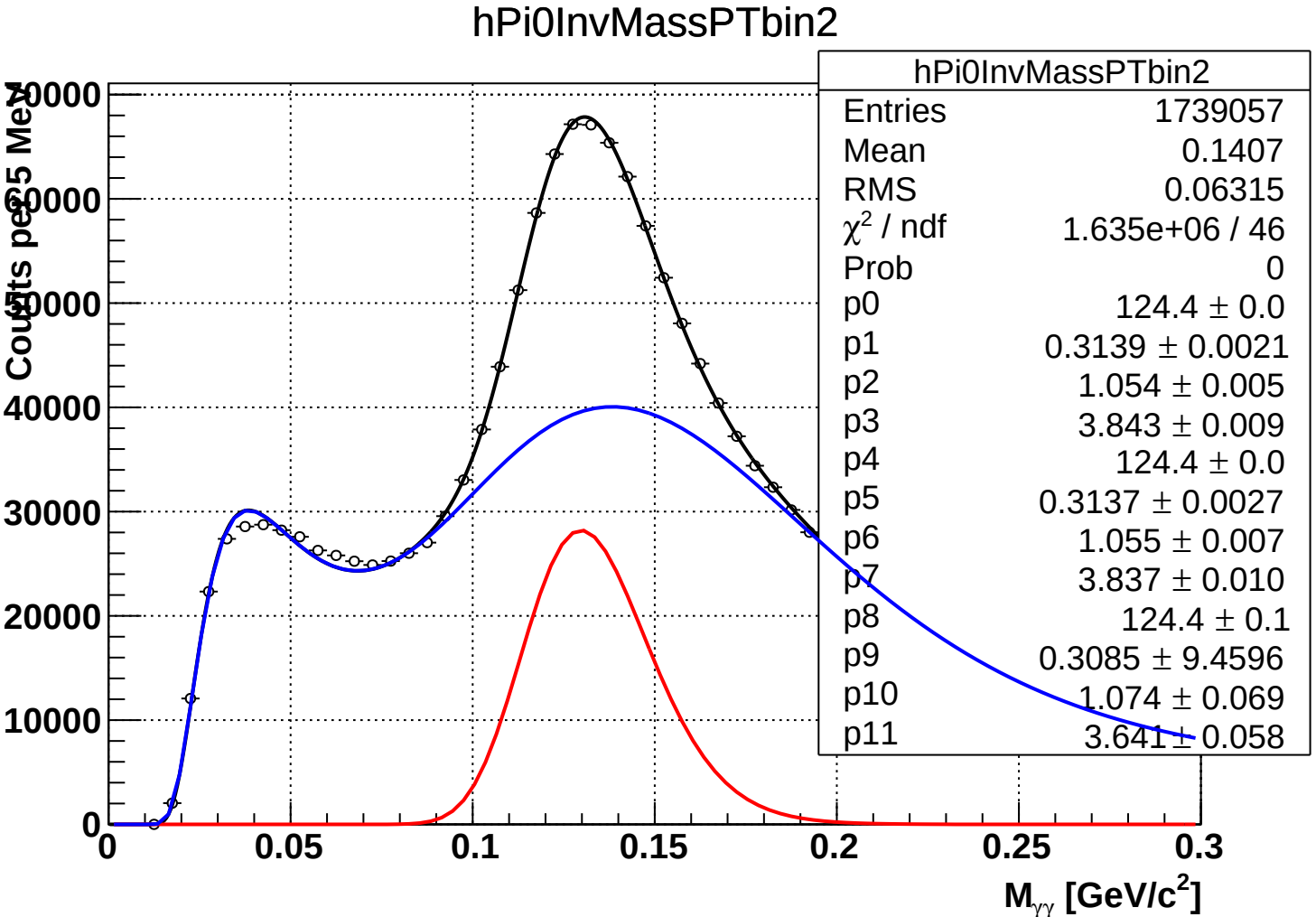
# $M_{\gamma\gamma}$ vs. Seed-strip energy Diff

