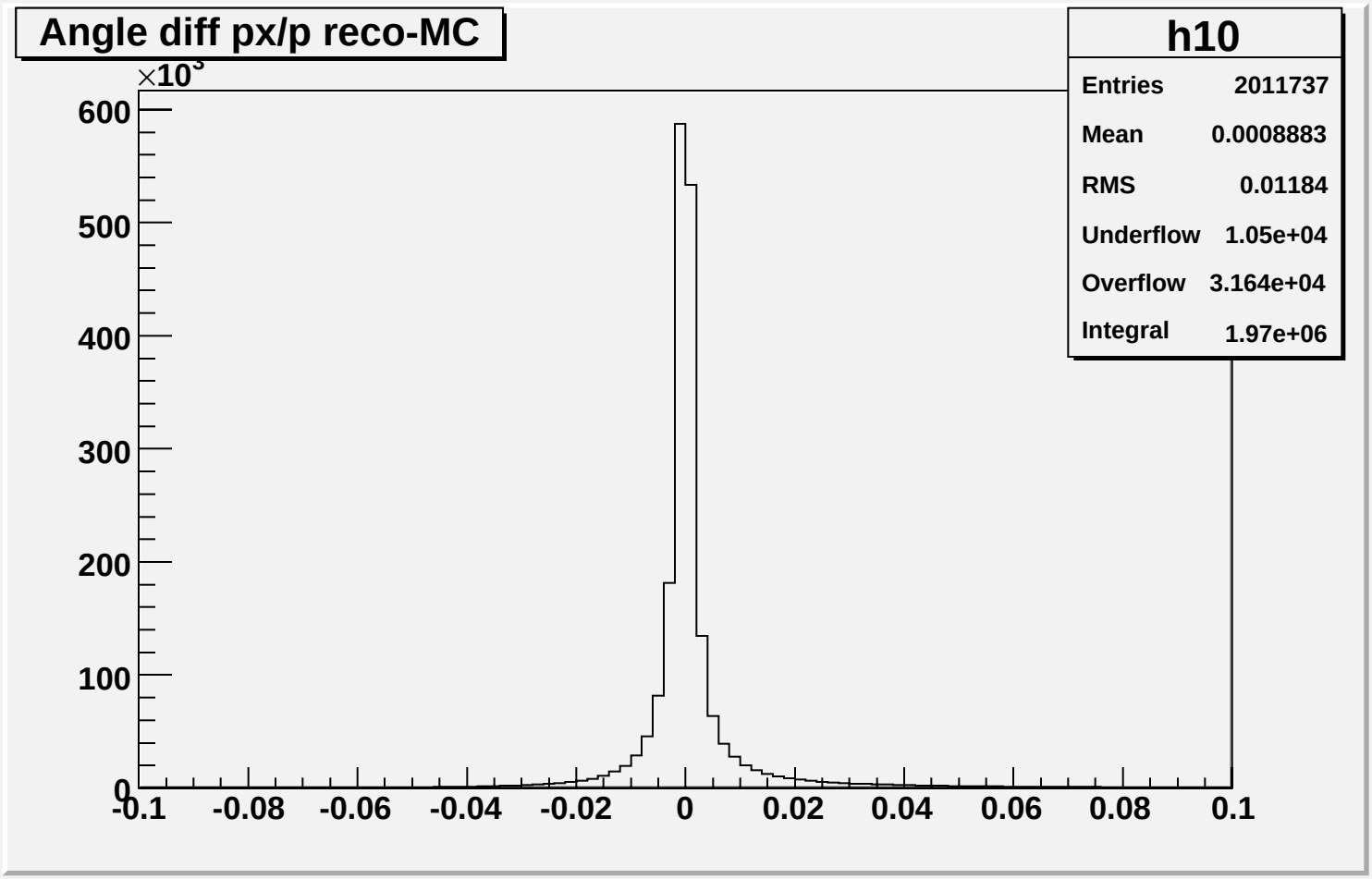
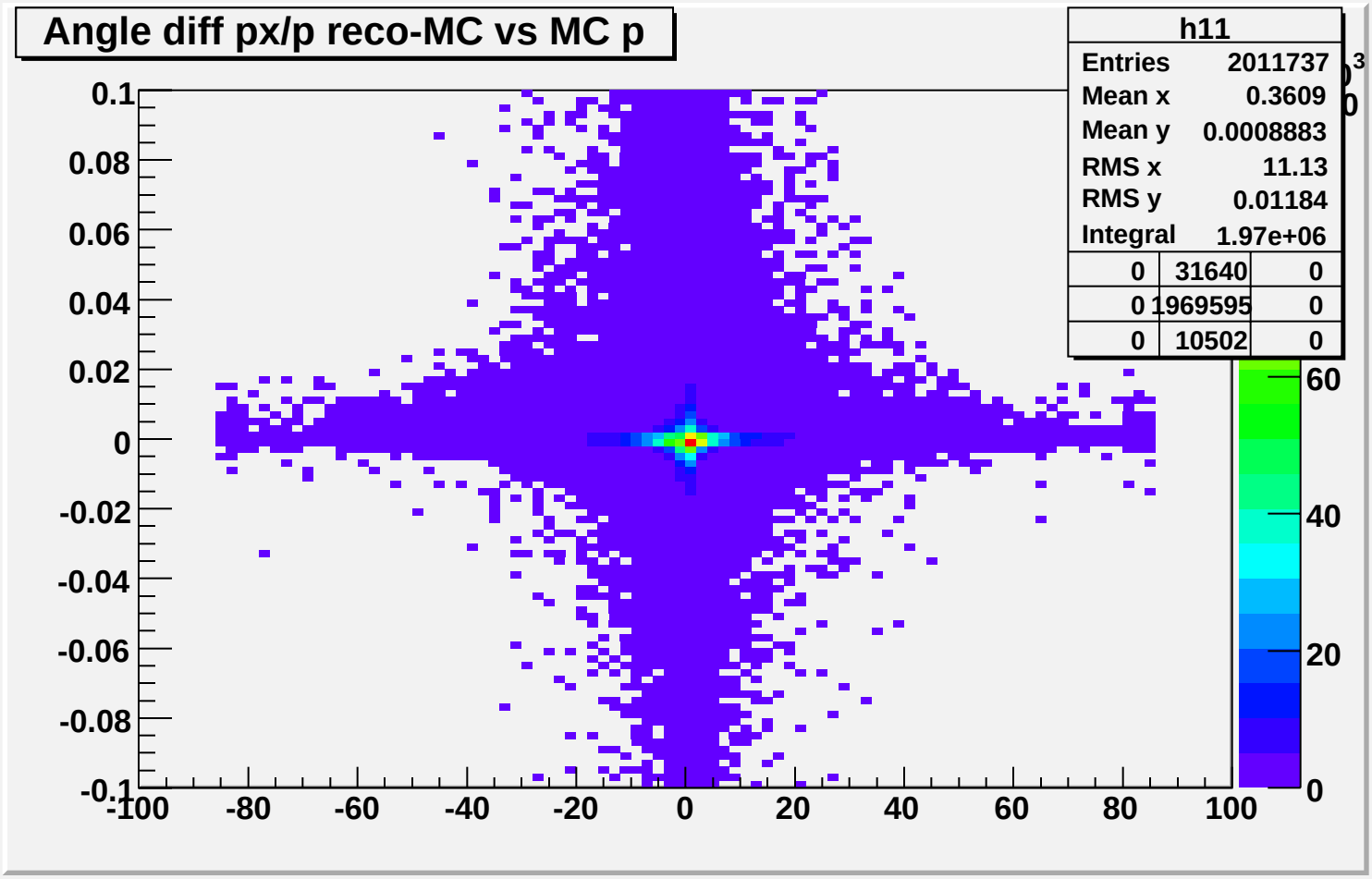
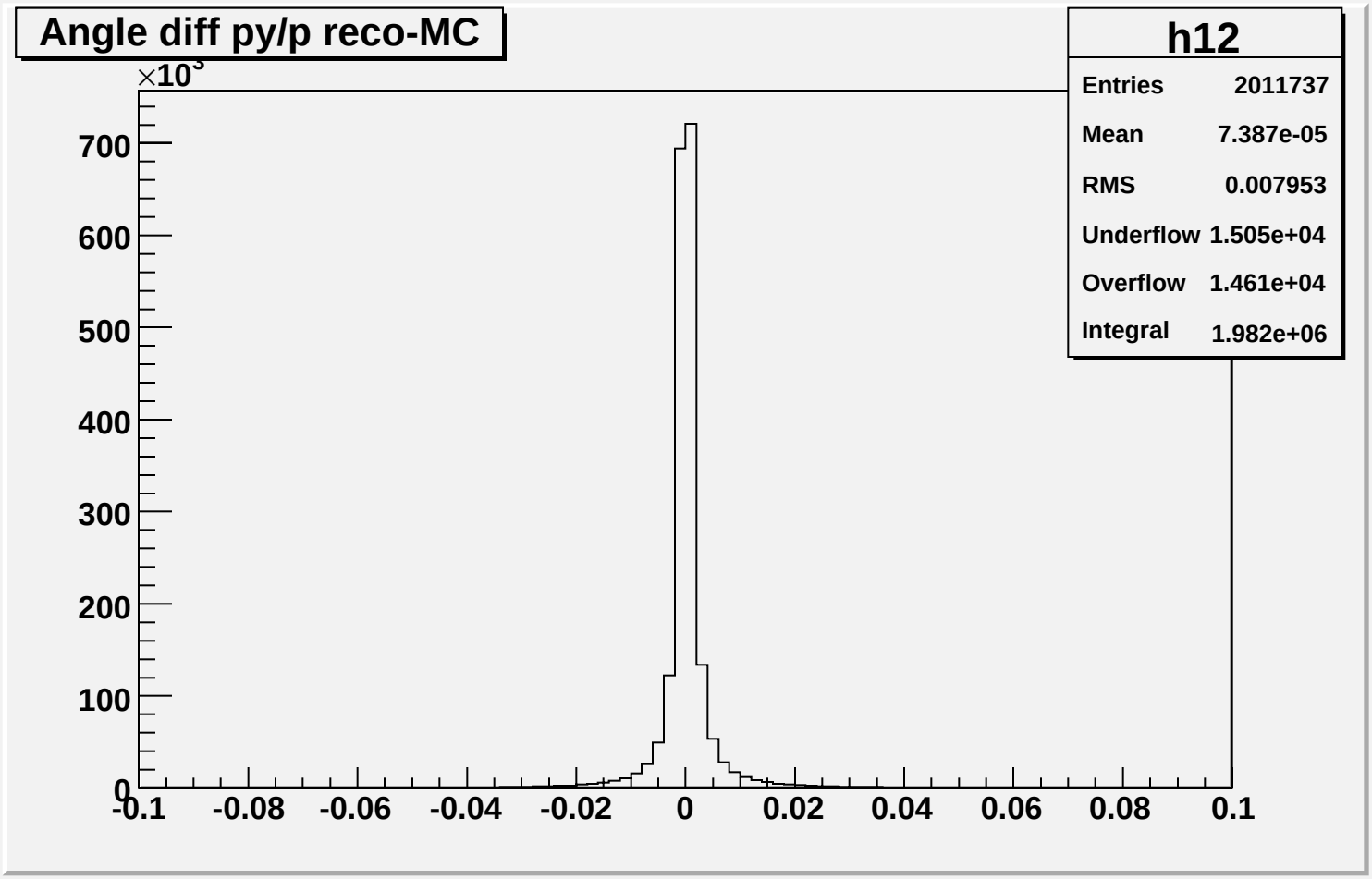
