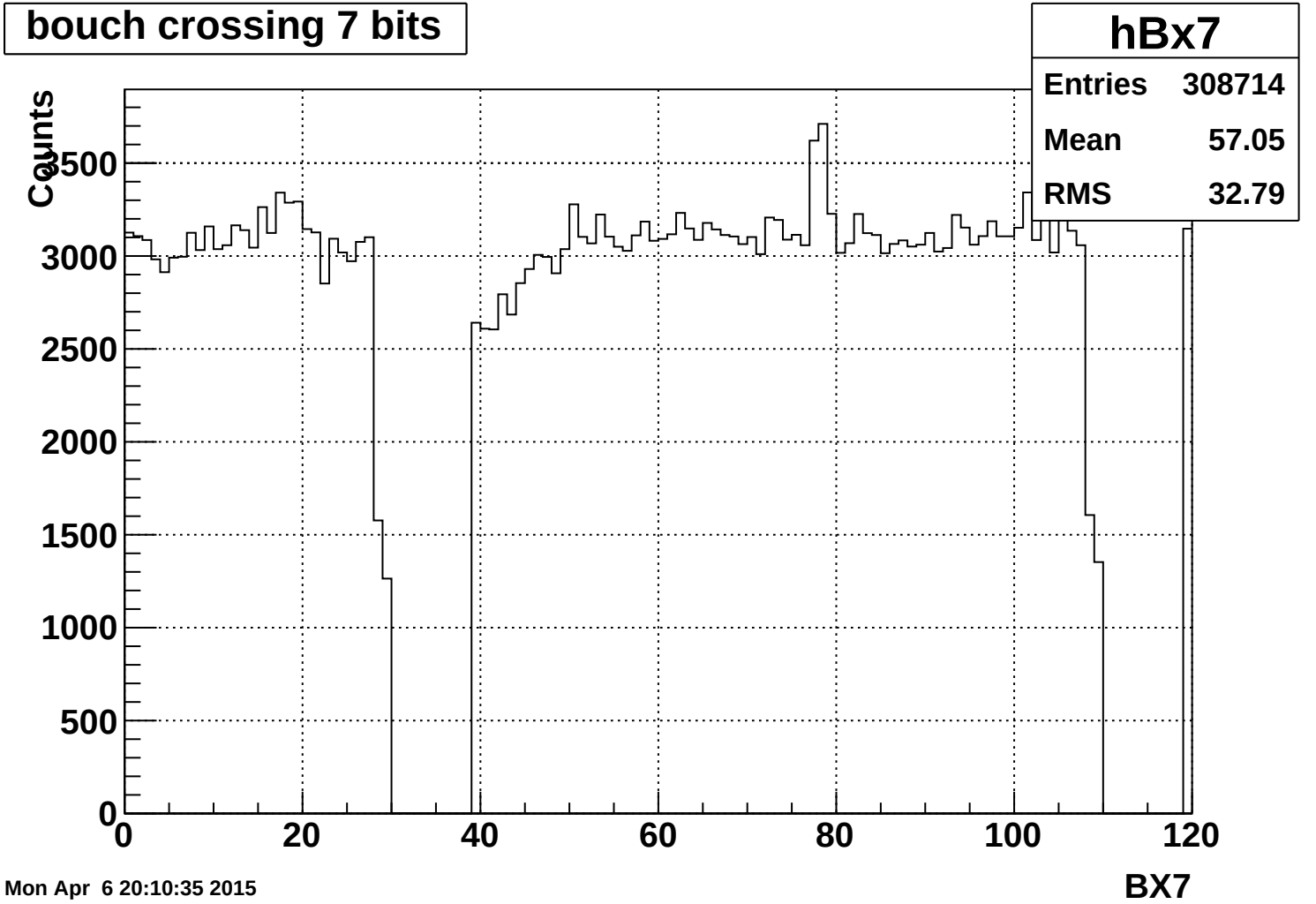
bouch crossing 7 bits
hBx7
Entries 308714
Mean 57.05
RMS 32.79
Counts
3500
3000
2500
2000
1500
1000
500
0
0
20
40
60
80
100
120
BX7
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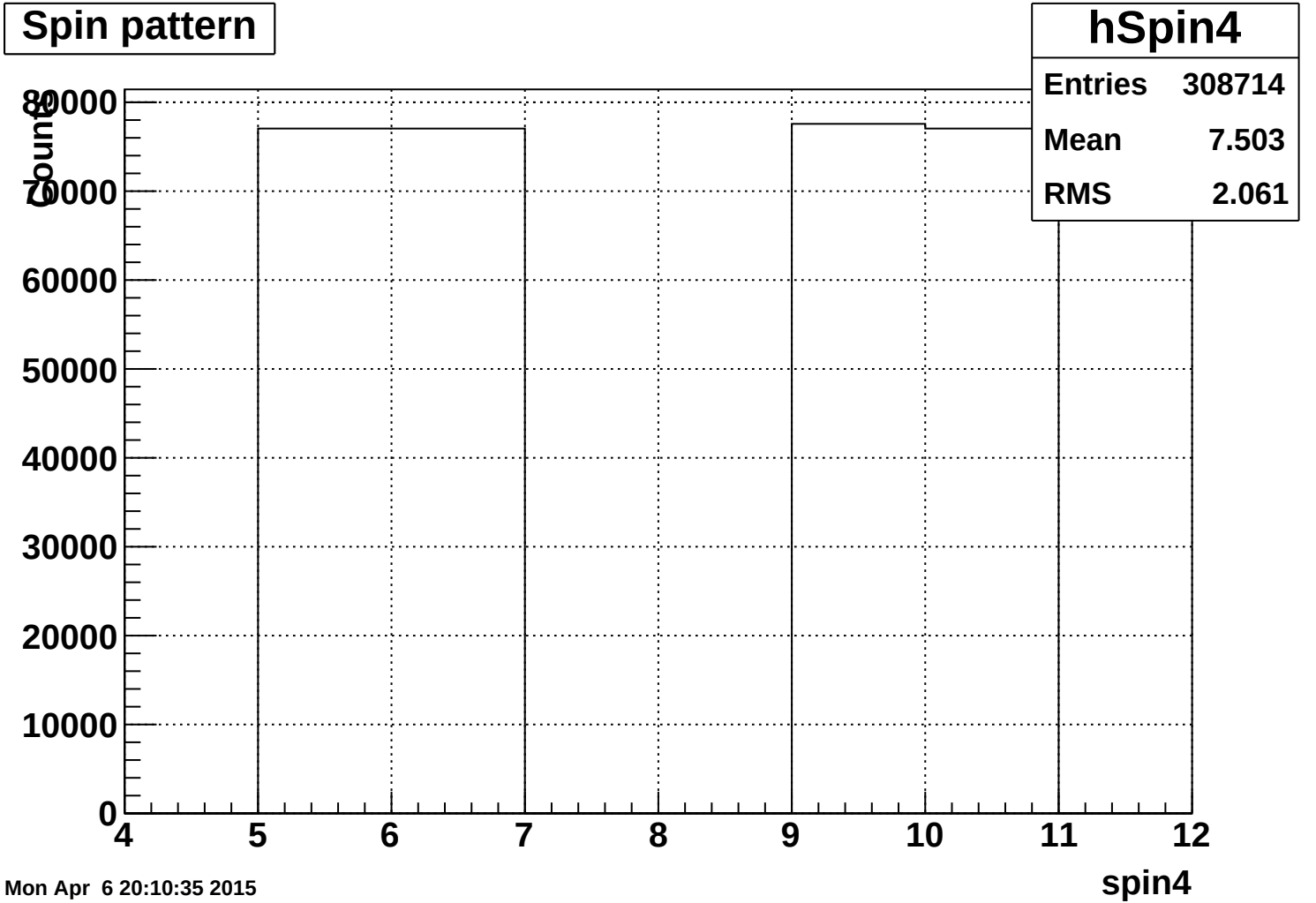
Spin pattern
hSpin4
Entries 308714
Mean 7.503
RMS 2.061
Counts
80000
70000
60000
50000
40000
30000
20000
10000
0
4
5
6
7
8
9
10
11
12
spin4
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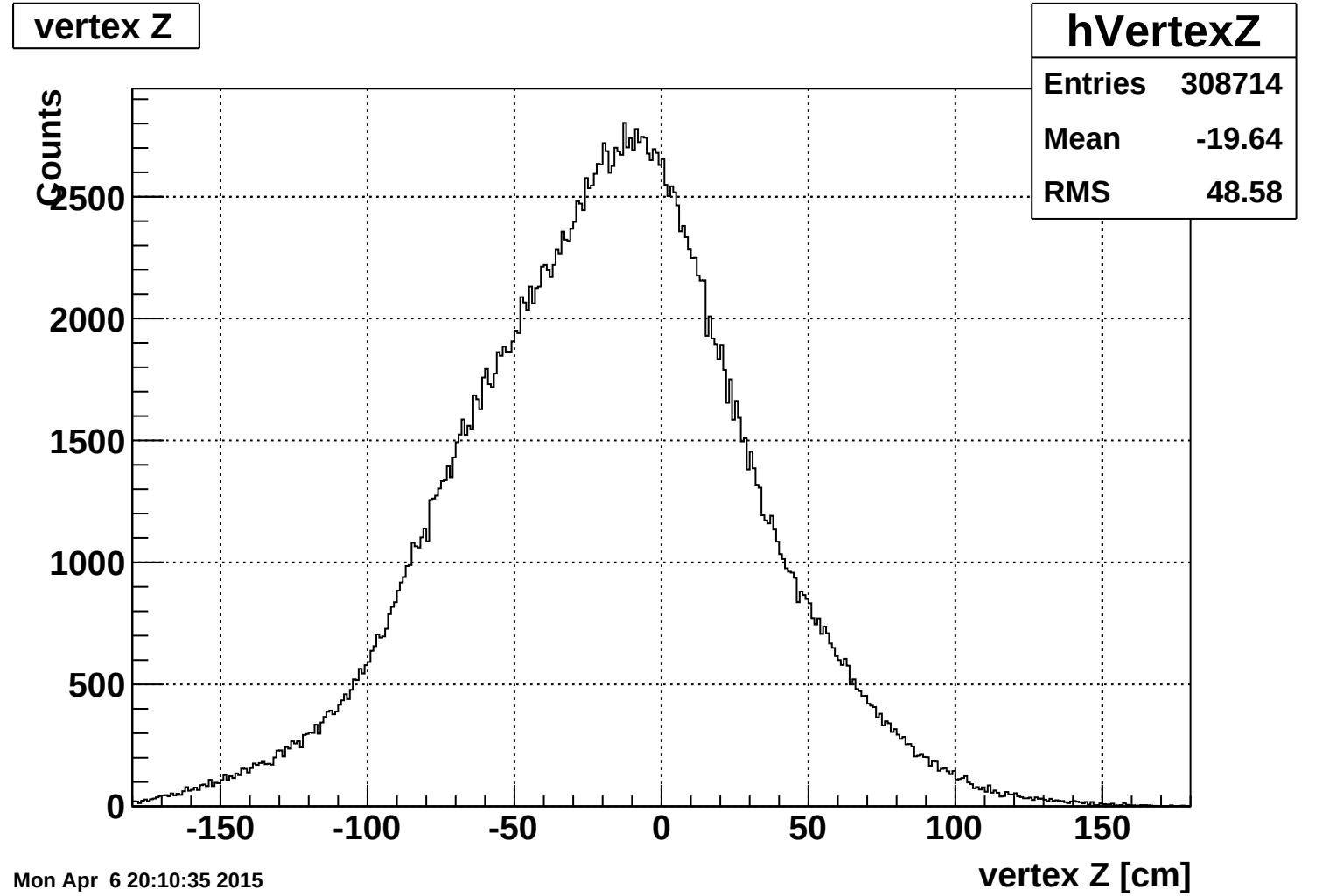
vertex Z
hVertexZ
Entries 308714
Mean -19.64
RMS 48.58
Counts
2500
2000
1500
1000
500
0
-150
-100
-50
0
50
100
150
vertex Z [cm]
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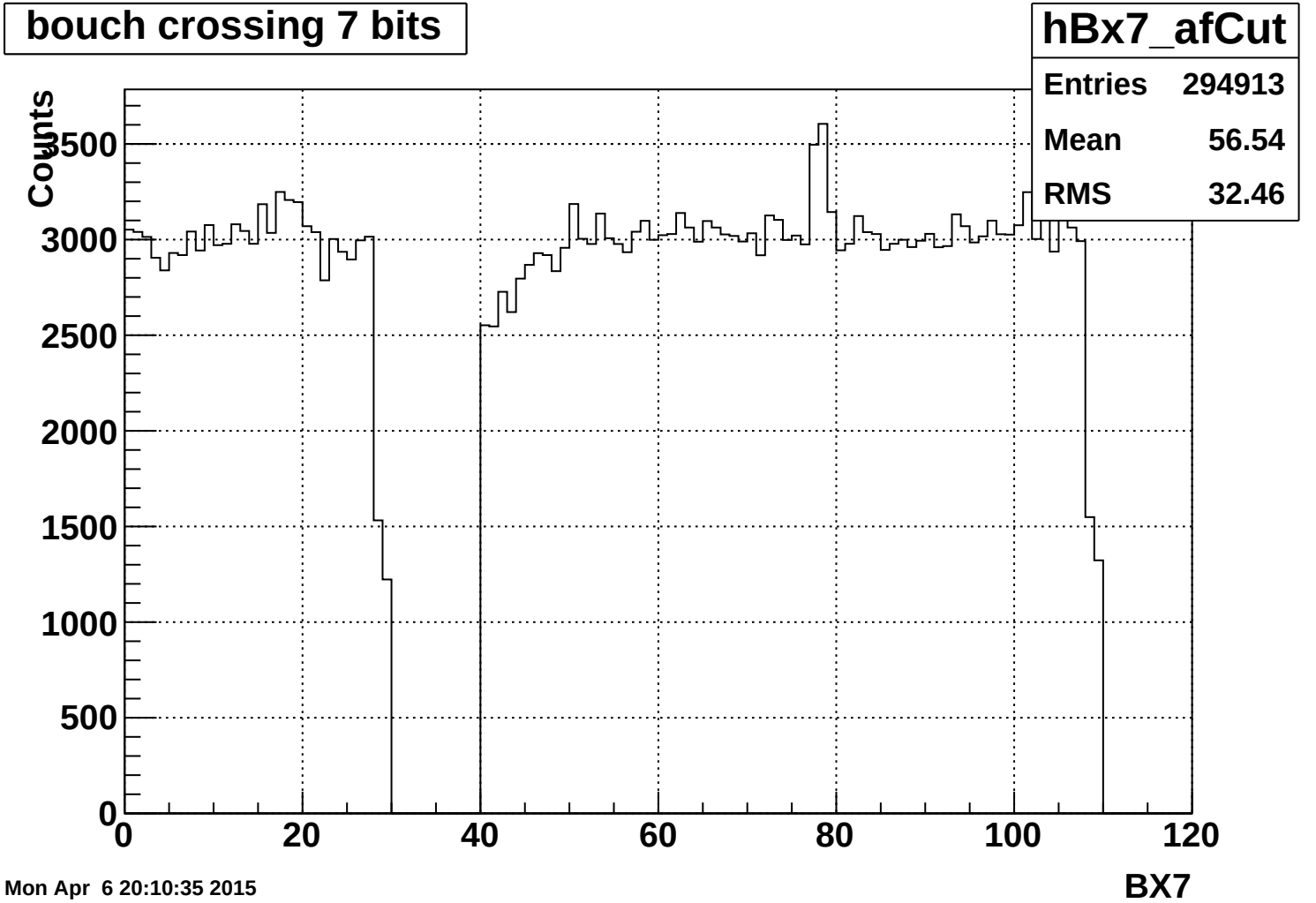
bouch crossing 7 bits
hBx7_afCut
Entries 294913
Mean 56.54
RMS 32.46
Counts
3500
3000
2500
2000
1500
1000
500
0
0
20
40
60
80
100
120
BX7
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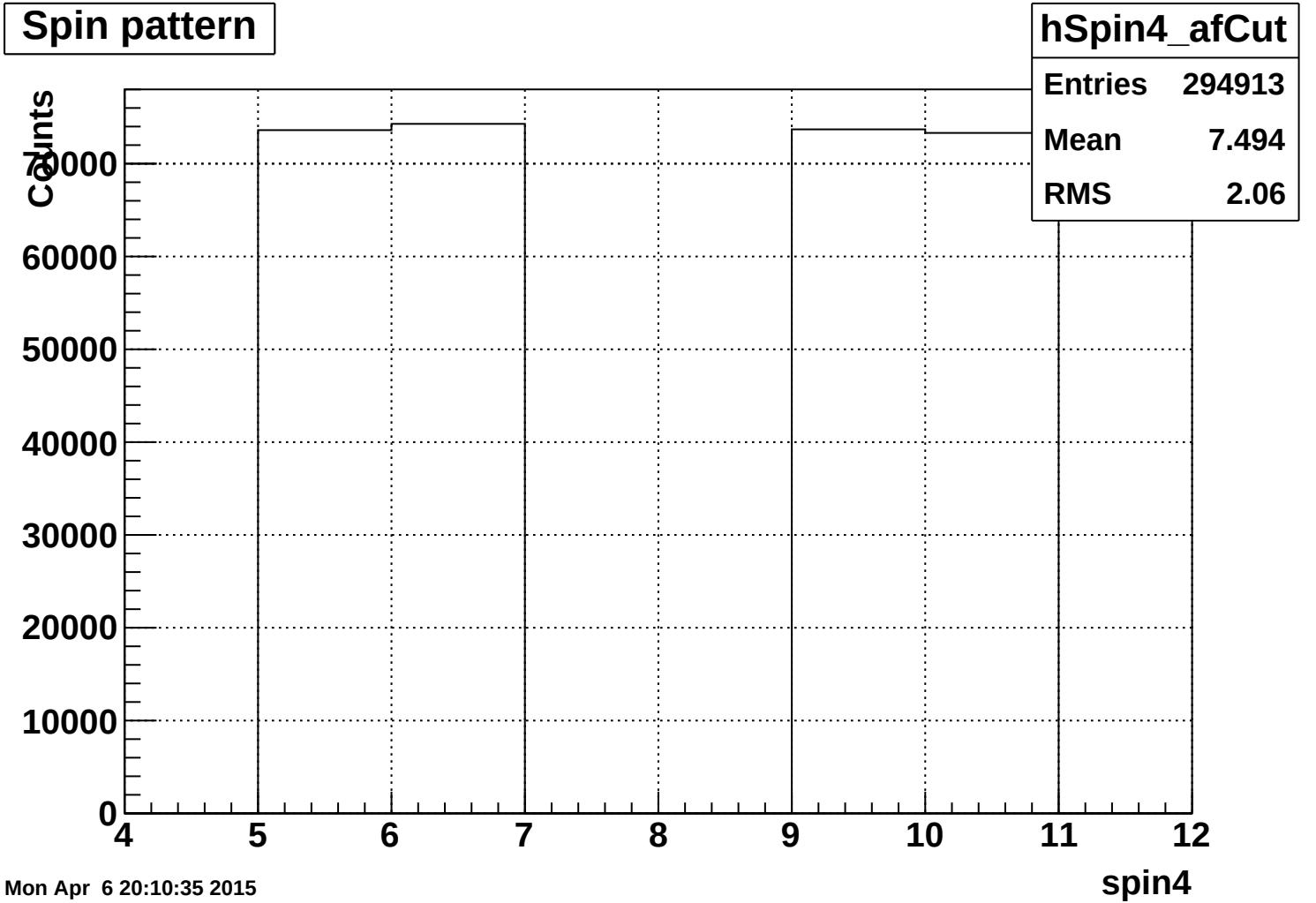
Spin pattern
hSpin4_afCut
Entries 294913
Mean 7.494
RMS 2.06
Counts
70000
60000
50000
40000
30000
20000
10000
0
4
5
6
7
8
9
10
11
12
spin4
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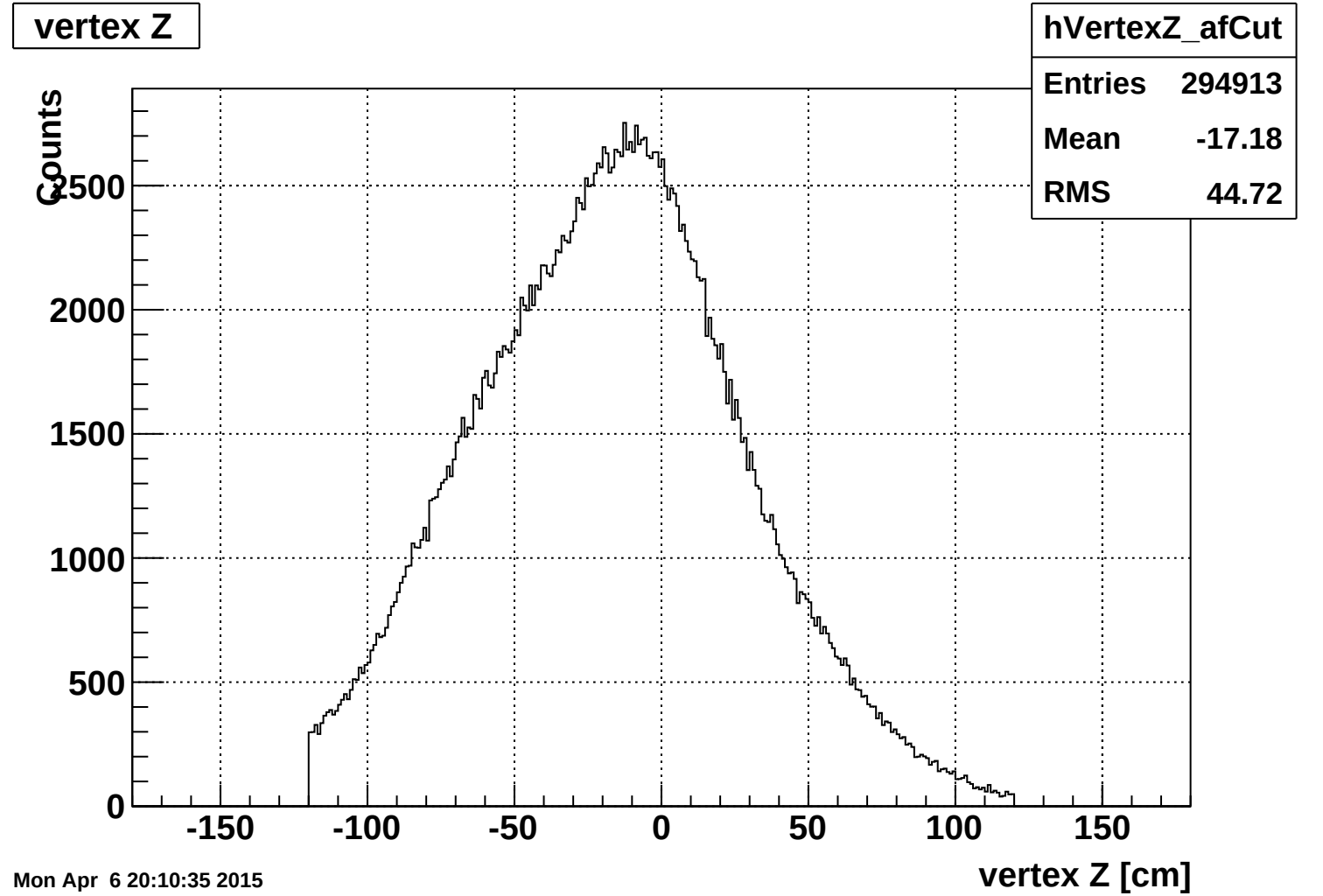
vertex Z
hVertexZ_afCut
Entries 294913
Mean -17.18
RMS 44.72
Counts
2500
2000
1500
1000
500
0
-150
-100
-50
0
50
100
150
vertex Z [cm]
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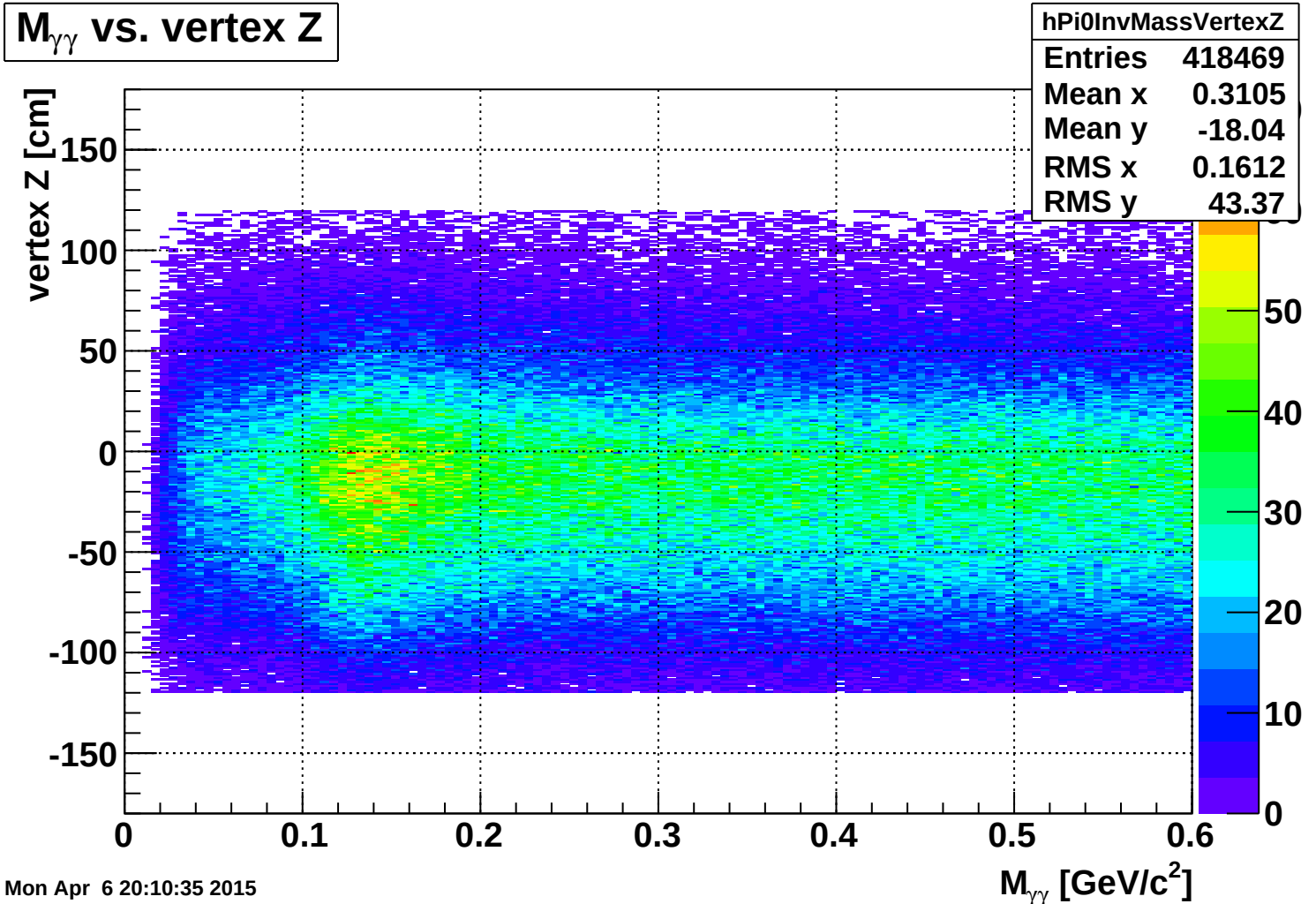
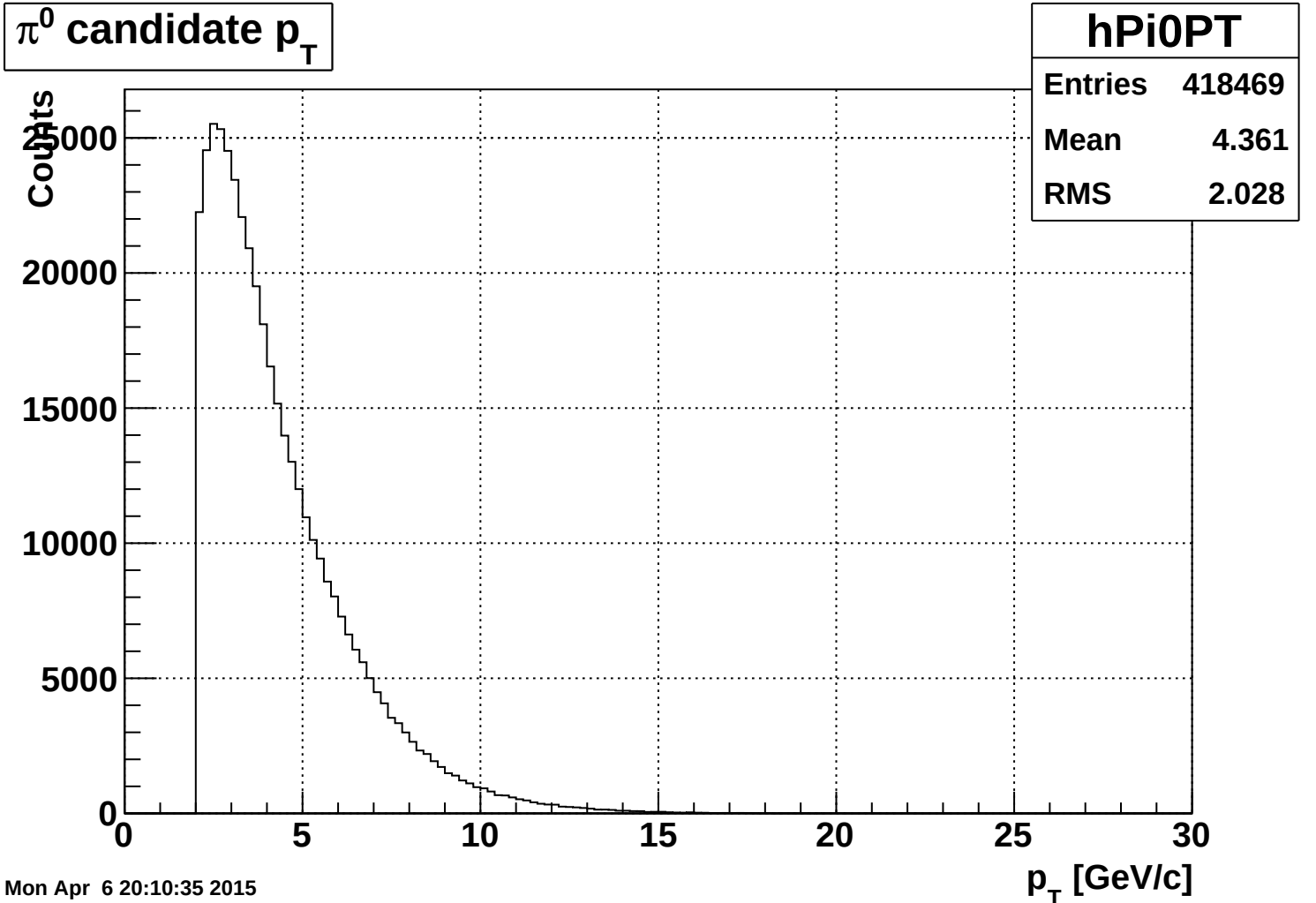
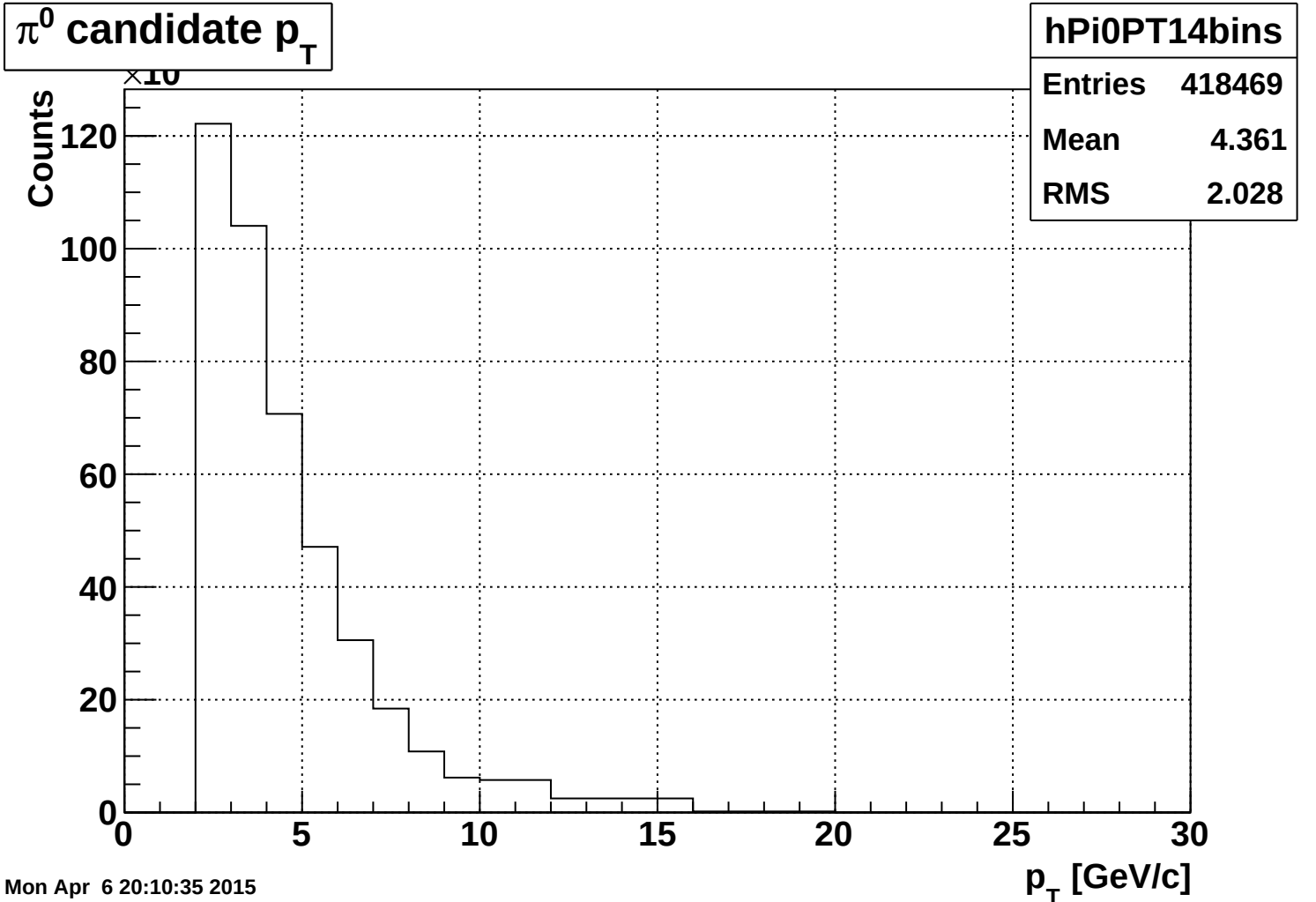
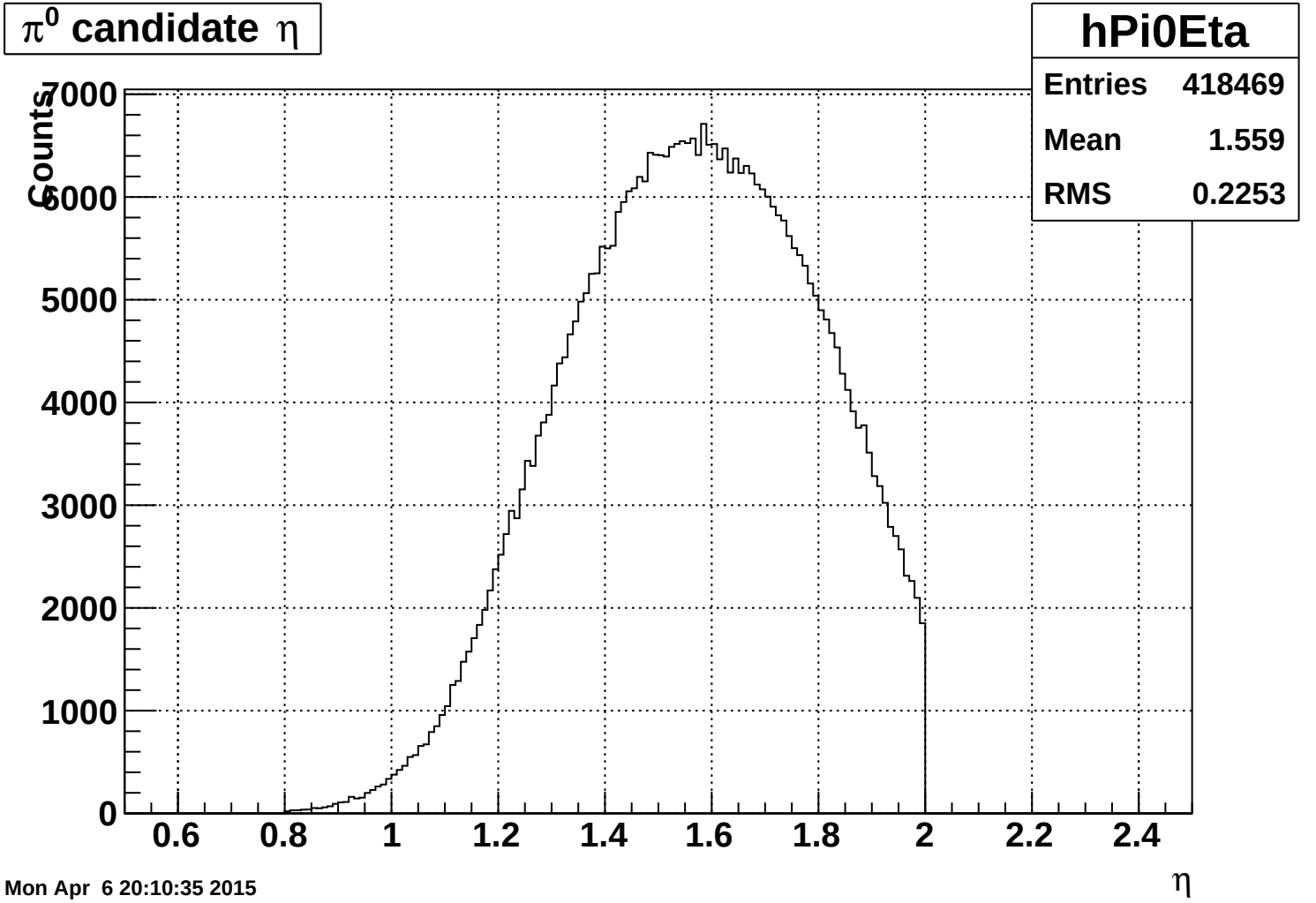
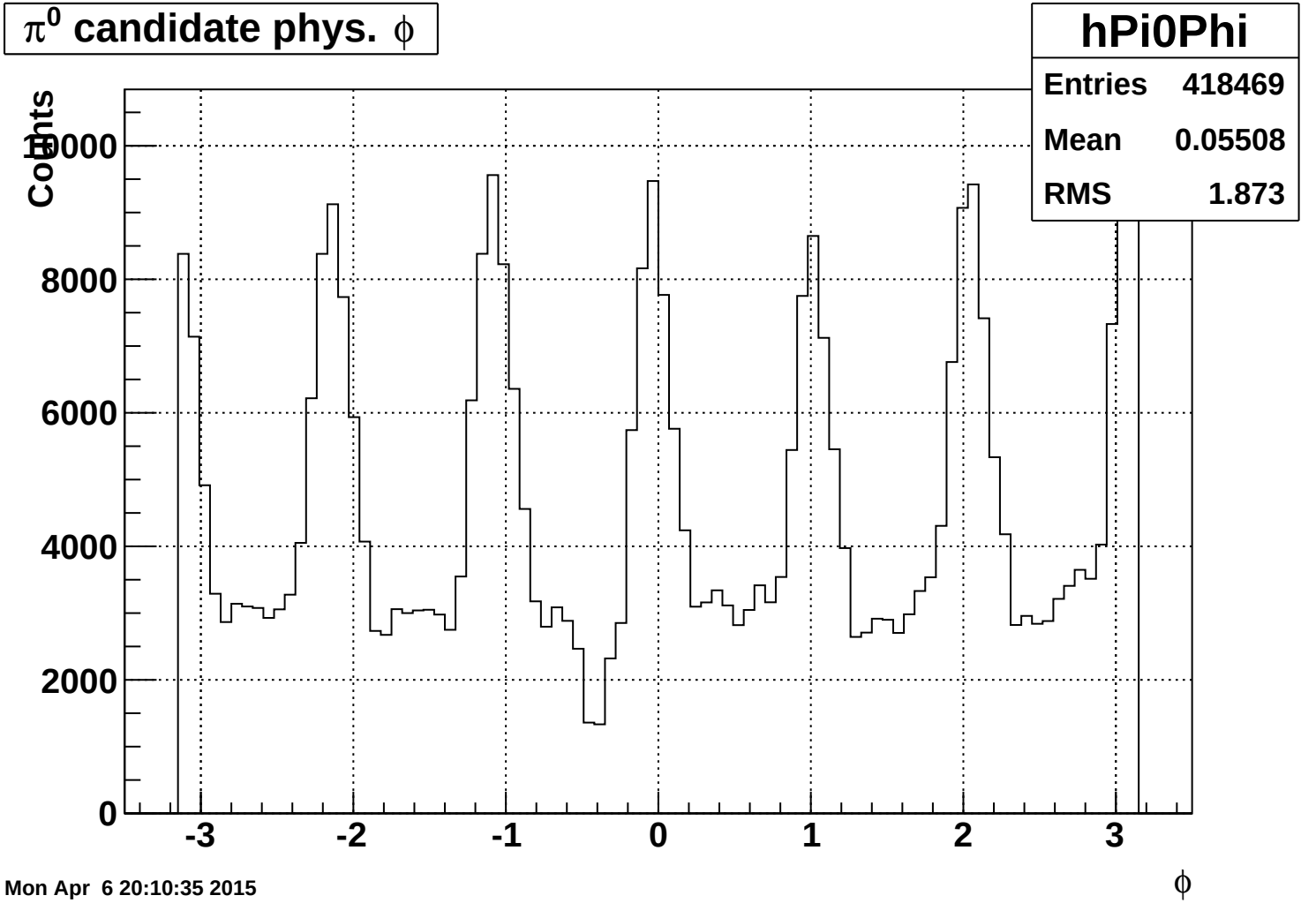
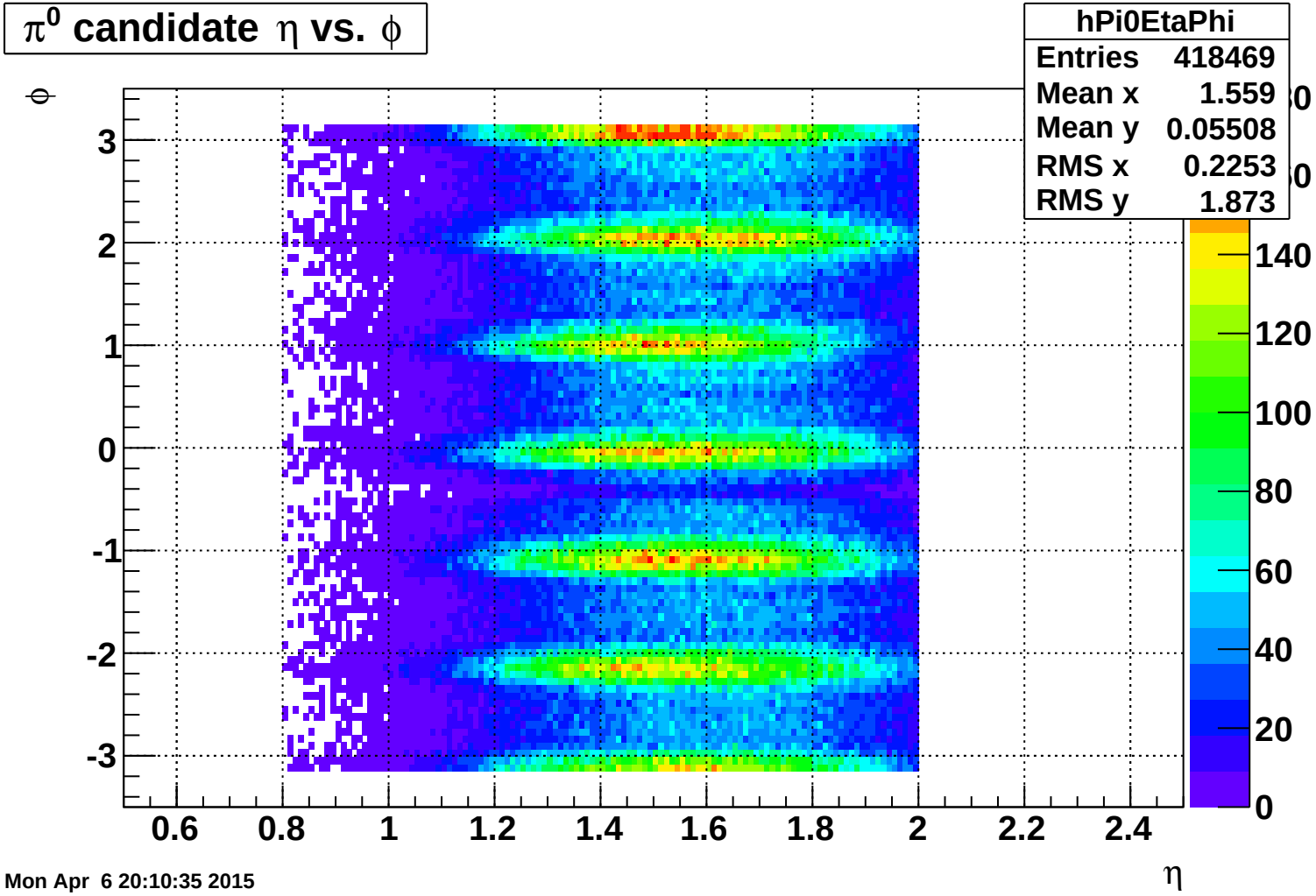