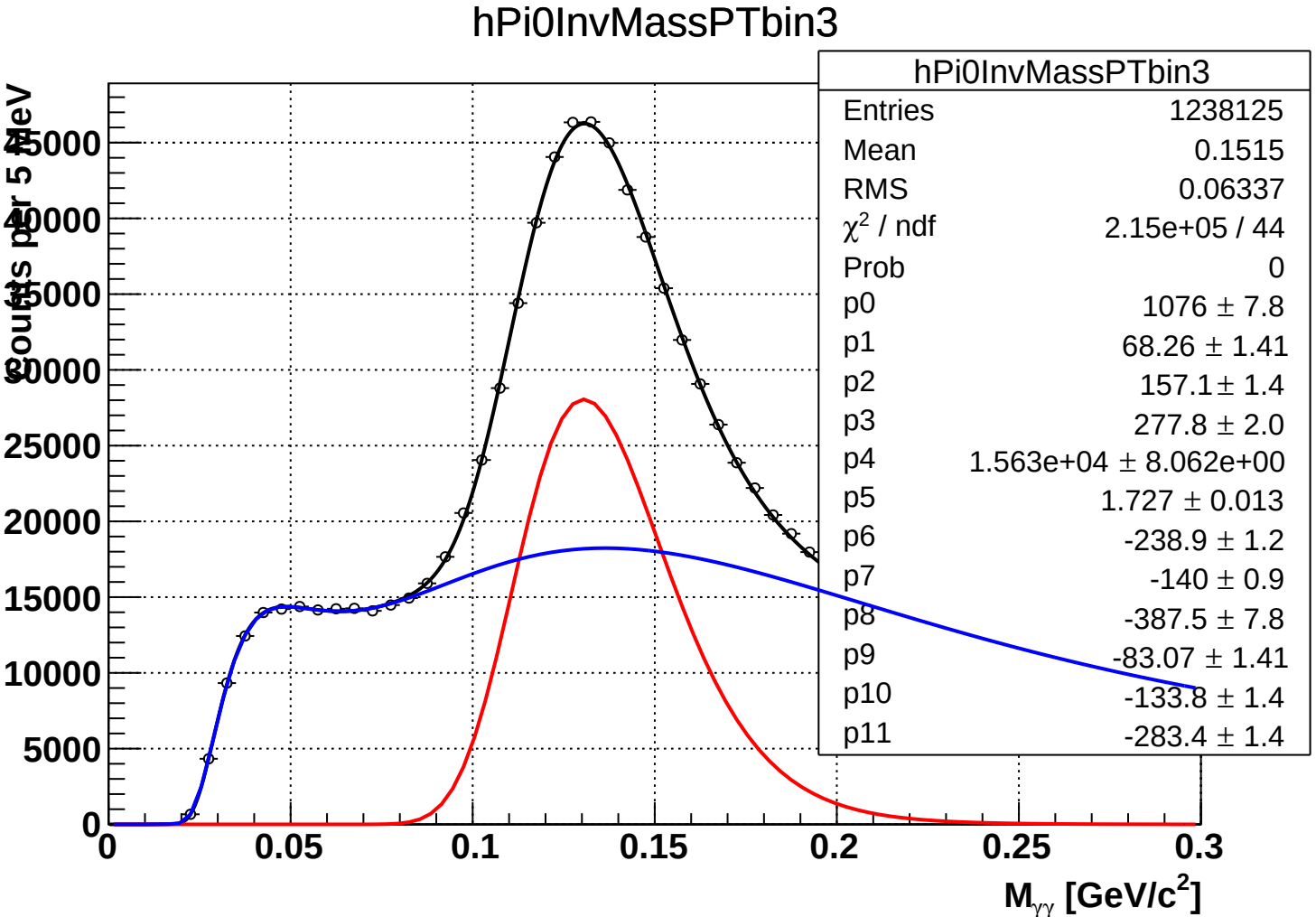


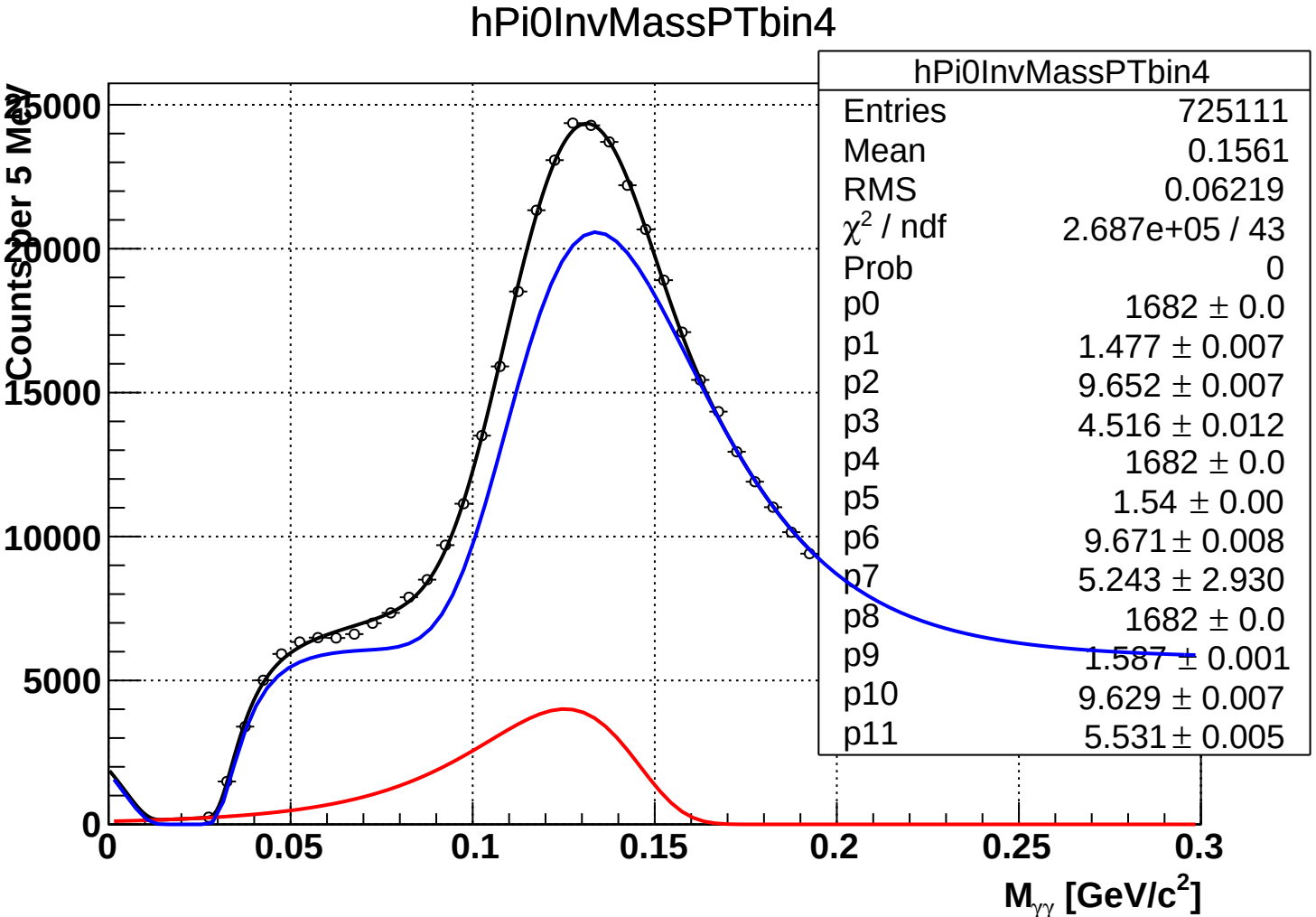

$\pi^0$ candidate global position x vs. y
hPi0Pos
Entries 6553388
Mean x -4.105
Mean y 3.935
RMS x 97.37
RMS y 97.39
y [cm]
x [cm]
250
200
150
100
50
0
-50
-100
-150
-200
-250
3000
2000
1000
0