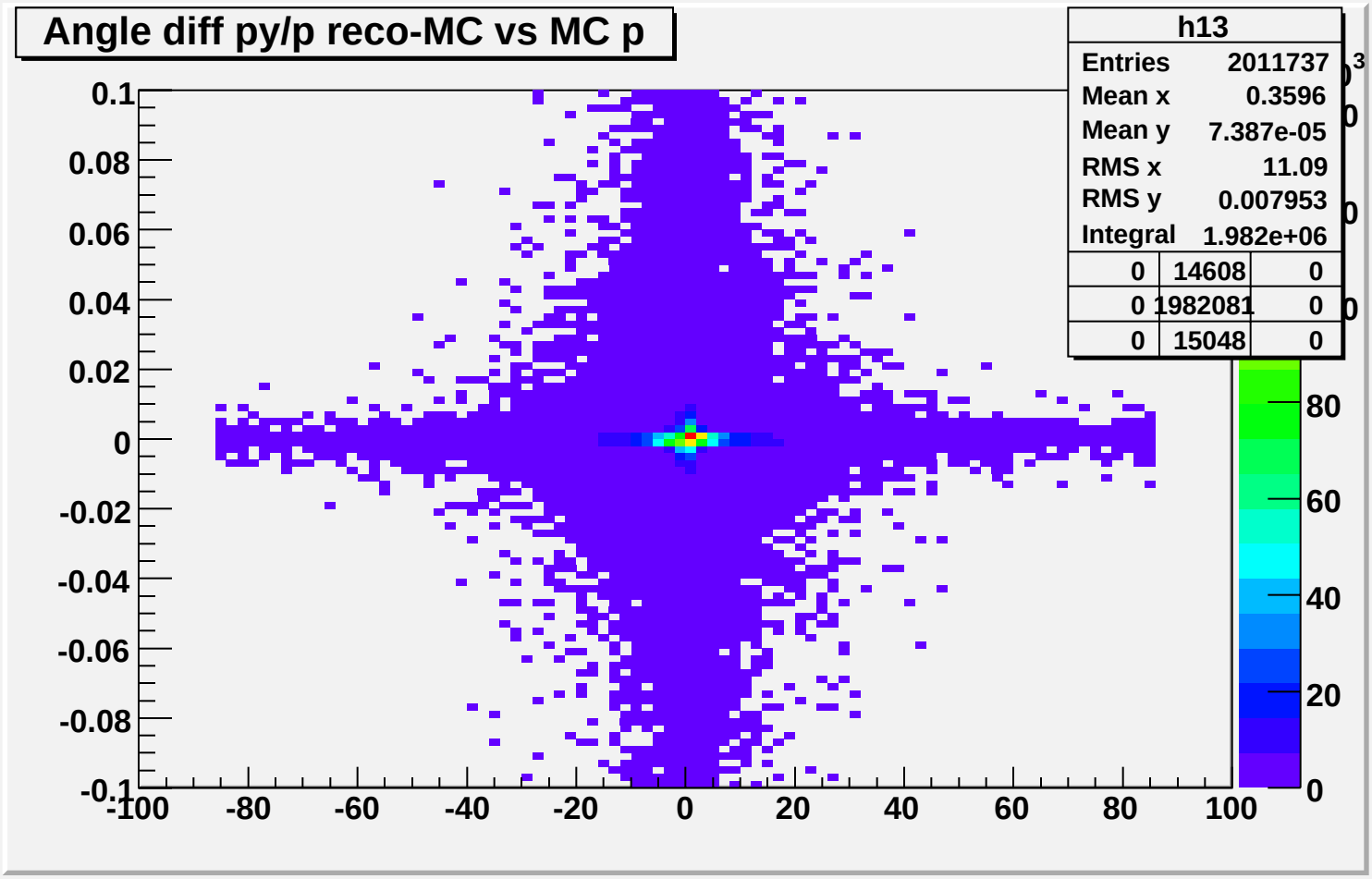
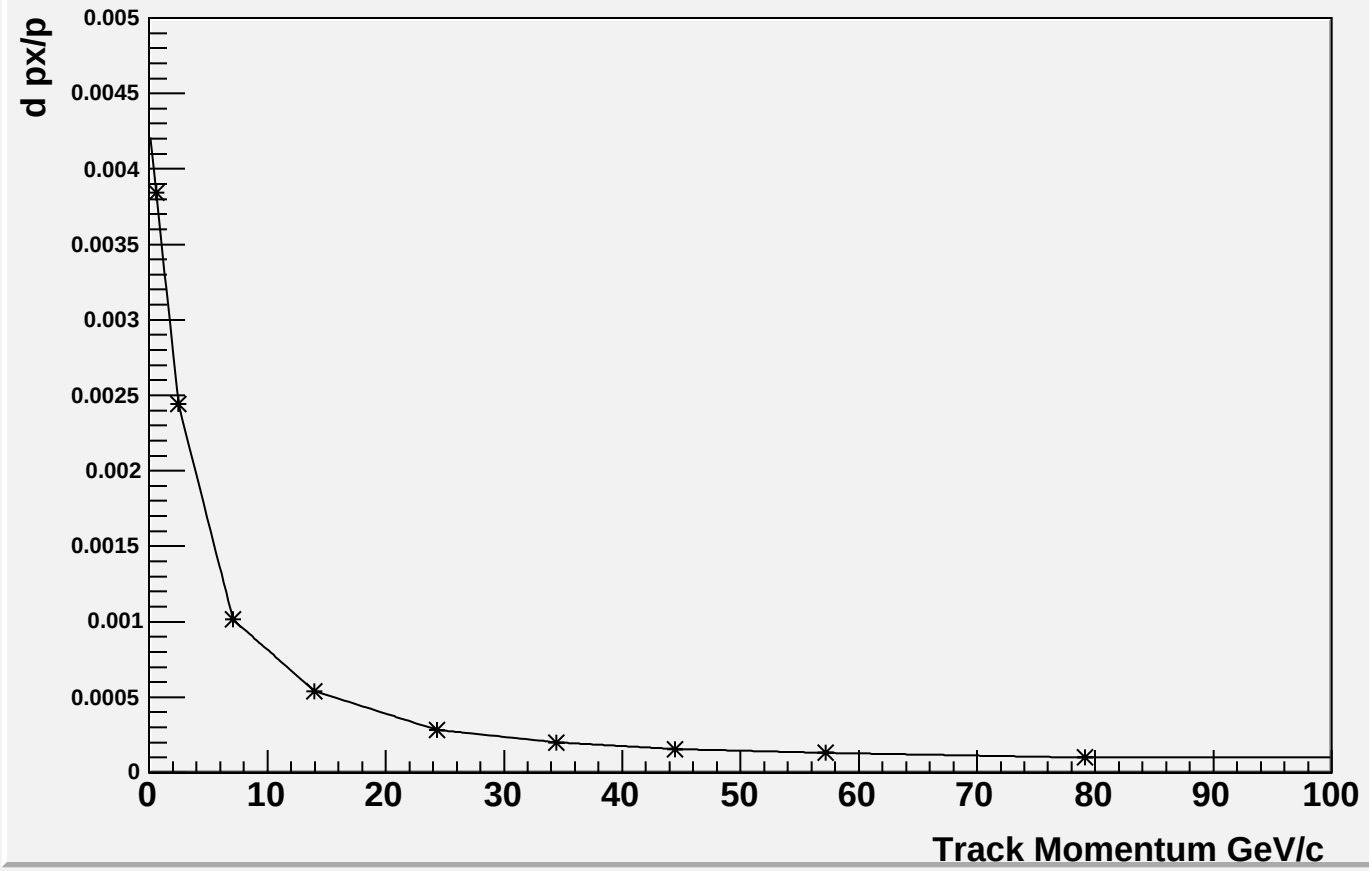