$M_{\gamma\gamma}$ vs. vertex Z
hPi0InvMassVertexZ
Entries 418469
Mean x 0.3105
Mean y -18.04
RMS x 0.1612
RMS y 43.37
vertex Z [cm]
150
100
50
0
-50
-100
-150
0
0.1
0.2
0.3
0.4
0.5
0.6
50
40
30
20
10
0
Mon Apr 6 20:10:35 2015
$M_{\gamma\gamma}$ [GeV/c^2]

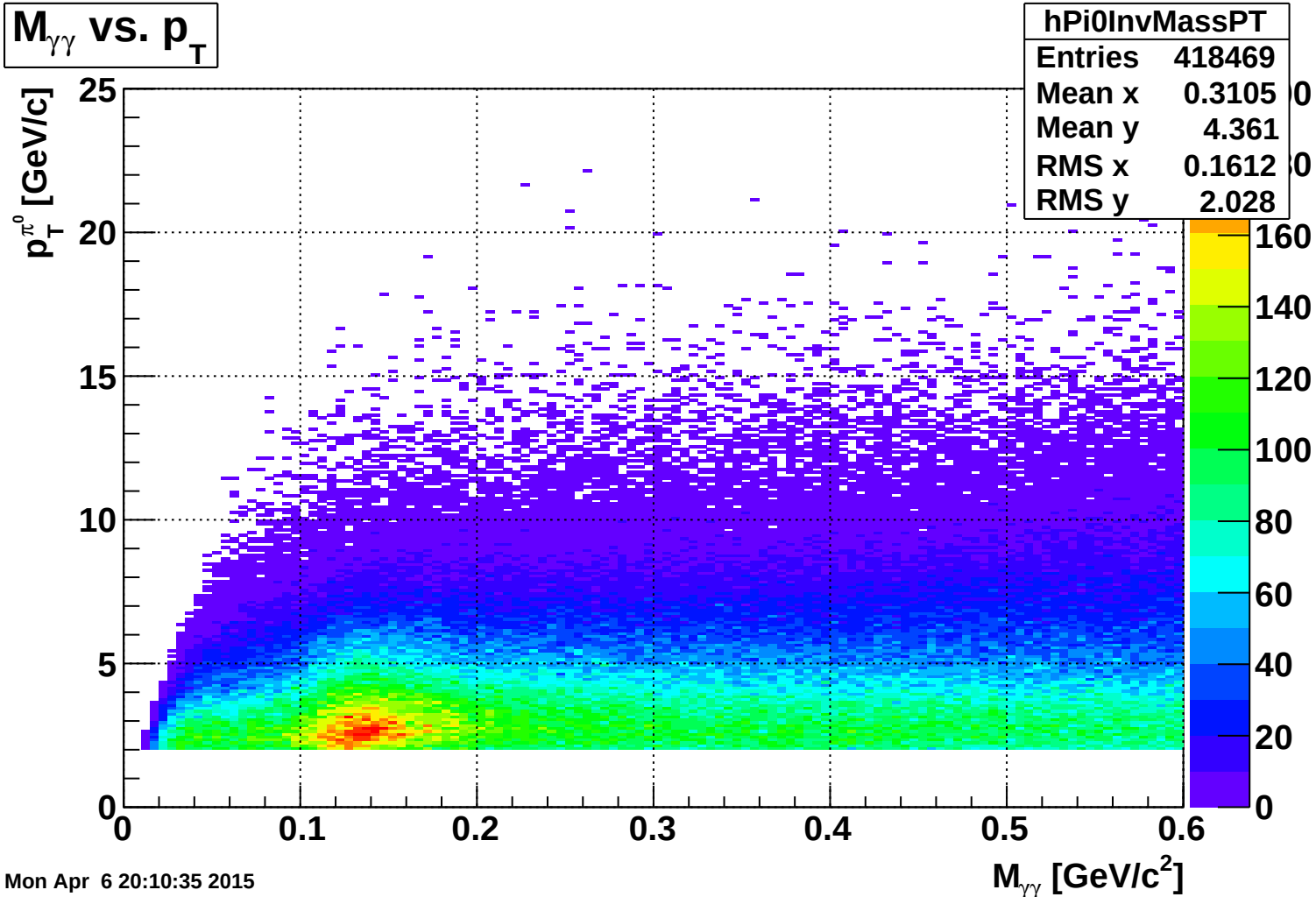

π^0 candidate p_T
hPi0PT
Entries 418469
Mean 4.361
RMS 2.028
Counts
25000
20000
15000
10000
5000
0
0
5
10
15
20
25
30
p_T [GeV/c]
Mon Apr 6 20:10:35 2015


π^0 candidate p_T
hPi0PT14bins
Entries 418469
Mean 4.361
RMS 2.028
Counts
×10
120
100
80
60
40
20
0
0
5
10
15
20
25
30
p_T [GeV/c]
Mon Apr 6 20:10:35 2015


π^0 candidate η
hPi0Eta
Entries 418469
Mean 1.559
RMS 0.2253
Counts
7000
6000
5000
4000
3000
2000
1000
0
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
η
Mon Apr 6 20:10:35 2015


π^0 candidate phys. ϕ
hPi0Phi
Entries 418469
Mean 0.05508
RMS 1.873
Counts
10000
8000
6000
4000
2000
0
-3
-2
-1
0
1
2
3
ϕ
Mon Apr 6 20:10:35 2015


π^0 candidate η vs. ϕ
hPi0EtaPhi
Entries 418469
Mean x 1.559
Mean y 0.05508
RMS x 0.2253
RMS y 1.873
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
140
120
100
80
60
40
20
0
Mon Apr 6 20:10:35 2015


$M_{\gamma\gamma}$ vs. p_T
hPi0InvMassPT
Entries 418469
Mean x 0.3105
Mean y 4.361
RMS x 0.1612
RMS y 2.028
$p_T^{\pi^0}$ [GeV/c]
$M_{\gamma\gamma}$ [GeV/c^2]
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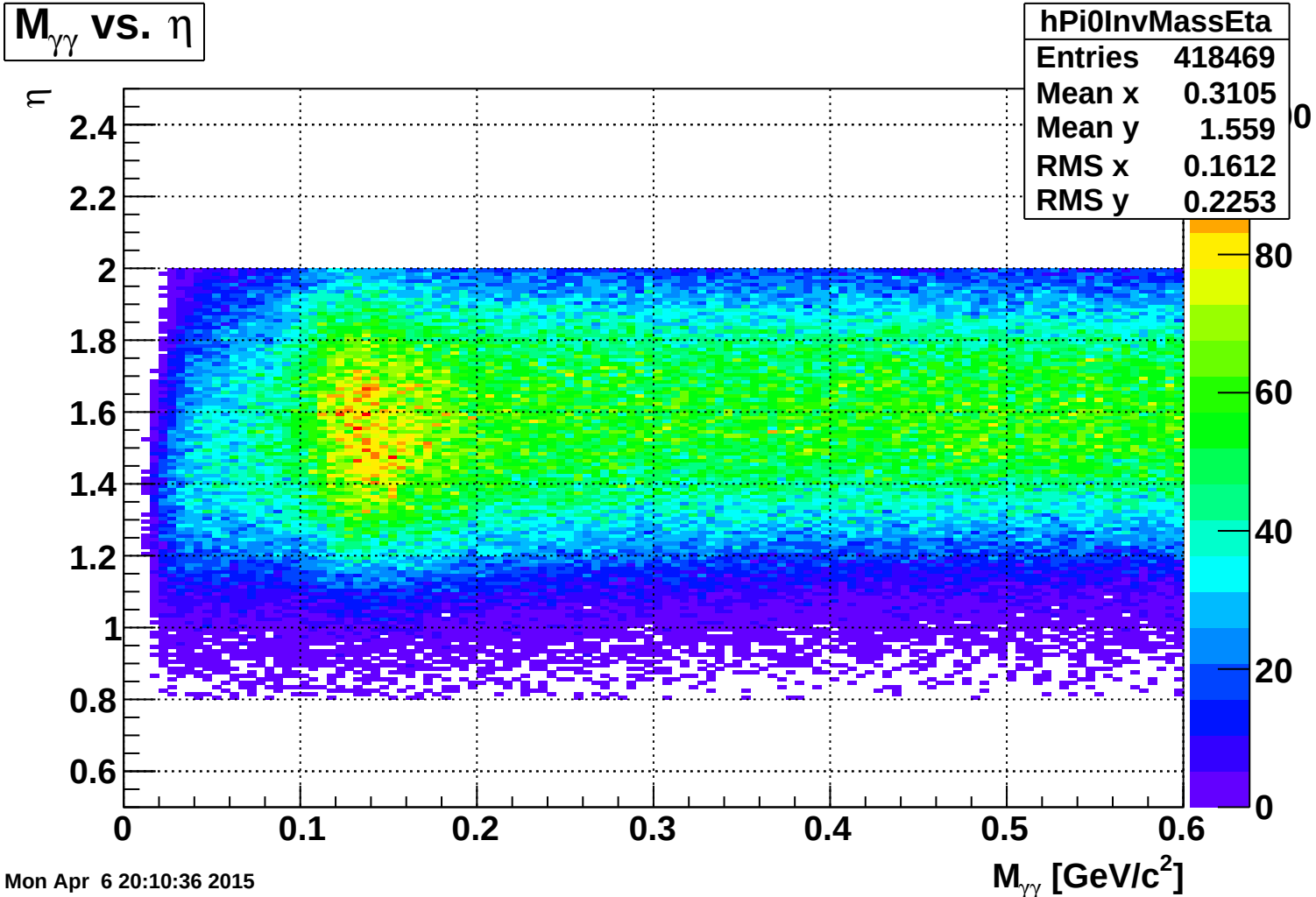
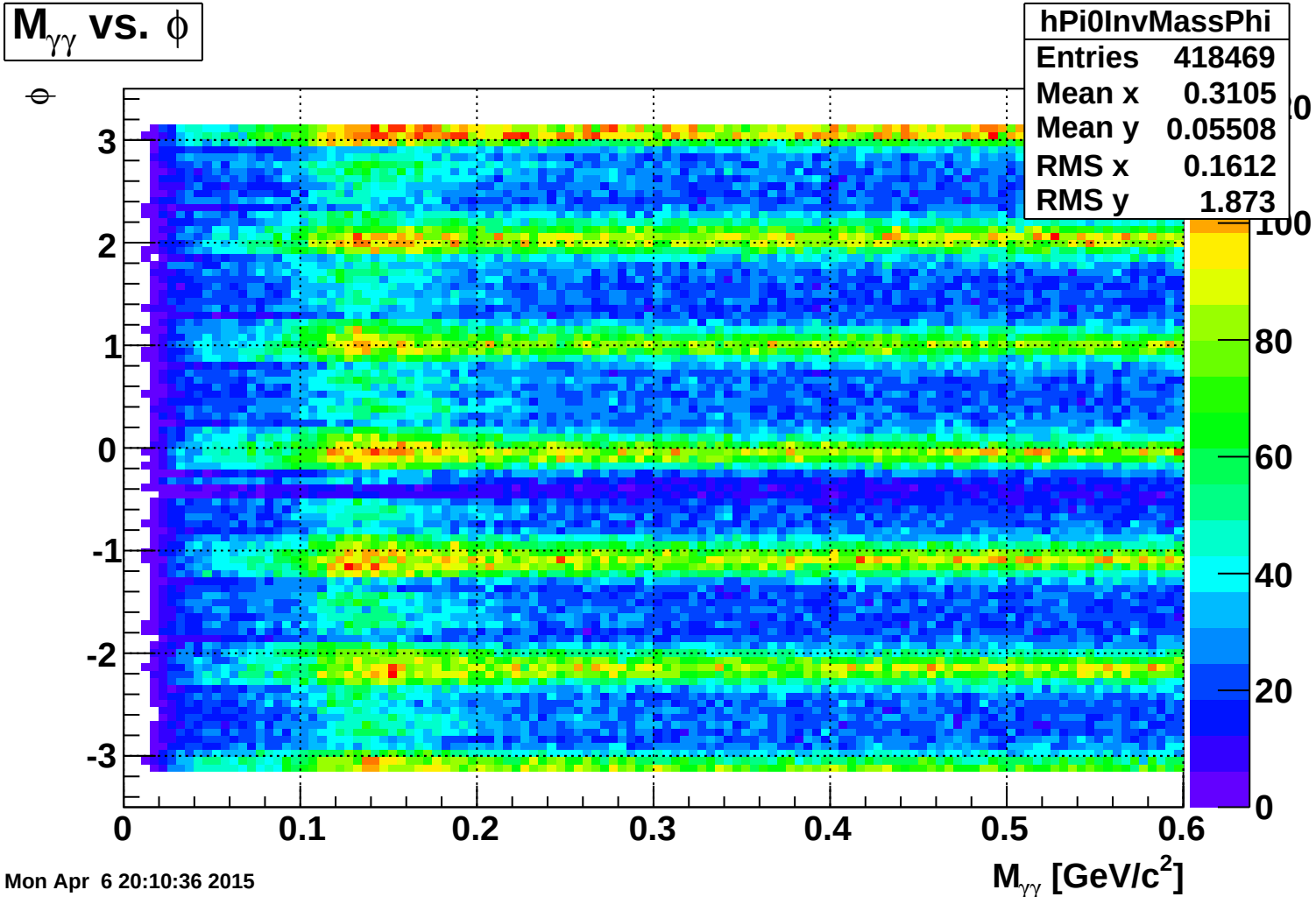

$M_{\gamma\gamma}$ vs. η
hPi0InvMassEta
Entries 418469
Mean x 0.3105
Mean y 1.559
RMS x 0.1612
RMS y 0.2253
η
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0
0.1
0.2
0.3
0.4
0.5
0.6
80
60
40
20
0
Mon Apr 6 20:10:36 2015
$M_{\gamma\gamma}$ [GeV/c^2]


$M_{\gamma\gamma}$ vs. ϕ
hPi0InvMassPhi
Entries 418469
Mean x 0.3105
Mean y 0.05508
RMS x 0.1612
RMS y 1.873
ϕ
3
2
1
0
-1
-2
-3
0
0.1
0.2
0.3
0.4
0.5
0.6
100
80
60
40
20
0
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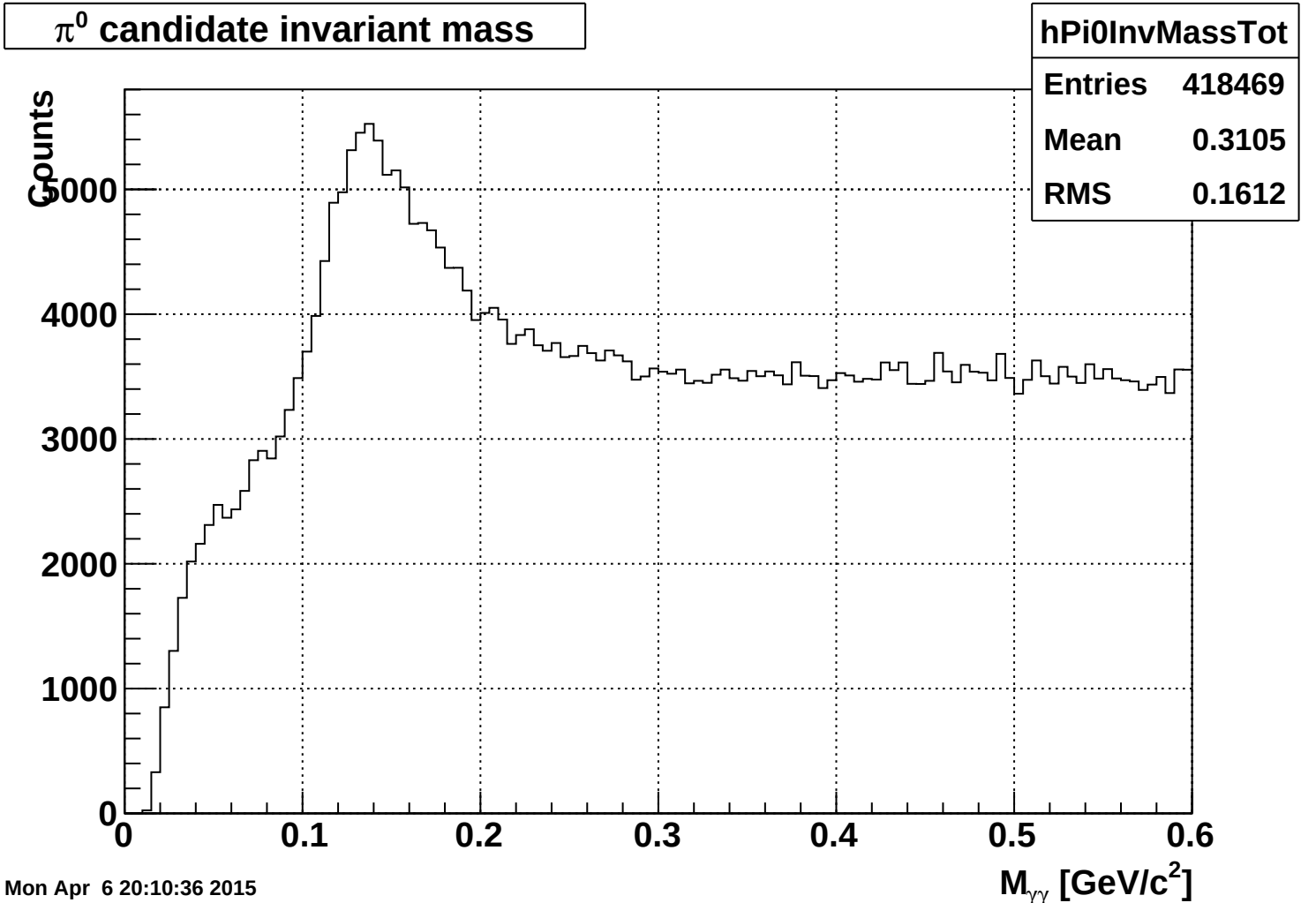
$M_{\gamma\gamma}$ [GeV/c^2]