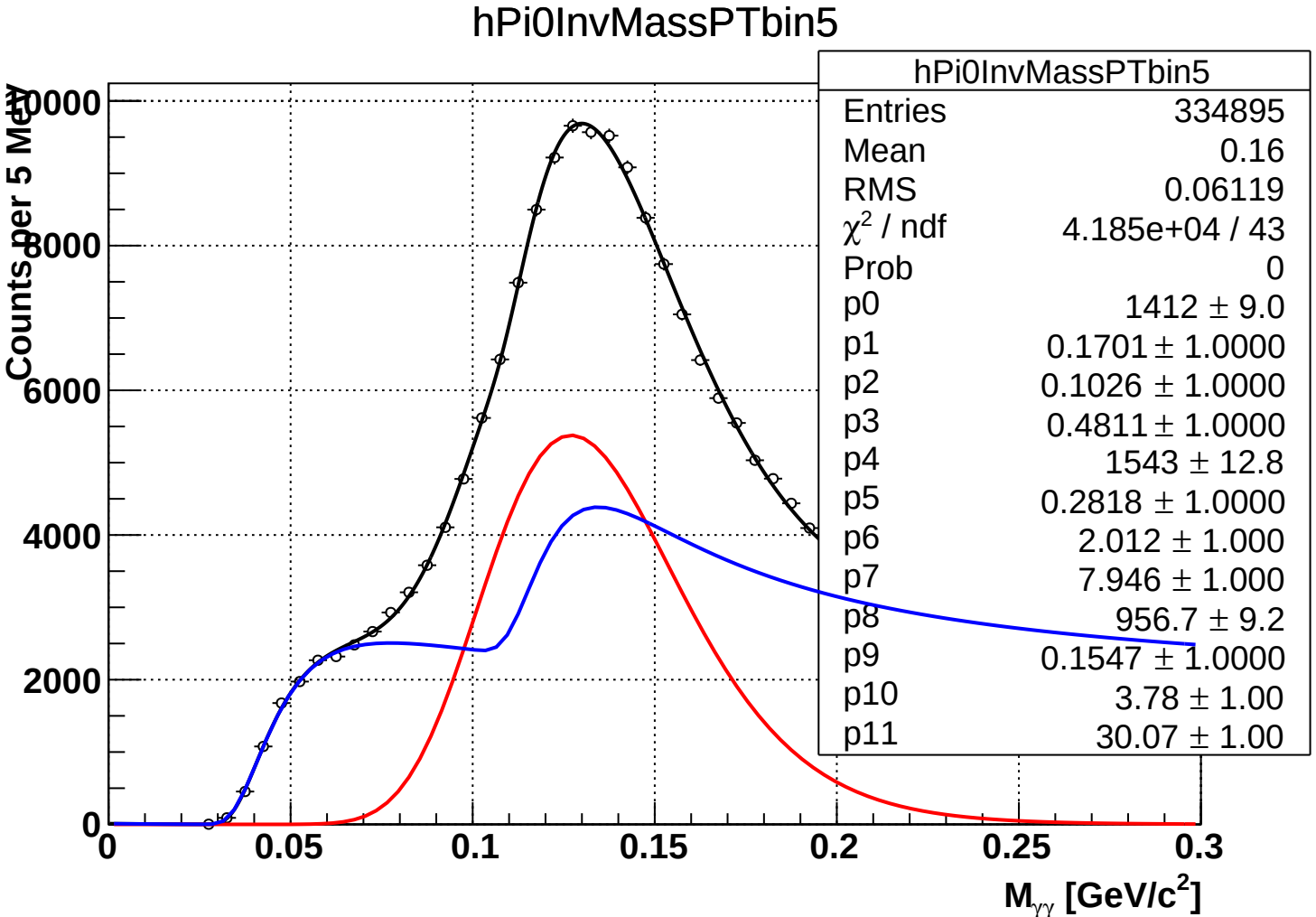

$\pi^0$ candidate global position x vs. y
hPi0Pos
Entries 6553388
Mean x -4.105
Mean y 3.935
RMS x 97.37
RMS y 97.39
y [cm]
x [cm]
250
200
150
100
50
0
-50
-100
-150
-200
-250
3000
2000
1000
0

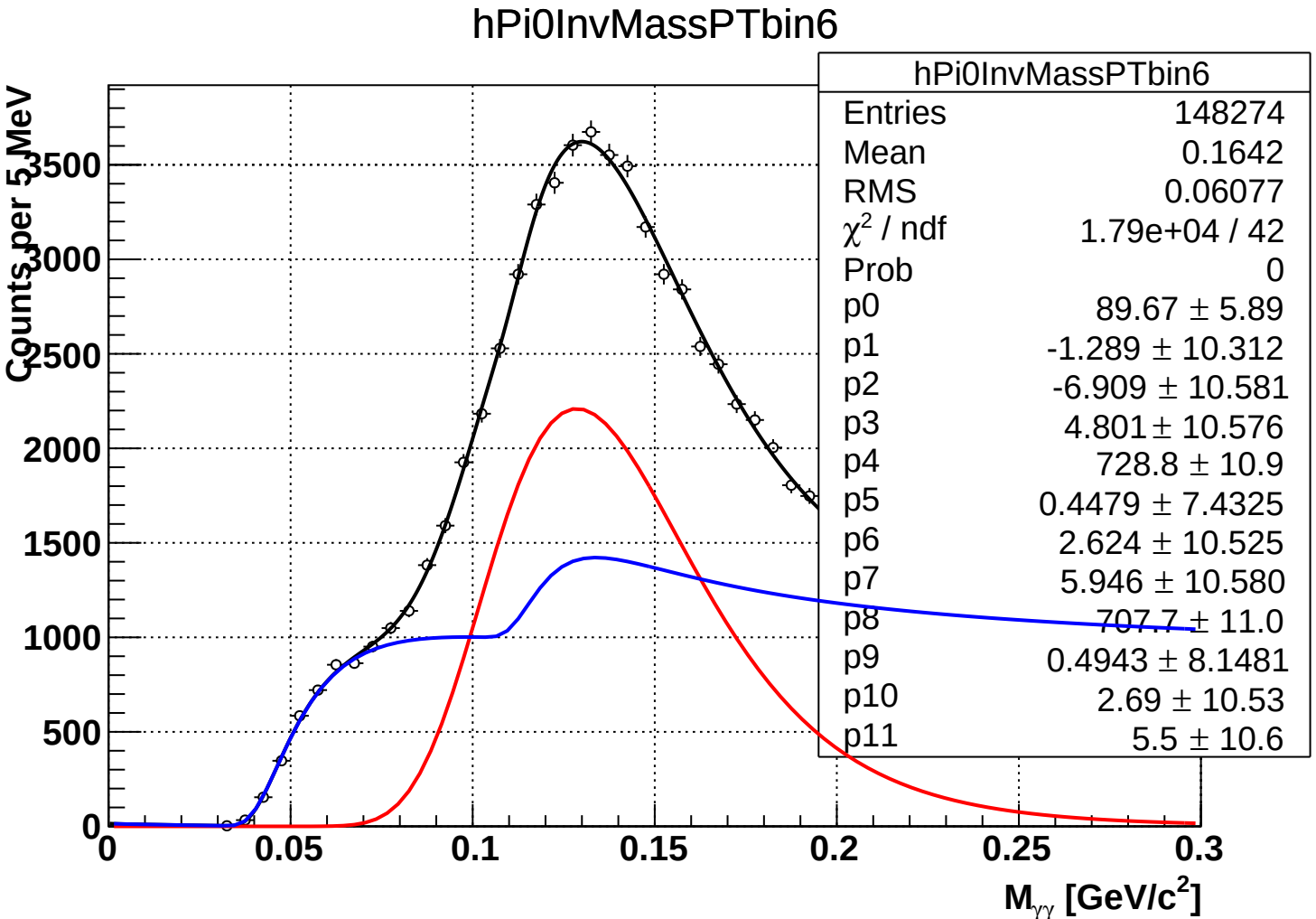

hPi0InvMassPTbin1
hPi0InvMassPTbin1
Entries 2235942
Mean 0.1181
RMS 0.05757
χ2 / ndf 8.615e+05 / 46
Prob 0
p0 1.18e+04 ± 0.0
p1 -0.007935 ± 0.000001
p2 0.7649 ± 0.0000
p3 -2.122 ± 0.000
p4 1.18e+04 ± 0.0
p5 -0.1856 ± 0.0000
p6 0.7858 ± 0.0000
p7 -1.589 ± 0.025
p8 1.18e+04 ± 0.0
p9 -0.1856 ± 0.0000
p10 0.7858 ± 0.0000
p11 -1.589 ± 0.281
Counts per 5 MeV
0
10000
20000
30000
40000
50000
60000
70000
80000
90000
0
0.05
0.1
0.15
0.2
0.25
0.3
Mγγ [GeV/c2]