Angle diff px/p reco-MC
h10
Entries 2011737
Mean 0.0008883
RMS 0.01184
Underflow 1.05e+04
Overflow 3.164e+04
Integral 1.97e+06
×10³
600
500
400
300
200
100
0
-0.1
-0.08
-0.06
-0.04
-0.02
0
0.02
0.04
0.06
0.08
0.1


Angle diff px/p reco-MC vs MC p
h11
Entries 2011737
Mean x 0.3609
Mean y 0.0008883
RMS x 11.13
RMS y 0.01184
Integral 1.97e+06
0 31640 0
0 1969595 0
0 10502 0
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
-100
-80
-60
-40
-20
0
20
40
60
80
100
60
40
20
0

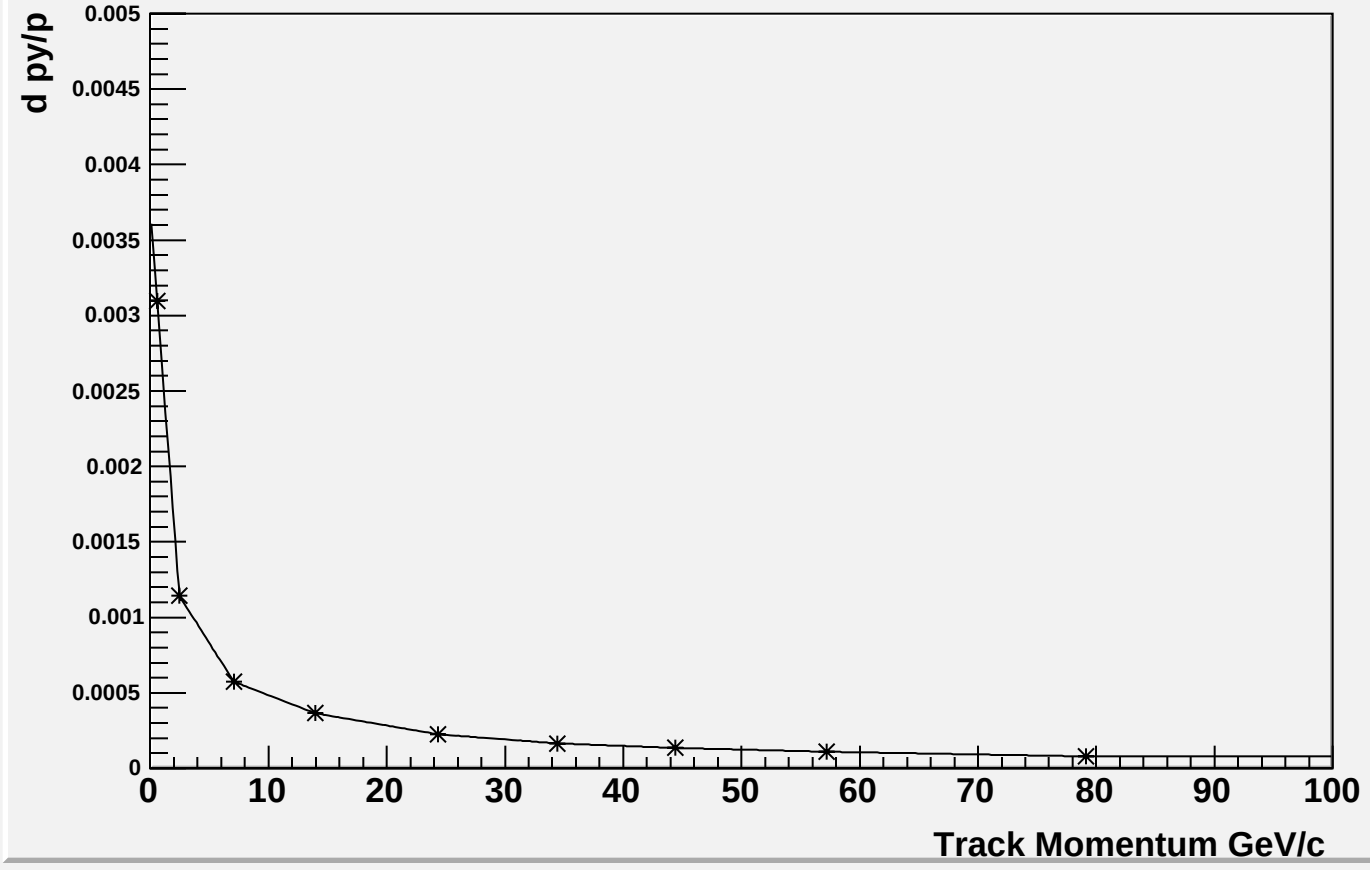

Angle diff py/p reco-MC
h12
Entries 2011737
Mean 7.387e-05
RMS 0.007953
Underflow 1.505e+04
Overflow 1.461e+04
Integral 1.982e+06
×10³
700
600
500
400
300
200
100
0
-0.1
-0.08
-0.06
-0.04
-0.02
0
0.02
0.04
0.06
0.08
0.1

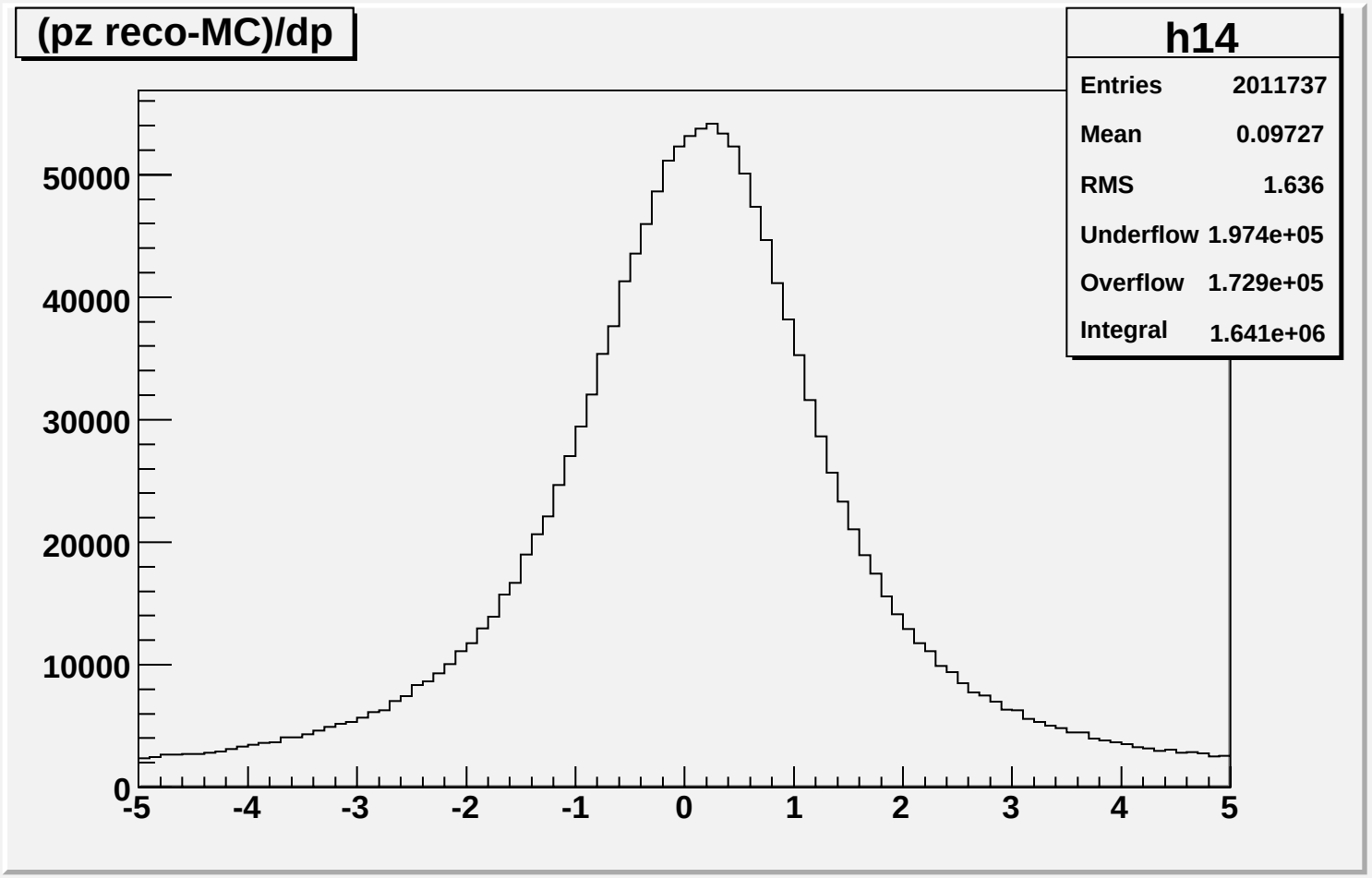

Angle diff py/p reco-MC vs MC p
h13
Entries 2011737
Mean x 0.3596
Mean y 7.387e-05
RMS x 11.09
RMS y 0.007953
Integral 1.982e+06
0 14608 0
0 1982081 0
0 15048 0
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
-100
-80
-60
-40
-20
0
20
40
60
80
100
80
60
40
20
0