π^0 candidate invariant mass
hPi0InvMassTot
Entries 418469
Mean 0.3105
RMS 0.1612
Counts
5000
4000
3000
2000
1000
0
0
0.1
0.2
0.3
0.4
0.5
0.6
$M_{\gamma\gamma}$ [GeV/c^2]
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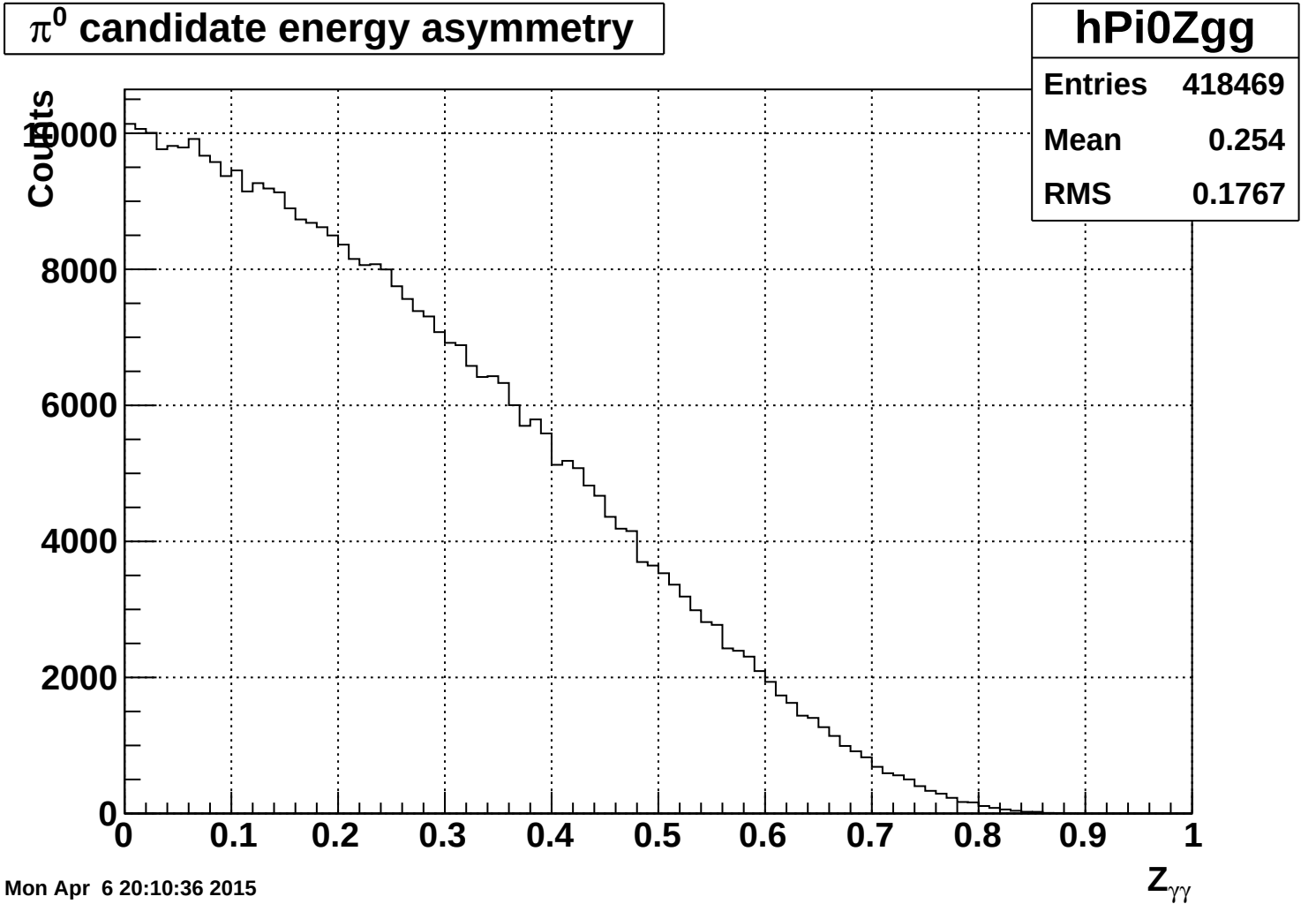
π^0 candidate energy asymmetry
hPi0Zgg
Entries 418469
Mean 0.254
RMS 0.1767
Counts
10000
8000
6000
4000
2000
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
$Z_{\gamma\gamma}$
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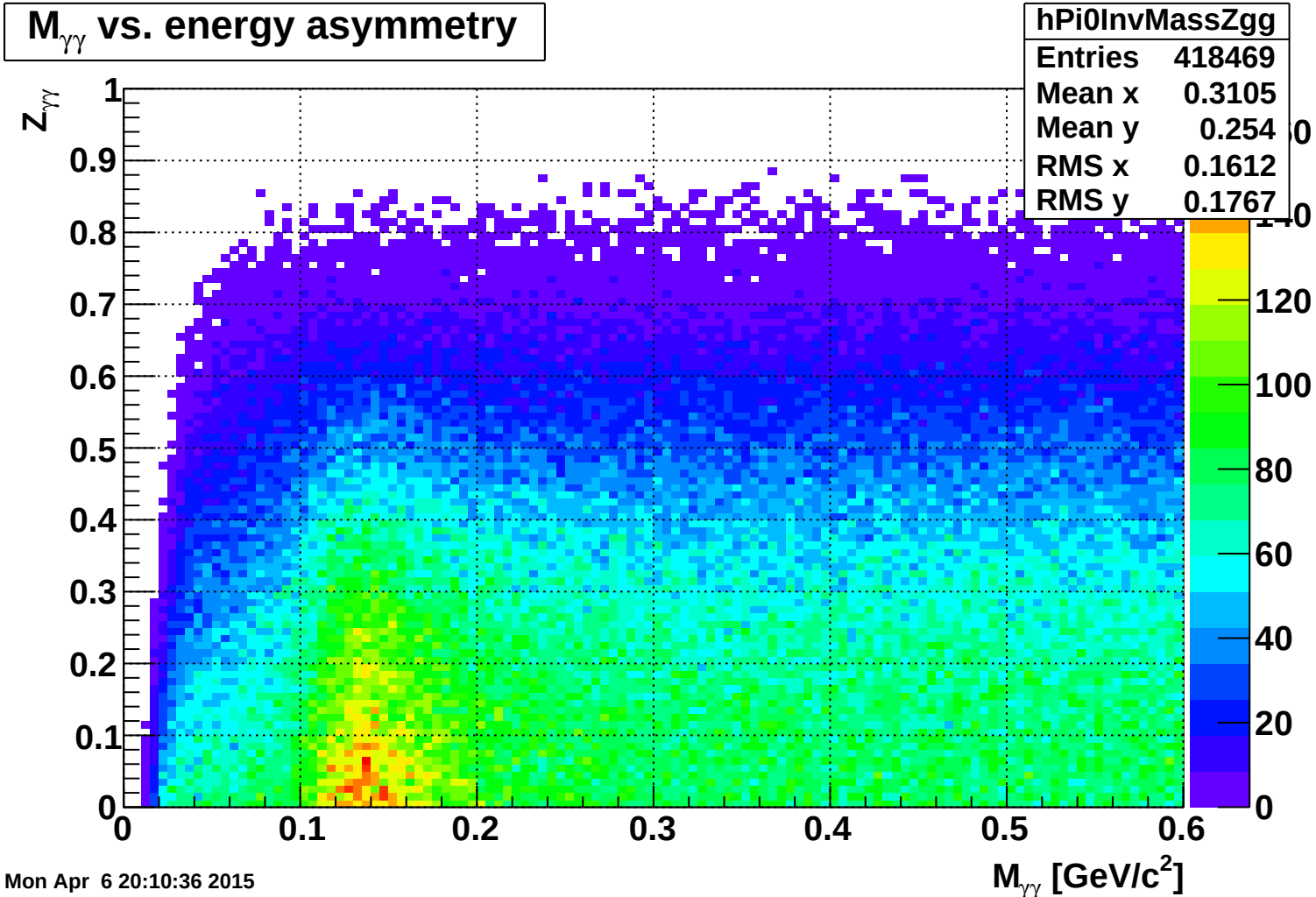
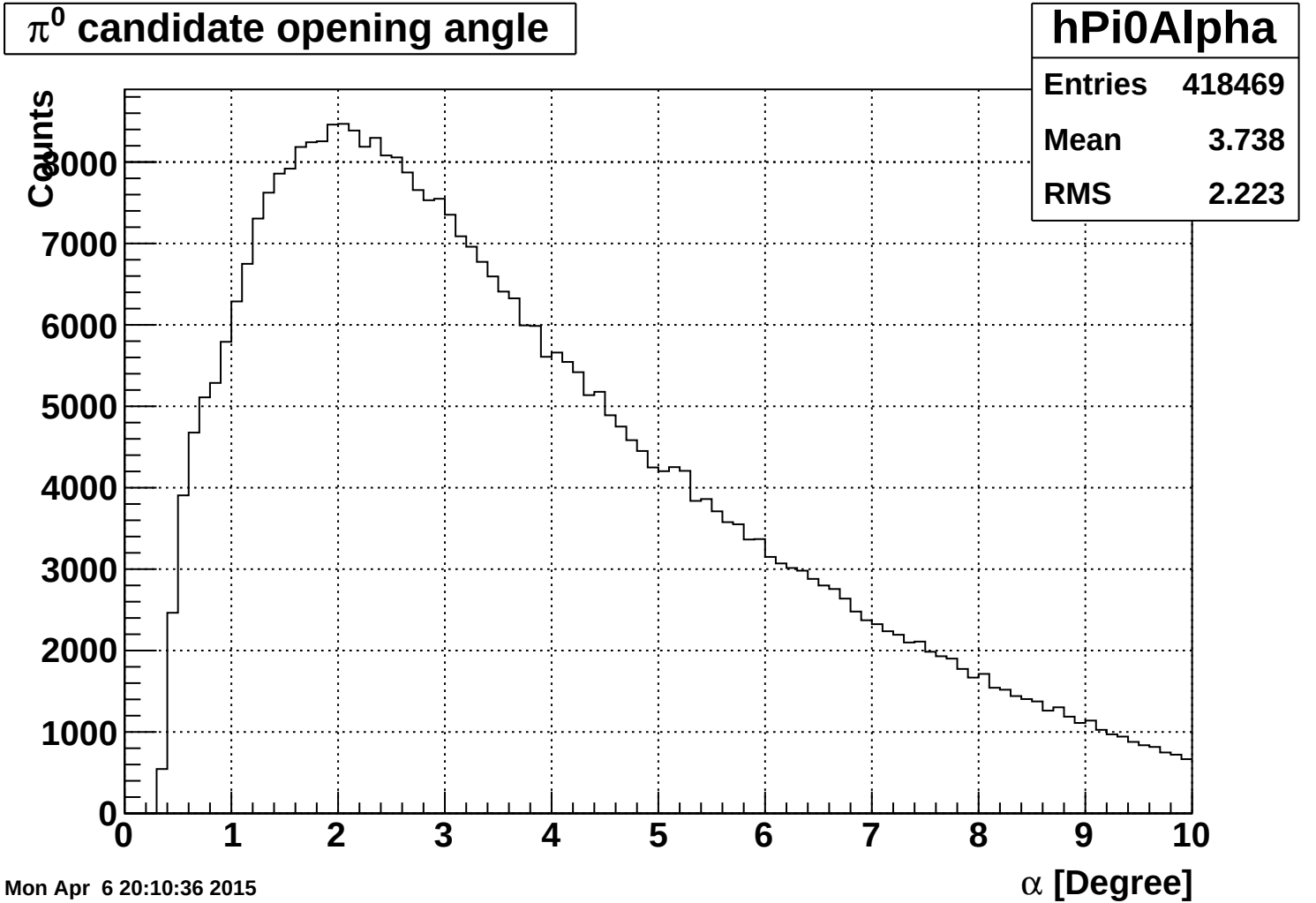

$M_{\gamma\gamma}$ vs. energy asymmetry
hPi0InvMassZgg
Entries 418469
Mean x 0.3105
Mean y 0.254
RMS x 0.1612
RMS y 0.1767
$Z_{\gamma\gamma}$
$M_{\gamma\gamma}$ [GeV/c^2]
Mon Apr 6 20:10:36 2015


π^0 candidate opening angle
hPi0Alpha
Entries 418469
Mean 3.738
RMS 2.223
Counts
8000
7000
6000
5000
4000
3000
2000
1000
0
0
1
2
3
4
5
6
7
8
9
10
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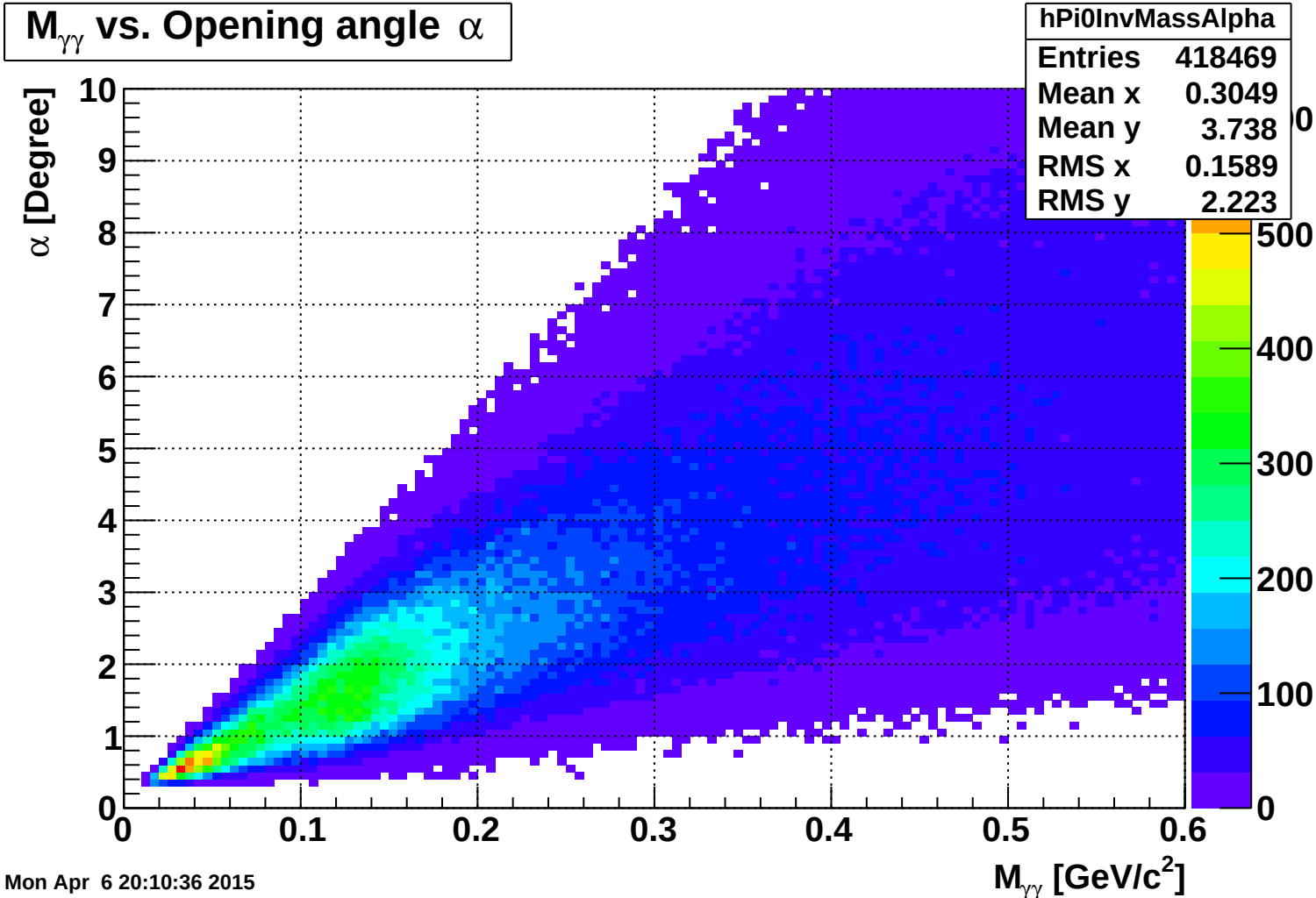
α [Degree]


$M_{\gamma\gamma}$ vs. Opening angle α
hPi0InvMassAlpha
Entries 418469
Mean x 0.3049
Mean y 3.738
RMS x 0.1589
RMS y 2.223
α [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
100
200
300
400
500
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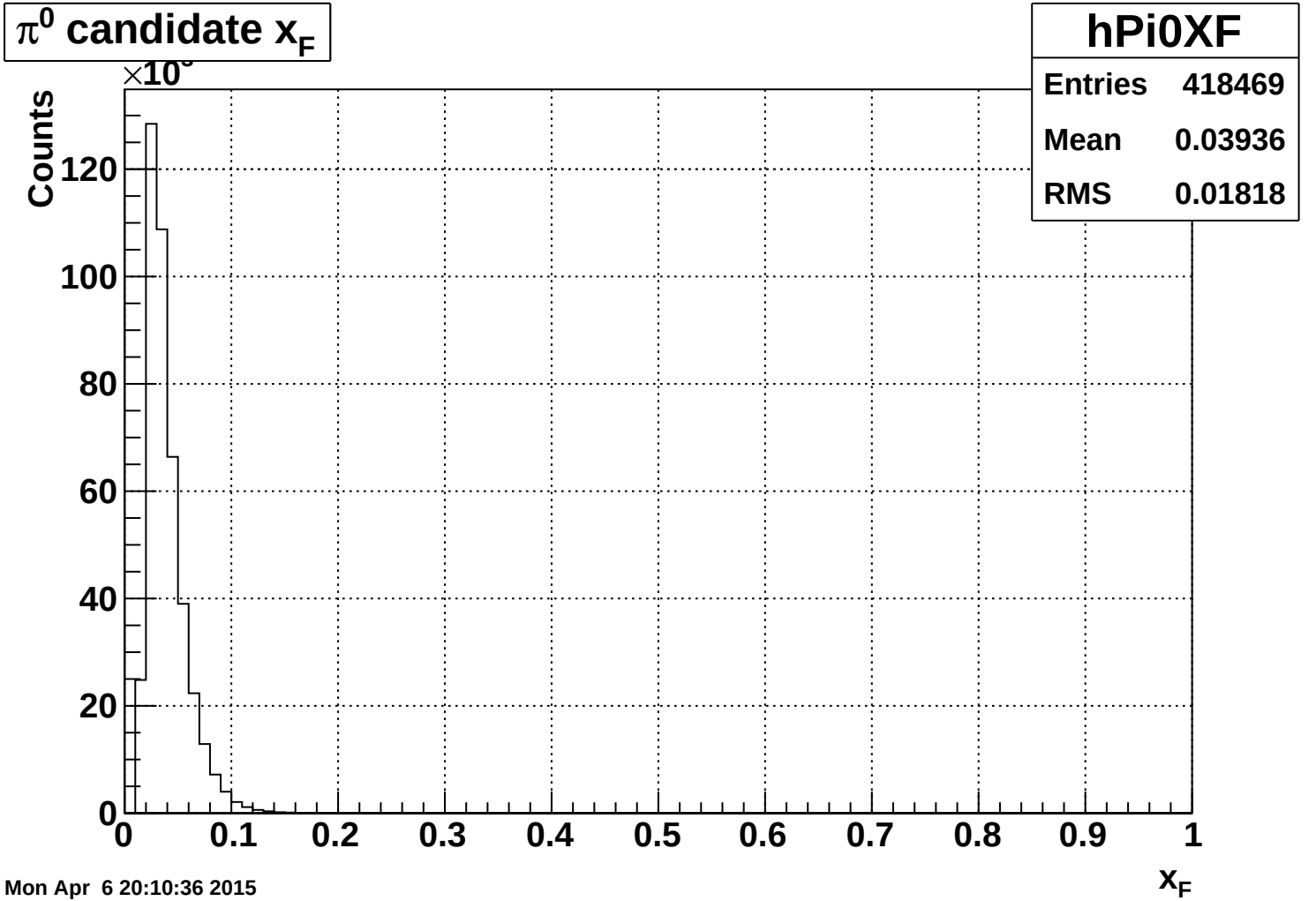
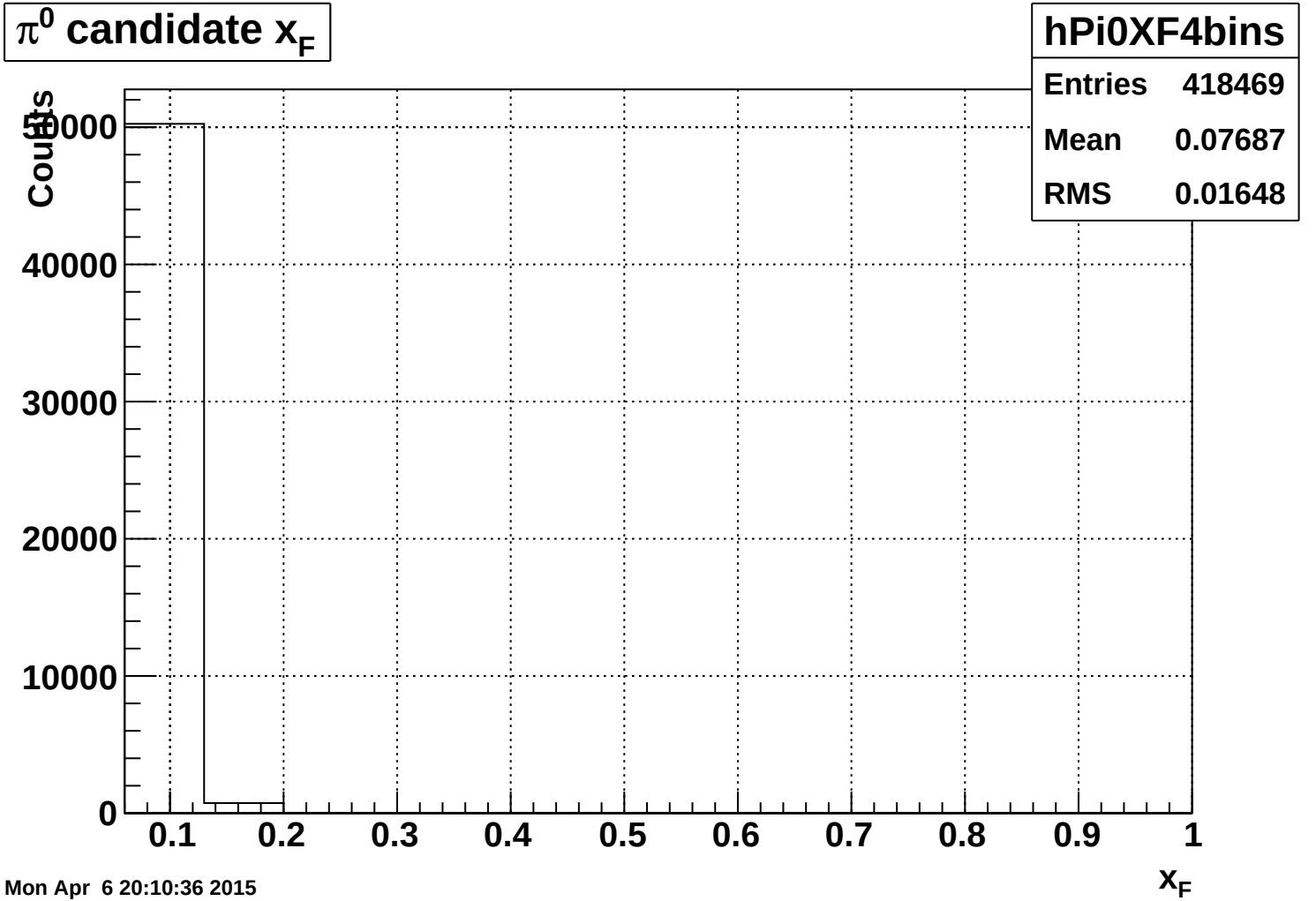
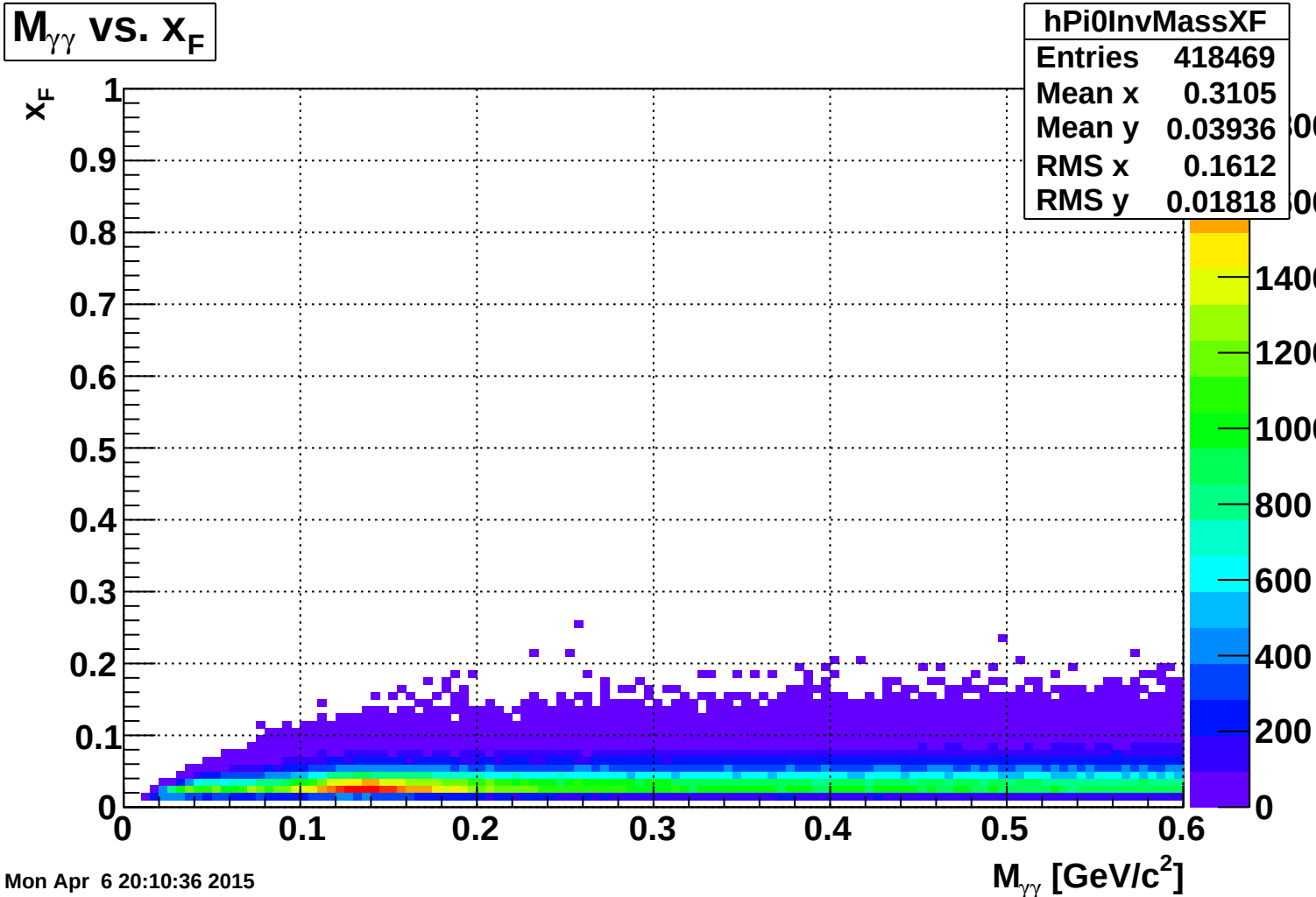
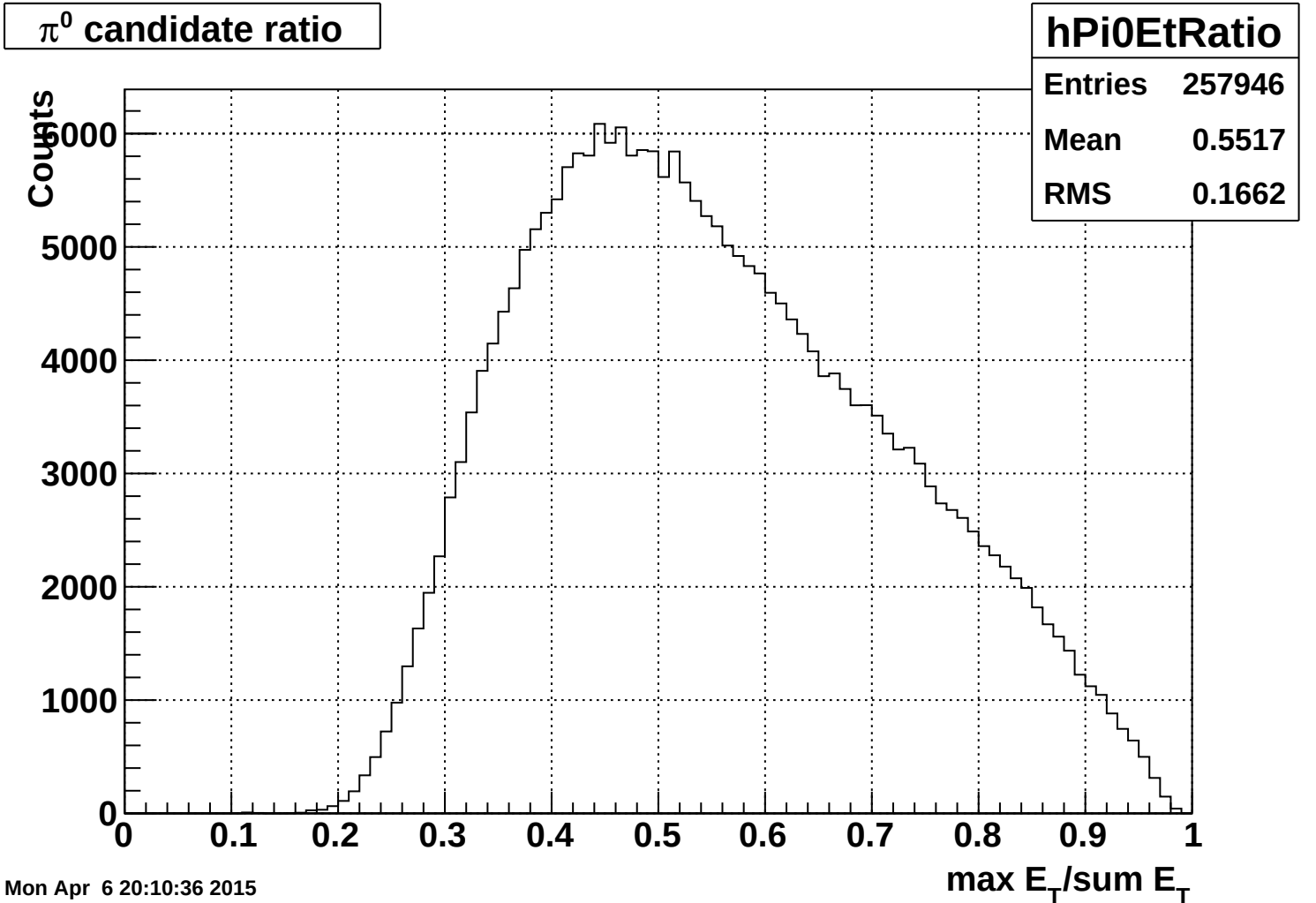

π^0 candidate x_F
hPi0XF
Entries 418469
Mean 0.03936
RMS 0.01818
Counts
$\times 10^3$
120
100
80
60
40
20
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
x_F
Mon Apr 6 20:10:36 2015


π^0 candidate x_F
hPi0XF4bins
Entries 418469
Mean 0.07687
RMS 0.01648
Counts
50000
40000
30000
20000
10000
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
x_F
Mon Apr 6 20:10:36 2015


$M_{\gamma\gamma}$ vs. x_F
hPi0InvMassXF
Entries 418469
Mean x 0.3105
Mean y 0.03936
RMS x 0.1612
RMS y 0.01818
x_F
$M_{\gamma\gamma}$ [GeV/c^2]
Mon Apr 6 20:10:36 2015


π^0 candidate ratio
hPi0EtRatio
Entries 257946
Mean 0.5517
RMS 0.1662
Counts
6000
5000
4000
3000
2000
1000
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
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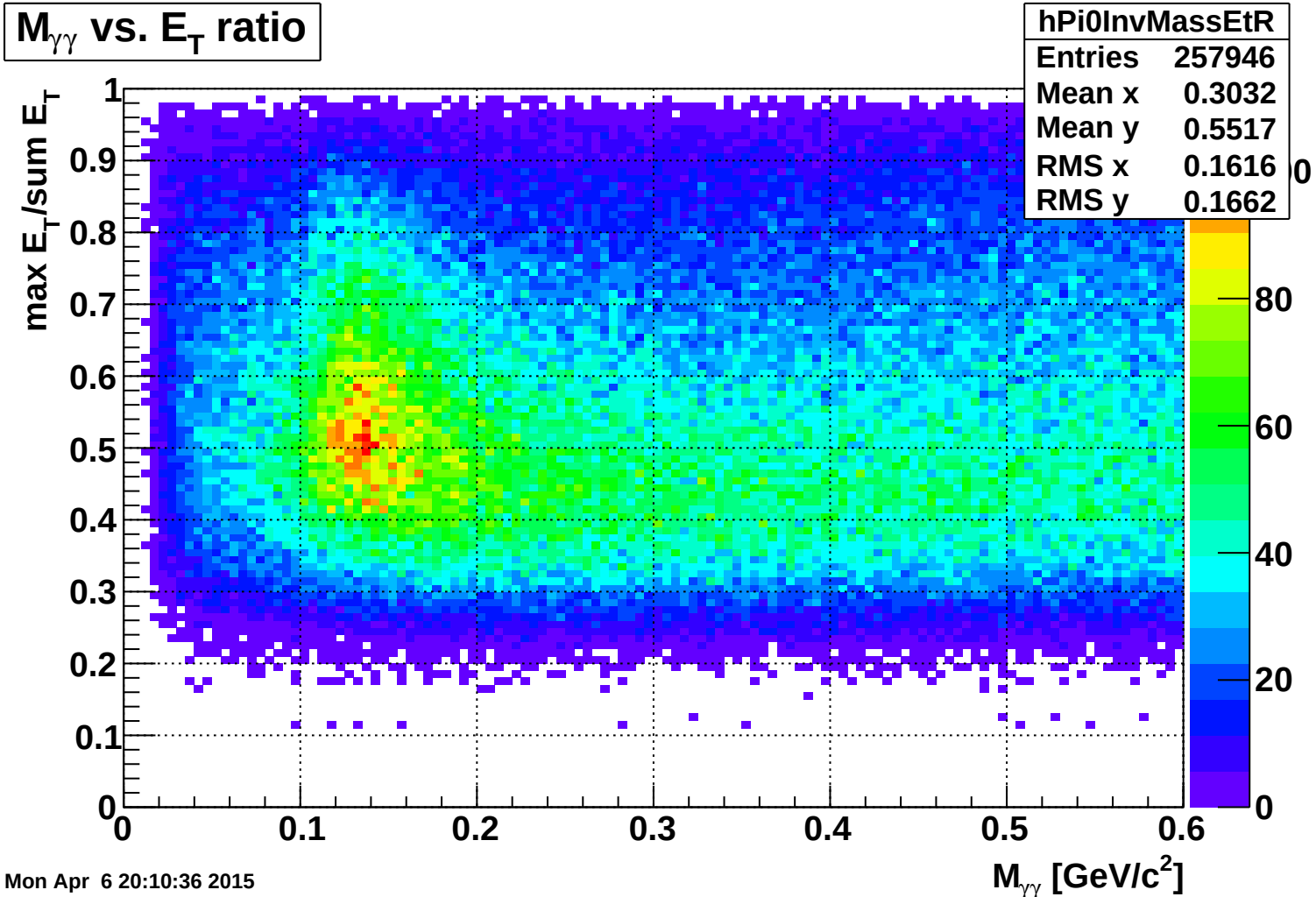
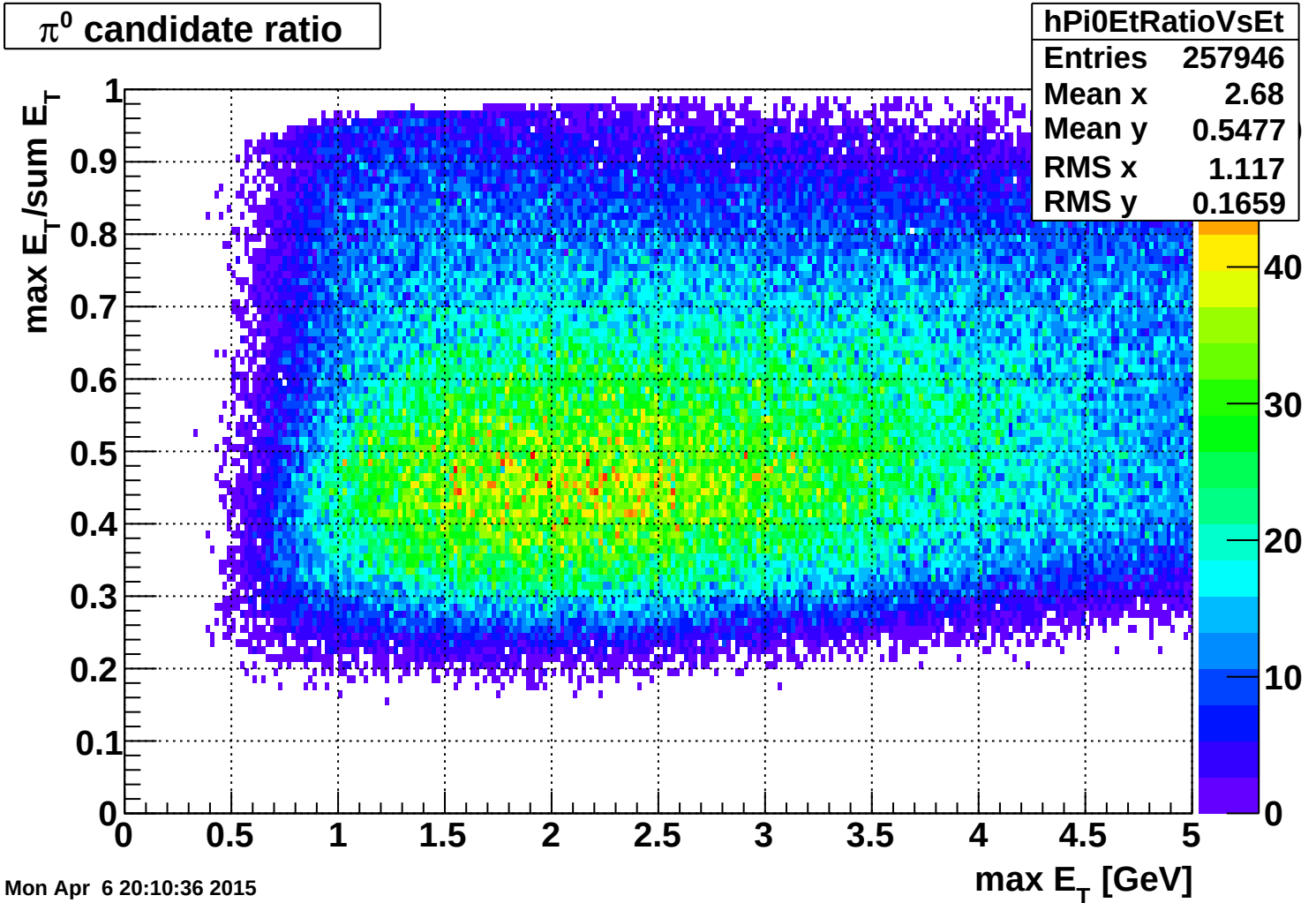

$M_{\gamma\gamma}$ vs. E_T ratio
hPi0InvMassEtR
Entries 257946
Mean x 0.3032
Mean y 0.5517
RMS x 0.1616
RMS y 0.1662
max E_T/sum E_T
$M_{\gamma\gamma}$ [GeV/c^2]
Mon Apr 6 20:10:36 2015