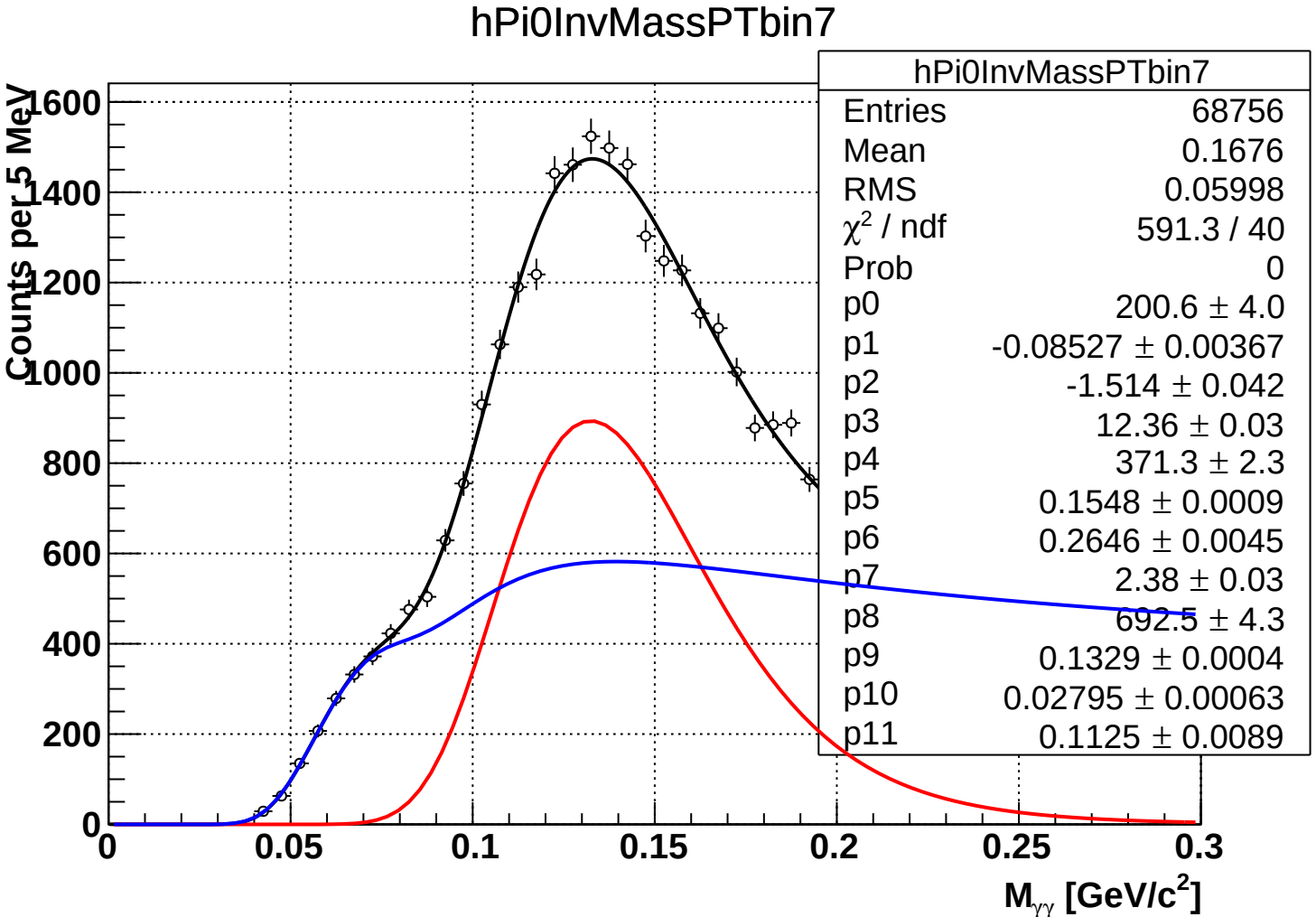

hPi0InvMassPTbin2
hPi0InvMassPTbin2
Entries 1739057
Mean 0.1407
RMS 0.06315
χ² / ndf 1.635e+06 / 46
Prob 0
p0 124.4 ± 0.0
p1 0.3139 ± 0.0021
p2 1.054 ± 0.005
p3 3.843 ± 0.009
p4 124.4 ± 0.0
p5 0.3137 ± 0.0027
p6 1.055 ± 0.007
p7 3.837 ± 0.010
p8 124.4 ± 0.1
p9 0.3085 ± 9.4596
p10 1.074 ± 0.069
p11 3.641 ± 0.058
Counts per 5 MeV
0
10000
20000
30000
40000
50000
60000
70000
0
0.05
0.1
0.15
0.2
0.25
0.3
M_γγ [GeV/c²]