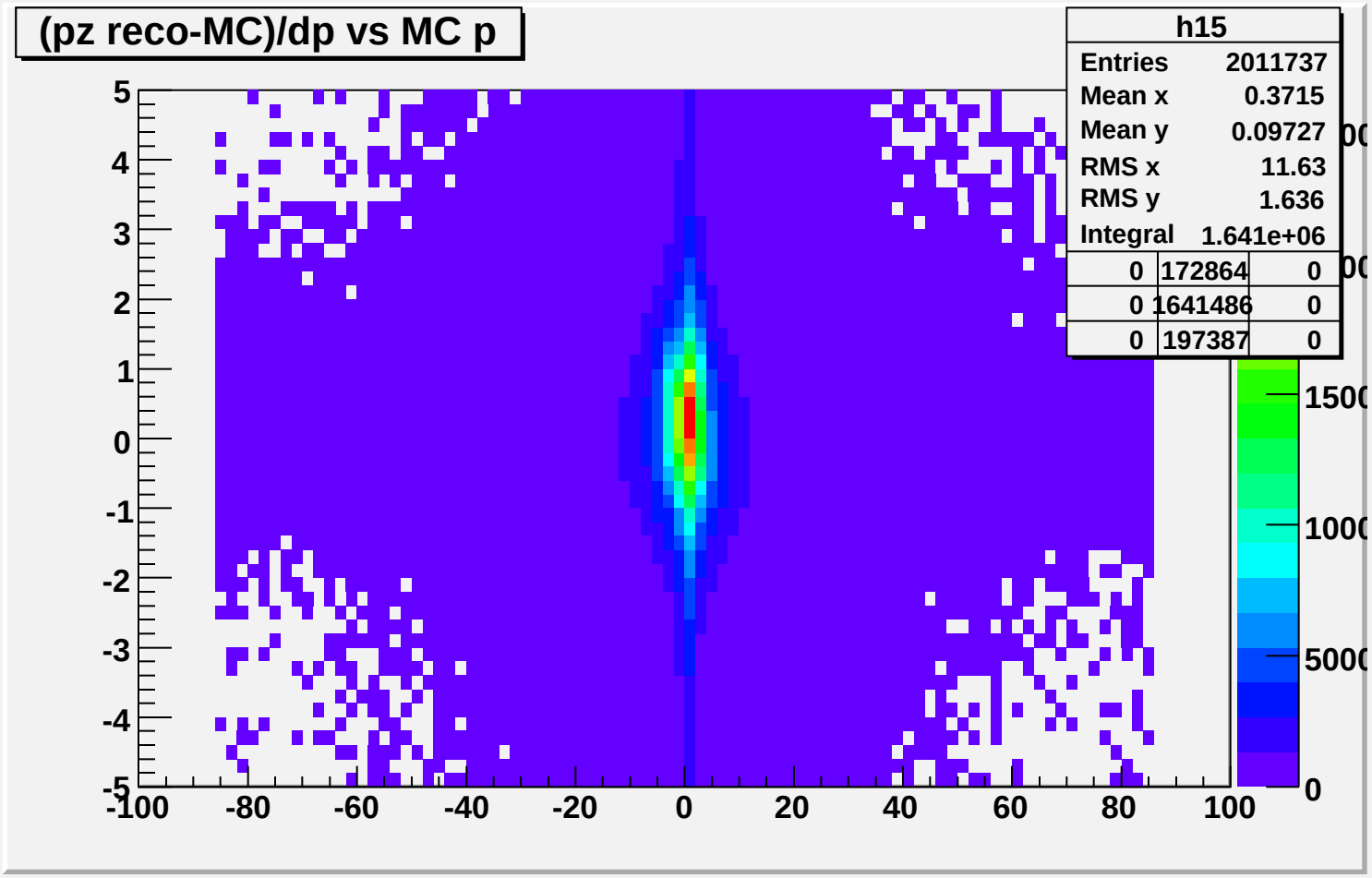
## x angular resolution



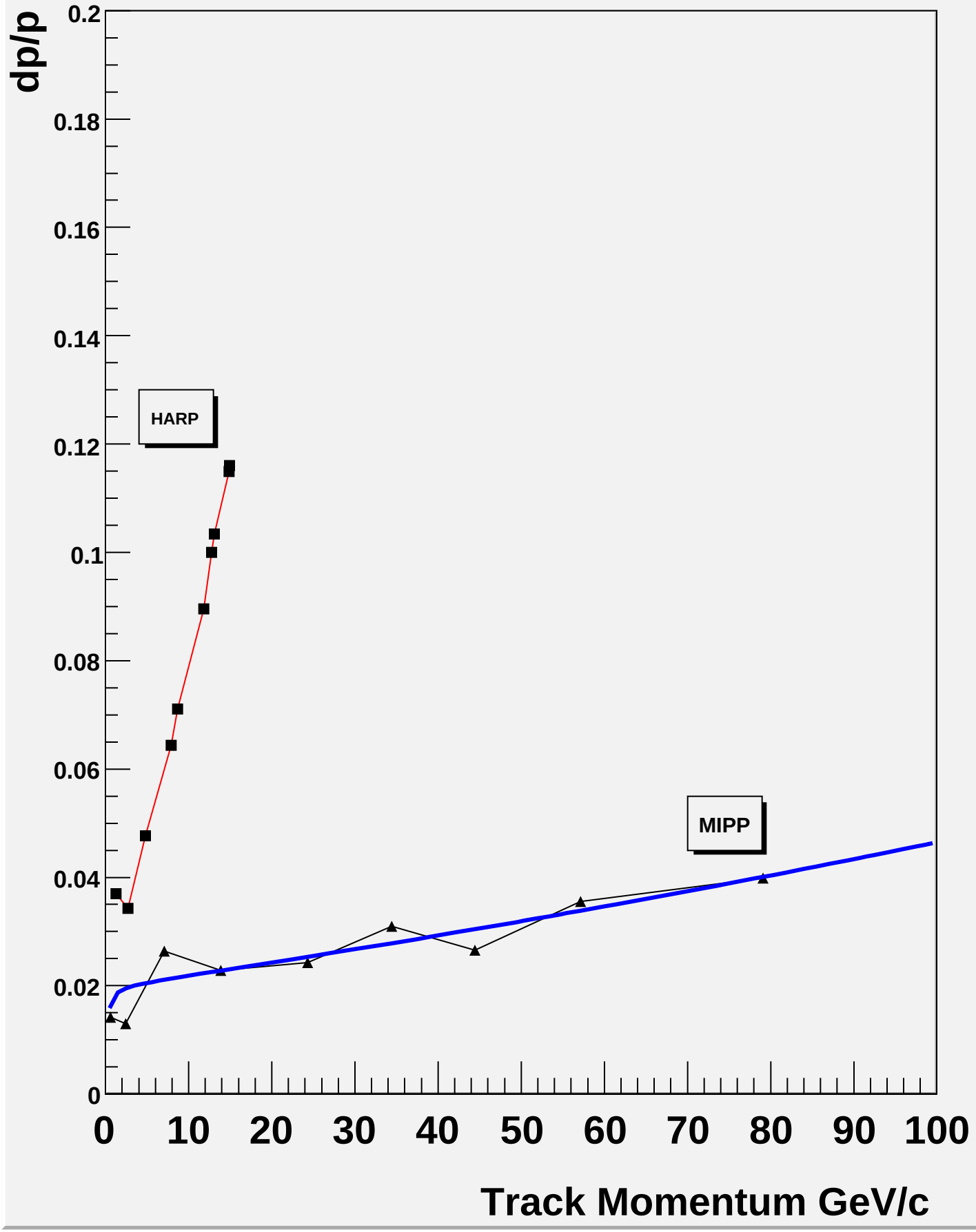

## y angular resolution

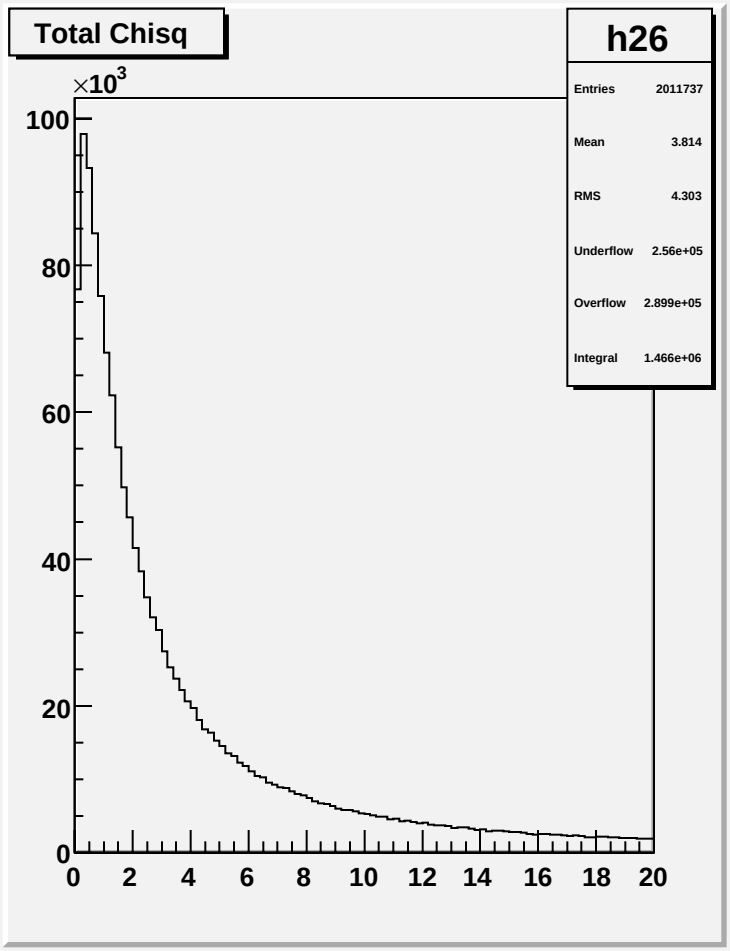


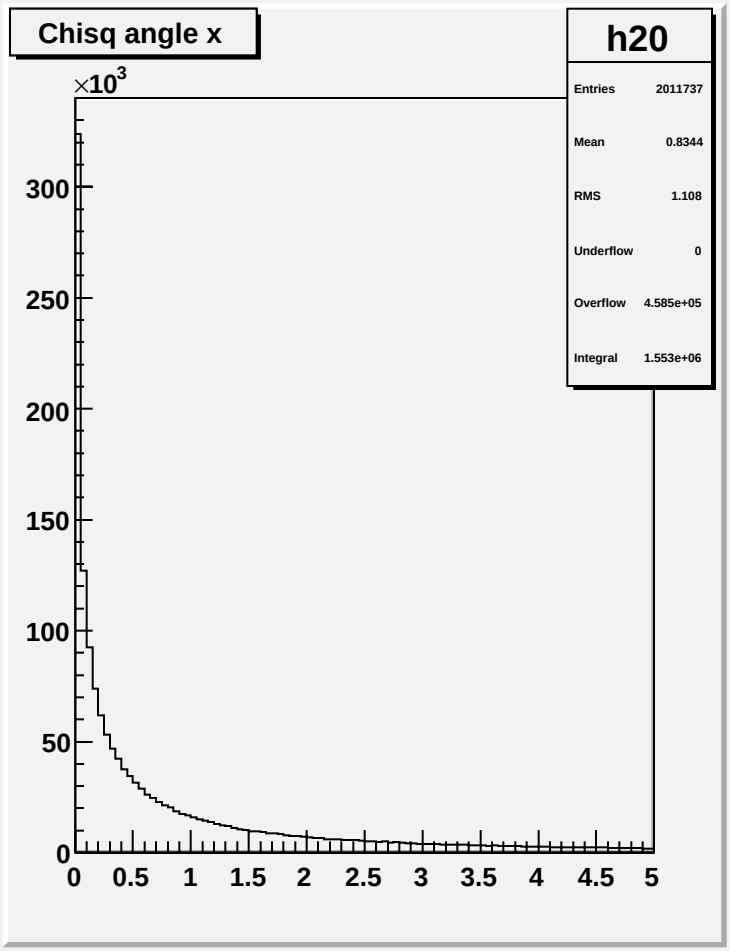

(pz reco-MC)/dp
h14
Entries 2011737
Mean 0.09727
RMS 1.636
Underflow 1.974e+05
Overflow 1.729e+05
Integral 1.641e+06
50000
40000
30000
20000
10000
0
-5
-4
-3
-2
-1
0
1
2
3
4
5

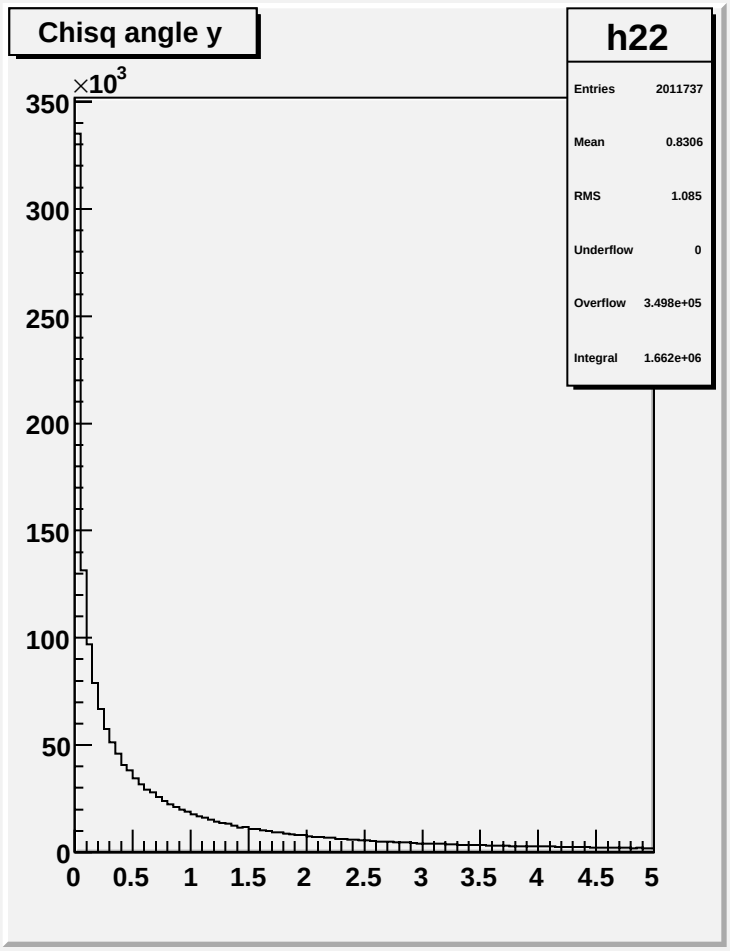

(pz reco-MC)/dp vs MC p
h15
Entries 2011737
Mean x 0.3715
Mean y 0.09727
RMS x 11.63
RMS y 1.636
Integral 1.641e+06
0 172864 0
0 1641486 0
0 197387 0
5
4
3
2
1
0
-1
-2
-3
-4
-5
-100
-80
-60
-40
-20
0
20
40
60
80
100
1500
1000
5000
0