π^0 candidate ratio
hPi0EtRatioVsEt
Entries 257946
Mean x 2.68
Mean y 0.5477
RMS x 1.117
RMS y 0.1659
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
0.5
1.5
2
2.5
3
3.5
4
4.5
5
10
20
30
40
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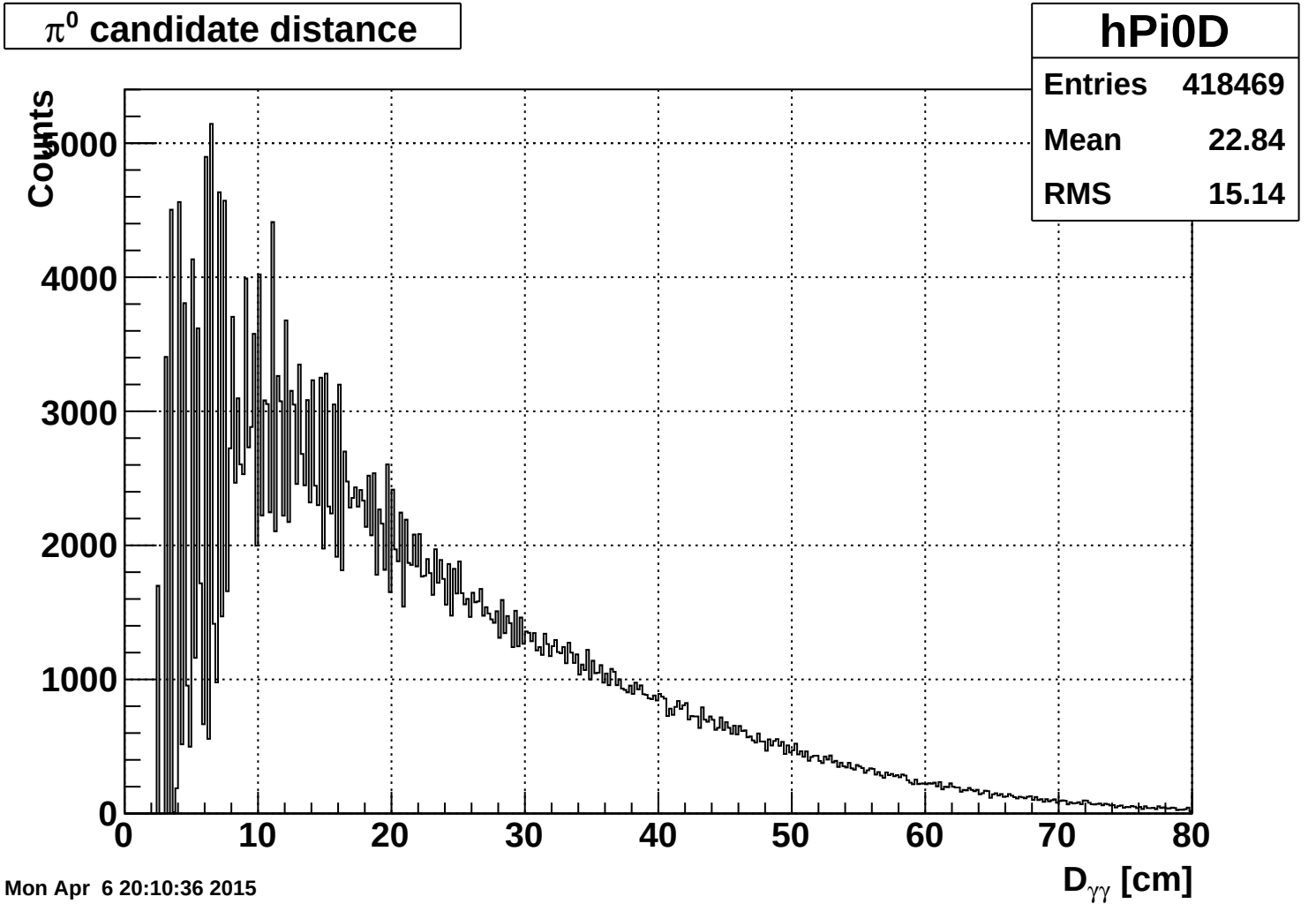
π^0 candidate distance
hPi0D
Entries 418469
Mean 22.84
RMS 15.14
Counts
5000
4000
3000
2000
1000
0
0
10
20
30
40
50
60
70
80
$D_{\gamma\gamma}$ [cm]
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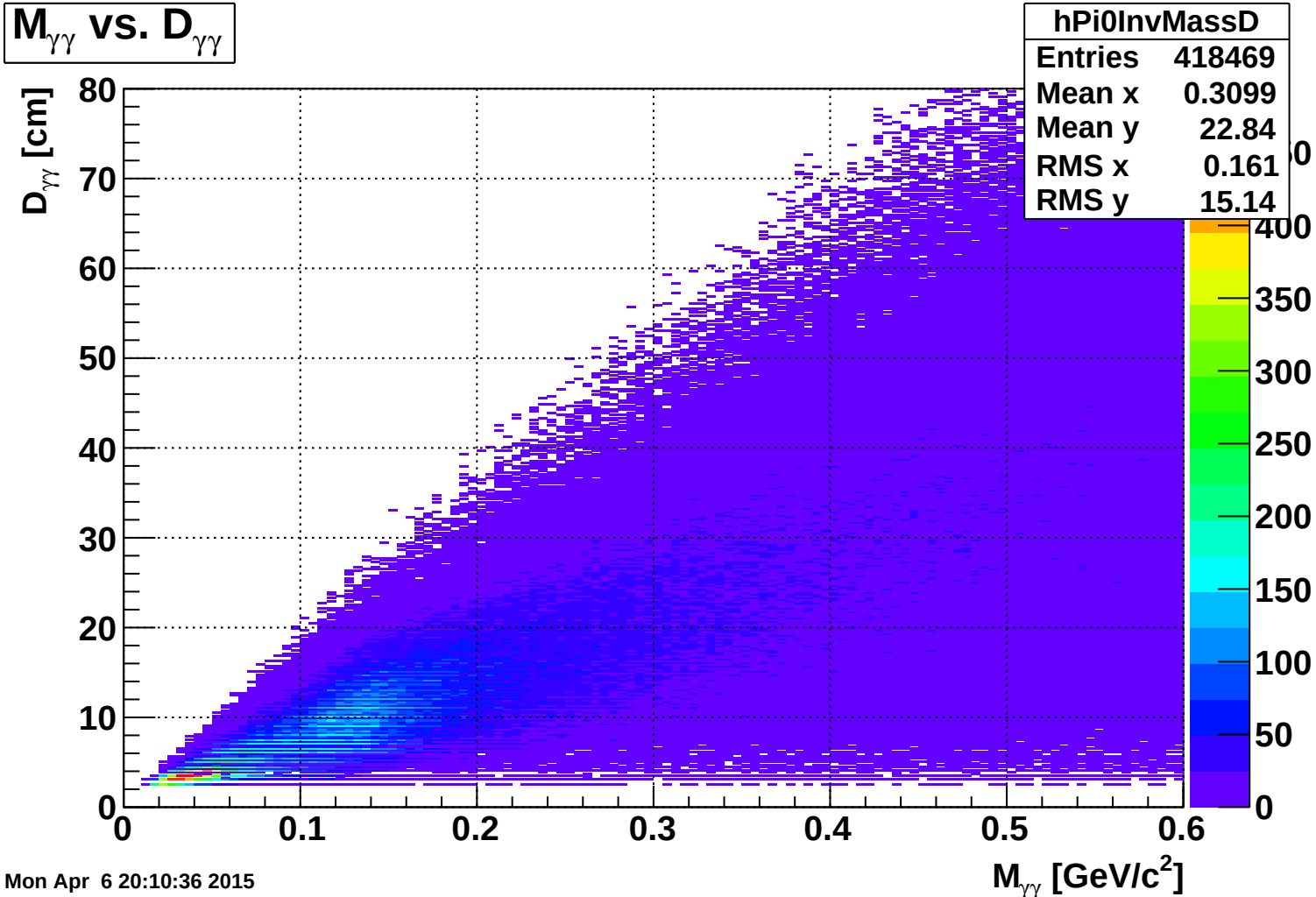
$M_{\gamma\gamma}$ vs. $D_{\gamma\gamma}$
hPi0InvMassD
Entries 418469
Mean x 0.3099
Mean y 22.84
RMS x 0.161
RMS y 15.14
$D_{\gamma\gamma}$ [cm]
$M_{\gamma\gamma}$ [GeV/c^2]
0
10
20
30
40
50
60
70
80
0.1
0.2
0.3
0.4
0.5
0.6
50
100
150
200
250
300
350
400
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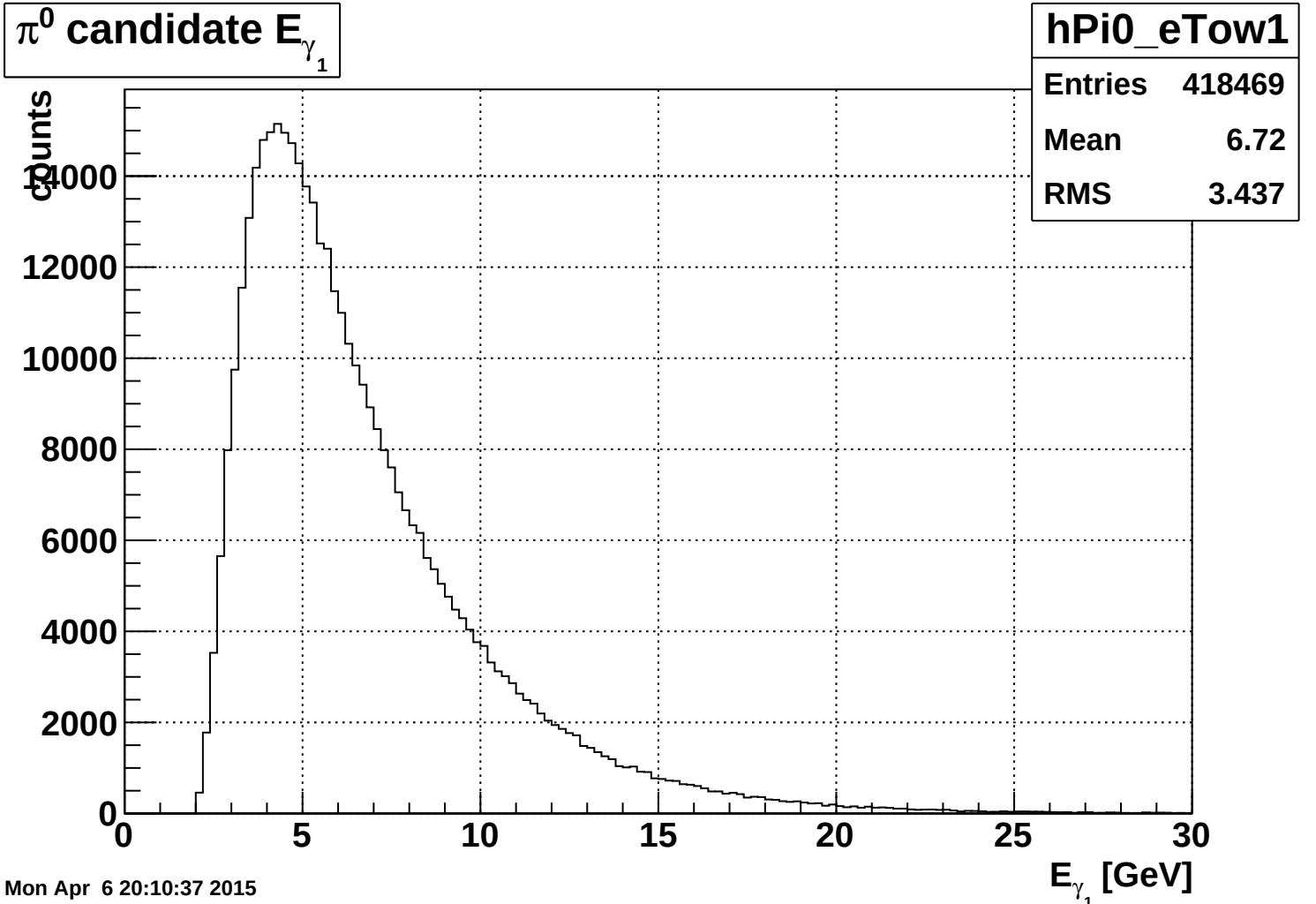
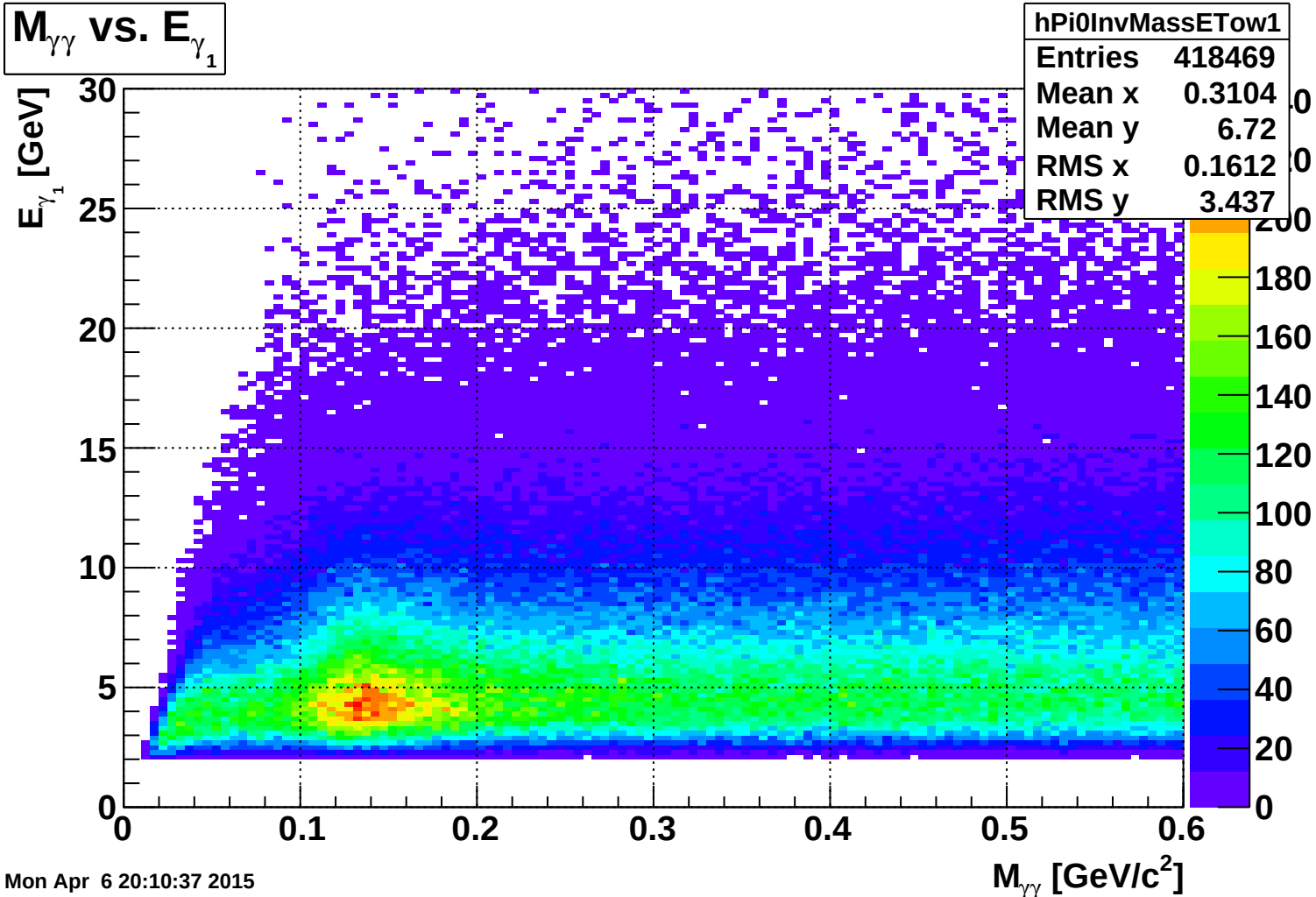
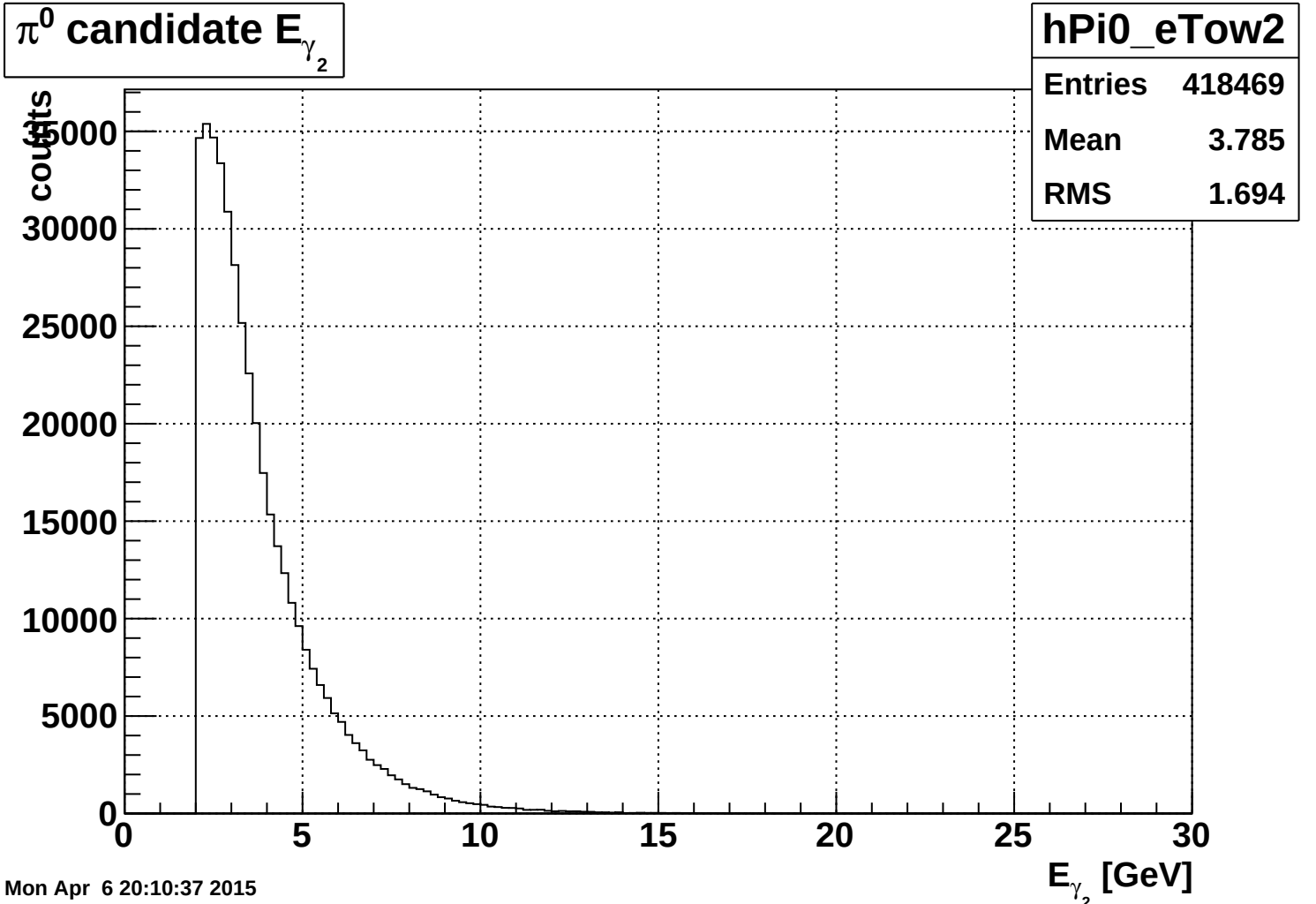
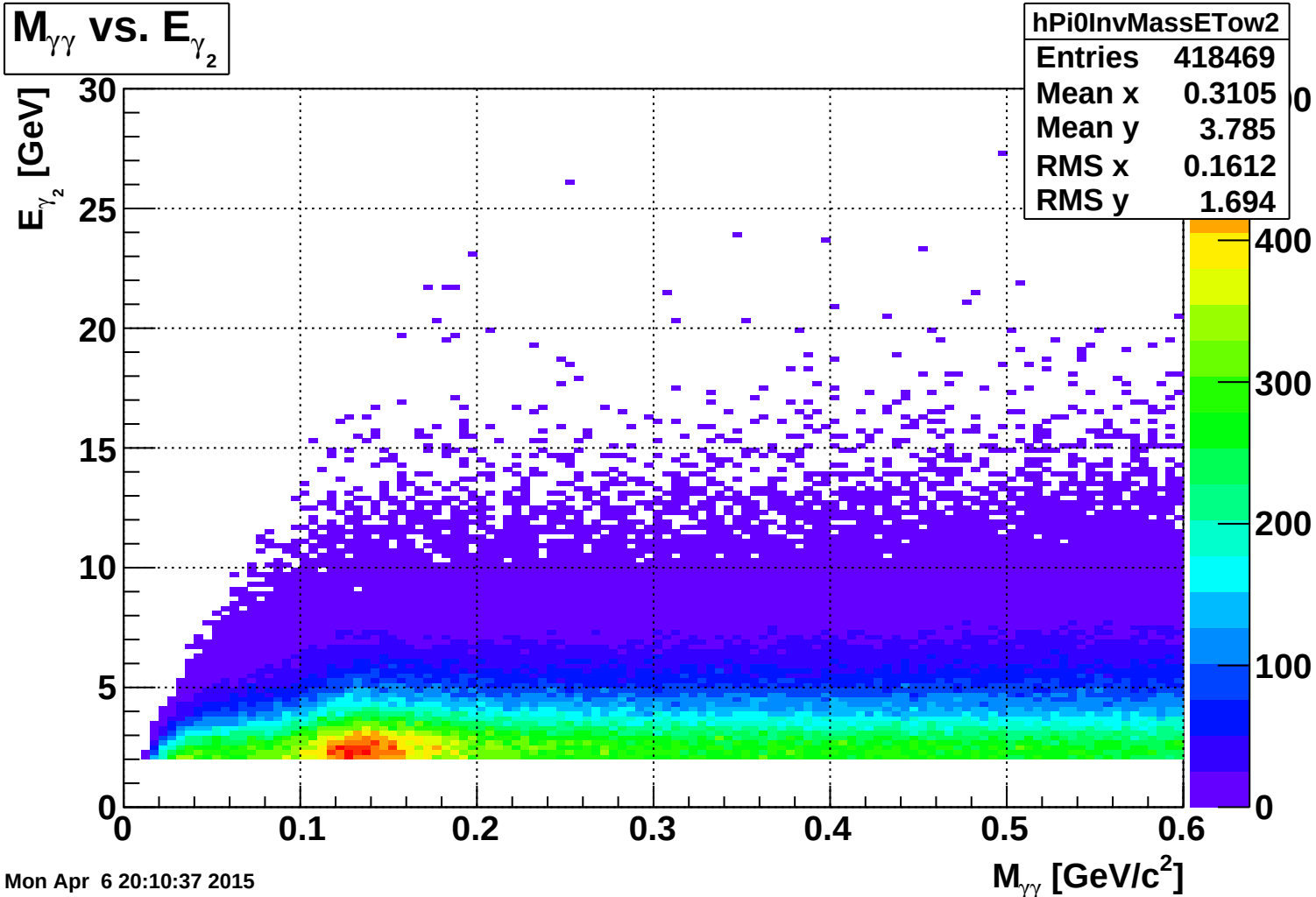
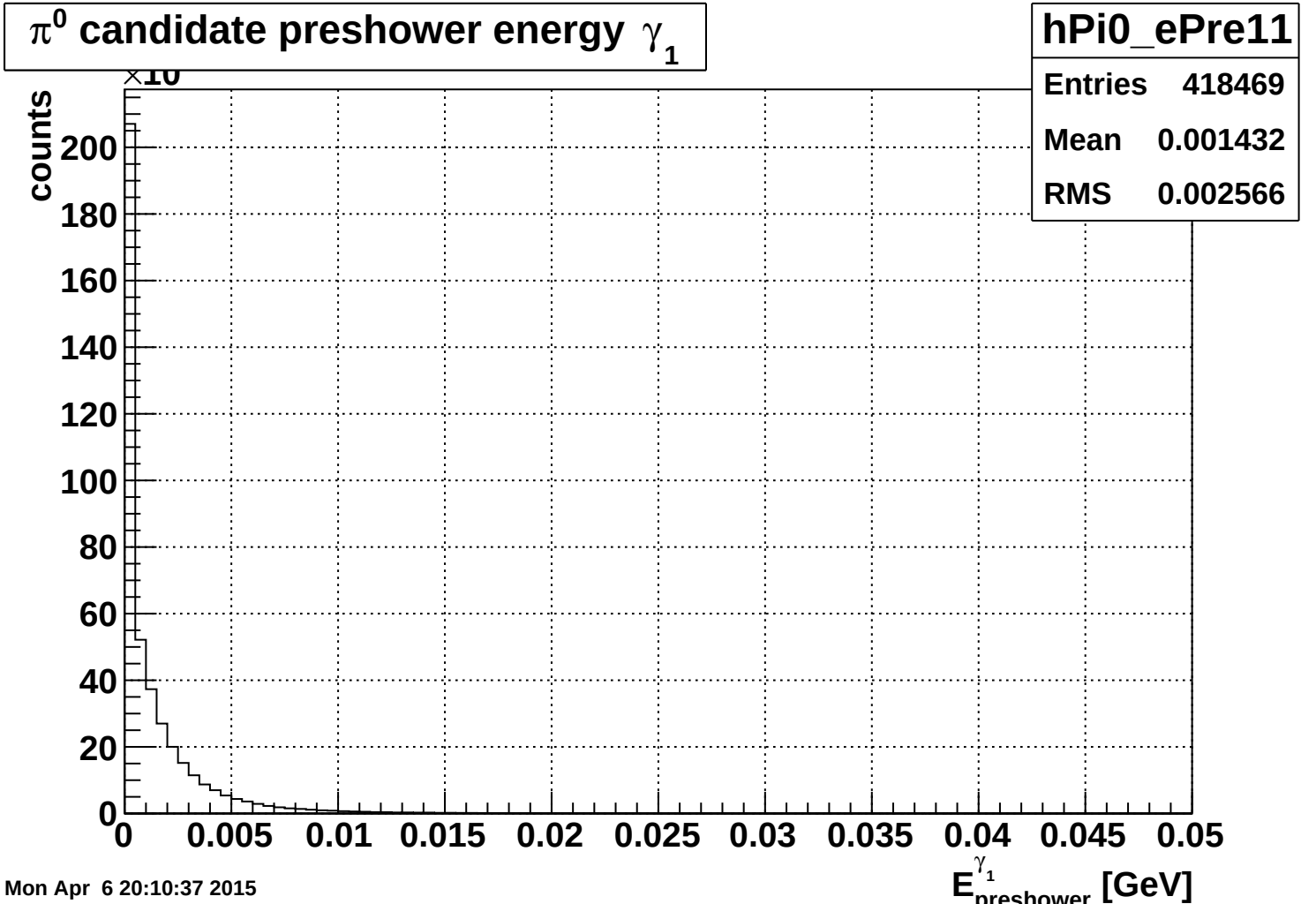
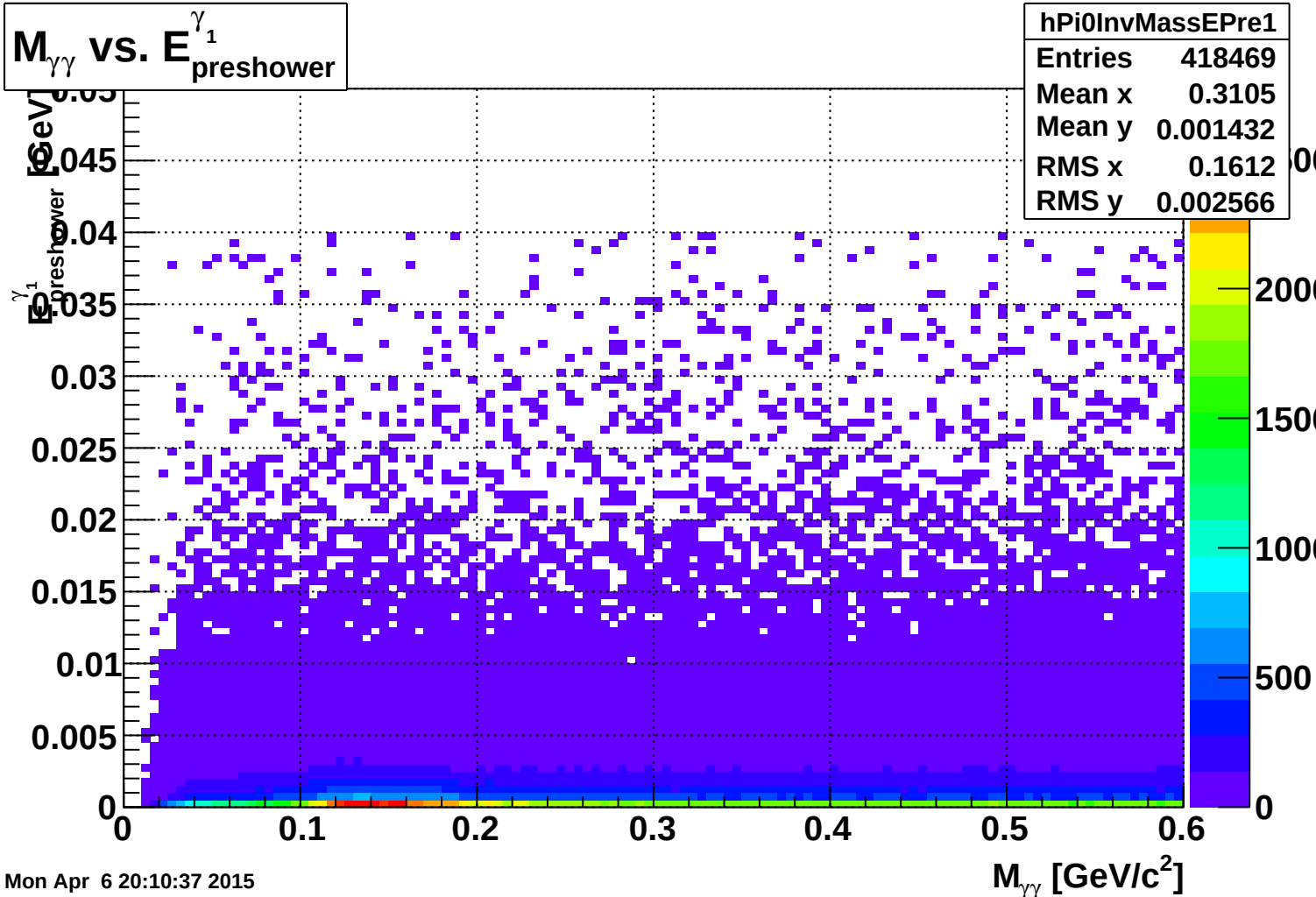

π^0 candidate E_{γ_1}
hPi0_eTow1
Entries 418469
Mean 6.72
RMS 3.437
counts
14000
12000
10000
8000
6000
4000
2000
0
0
5
10
15
20
25
30
E_{γ_1} [GeV]
Mon Apr 6 20:10:37 2015

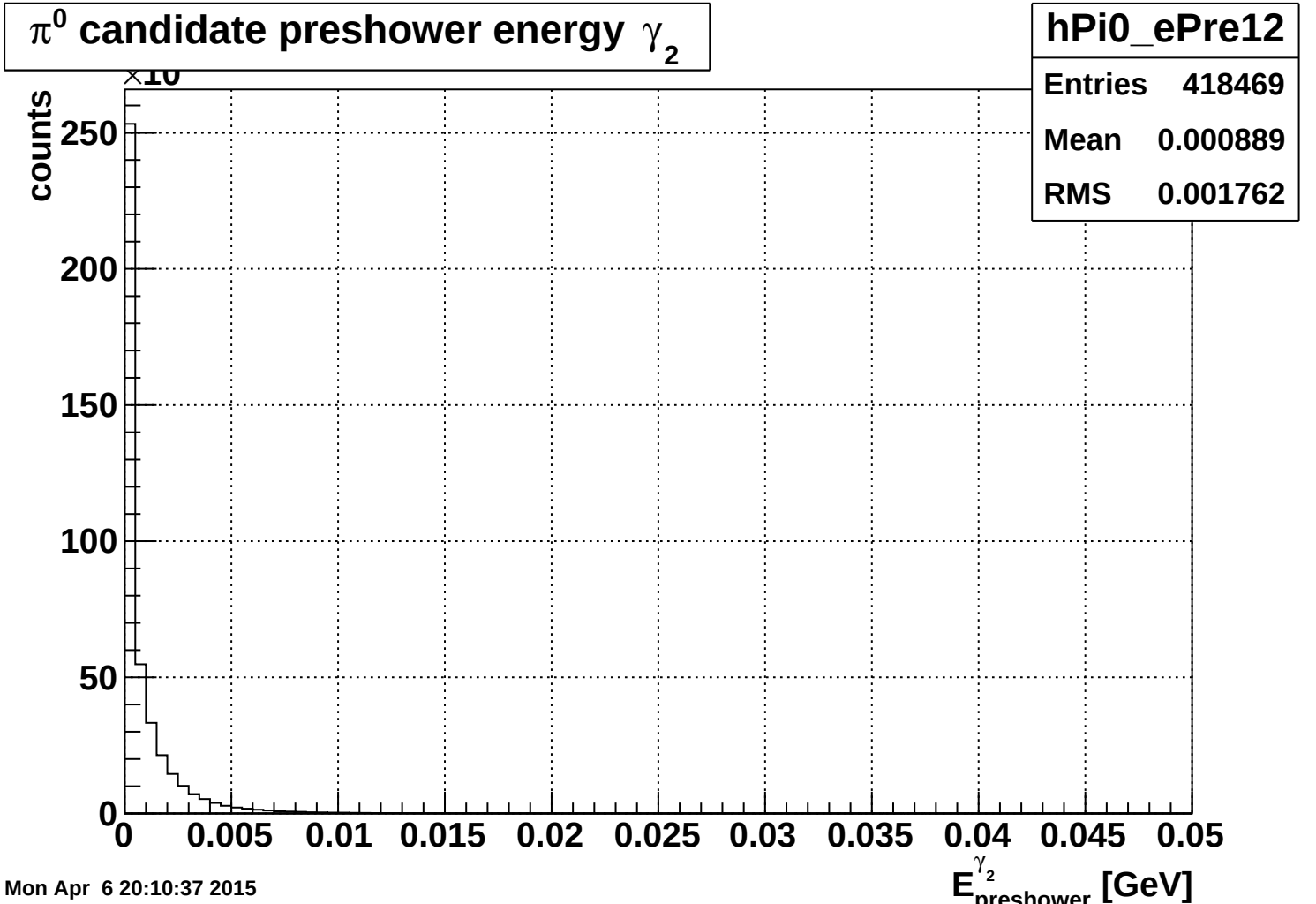

$M_{\gamma\gamma}$ vs. E_{γ_1}
hPi0InvMassETow1
Entries 418469
Mean x 0.3104
Mean y 6.72
RMS x 0.1612
RMS y 3.437
E_{γ_1} [GeV]
$M_{\gamma\gamma}$ [GeV/c^2]
Mon Apr 6 20:10:37 2015