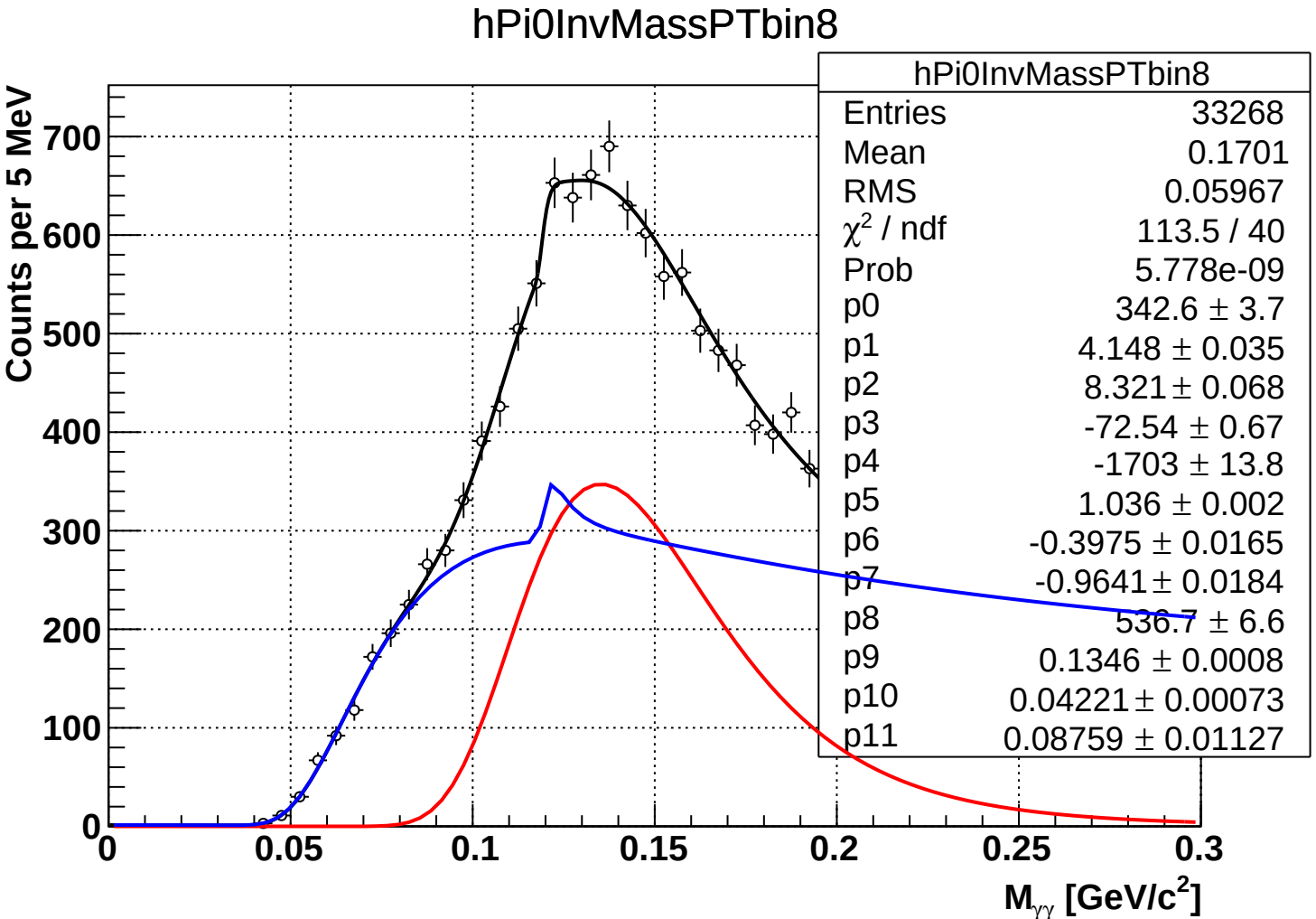

hPi0InvMassPTbin3
hPi0InvMassPTbin3
Entries 1238125
Mean 0.1515
RMS 0.06337
χ² / ndf 2.15e+05 / 44
Prob 0
p0 1076 ± 7.8
p1 68.26 ± 1.41
p2 157.1 ± 1.4
p3 277.8 ± 2.0
p4 1.563e+04 ± 8.062e+00
p5 1.727 ± 0.013
p6 -238.9 ± 1.2
p7 -140 ± 0.9
p8 -387.5 ± 7.8
p9 -83.07 ± 1.41
p10 -133.8 ± 1.4
p11 -283.4 ± 1.4
counts per 5 MeV
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
0
0.05
0.1
0.15
0.2
0.25
0.3
M_γγ [GeV/c²]

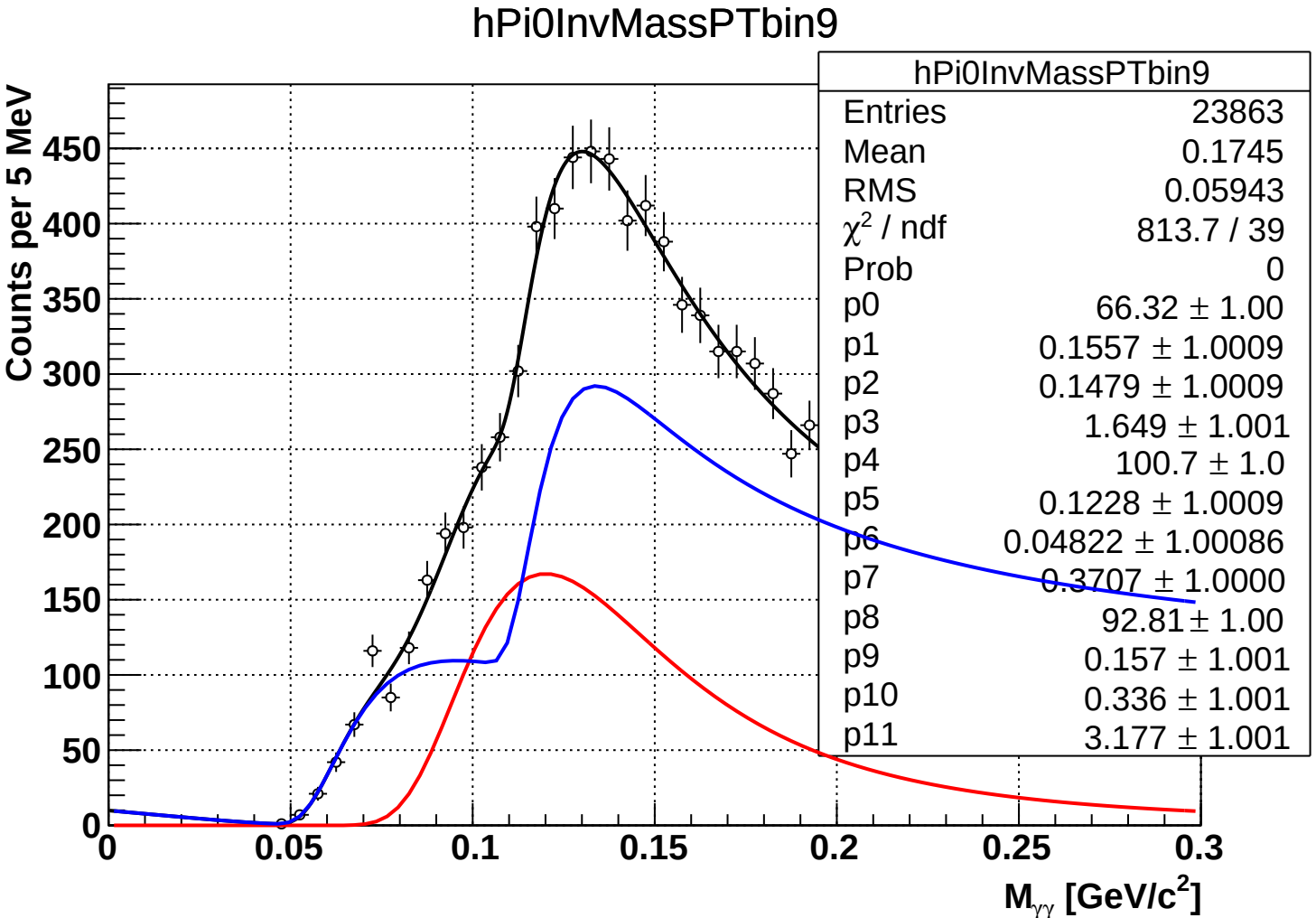

hPi0InvMassPTbin4
Counts per 5 MeV
25000
20000
15000
10000
5000
0
0
0.05
0.1
0.15
0.2
0.25
0.3
$M_{\gamma\gamma}$ [GeV/$c^2$]
hPi0InvMassPTbin4
Entries 725111
Mean 0.1561
RMS 0.06219
$\chi^2$ / ndf 2.687e+05 / 43
Prob 0
p0 1682 ± 0.0
p1 1.477 ± 0.007
p2 9.652 ± 0.007
p3 4.516 ± 0.012
p4 1682 ± 0.0
p5 1.54 ± 0.00
p6 9.671 ± 0.008
p7 5.243 ± 2.930
p8 1682 ± 0.0
p9 1.587 ± 0.001
p10 9.629 ± 0.007
p11 5.531 ± 0.005