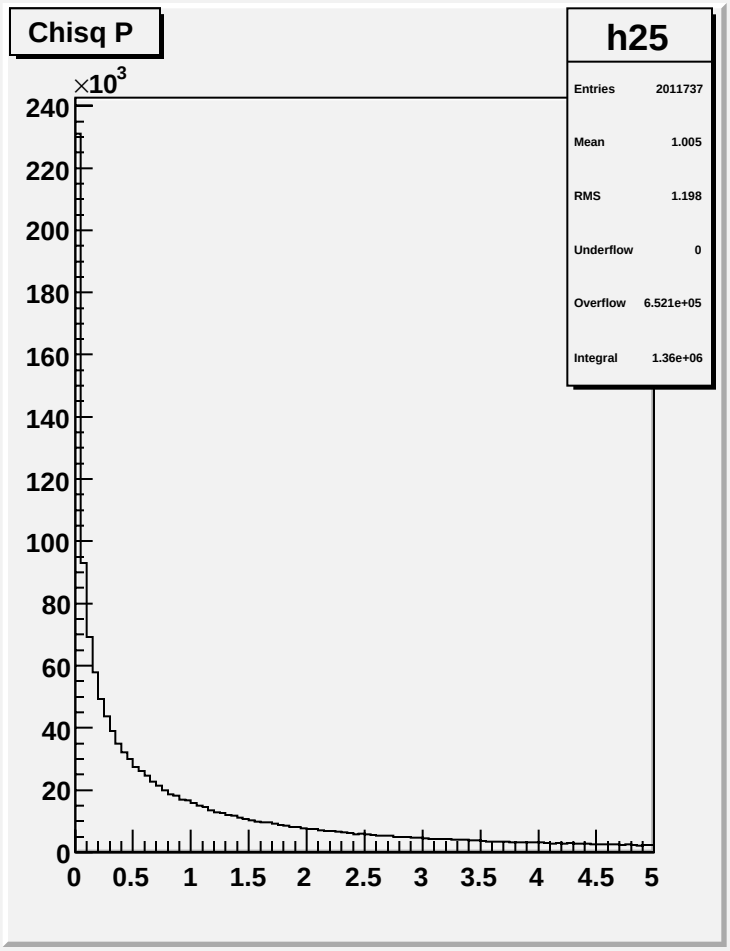
# HARP MIPP Resolution Comparison

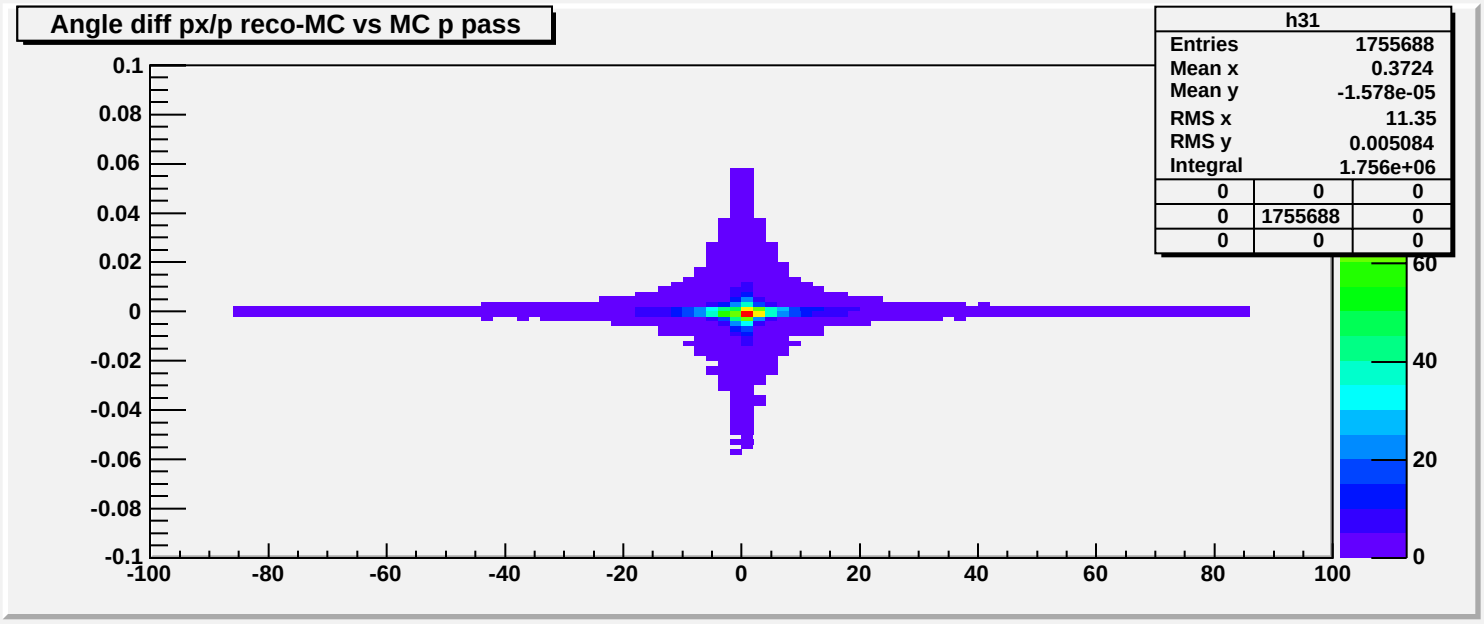


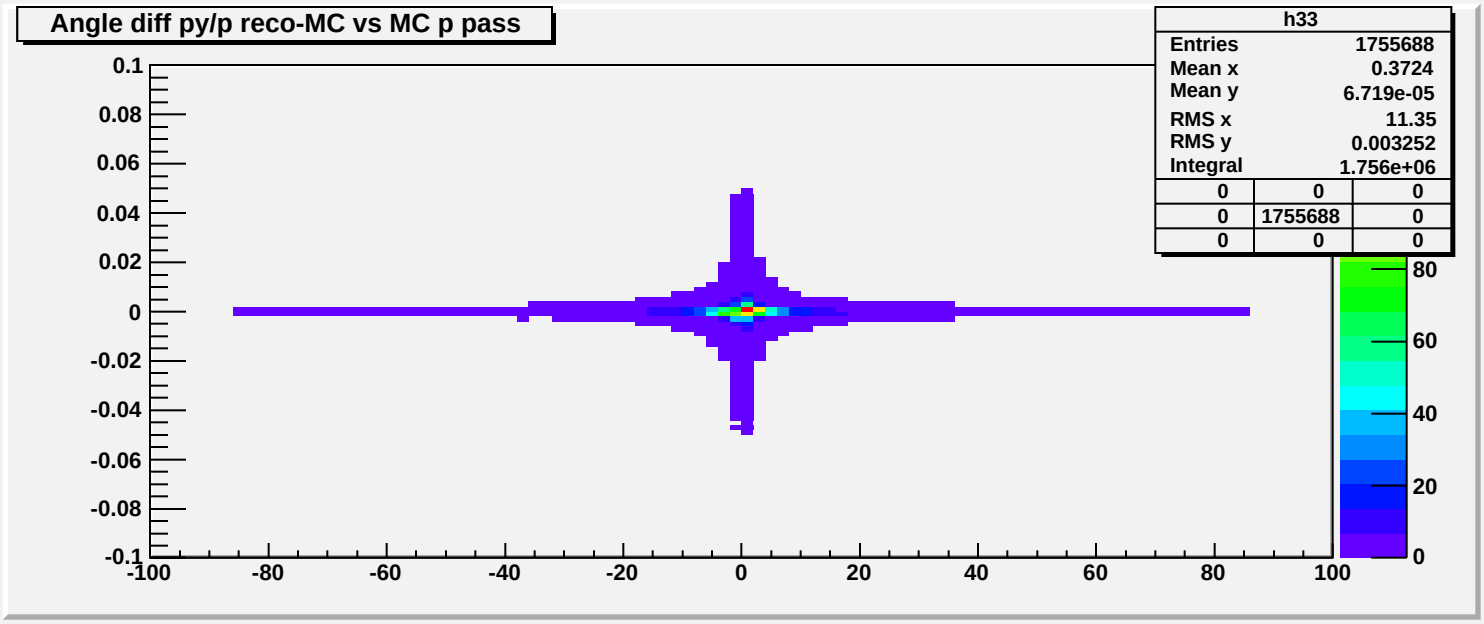

Total Chisq
h26
Entries 2011737
Mean 3.814
RMS 4.303
Underflow 2.56e+05
Overflow 2.899e+05
Integral 1.466e+06
×10^3
100
80
60
40
20
0
0 2 4 6 8 10 12 14 16 18 20

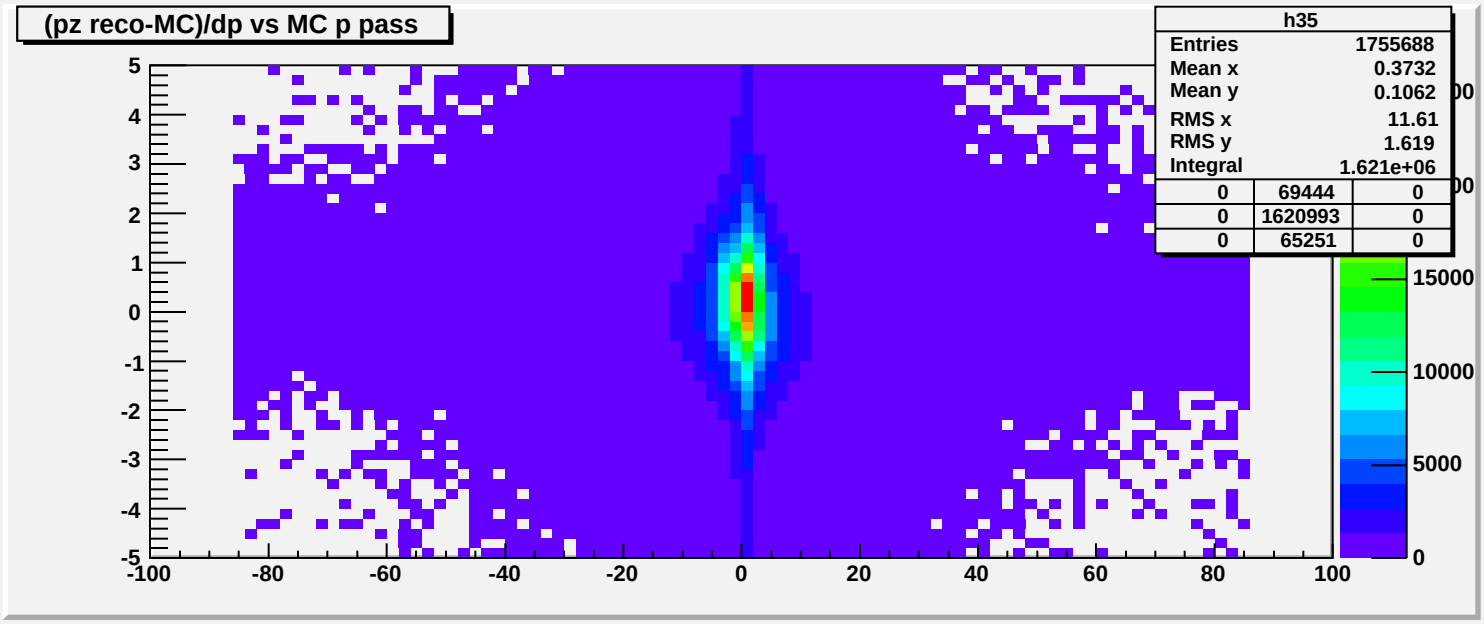

Chisq angle x
h20
Entries 2011737