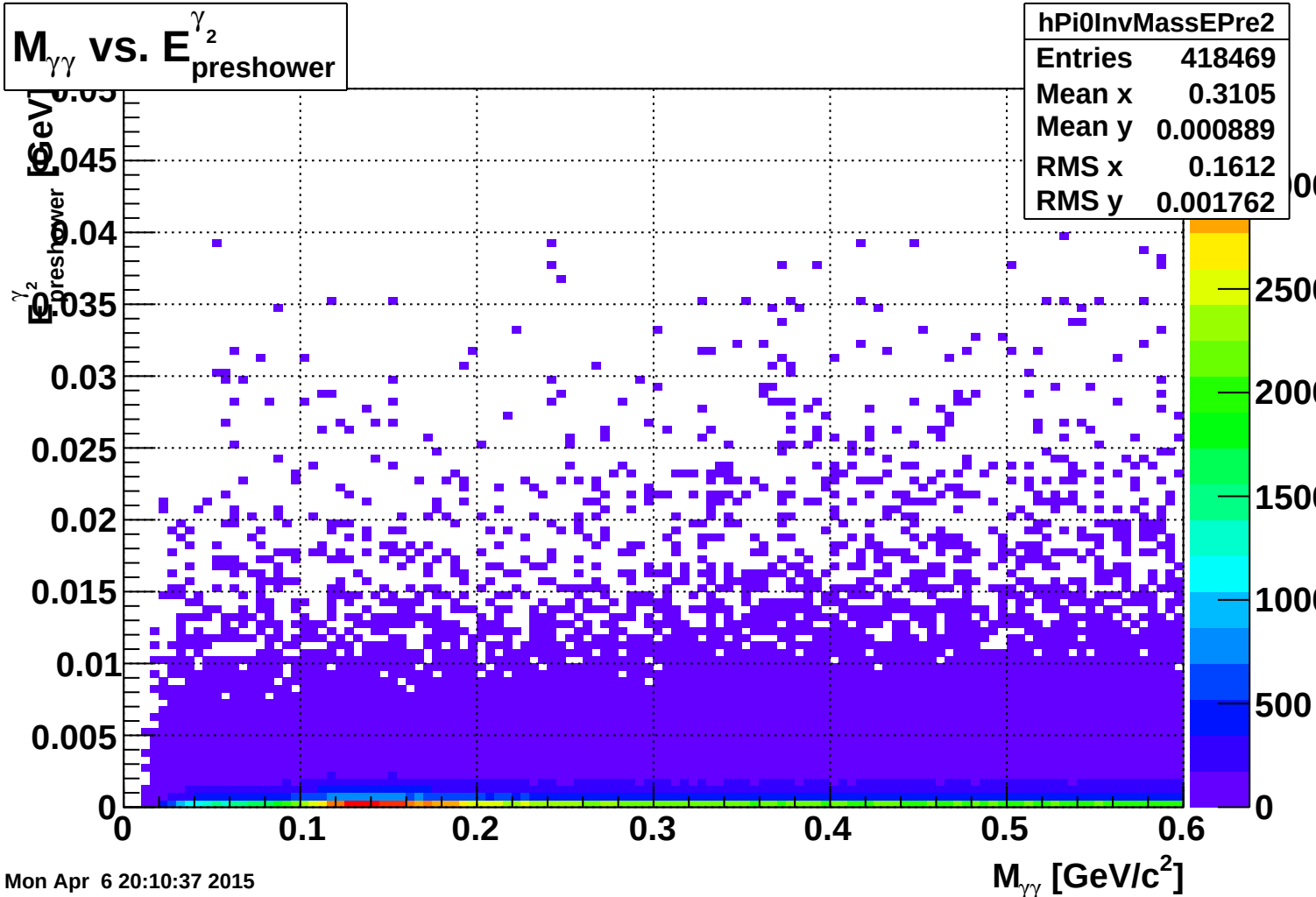

π^0 candidate E_{γ_2}
hPi0_eTow2
Entries 418469
Mean 3.785
RMS 1.694
counts
35000
30000
25000
20000
15000
10000
5000
0
0
5
10
15
20
25
30
E_{γ_2} [GeV]
Mon Apr 6 20:10:37 2015

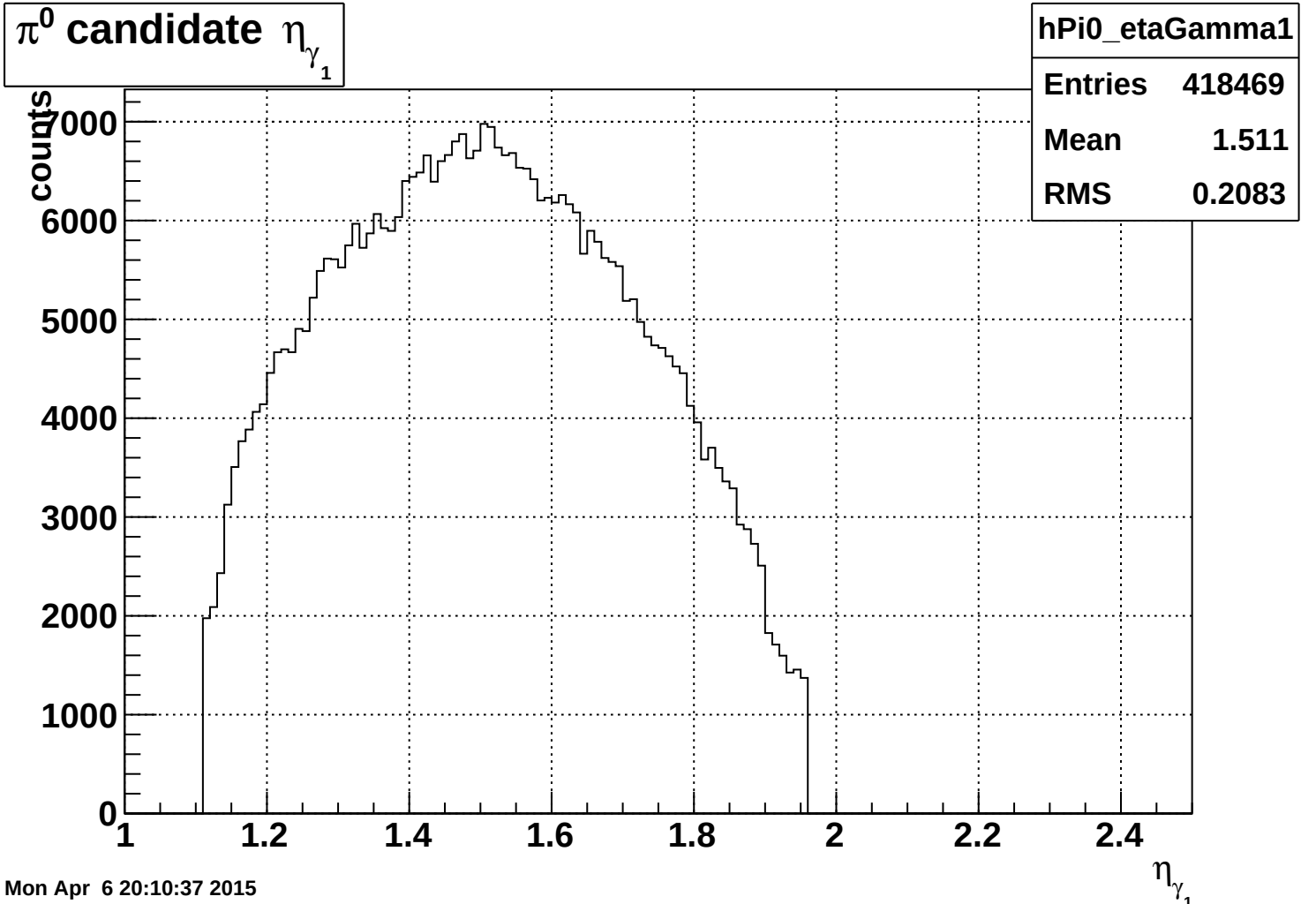

$M_{\gamma\gamma}$ vs. E_{γ_2}
hPi0InvMassETow2
Entries 418469
Mean x 0.3105
Mean y 3.785
RMS x 0.1612
RMS y 1.694
E_{γ_2} [GeV]
$M_{\gamma\gamma}$ [GeV/c^2]
0
5
10
15
20
25
30
0
0.1
0.2
0.3
0.4
0.5
0.6
0
100
200
300
400
Mon Apr 6 20:10:37 2015

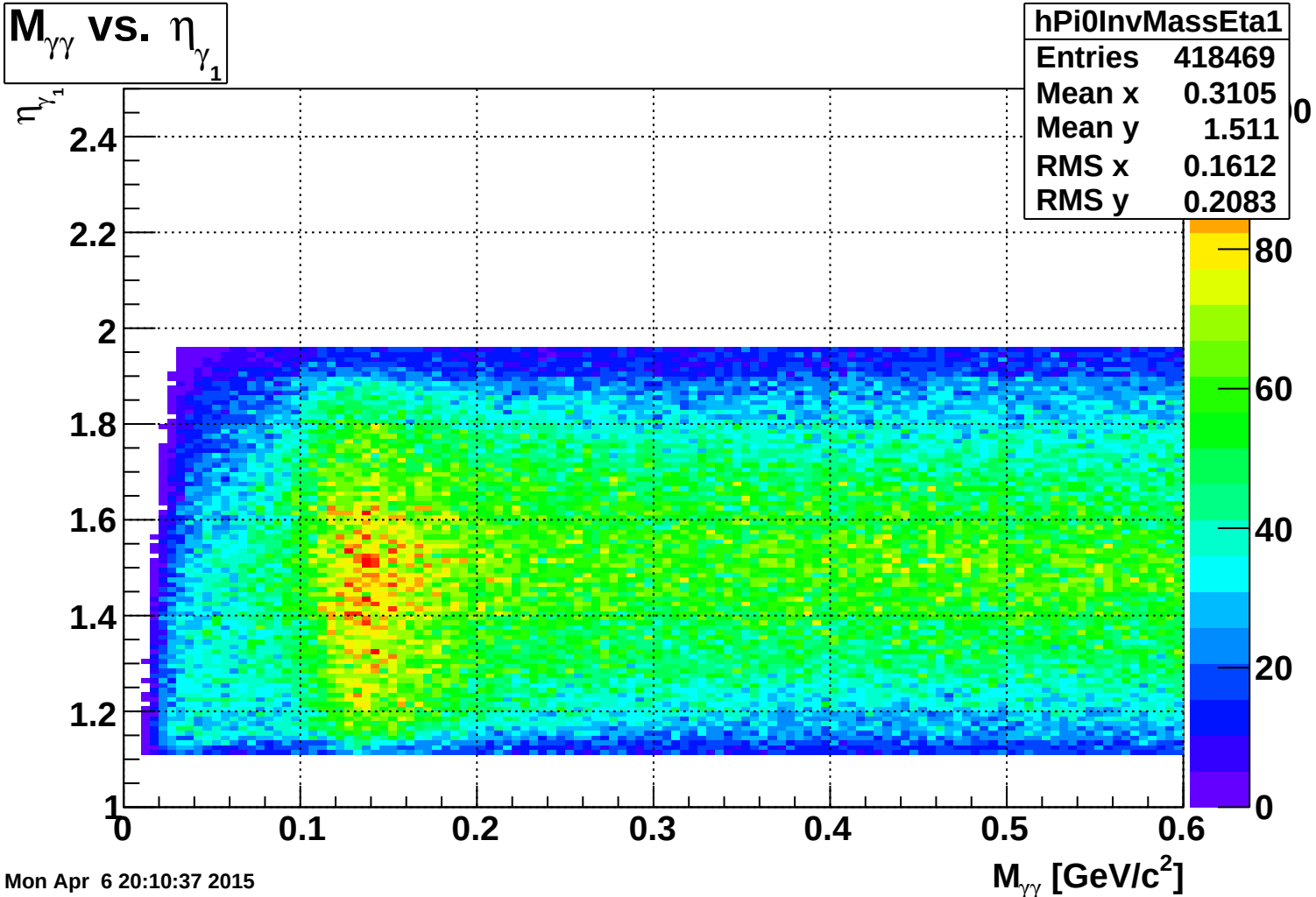

π^0 candidate preshower energy γ_1
hPi0_ePre11
Entries 418469
Mean 0.001432
RMS 0.002566
counts
×10
200
180
160
140
120
100
80
60
40
20
0
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
$E^{\gamma_1}_{preshower}$ [GeV]
Mon Apr 6 20:10:37 2015

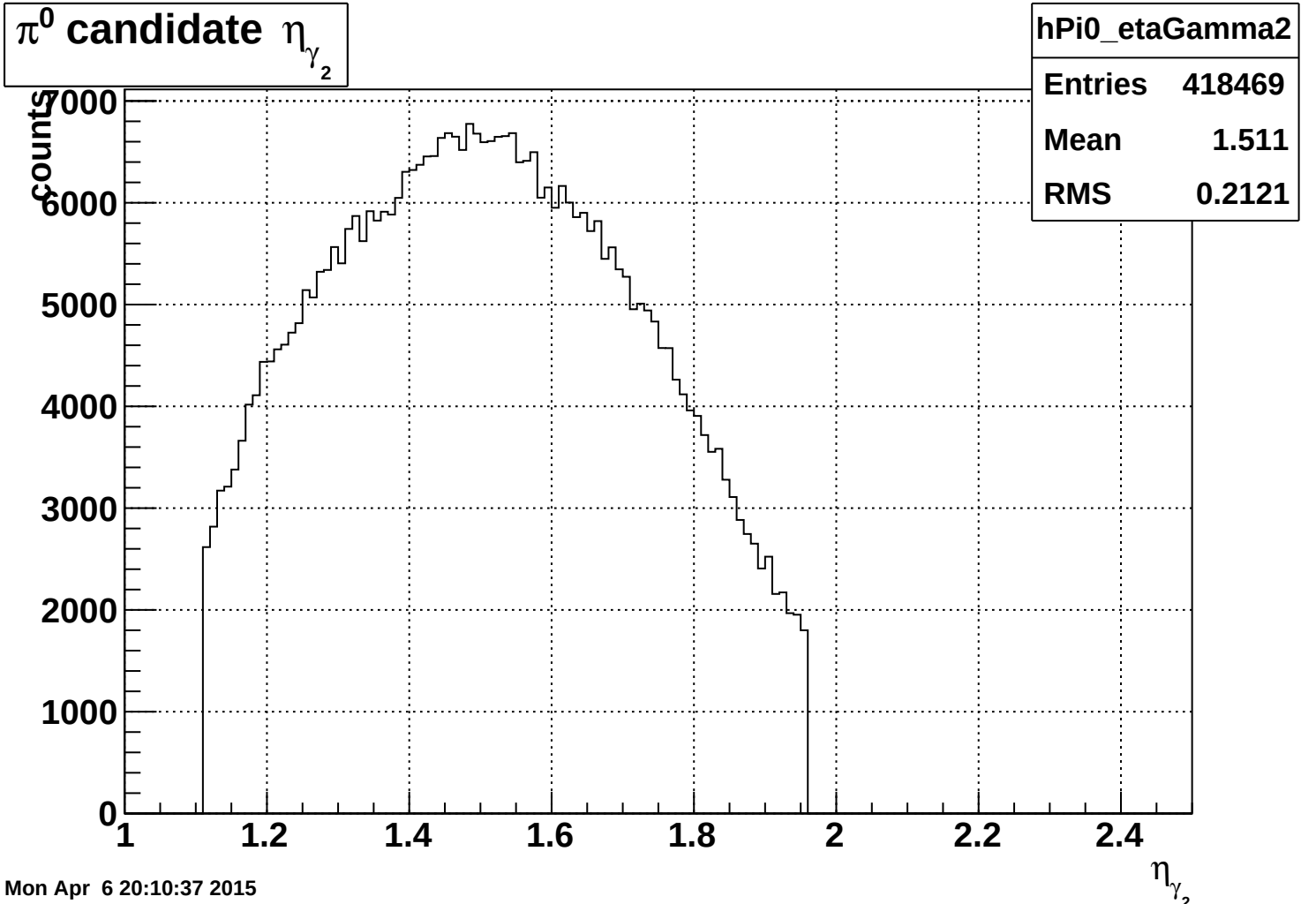

$M_{\gamma\gamma}$ vs. $E^{\gamma_1}_{preshower}$
hPi0InvMassEPre1
Entries 418469
Mean x 0.3105
Mean y 0.001432
RMS x 0.1612
RMS y 0.002566
$E^{\gamma_1}_{preshower}$ GeV
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
0.1
0.2
0.3
0.4
0.5
0.6
2000
1500
1000
500
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]

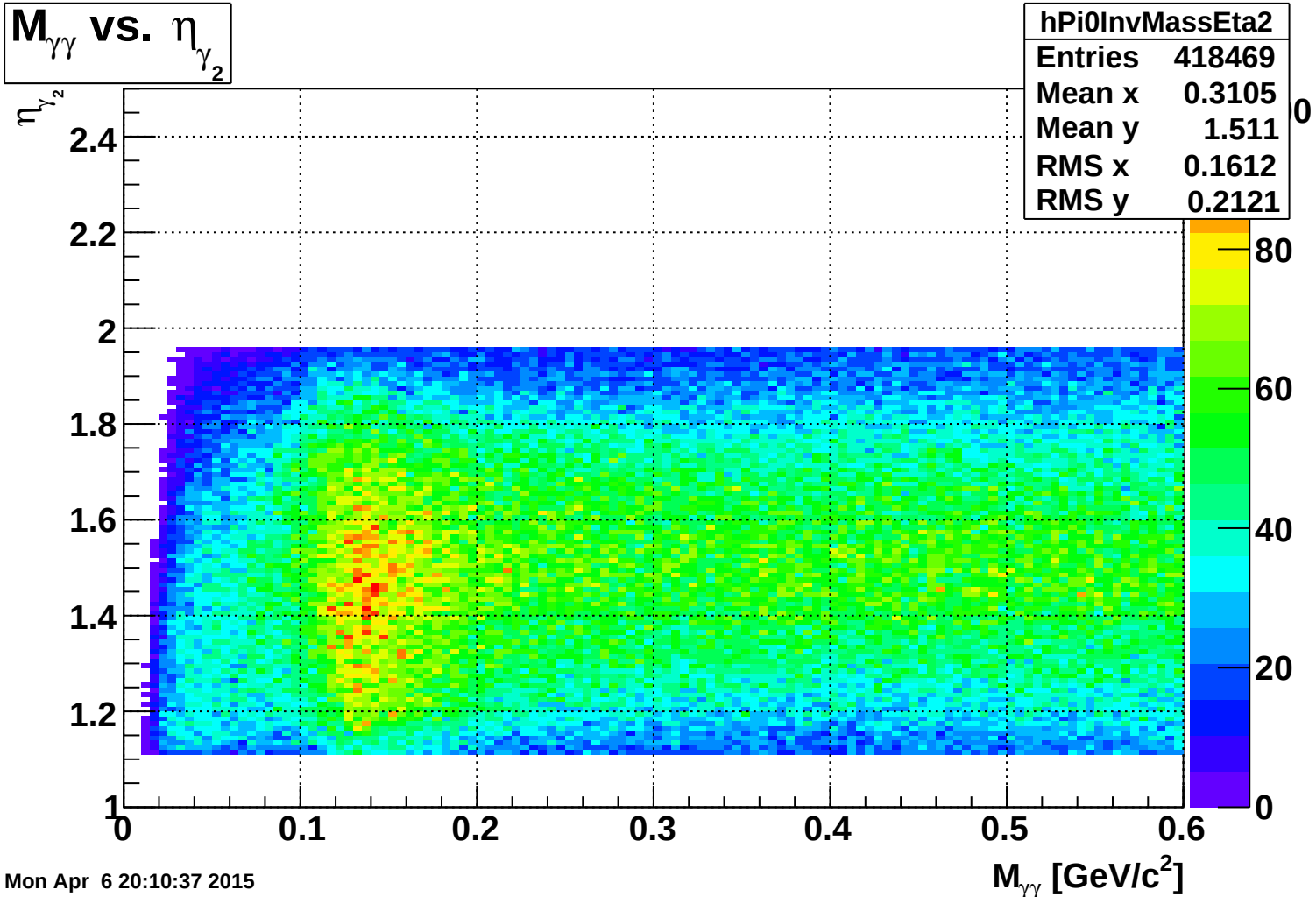

π^0 candidate preshower energy γ_2
hPi0_ePre12
Entries 418469
Mean 0.000889
RMS 0.001762
counts
×10
250
200
150
100
50
0
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
$E^{\gamma_2}_{preshower}$ [GeV]
Mon Apr 6 20:10:37 2015

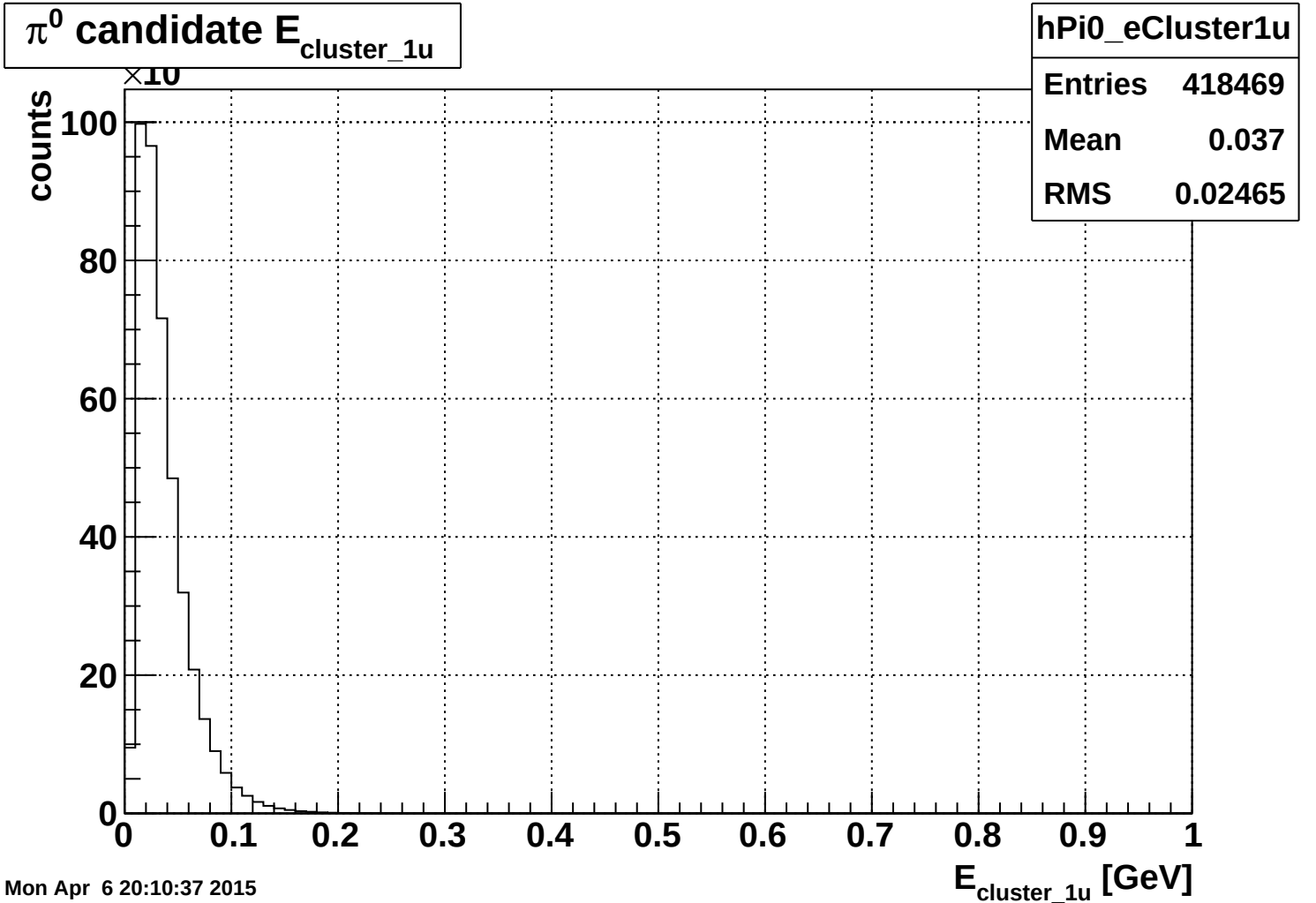

$M_{\gamma\gamma}$ vs. $E^{\gamma_2}_{preshower}$
hPi0InvMassEPre2
Entries 418469
Mean x 0.3105
Mean y 0.000889
RMS x 0.1612
RMS y 0.001762
$E^{\gamma_2}_{preshower}$ GeV
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
0.1
0.2
0.3
0.4
0.5
0.6
2500
2000
1500
1000
500
$M_{\gamma\gamma}$ [GeV/c^2]
Mon Apr 6 20:10:37 2015

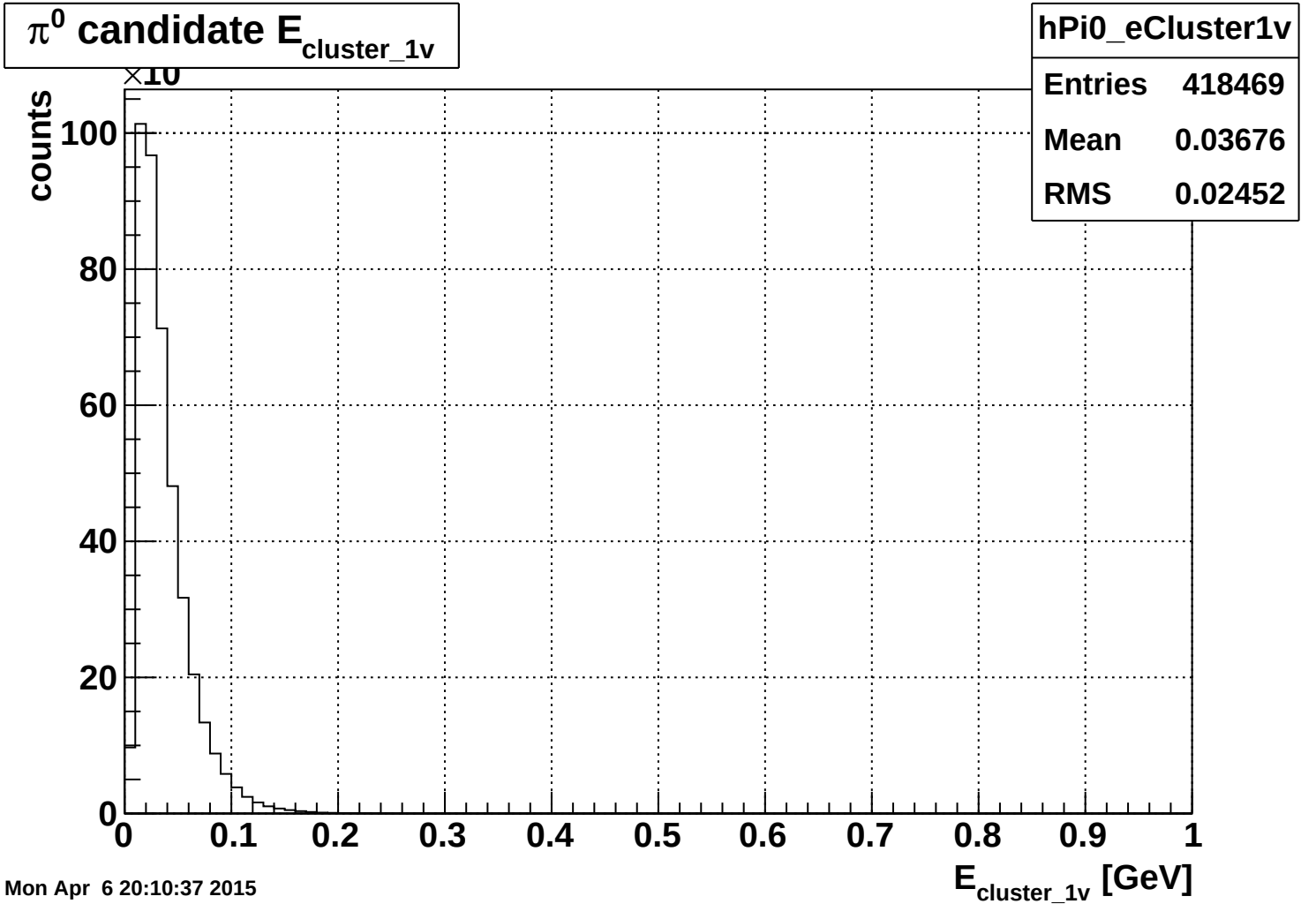

π^0 candidate η_{γ_1}
hPi0_etaGamma1
Entries 418469
Mean 1.511
RMS 0.2083
counts
7000
6000
5000
4000
3000
2000
1000
0
1
1.2
1.4
1.6
1.8
2
2.2
2.4
η_{γ_1}
Mon Apr 6 20:10:37 2015

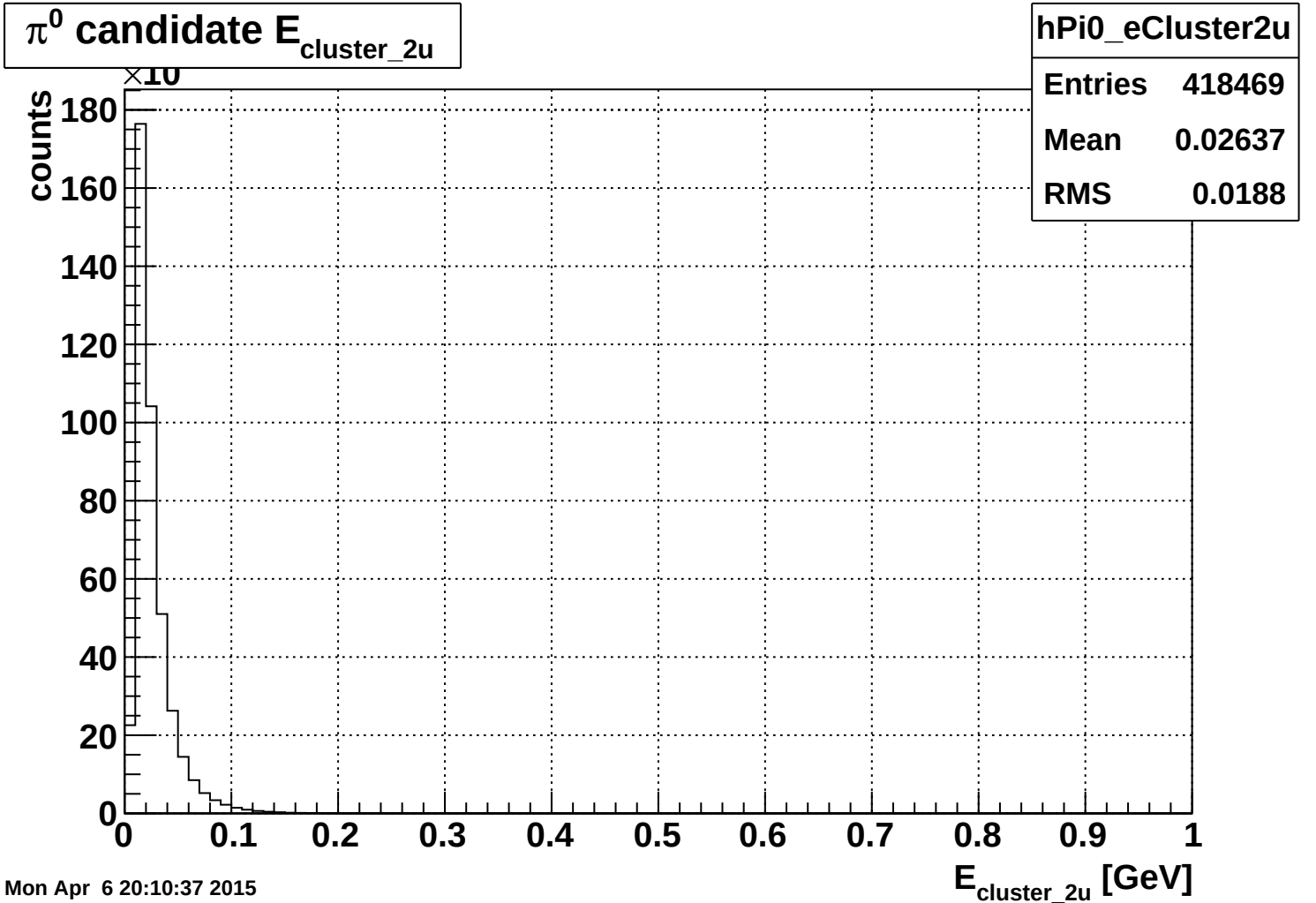

$M_{\gamma\gamma}$ vs. η_{γ_1}
hPi0InvMassEta1
Entries 418469
Mean x 0.3105
Mean y 1.511
RMS x 0.1612
RMS y 0.2083
η_{γ_1}
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0
0.1
0.2
0.3
0.4
0.5
0.6
80
60
40
20
0
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]