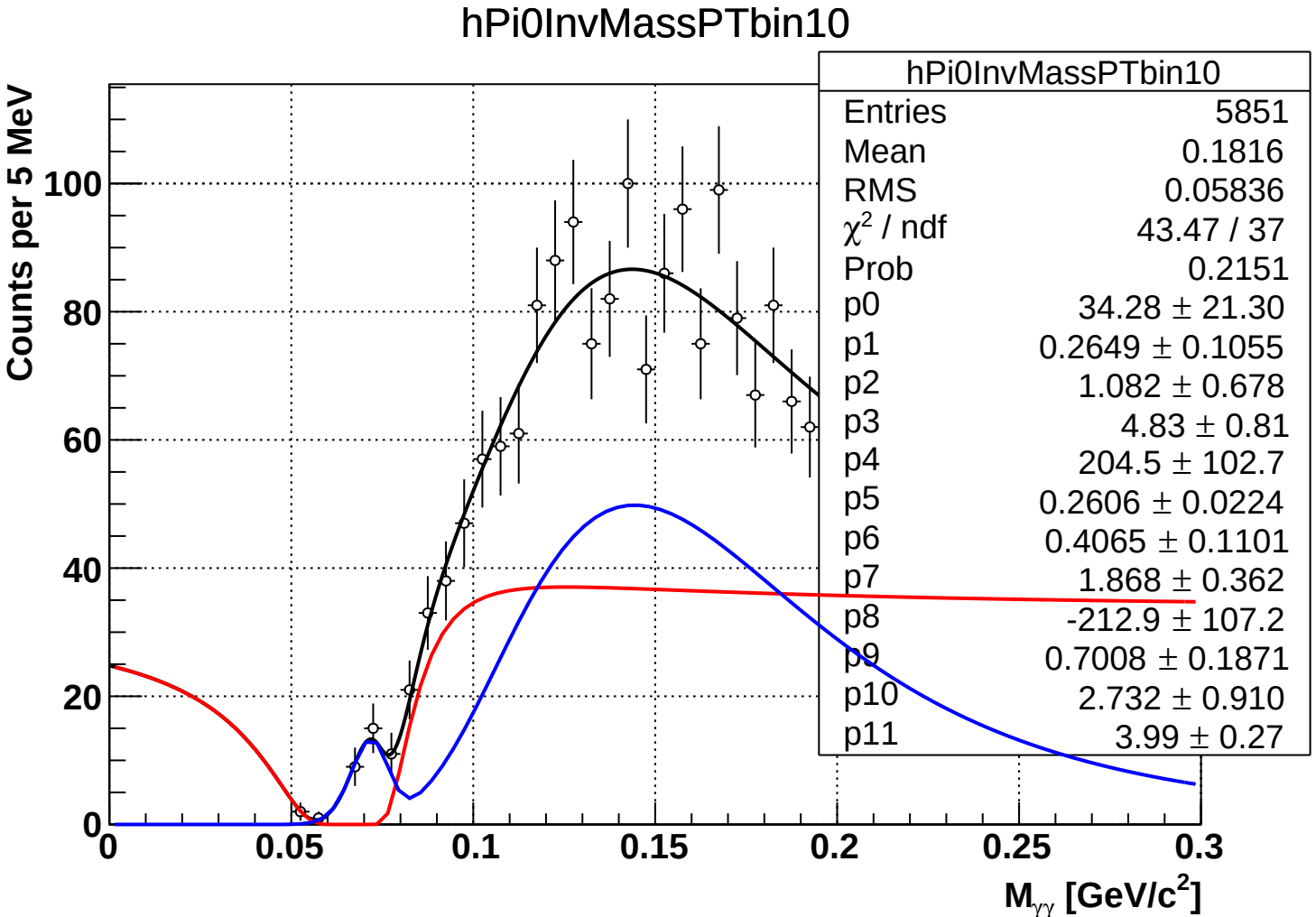

hPi0InvMassPTbin5
hPi0InvMassPTbin5
Entries 334895
Mean 0.16
RMS 0.06119
χ² / ndf 4.185e+04 / 43
Prob 0
p0 1412 ± 9.0
p1 0.1701 ± 1.0000
p2 0.1026 ± 1.0000
p3 0.4811 ± 1.0000
p4 1543 ± 12.8
p5 0.2818 ± 1.0000
p6 2.012 ± 1.000
p7 7.946 ± 1.000
p8 956.7 ± 9.2
p9 0.1547 ± 1.0000
p10 3.78 ± 1.00
p11 30.07 ± 1.00
Counts per 5 MeV
0
2000
4000
6000
8000
10000
0
0.05
0.1
0.15
0.2
0.25
0.3
M_γγ [GeV/c²]

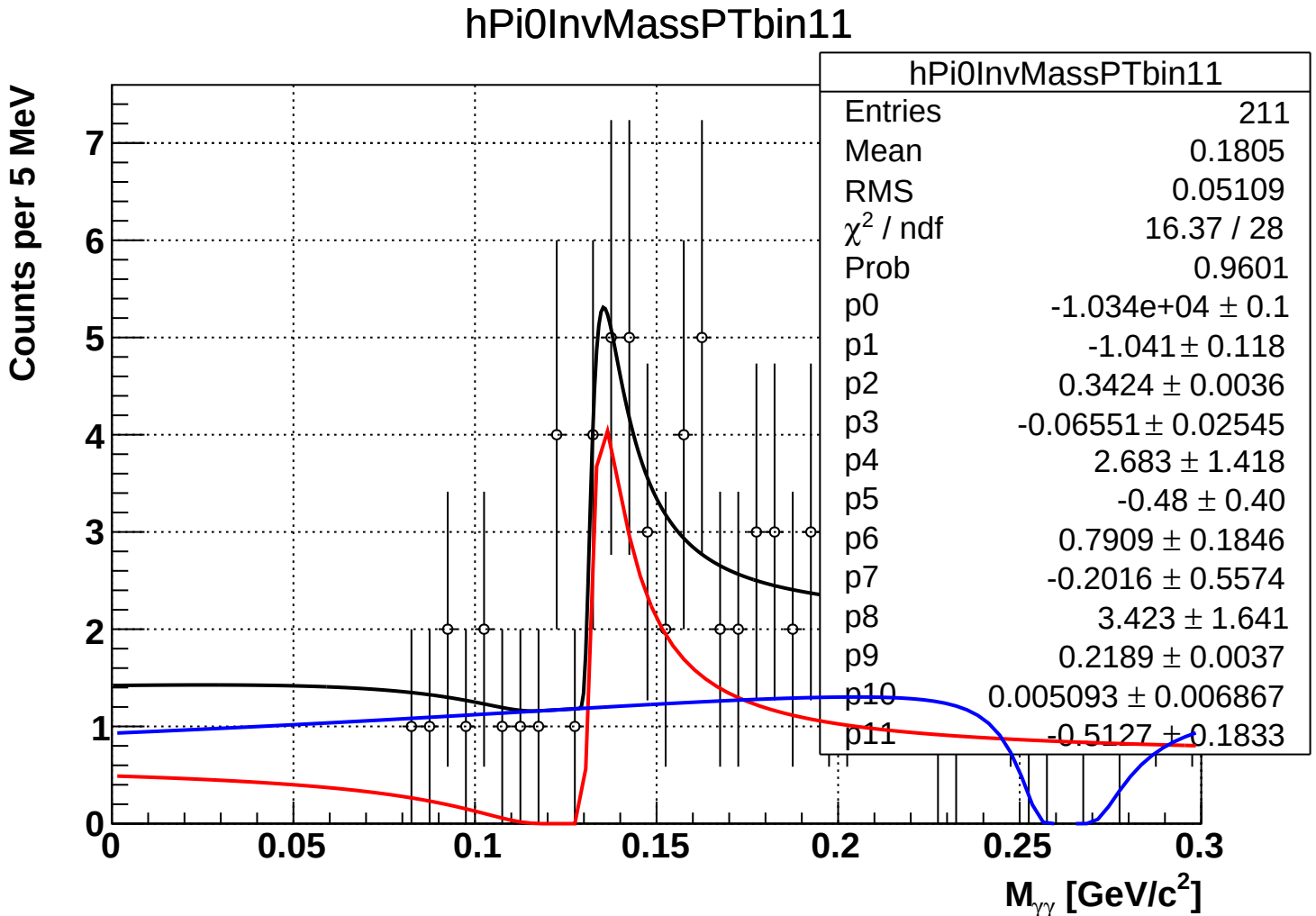

hPi0InvMassPTbin6
hPi0InvMassPTbin6
Entries 148274
Mean 0.1642
RMS 0.06077
χ² / ndf 1.79e+04 / 42
Prob 0
p0 89.67 ± 5.89
p1 -1.289 ± 10.312
p2 -6.909 ± 10.581
p3 4.801 ± 10.576
p4 728.8 ± 10.9
p5 0.4479 ± 7.4325
p6 2.624 ± 10.525
p7 5.946 ± 10.580
p8 707.7 ± 11.0
p9 0.4943 ± 8.1481
p10 2.69 ± 10.53
p11 5.5 ± 10.6
Counts per 5 MeV
0
500
1000
1500
2000
2500
3000
3500
0
0.05
0.1
0.15
0.2
0.25
0.3
M_γγ [GeV/c²]