Mean 0.8344
RMS 1.108
Underflow 0
Overflow 4.585e+05
Integral 1.553e+06
×10^3
300
250
200
150
100
50
0
0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5

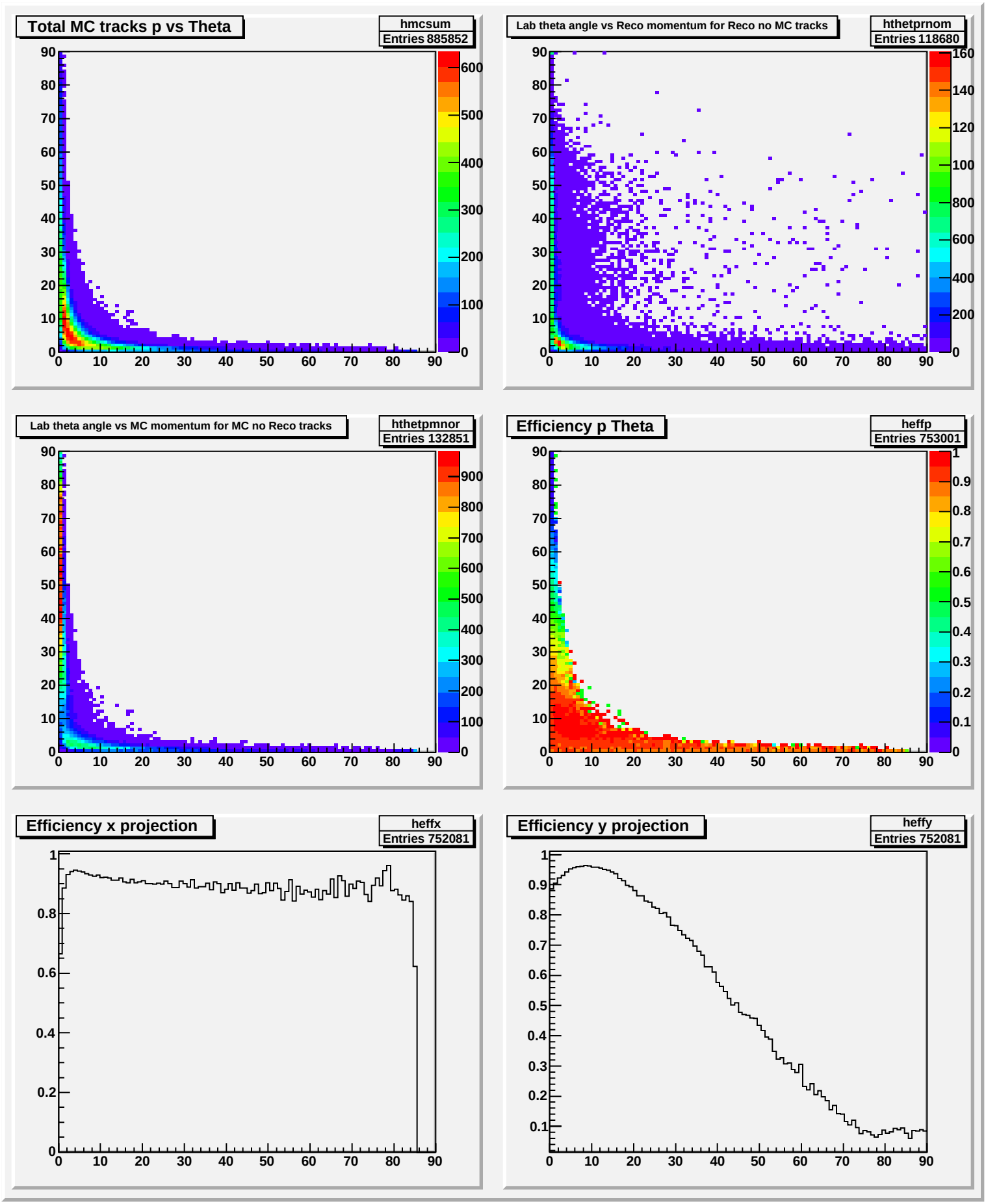

Chisq angle y
h22
Entries 2011737
Mean 0.8306
RMS 1.085
Underflow 0
Overflow 3.498e+05
Integral 1.662e+06
×10^3
350
300
250
200
150
100
50
0
0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5