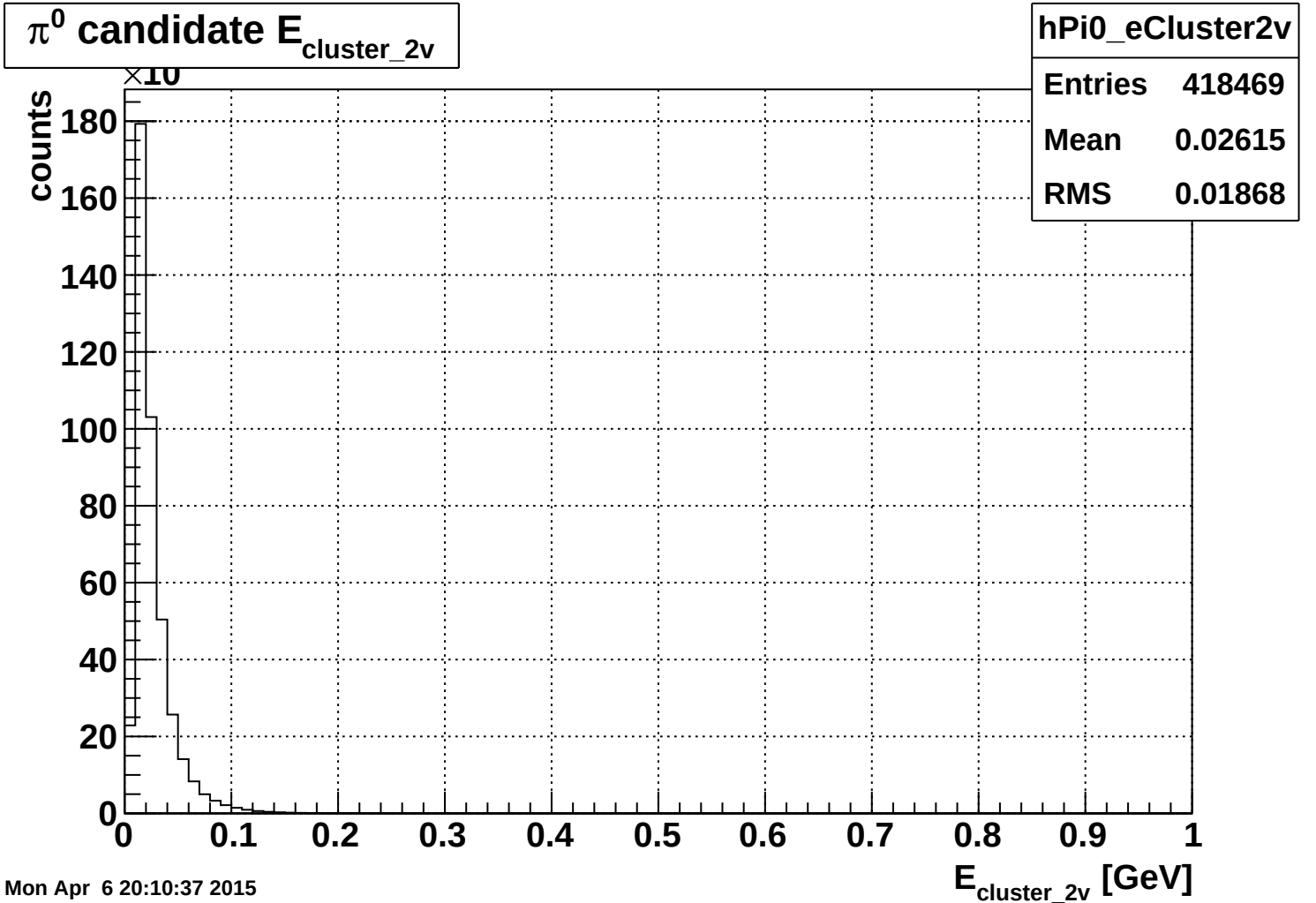

π^0 candidate η_{γ_2}
hPi0_etaGamma2
Entries 418469
Mean 1.511
RMS 0.2121
counts
7000
6000
5000
4000
3000
2000
1000
0
1
1.2
1.4
1.6
1.8
2
2.2
2.4
η_{γ_2}
Mon Apr 6 20:10:37 2015

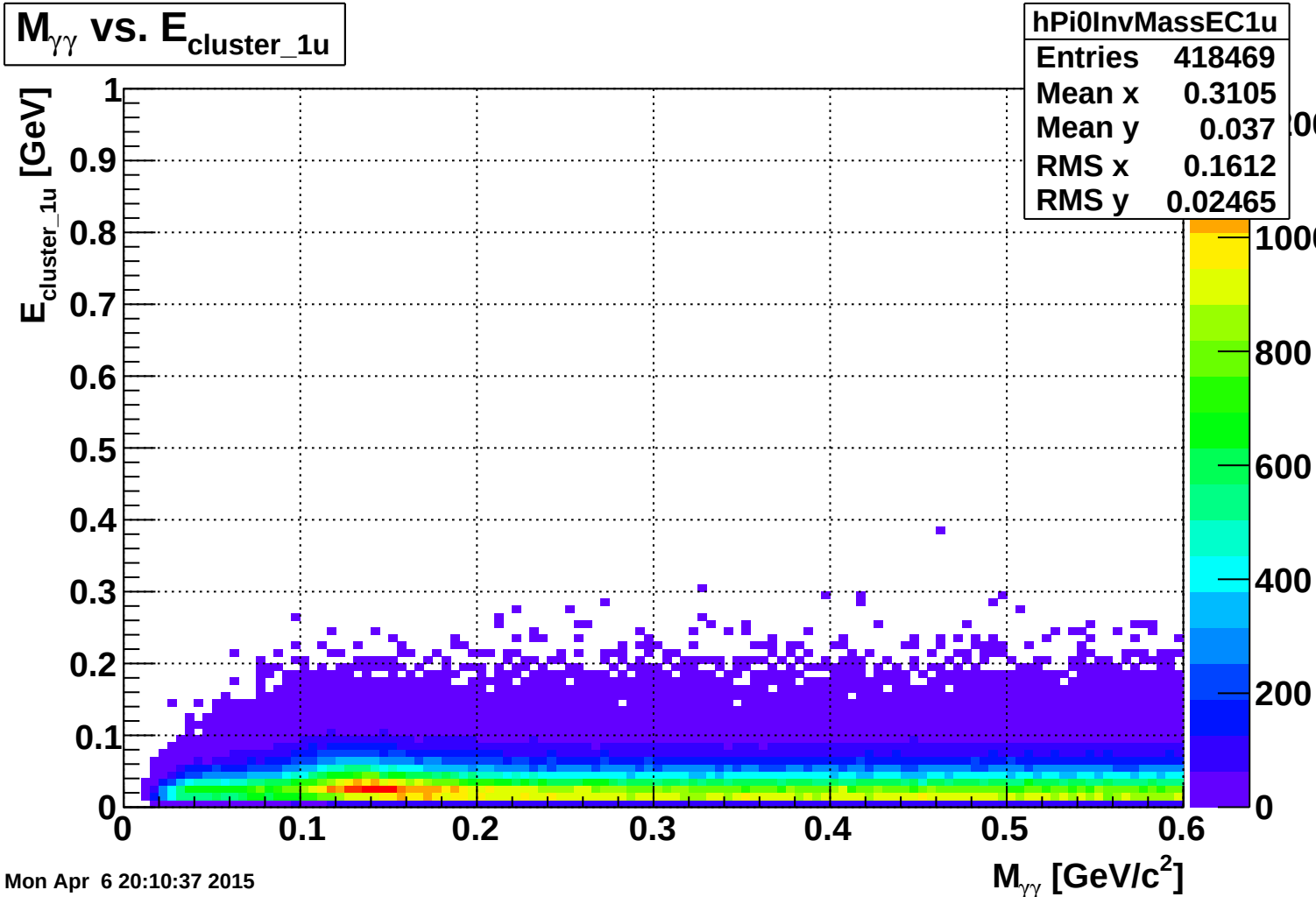

$M_{\gamma\gamma}$ vs. η_{γ_2}
hPi0InvMassEta2
Entries 418469
Mean x 0.3105
Mean y 1.511
RMS x 0.1612
RMS y 0.2121
η_{γ_2}
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0
0.1
0.2
0.3
0.4
0.5
0.6
80
60
40
20
0
$M_{\gamma\gamma}$ [GeV/c^2]
Mon Apr 6 20:10:37 2015

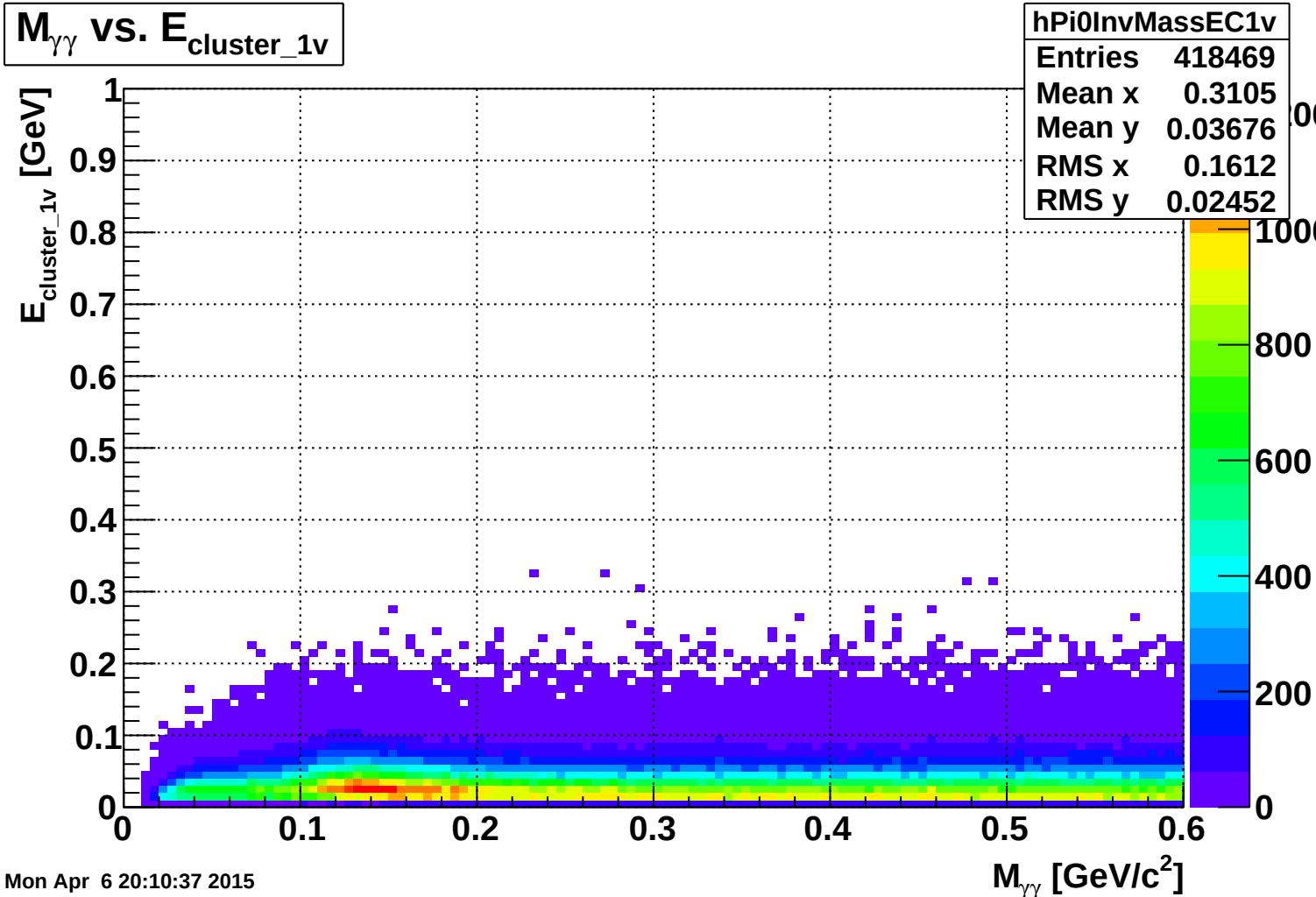

π^0 candidate $E_{cluster_1u}$
hPi0_eCluster1u
Entries 418469
Mean 0.037
RMS 0.02465
counts
×10
100
80
60
40
20
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
$E_{cluster_1u}$ [GeV]
Mon Apr 6 20:10:37 2015

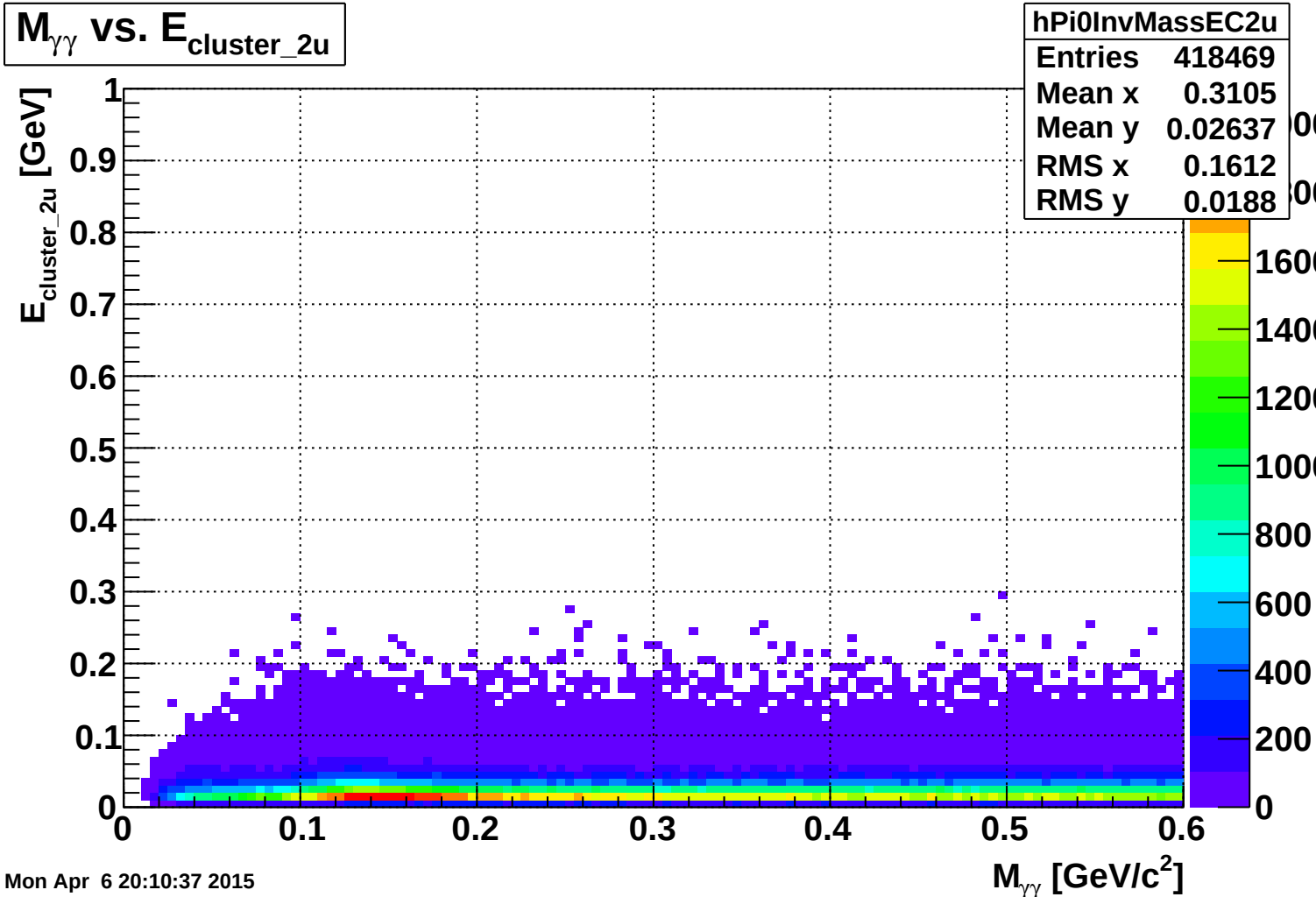

π^0 candidate $E_{cluster_1v}$
hPi0_eCluster1v
Entries 418469
Mean 0.03676
RMS 0.02452
counts
×10
100
80
60
40
20
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
$E_{cluster_1v}$ [GeV]
Mon Apr 6 20:10:37 2015

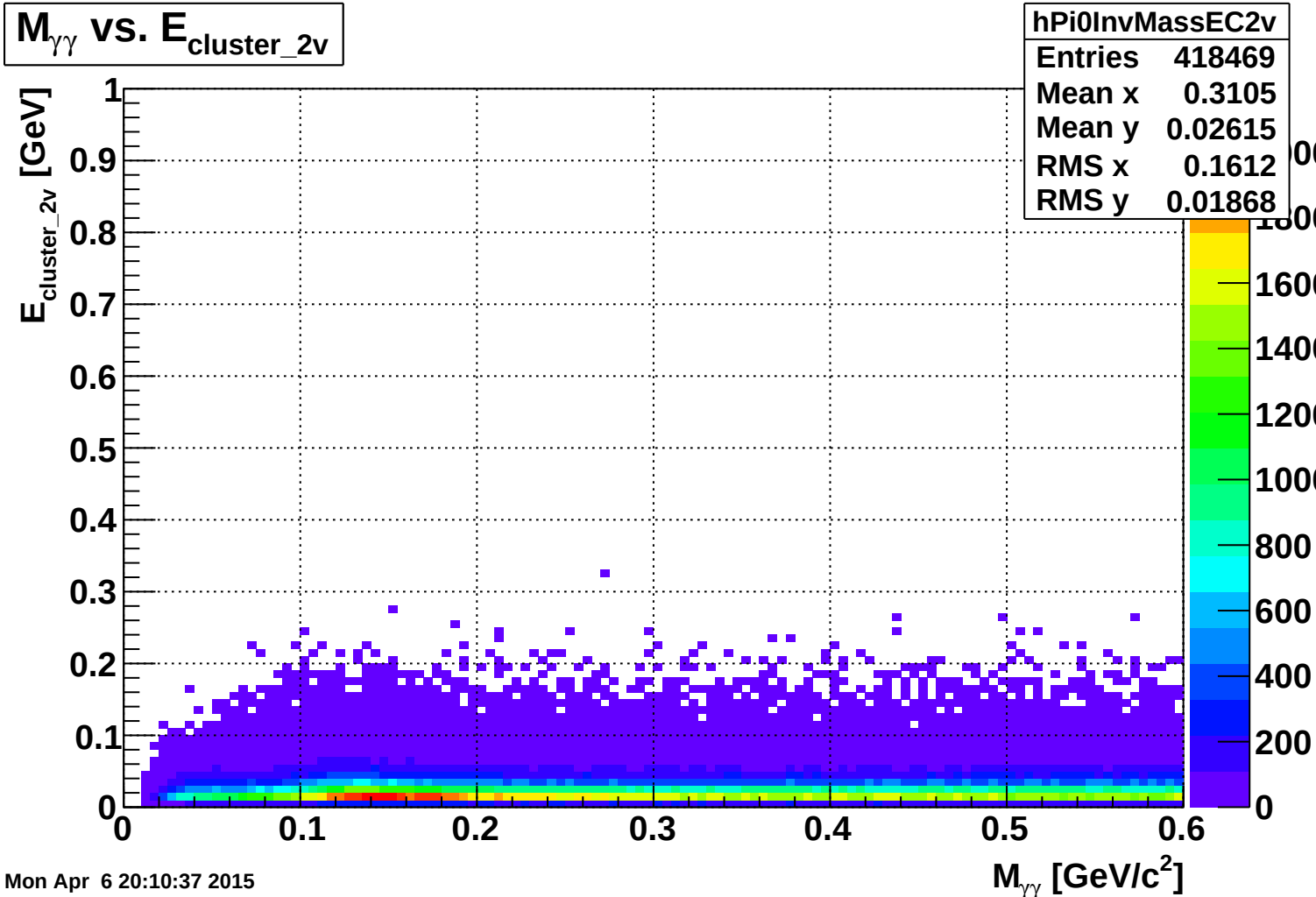

π^0 candidate $E_{cluster_2u}$
hPi0_eCluster2u
Entries 418469
Mean 0.02637
RMS 0.0188
counts
×10
180
160
140
120
100
80
60
40
20
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
$E_{cluster_2u}$ [GeV]
Mon Apr 6 20:10:37 2015

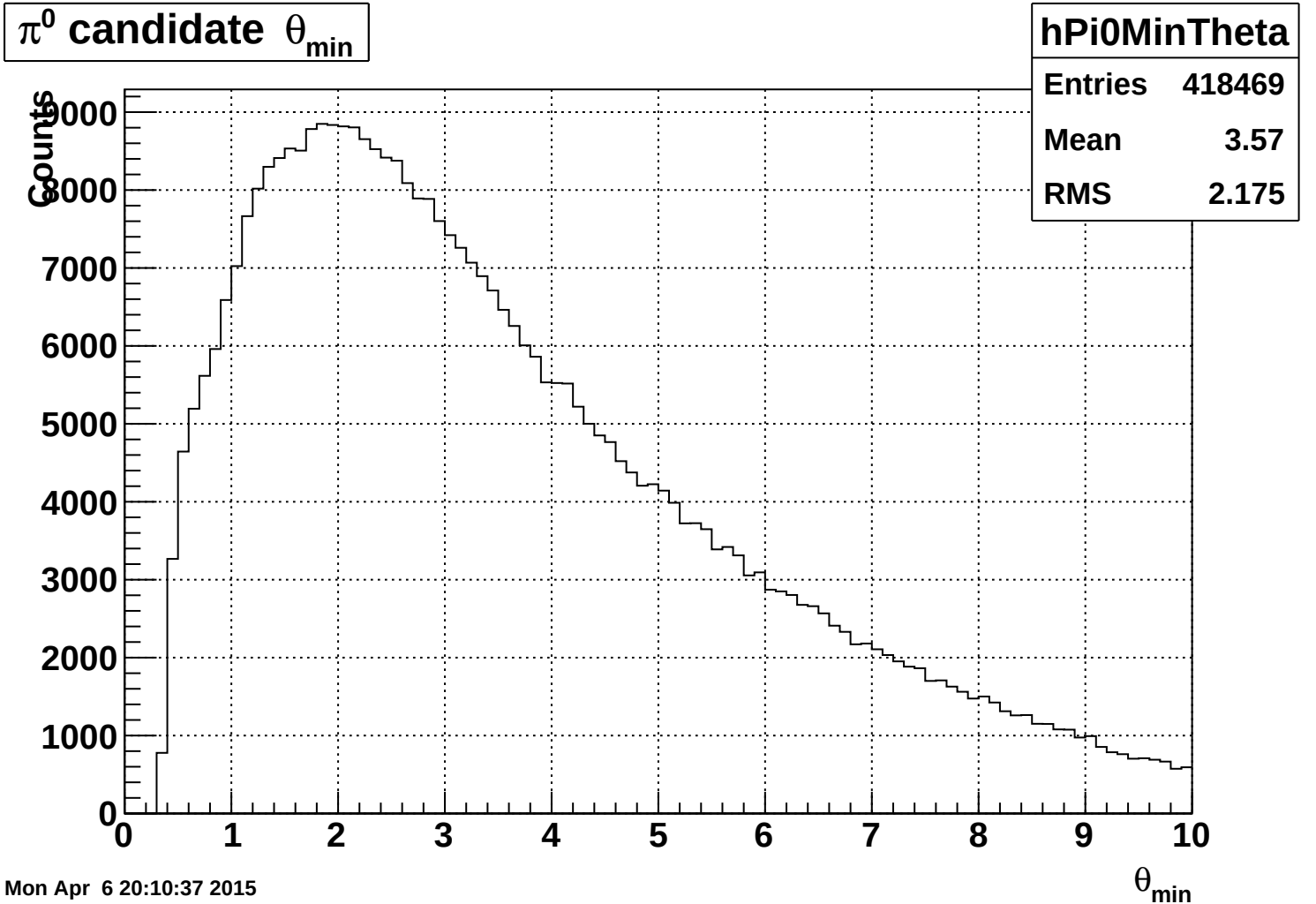

π^0 candidate $E_{cluster_2v}$
hPi0_eCluster2v
Entries 418469
Mean 0.02615
RMS 0.01868
counts
×10
180
160
140
120
100
80
60
40
20
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
$E_{cluster_2v}$ [GeV]
Mon Apr 6 20:10:37 2015

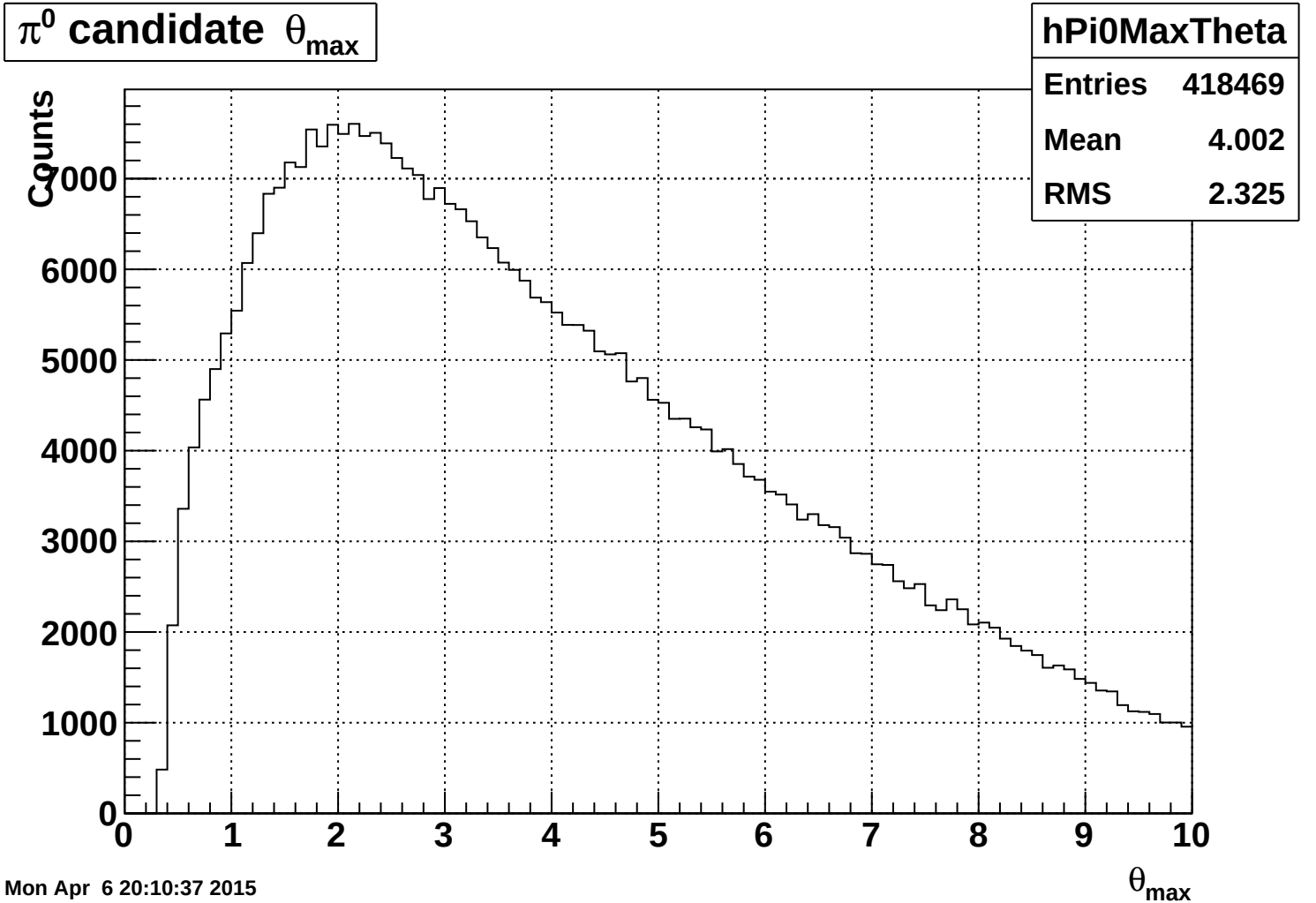

$M_{\gamma\gamma}$ vs. $E_{cluster_1u}$
hPi0InvMassEC1u
Entries 418469
Mean x 0.3105
Mean y 0.037
RMS x 0.1612
RMS y 0.02465
$E_{cluster_1u}$ [GeV]
$M_{\gamma\gamma}$ [GeV/c^2]
Mon Apr 6 20:10:37 2015

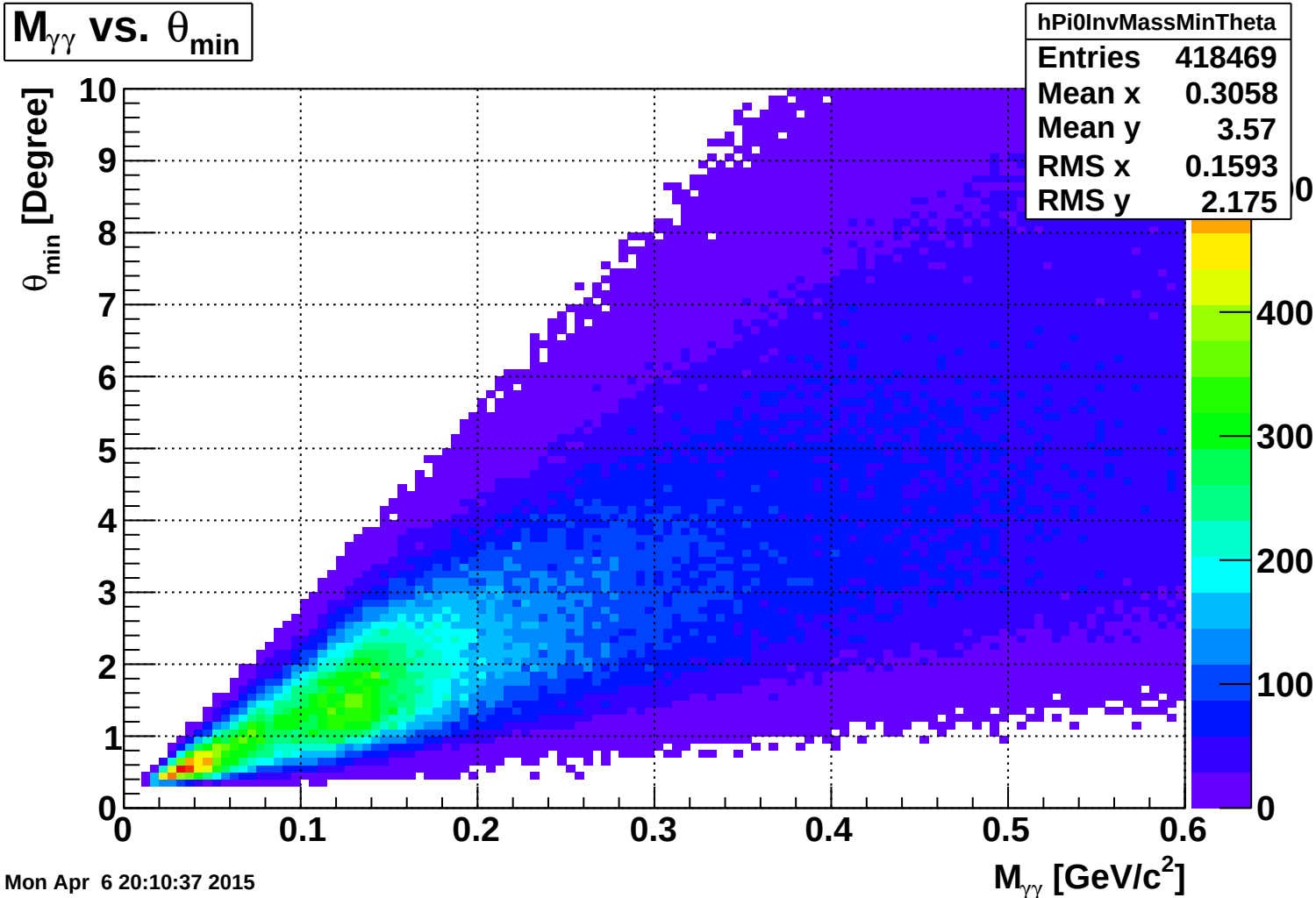

$M_{\gamma\gamma}$ vs. $E_{cluster_1v}$
hPi0InvMassEC1v
Entries 418469
Mean x 0.3105
Mean y 0.03676
RMS x 0.1612
RMS y 0.02452
$E_{cluster_1v}$ [GeV]
$M_{\gamma\gamma}$ [GeV/c^2]
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
200
400
600
800
1000
Mon Apr 6 20:10:37 2015

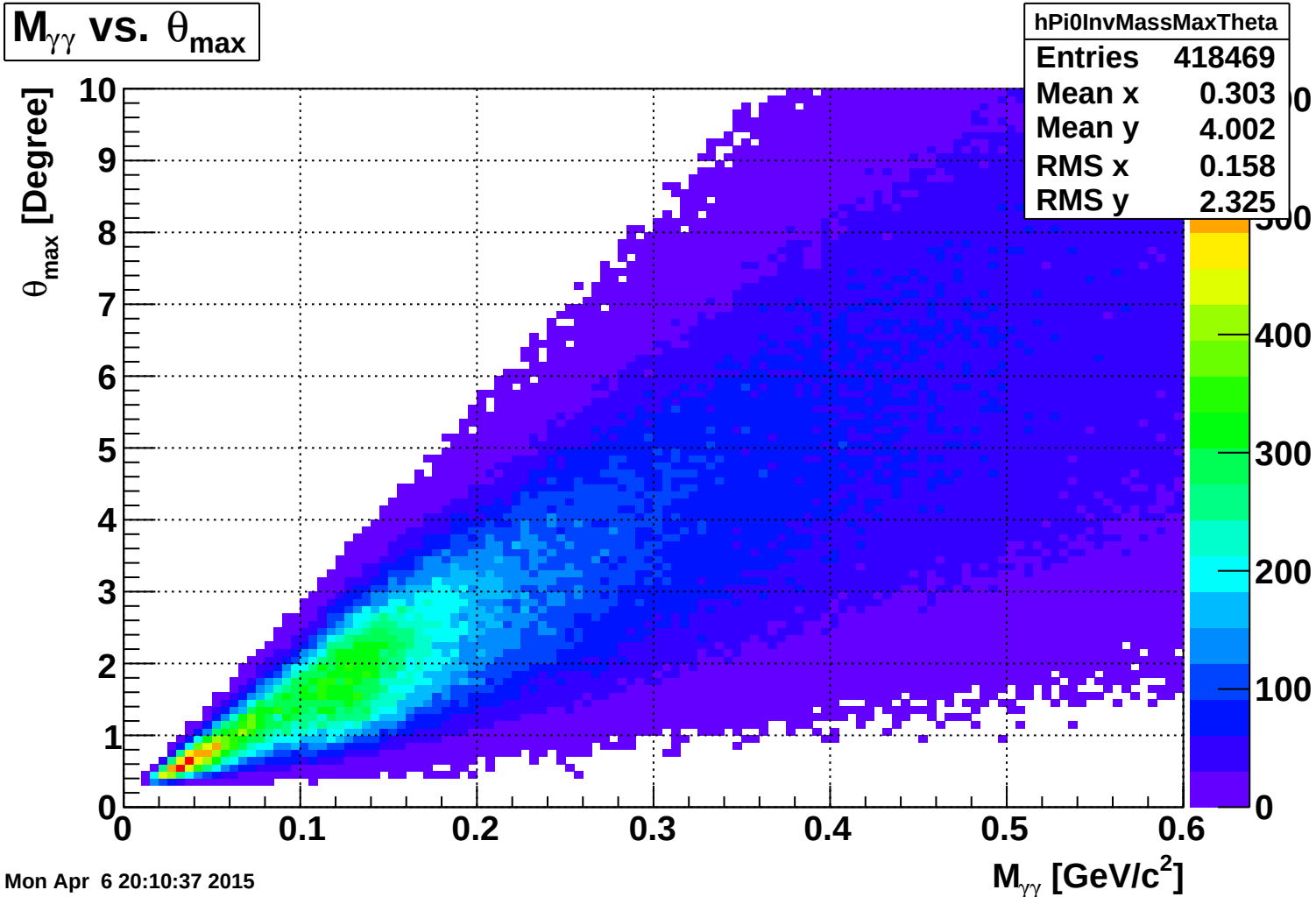

$M_{\gamma\gamma}$ vs. $E_{cluster_2u}$
hPi0InvMassEC2u
Entries 418469
Mean x 0.3105
Mean y 0.02637
RMS x 0.1612
RMS y 0.0188
$E_{cluster_2u}$ [GeV]
$M_{\gamma\gamma}$ [GeV/c^2]
Mon Apr 6 20:10:37 2015