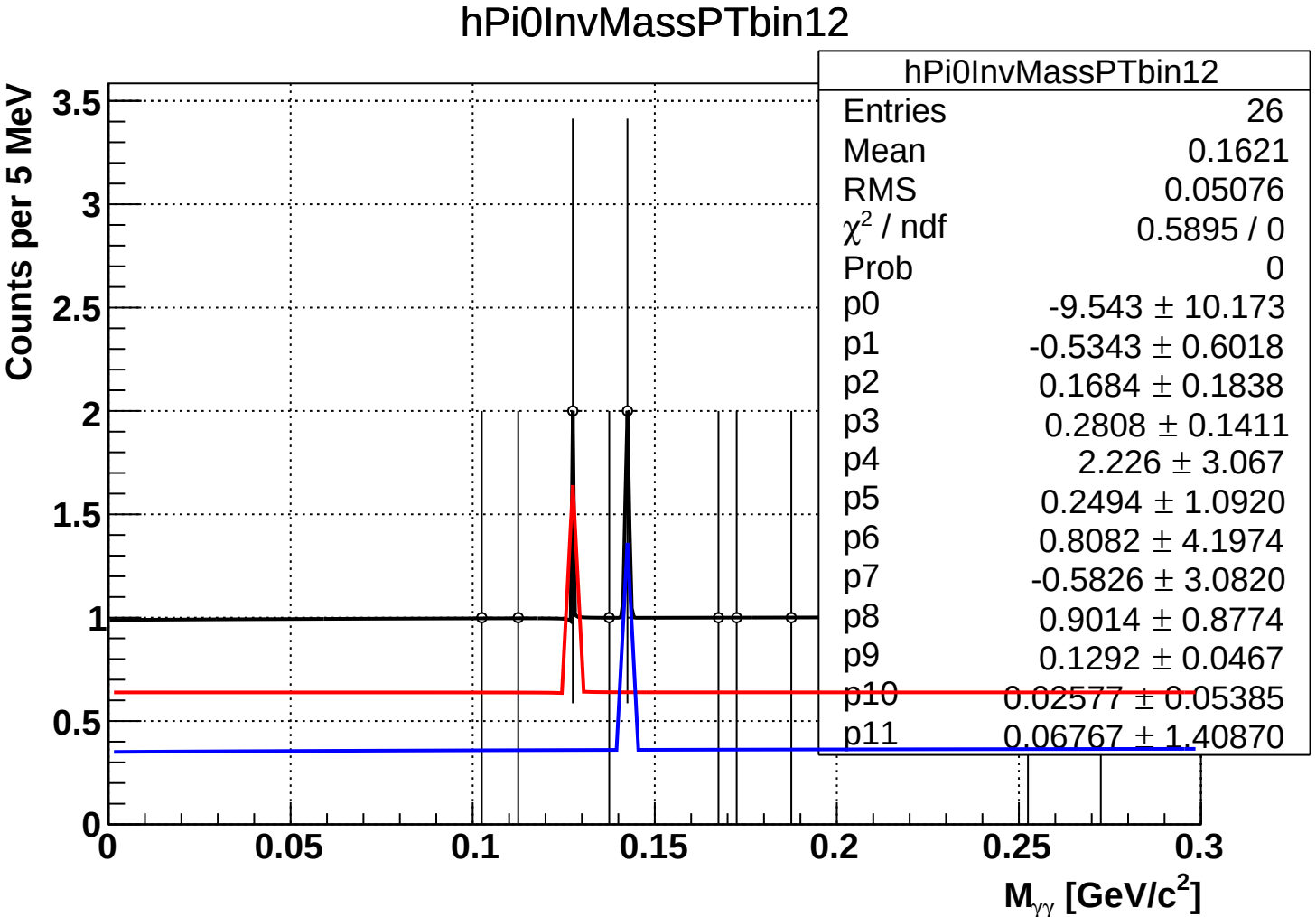

hPi0InvMassPTbin7
Counts per 5 MeV
1600
1400
1200
1000
800
600
400
200
0
0
0.05
0.1
0.15
0.2
0.25
0.3
$M_{\gamma\gamma}$ [GeV/$c^2$]
hPi0InvMassPTbin7
Entries 68756
Mean 0.1676
RMS 0.05998
$\chi^2$ / ndf 591.3 / 40
Prob 0
p0 200.6 ± 4.0
p1 -0.08527 ± 0.00367
p2 -1.514 ± 0.042
p3 12.36 ± 0.03
p4 371.3 ± 2.3
p5 0.1548 ± 0.0009
p6 0.2646 ± 0.0045
p7 2.38 ± 0.03
p8 692.5 ± 4.3
p9 0.1329 ± 0.0004
p10 0.02795 ± 0.00063
p11 0.1125 ± 0.0089