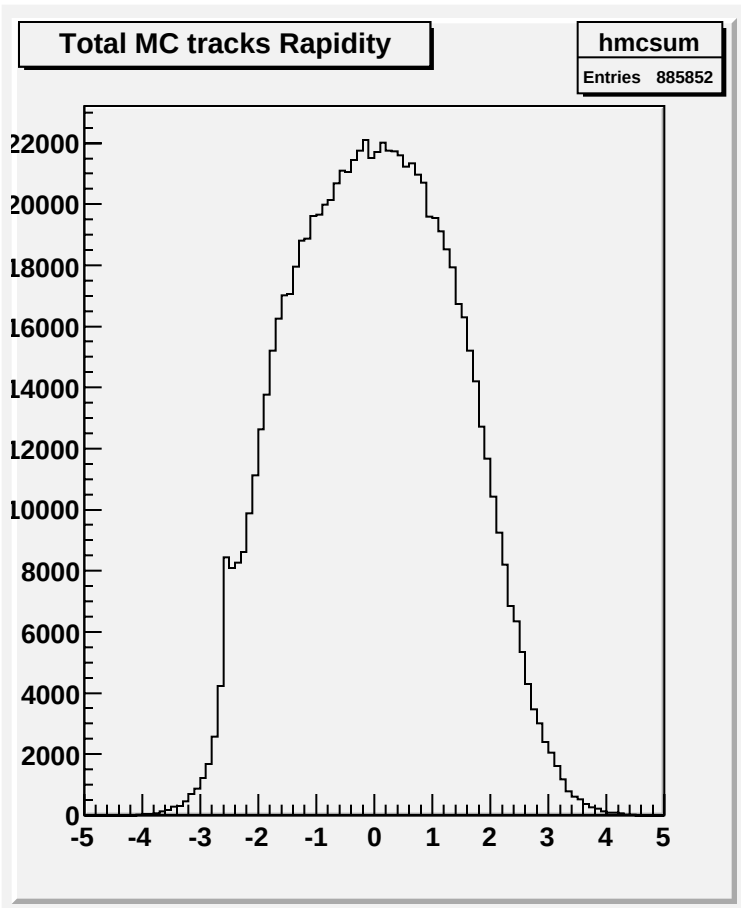

Chisq P
h25
Entries 2011737
Mean 1.005
RMS 1.198
Underflow 0
Overflow 6.521e+05
Integral 1.36e+06
×10^3
240
220
200
180
160
140
120
100
80
60
40
20
0
0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5

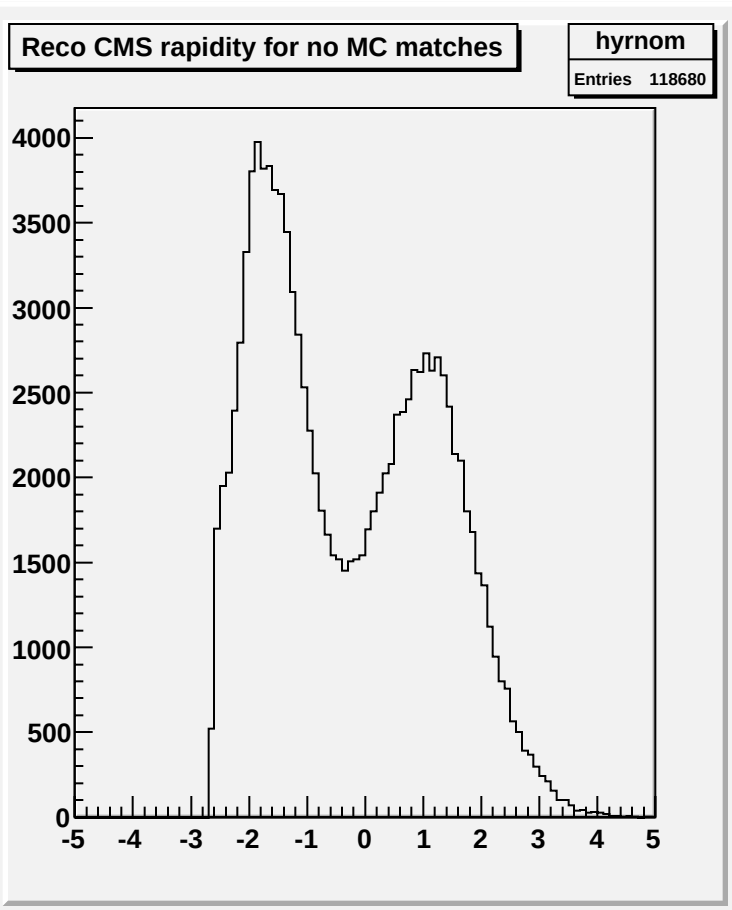

Angle diff px/p reco-MC vs MC p pass
h31
Entries 1755688
Mean x 0.3724
Mean y -1.578e-05
RMS x 11.35
RMS y 0.005084
Integral 1.756e+06
0 0 0
0 1755688 0
0 0 0

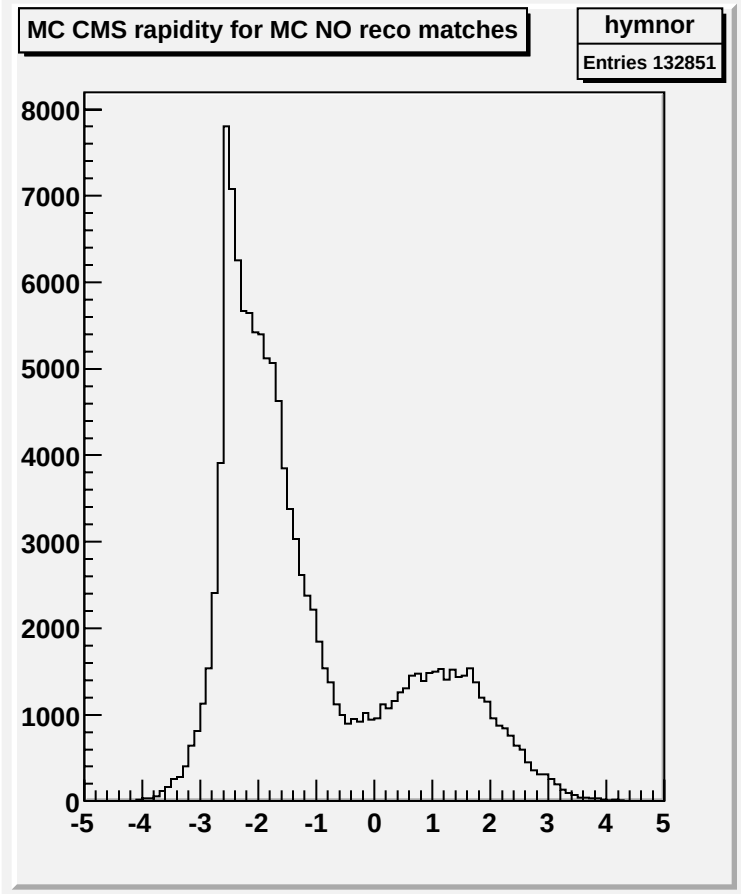

Angle diff py/p reco-MC vs MC p pass
h33
Entries 1755688
Mean x 0.3724
Mean y 6.719e-05
RMS x 11.35
RMS y 0.003252
Integral 1.756e+06
0 0 0
0 1755688 0
0 0 0

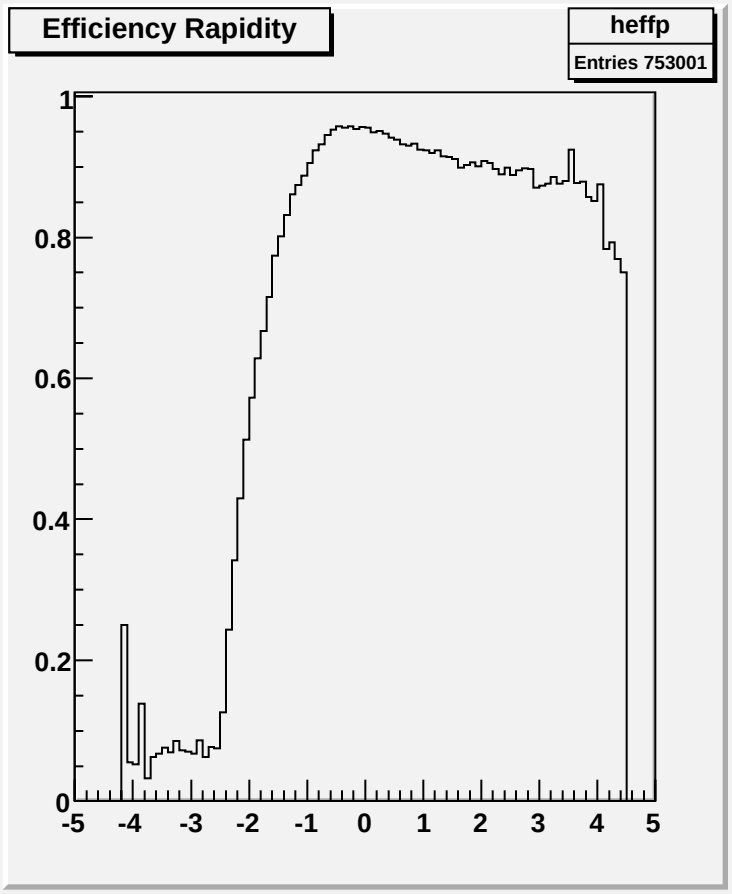

(pz reco-MC)/dp vs MC p pass
h35
Entries 1755688
Mean x 0.3732
Mean y 0.1062
RMS x 11.61
RMS y 1.619
Integral 1.621e+06
0 69444 0
0 1620993 0
0 65251 0