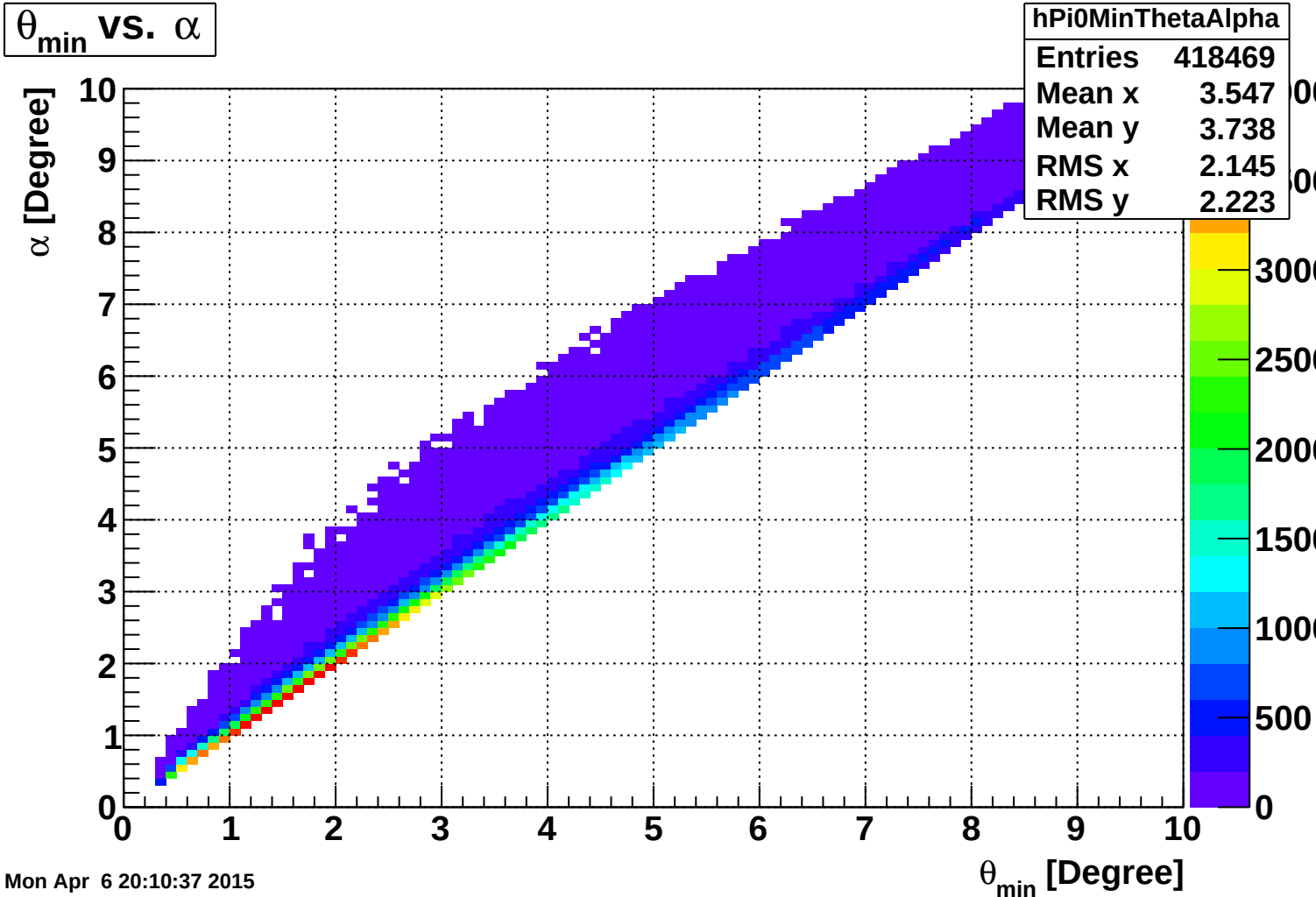

$M_{\gamma\gamma}$ vs. $E_{cluster_2v}$
hPi0InvMassEC2v
Entries 418469
Mean x 0.3105
Mean y 0.02615
RMS x 0.1612
RMS y 0.01868
$E_{cluster_2v}$ [GeV]
$M_{\gamma\gamma}$ [GeV/c^2]
Mon Apr 6 20:10:37 2015

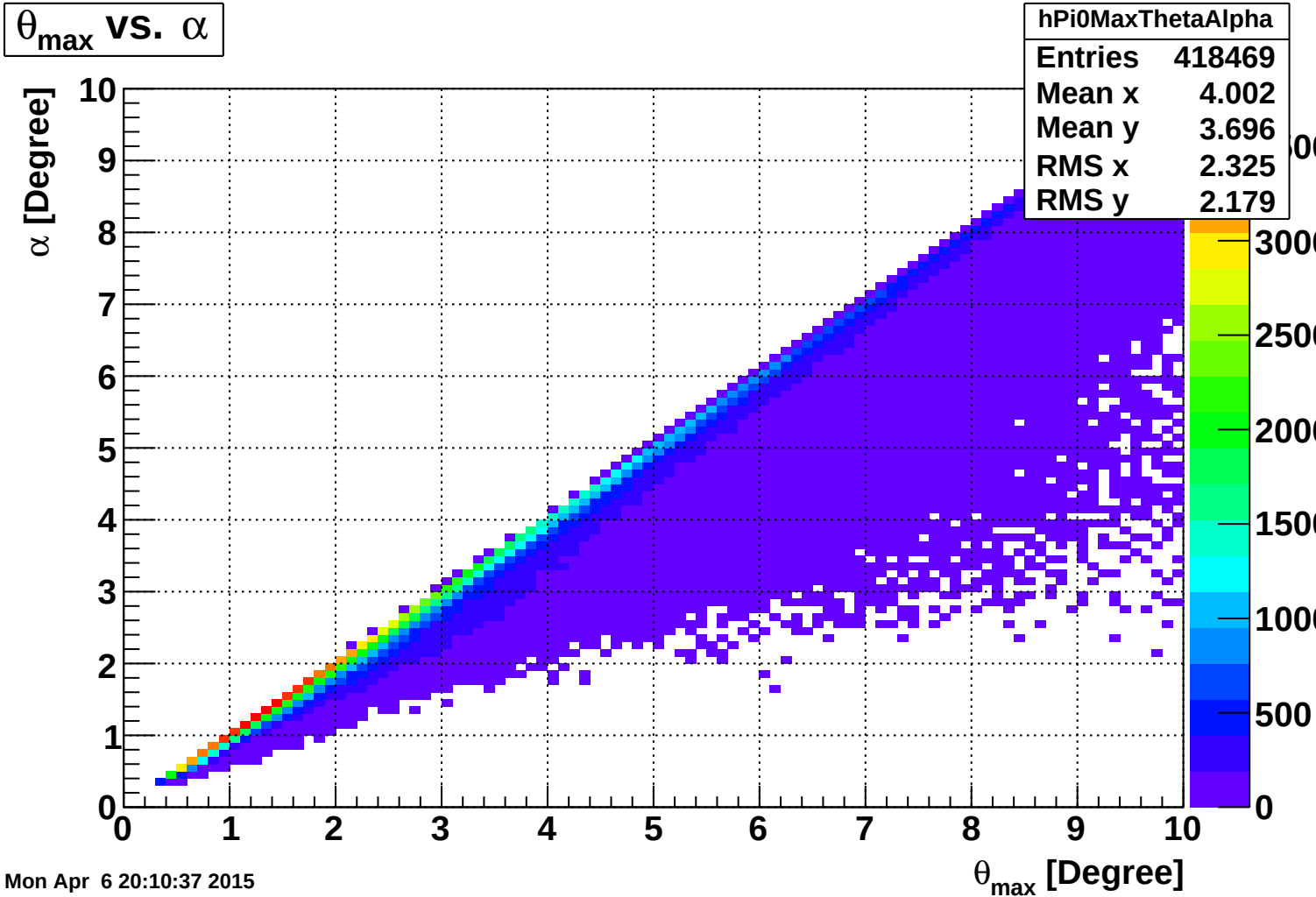

π^0 candidate θ_{min}
hPi0MinTheta
Entries 418469
Mean 3.57
RMS 2.175
Counts
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
0
1
2
3
4
5
6
7
8
9
10
θ_{min}
Mon Apr 6 20:10:37 2015

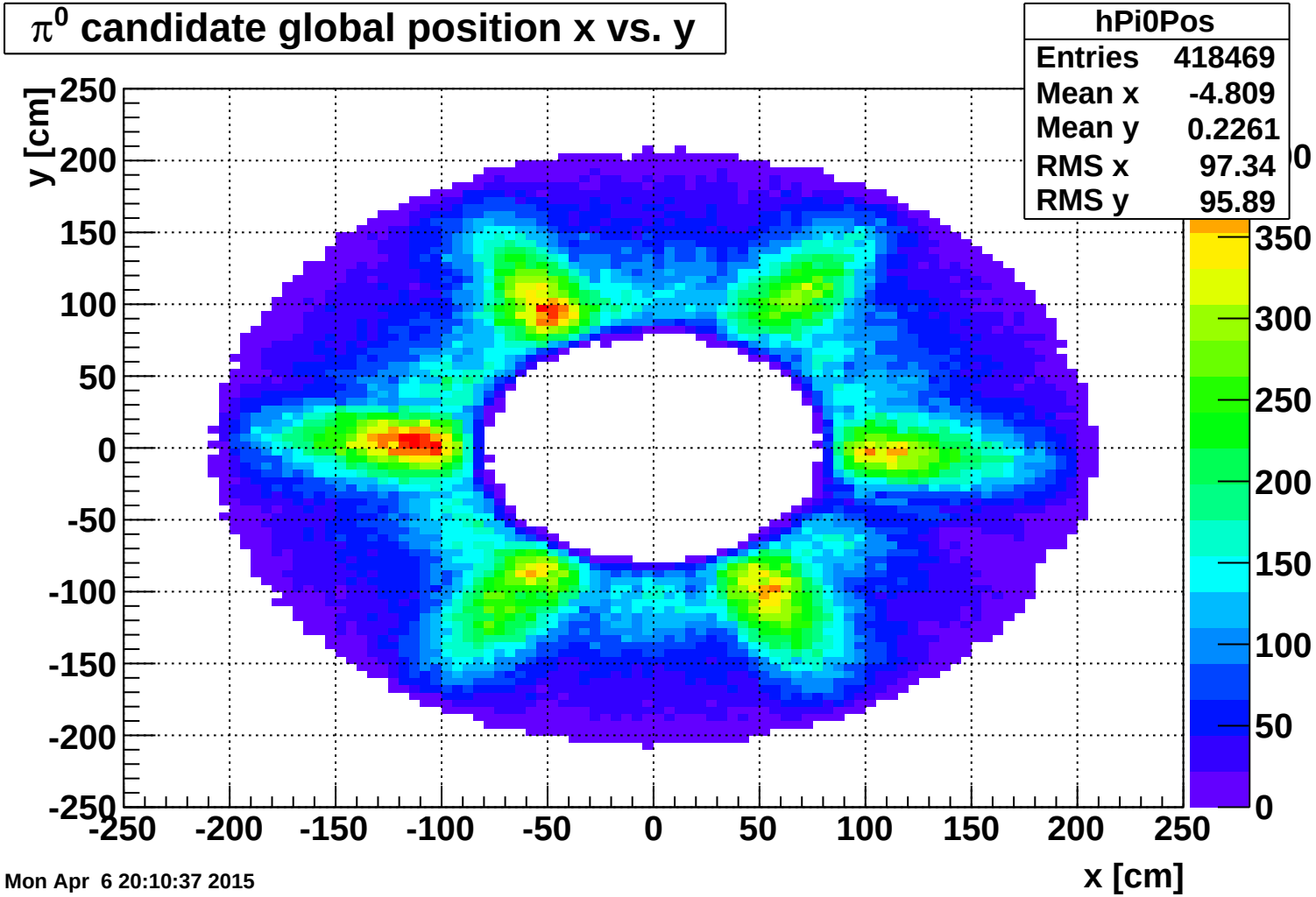

π^0 candidate θ_{max}
hPi0MaxTheta
Entries 418469
Mean 4.002
RMS 2.325
Counts
0
1000
2000
3000
4000
5000
6000
7000
0
1
2
3
4
5
6
7
8
9
10
θ_{max}
Mon Apr 6 20:10:37 2015

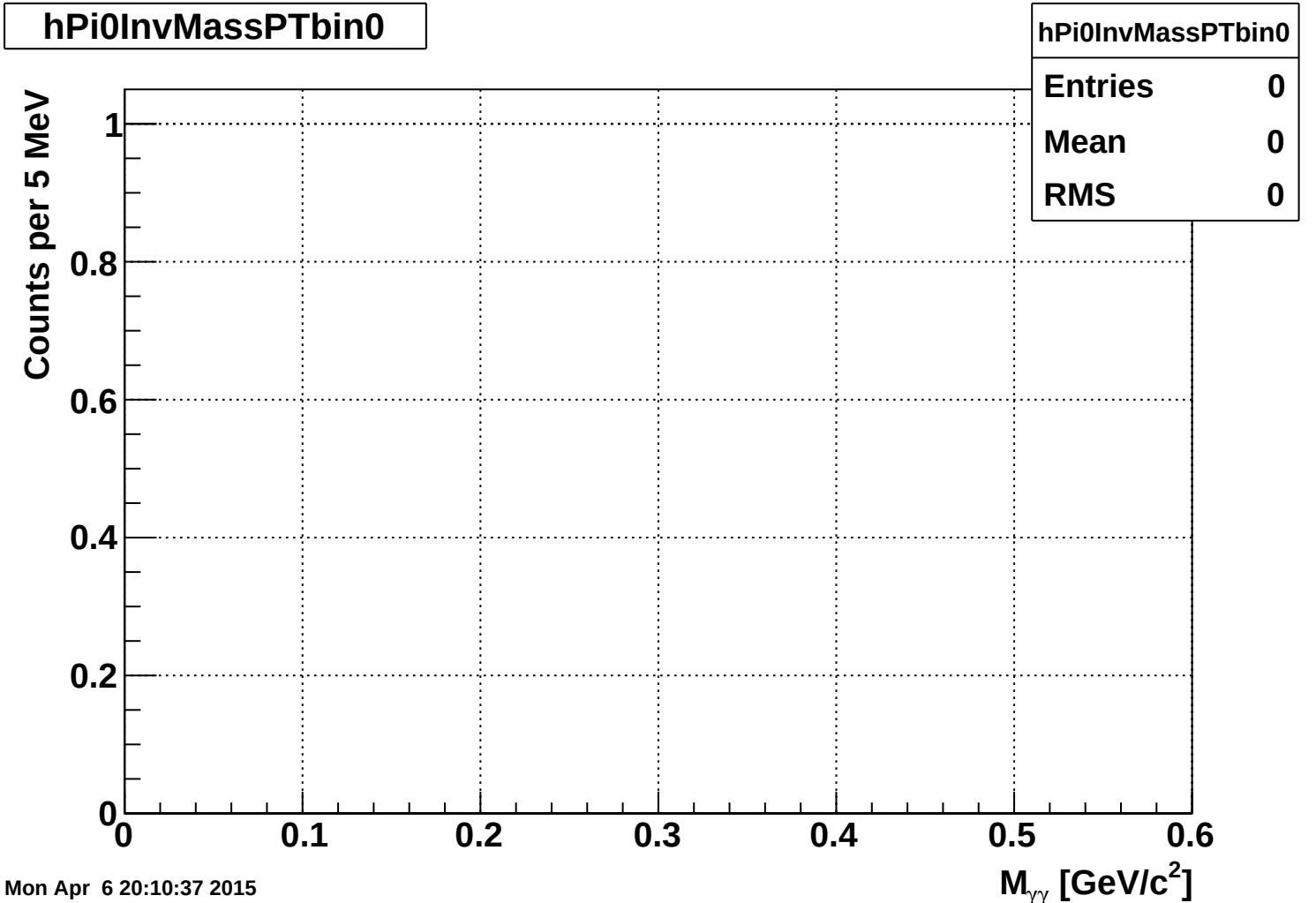

$M_{\gamma\gamma}$ vs. θ_{min}
hPi0InvMassMinTheta
Entries 418469
Mean x 0.3058
Mean y 3.57
RMS x 0.1593
RMS y 2.175
θ_{min} [Degree]
$M_{\gamma\gamma}$ [GeV/c^2]
0
1
2
3
4
5
6
7
8
9
10
0.1
0.2
0.3
0.4
0.5
0.6
100
200
300
400
Mon Apr 6 20:10:37 2015

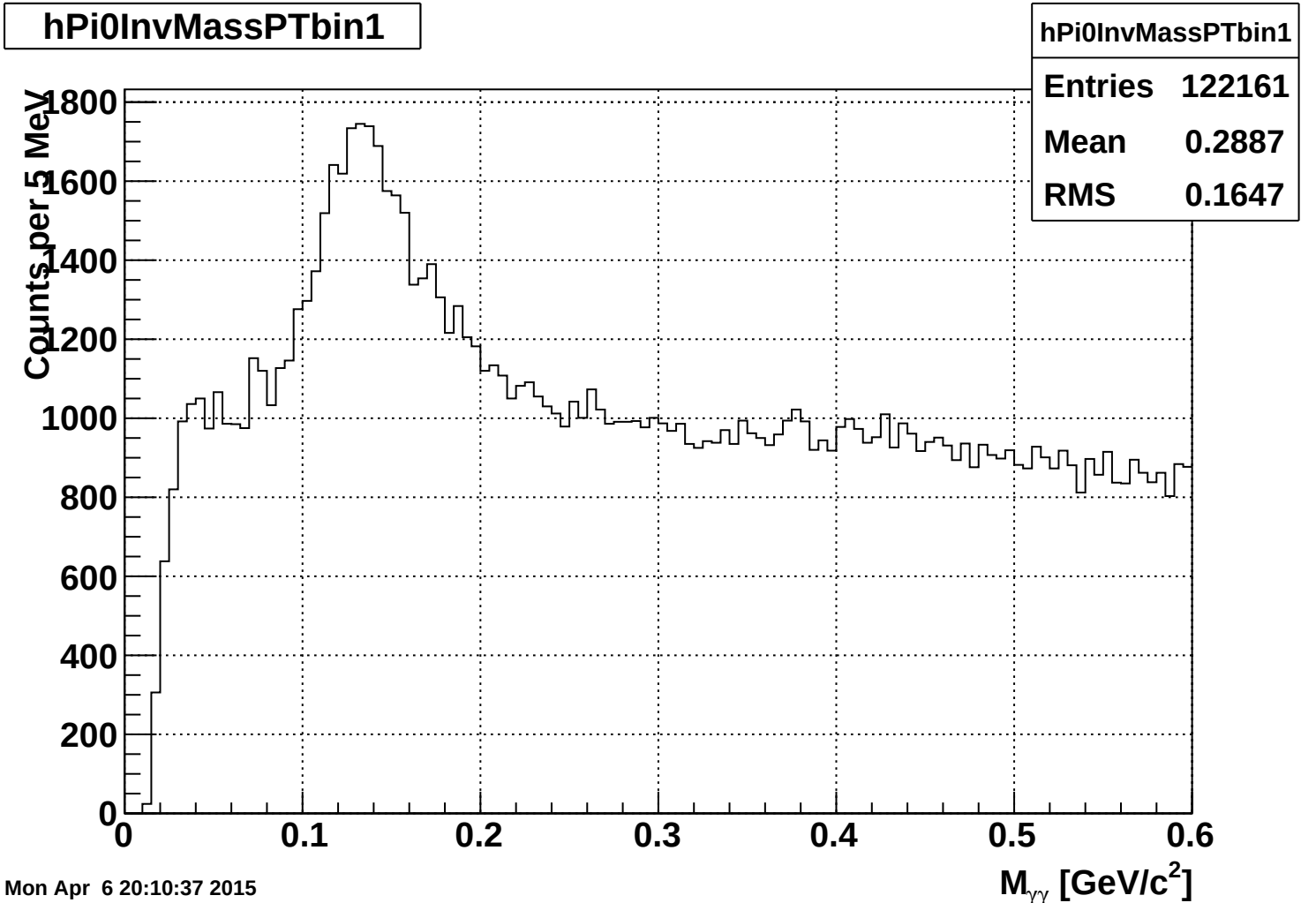

$M_{\gamma\gamma}$ vs. θ_{max}
hPi0InvMassMaxTheta
Entries 418469
Mean x 0.303
Mean y 4.002
RMS x 0.158
RMS y 2.325
θ_{max} [Degree]
$M_{\gamma\gamma}$ [GeV/c^2]
Mon Apr 6 20:10:37 2015

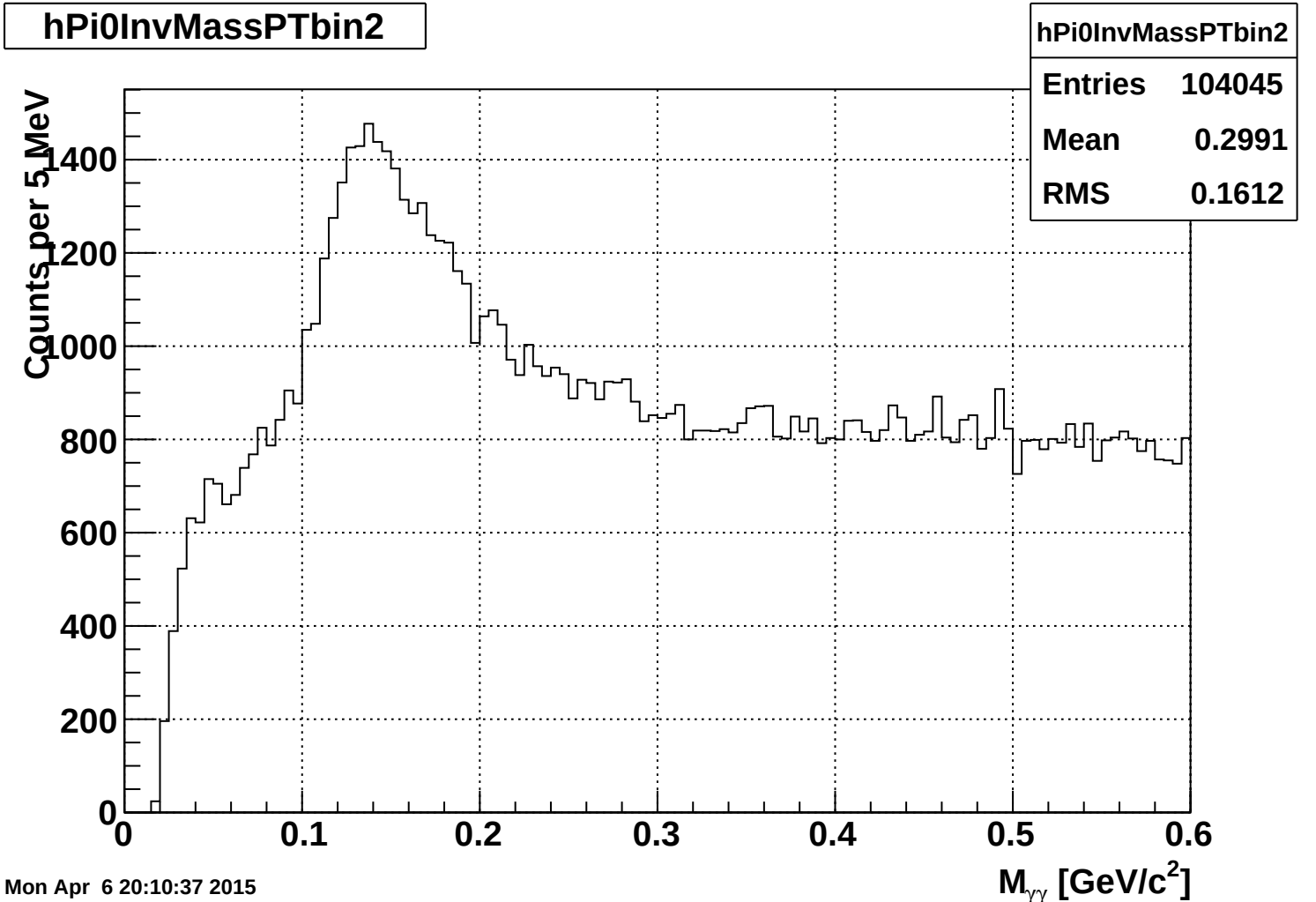

θmin vs. α
hPi0MinThetaAlpha
Entries 418469
Mean x 3.547
Mean y 3.738
RMS x 2.145
RMS y 2.223
α [Degree]
θmin [Degree]
Mon Apr 6 20:10:37 2015

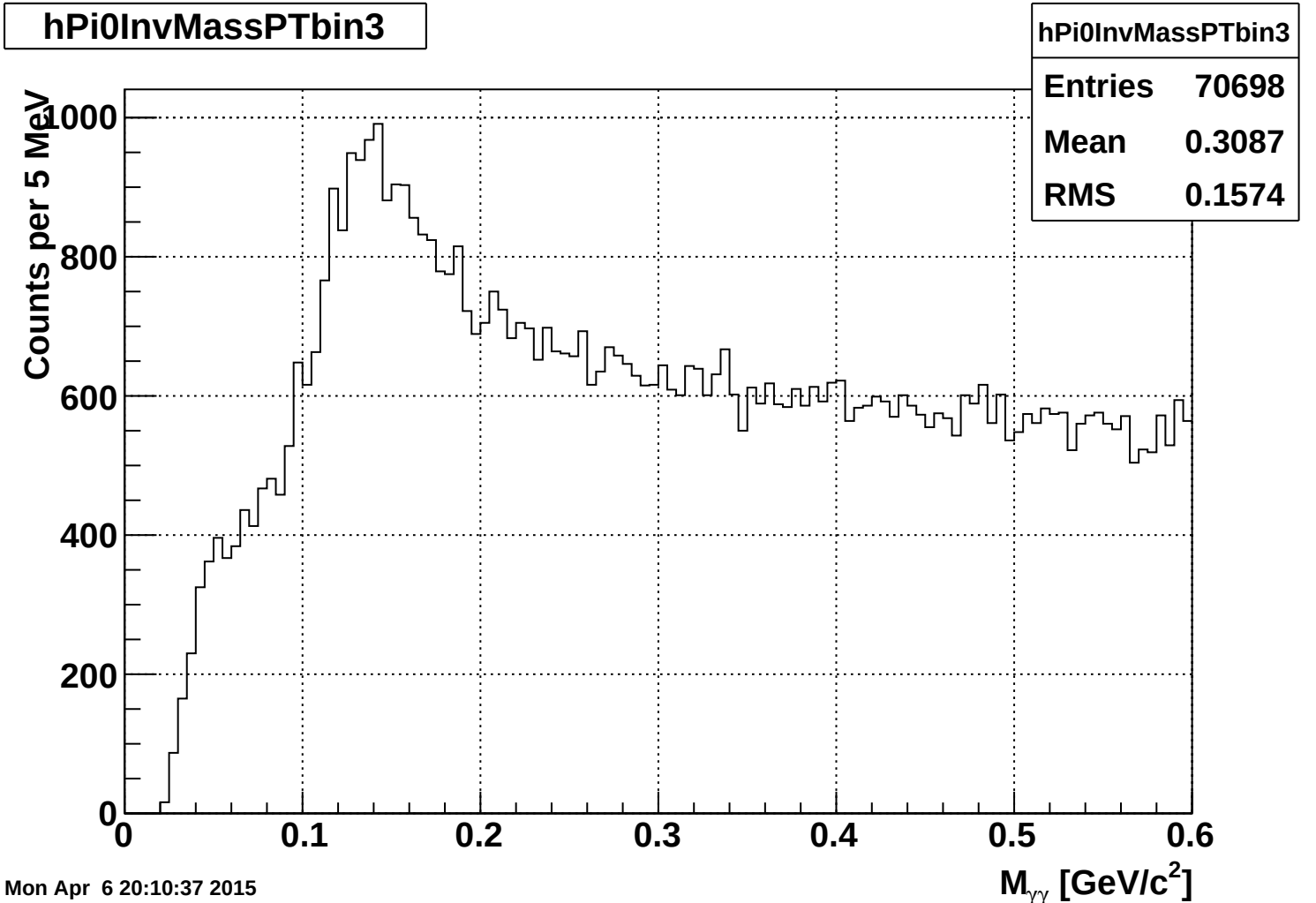

θmax vs. α
hPi0MaxThetaAlpha
Entries 418469
Mean x 4.002
Mean y 3.696
RMS x 2.325
RMS y 2.179
α [Degree]
θmax [Degree]
0
1
2
3
4
5
6
7
8
9
10
500
1000
1500
2000
2500
3000
Mon Apr 6 20:10:37 2015

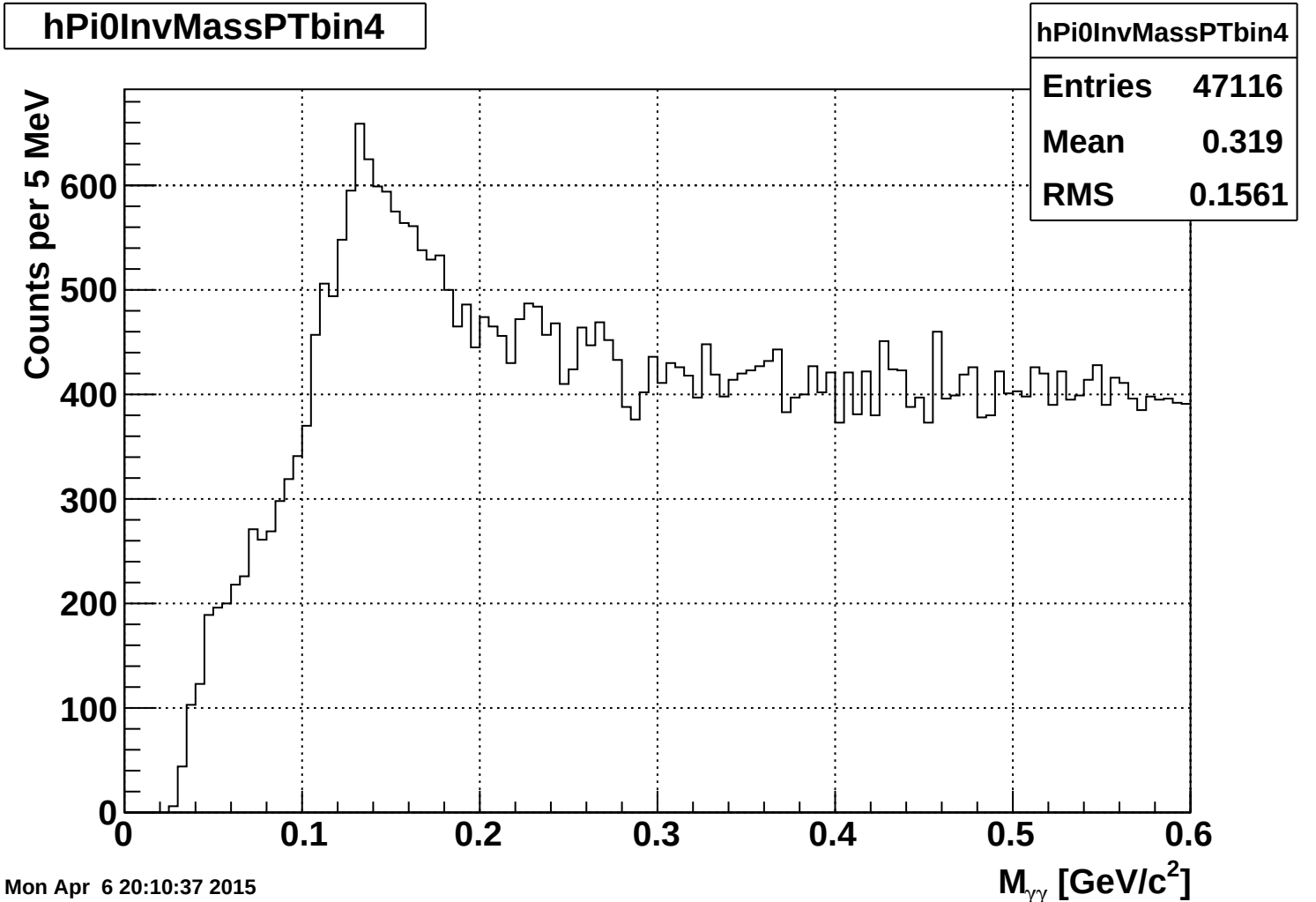

π^0 candidate global position x vs. y
hPi0Pos
Entries 418469
Mean x -4.809
Mean y 0.2261
RMS x 97.34
RMS y 95.89
y [cm]
x [cm]
250
200
150
100
50
0
-50
-100
-150
-200
-250
350
300
250
200
150
100
50
0
Mon Apr 6 20:10:37 2015