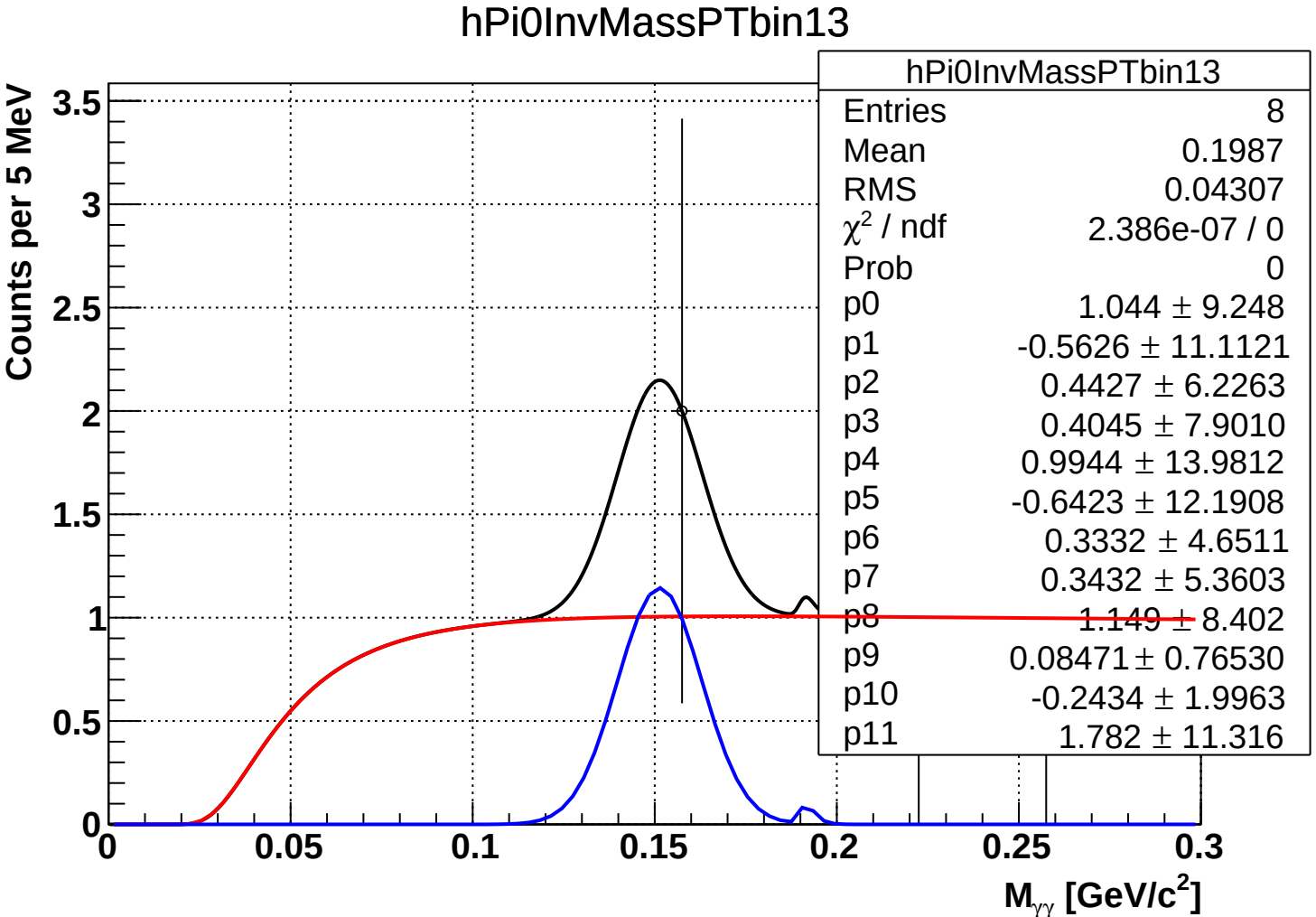

hPi0InvMassPTbin8
hPi0InvMassPTbin8
Entries 33268
Mean 0.1701
RMS 0.05967
χ² / ndf 113.5 / 40
Prob 5.778e-09
p0 342.6 ± 3.7
p1 4.148 ± 0.035
p2 8.321 ± 0.068
p3 -72.54 ± 0.67
p4 -1703 ± 13.8
p5 1.036 ± 0.002
p6 -0.3975 ± 0.0165
p7 -0.9641 ± 0.0184
p8 536.7 ± 6.6
p9 0.1346 ± 0.0008
p10 0.04221 ± 0.00073
p11 0.08759 ± 0.01127
Counts per 5 MeV
0
100
200
300
400
500
600
700
0
0.05
0.1
0.15
0.2
0.25
0.3
M_γγ [GeV/c²]


hPi0InvMassPTbin9
Counts per 5 MeV
$M_{\gamma\gamma}$ [GeV/c$^2$]
0
50
100
150
200
250
300
350
400
450
0
0.05
0.1
0.15
0.2
0.25
0.3
hPi0InvMassPTbin9
Entries 23863
Mean 0.1745
RMS 0.05943
$\chi^2$ / ndf 813.7 / 39
Prob 0
p0 66.32 ± 1.00
p1 0.1557 ± 1.0009
p2 0.1479 ± 1.0009
p3 1.649 ± 1.001
p4 100.7 ± 1.0
p5 0.1228 ± 1.0009
p6 0.04822 ± 1.00086
p7 0.3707 ± 1.0000
p8 92.81 ± 1.00
p9 0.157 ± 1.001
p10 0.336 ± 1.001
p11 3.177 ± 1.001


hPi0InvMassPTbin10
Counts per 5 MeV
0
20
40
60
80
100
0
0.05
0.1
0.15
0.2
0.25
0.3
$M_{\gamma\gamma}$ [GeV/$c^2$]
hPi0InvMassPTbin10
Entries 5851
Mean 0.1816
RMS 0.05836
$\chi^2$ / ndf 43.47 / 37
Prob 0.2151
p0 34.28 ± 21.30
p1 0.2649 ± 0.1055
p2 1.082 ± 0.678
p3 4.83 ± 0.81
p4 204.5 ± 102.7
p5 0.2606 ± 0.0224
p6 0.4065 ± 0.1101
p7 1.868 ± 0.362
p8 -212.9 ± 107.2
p9 0.7008 ± 0.1871
p10 2.732 ± 0.910
p11 3.99 ± 0.27


hPi0InvMassPTbin11
Counts per 5 MeV
0
1
2
3
4
5
6
7
0
0.05
0.1
0.15
0.2
0.25
0.3
$M_{\gamma\gamma}$ [GeV/c$^2$]
hPi0InvMassPTbin11
Entries 211
Mean 0.1805
RMS 0.05109
$\chi^2$ / ndf 16.37 / 28
Prob 0.9601
p0 -1.034e+04 ± 0.1
p1 -1.041 ± 0.118
p2 0.3424 ± 0.0036
p3 -0.06551 ± 0.02545
p4 2.683 ± 1.418
p5 -0.48 ± 0.40
p6 0.7909 ± 0.1846
p7 -0.2016 ± 0.5574
p8 3.423 ± 1.641
p9 0.2189 ± 0.0037
p10 0.005093 ± 0.006867
p11 -0.5127 ± 0.1833


hPi0InvMassPTbin12
Counts per 5 MeV
3.5
3
2.5
2
1.5
1
0.5
0
0
0.05
0.1
0.15
0.2
0.25
0.3
$M_{\gamma\gamma}$ [GeV/$c^2$]
hPi0InvMassPTbin12
Entries 26
Mean 0.1621
RMS 0.05076
$\chi^2$ / ndf 0.5895 / 0
Prob 0
p0 -9.543 ± 10.173
p1 -0.5343 ± 0.6018
p2 0.1684 ± 0.1838
p3 0.2808 ± 0.1411
p4 2.226 ± 3.067
p5 0.2494 ± 1.0920
p6 0.8082 ± 4.1974
p7 -0.5826 ± 3.0820
p8 0.9014 ± 0.8774
p9 0.1292 ± 0.0467
p10 0.02577 ± 0.05385
p11 0.06767 ± 1.40870


hPi0InvMassPTbin13
Counts per 5 MeV
3.5
3
2.5
2
1.5
1
0.5
0
0
0.05
0.1
0.15
0.2
0.25
0.3
$M_{\gamma\gamma}$ [GeV/$c^2$]
hPi0InvMassPTbin13
Entries 8
Mean 0.1987
RMS 0.04307
$\chi^2$ / ndf 2.386e-07 / 0
Prob 0
p0 1.044 ± 9.248
p1 -0.5626 ± 11.1121
p2 0.4427 ± 6.2263
p3 0.4045 ± 7.9010
p4 0.9944 ± 13.9812
p5 -0.6423 ± 12.1908
p6 0.3332 ± 4.6511
p7 0.3432 ± 5.3603
p8 1.149 ± 8.402
p9 0.08471 ± 0.76530
p10 -0.2434 ± 1.9963
p11 1.782 ± 11.316