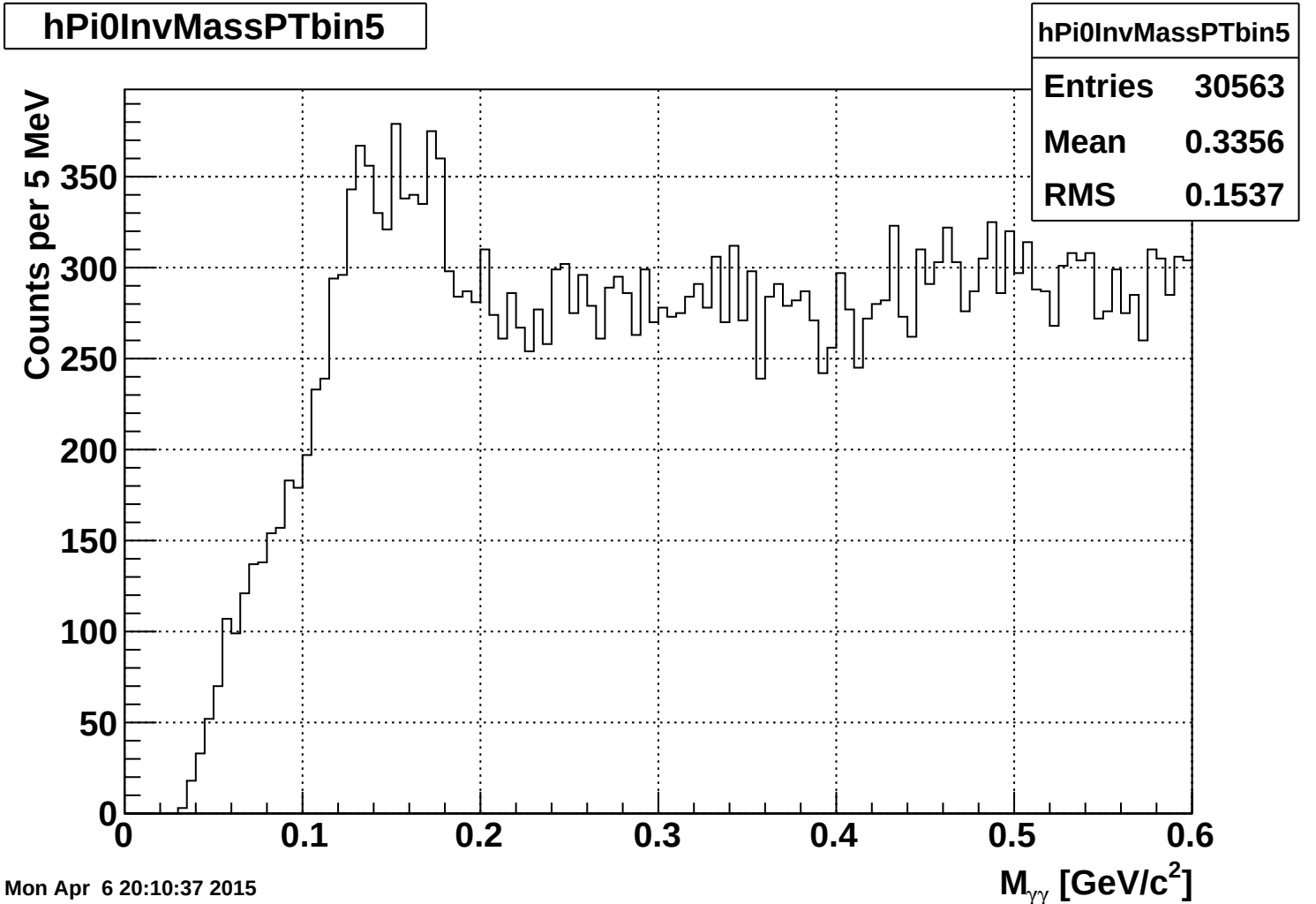

hPi0InvMassPTbin0
hPi0InvMassPTbin0
Entries 0
Mean 0
RMS 0
Counts per 5 MeV
1
0.8
0.6
0.4
0.2
0
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]

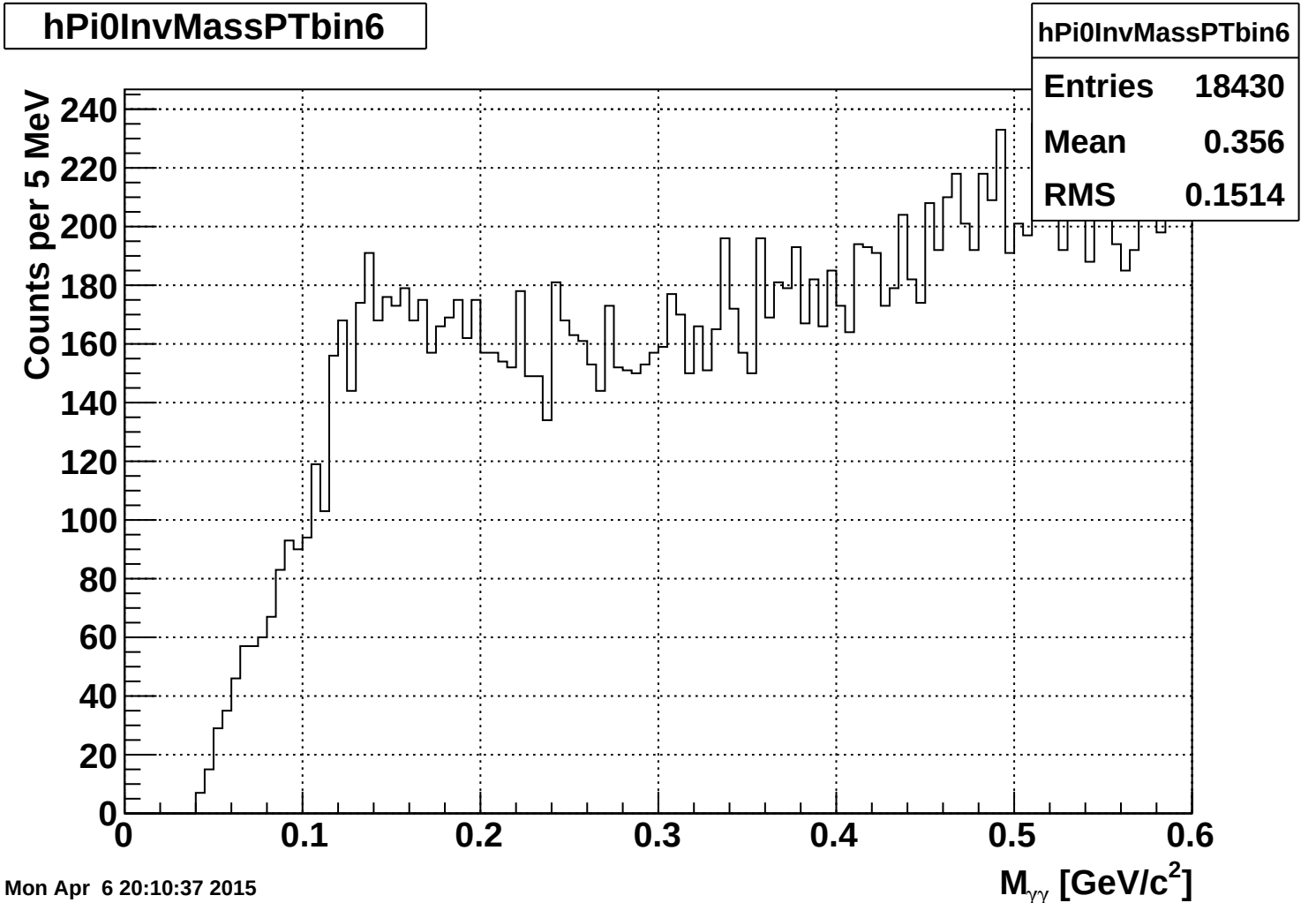

hPi0InvMassPTbin1
hPi0InvMassPTbin1
Entries 122161
Mean 0.2887
RMS 0.1647
Counts per 5 MeV
1800
1600
1400
1200
1000
800
600
400
200
0
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]

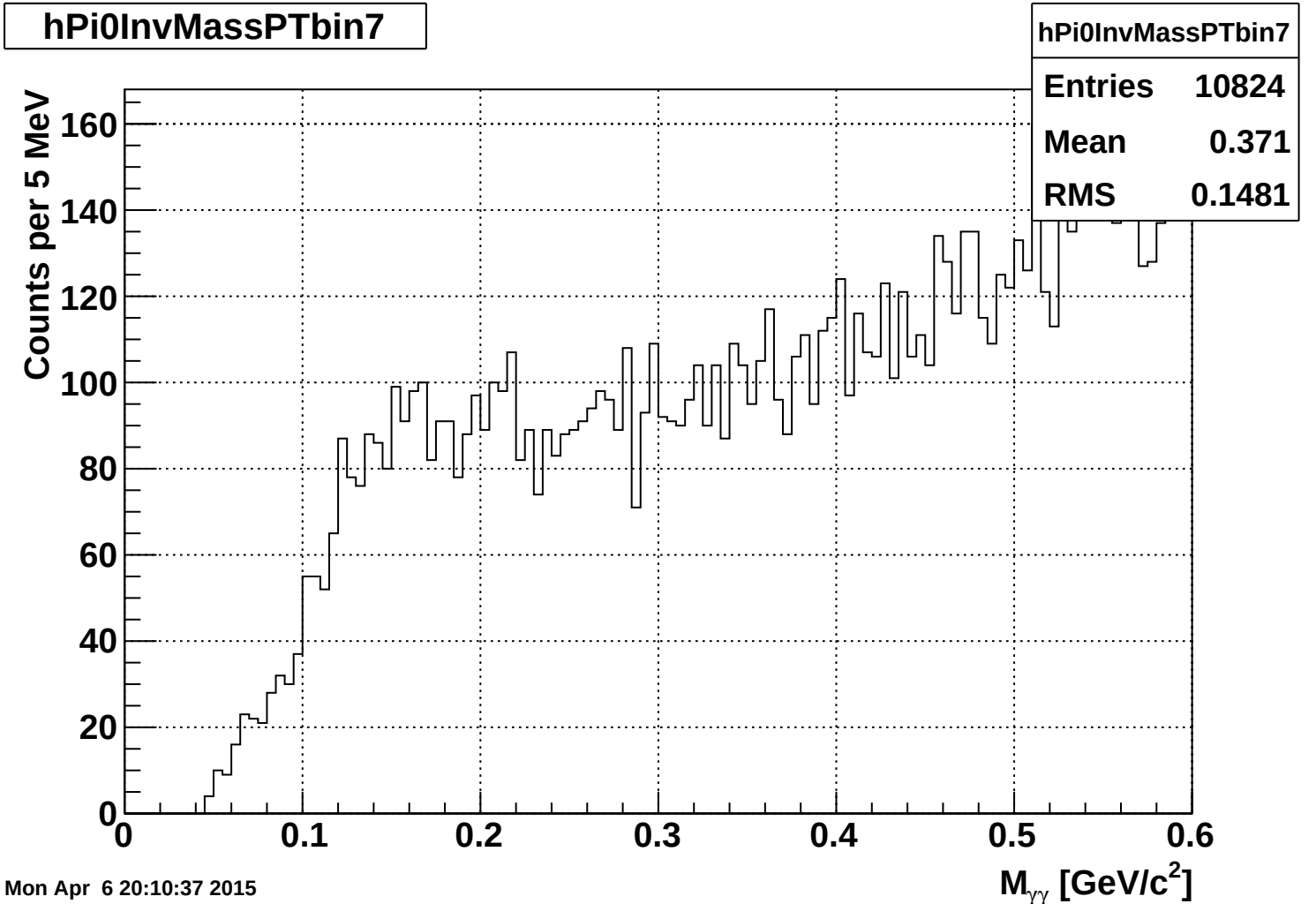

hPi0InvMassPTbin2
hPi0InvMassPTbin2
Entries 104045
Mean 0.2991
RMS 0.1612
Counts per 5 MeV
0
200
400
600
800
1000
1200
1400
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]

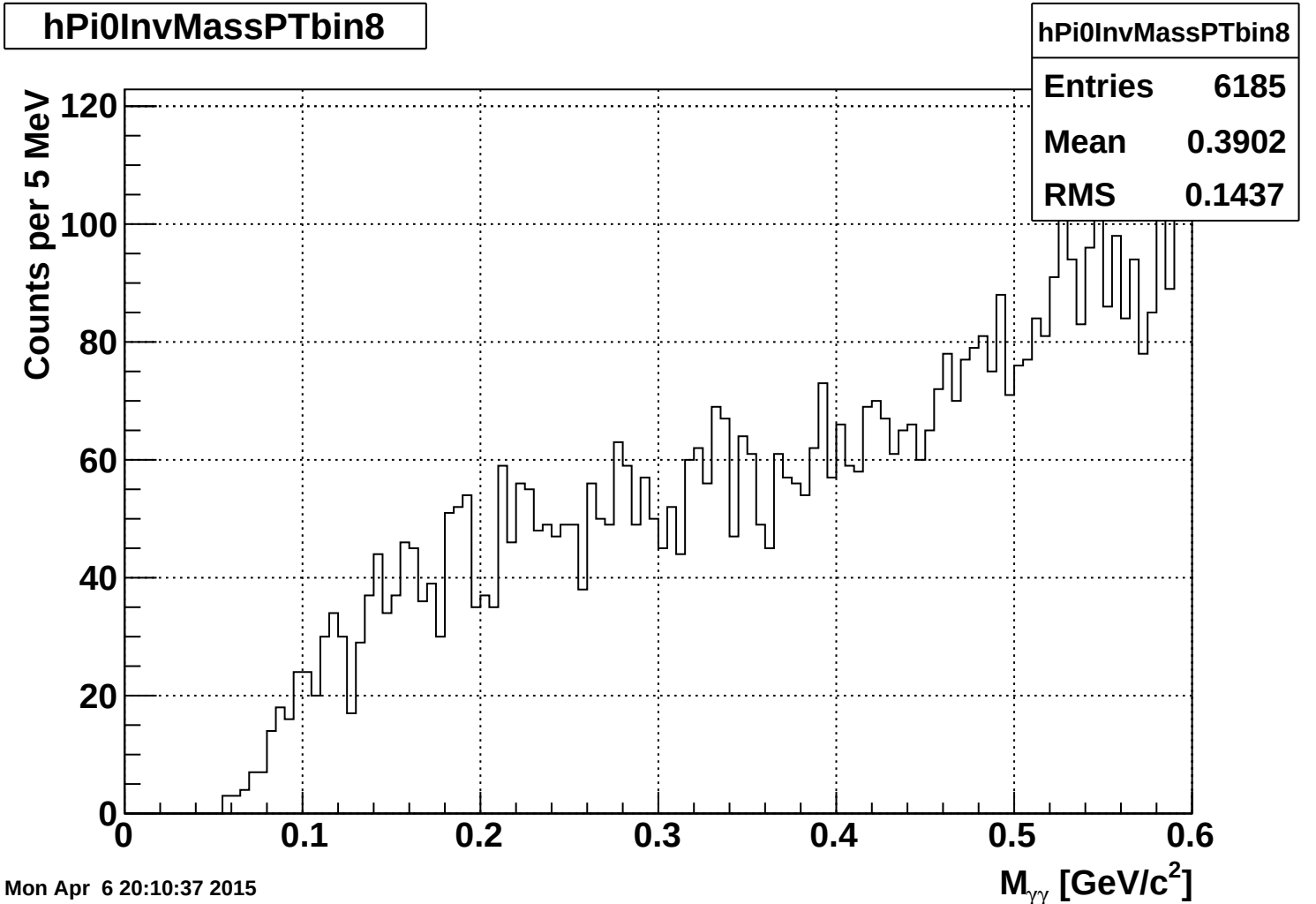

hPi0InvMassPTbin3
hPi0InvMassPTbin3
Entries 70698
Mean 0.3087
RMS 0.1574
Counts per 5 MeV
1000
800
600
400
200
0
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]

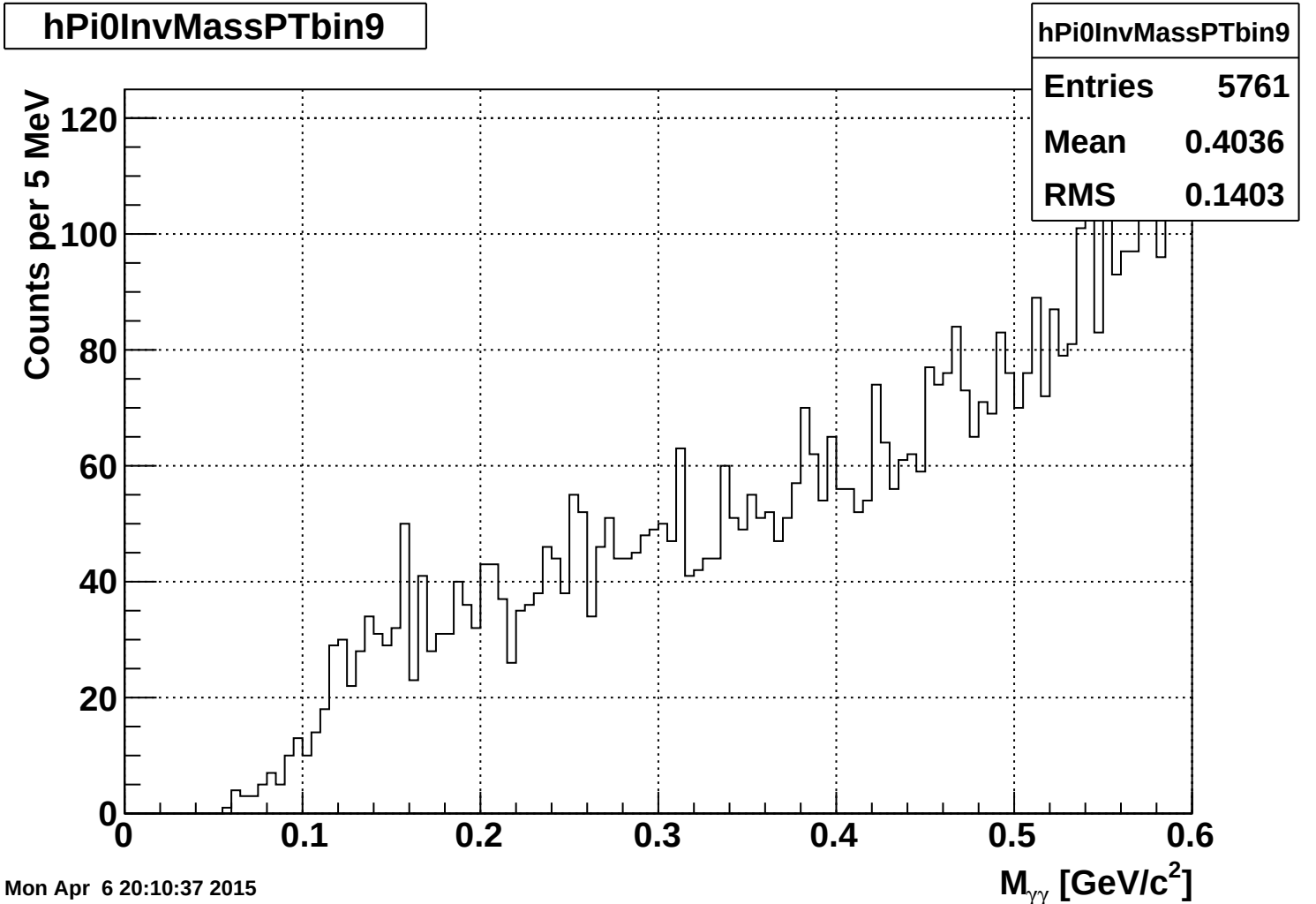

hPi0InvMassPTbin4
hPi0InvMassPTbin4
Entries 47116
Mean 0.319
RMS 0.1561
Counts per 5 MeV
0
100
200
300
400
500
600
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]

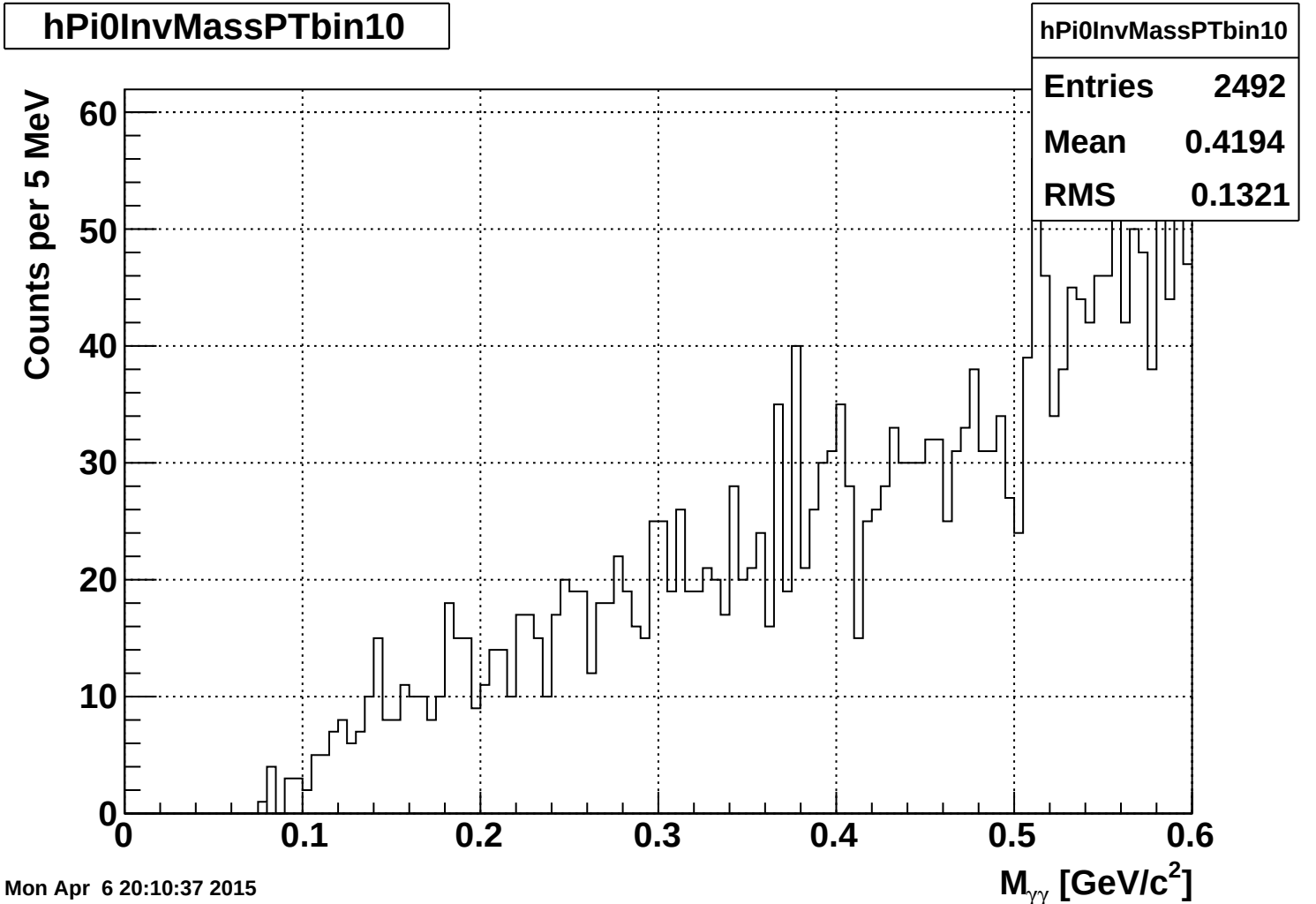

hPi0InvMassPTbin5
hPi0InvMassPTbin5
Entries 30563
Mean 0.3356
RMS 0.1537
Counts per 5 MeV
0
50
100
150
200
250
300
350
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]

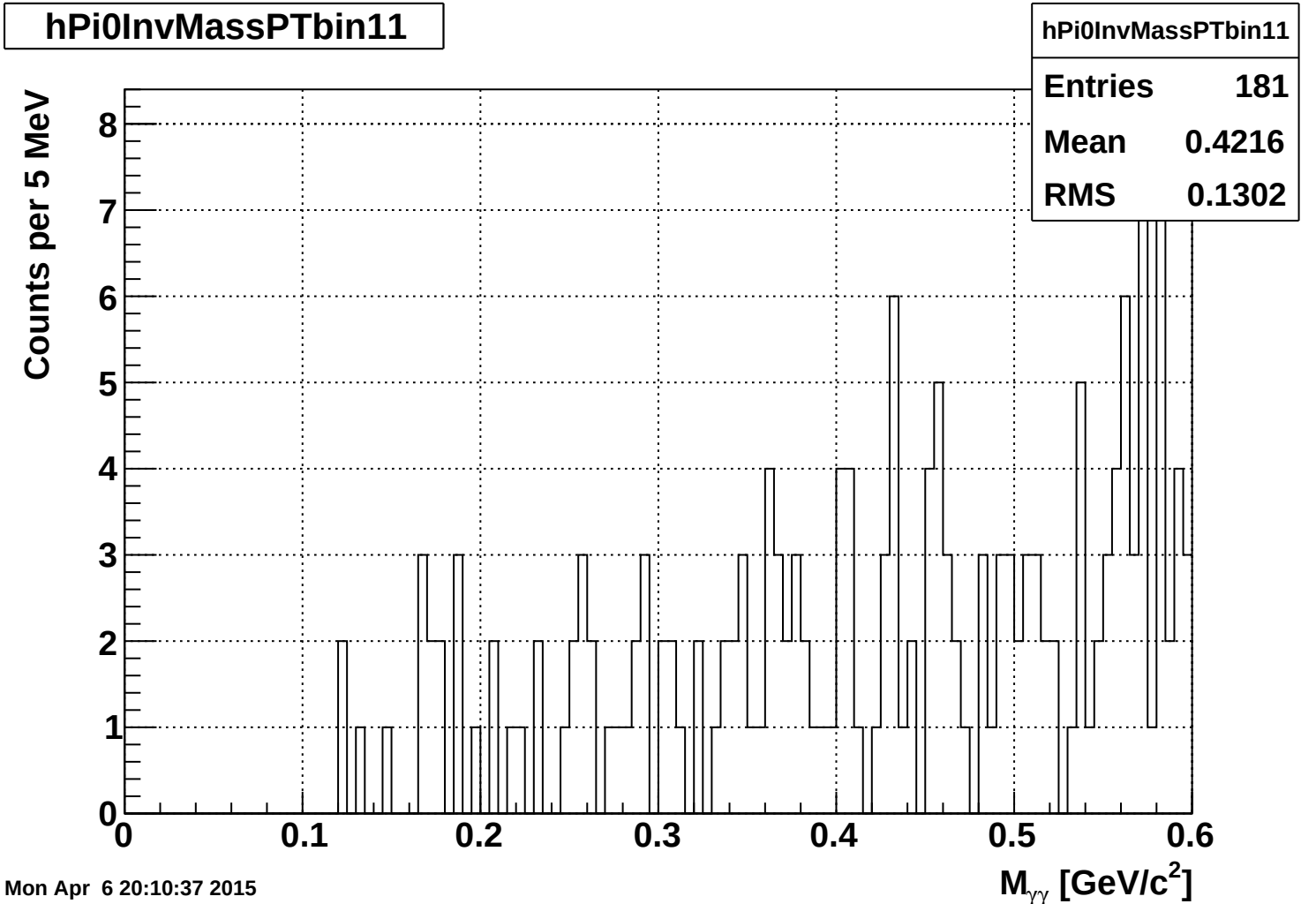

hPi0InvMassPTbin6
hPi0InvMassPTbin6
Entries 18430
Mean 0.356
RMS 0.1514
Counts per 5 MeV
0
20
40
60
80
100
120
140
160
180
200
220
240
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]

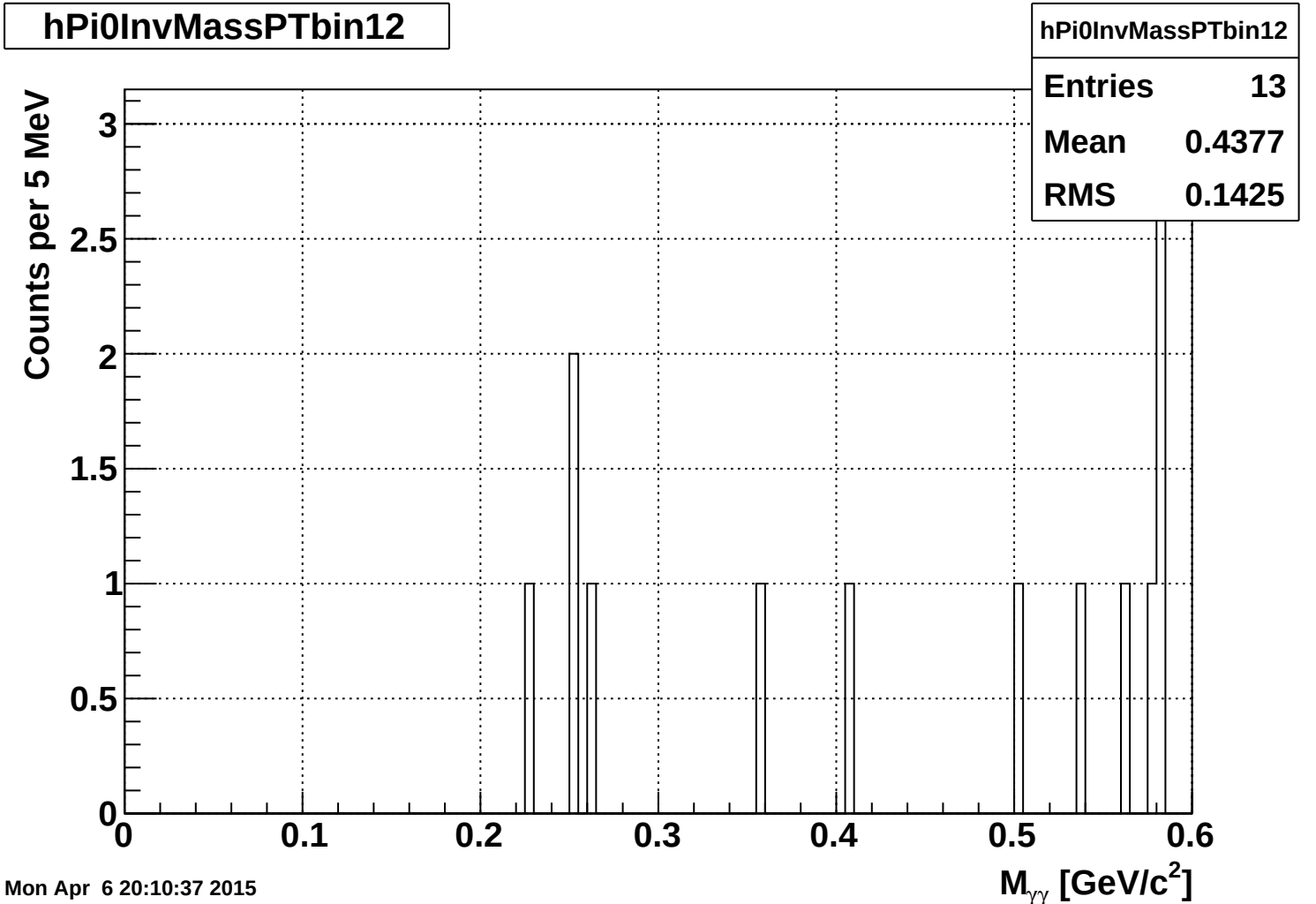

hPi0InvMassPTbin7
hPi0InvMassPTbin7
Entries 10824
Mean 0.371
RMS 0.1481
Counts per 5 MeV
0
20
40
60
80
100
120
140
160
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]

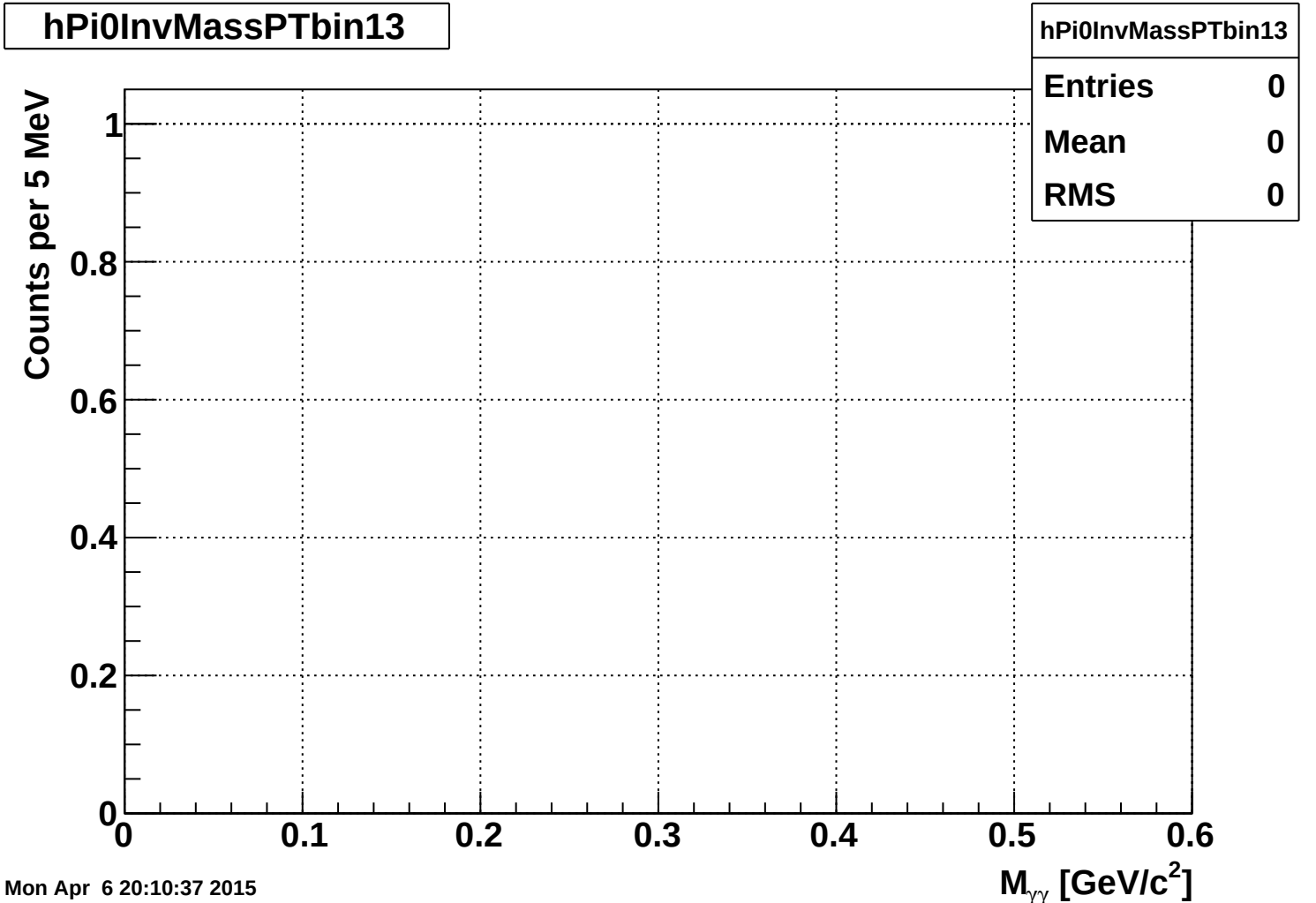

hPi0InvMassPTbin8
hPi0InvMassPTbin8
Entries 6185
Mean 0.3902
RMS 0.1437
Counts per 5 MeV
0
20
40
60
80
100
120
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]


hPi0InvMassPTbin9
hPi0InvMassPTbin9
Entries 5761
Mean 0.4036
RMS 0.1403
Counts per 5 MeV
0
20
40
60
80
100
120
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]


hPi0InvMassPTbin10
hPi0InvMassPTbin10
Entries 2492
Mean 0.4194
RMS 0.1321
Counts per 5 MeV
0
10
20
30
40
50
60
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]


hPi0InvMassPTbin11
hPi0InvMassPTbin11
Entries 181
Mean 0.4216
RMS 0.1302
Counts per 5 MeV
0
1
2
3
4
5
6
7
8
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]


hPi0InvMassPTbin12
hPi0InvMassPTbin12
Entries 13
Mean 0.4377
RMS 0.1425
Counts per 5 MeV
0
0.5
1
1.5
2
2.5
3
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]


hPi0InvMassPTbin13
hPi0InvMassPTbin13
Entries 0
Mean 0
RMS 0
Counts per 5 MeV
1
0.8
0.6
0.4
0.2
0
0
0.1
0.2
0.3
0.4
0.5
0.6
Mon Apr 6 20:10:37 2015
$M_{\gamma\gamma}$ [GeV/c^2]