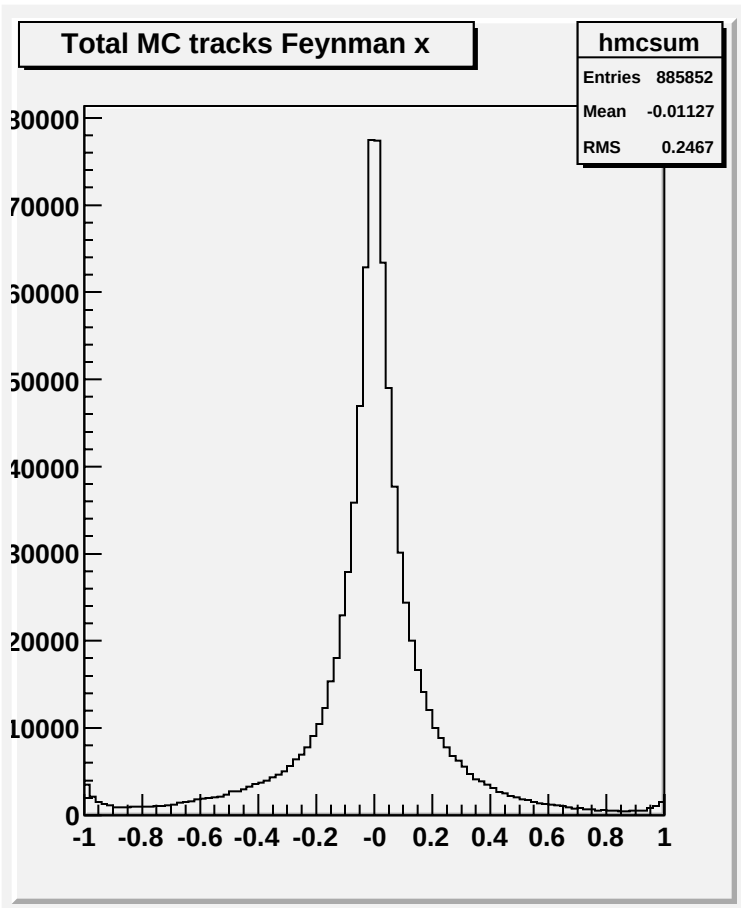

Total MC tracks p vs Theta
hmcsum
Entries 885852
Lab theta angle vs Reco momentum for Reco no MC tracks
hthetprnom
Entries 118680
Lab theta angle vs MC momentum for MC no Reco tracks
hthetpmnor
Entries 132851
Efficiency p Theta
heffp
Entries 753001
Efficiency x projection
heffx
Entries 752081
Efficiency y projection
heffy
Entries 752081

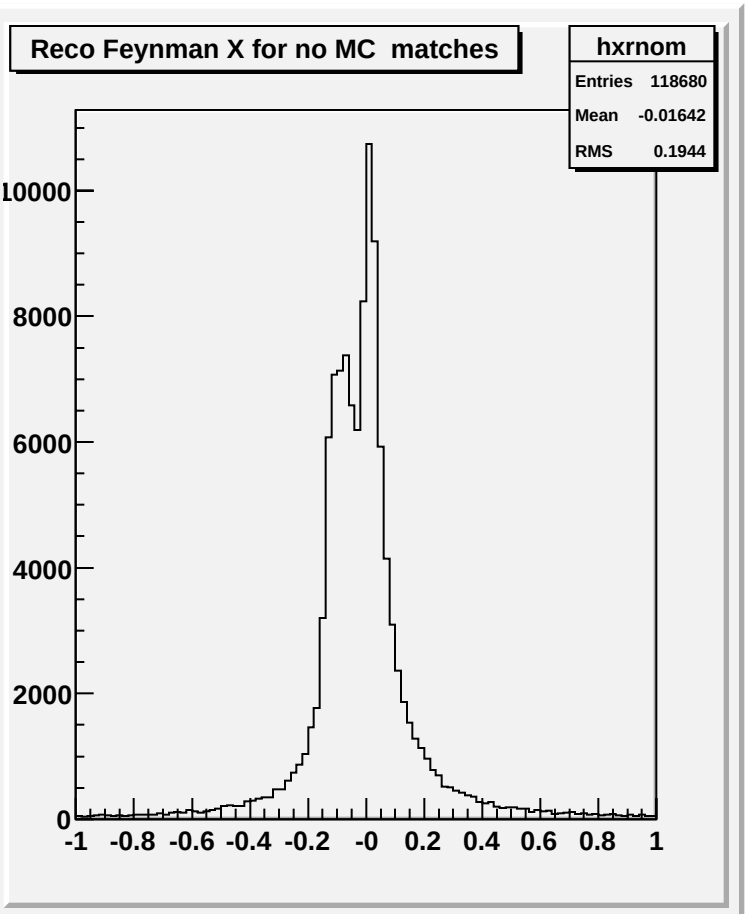

Total MC tracks Rapidity
hmcsum
Entries 885852
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
-5 -4 -3 -2 -1 0 1 2 3 4 5

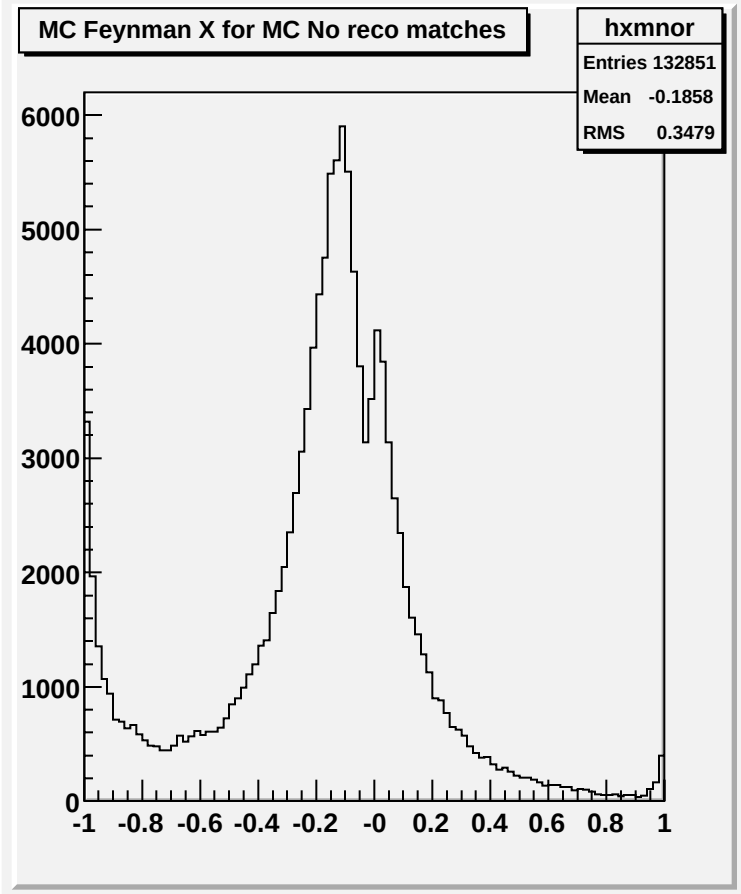

Reco CMS rapidity for no MC matches
hyrnom
Entries 118680
4000
3500
3000
2500
2000
1500
1000
500
0
-5 -4 -3 -2 -1 0 1 2 3 4 5

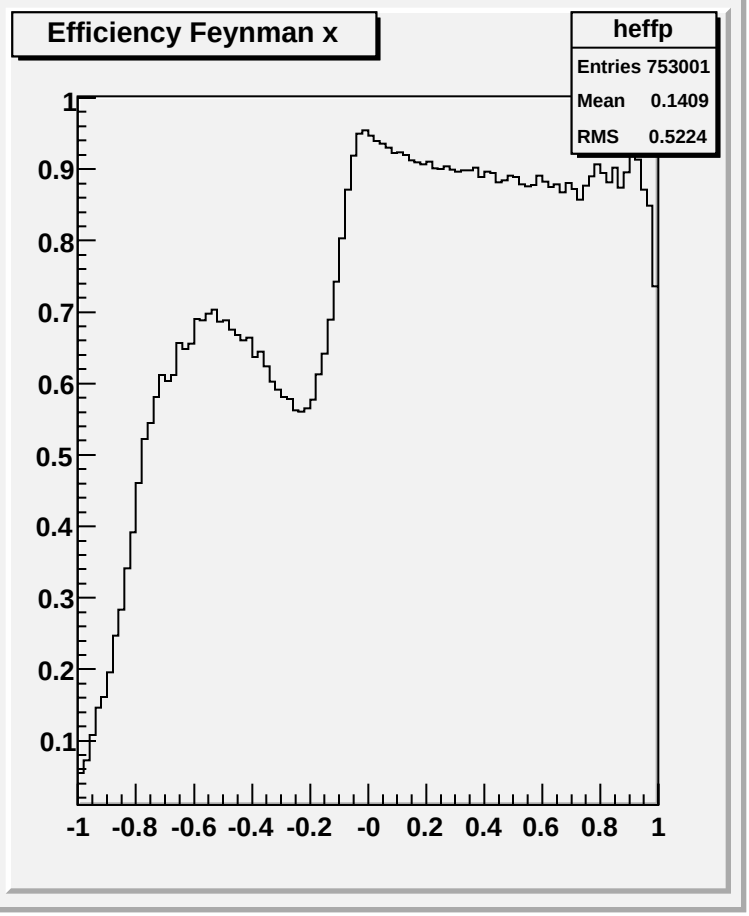

MC CMS rapidity for MC NO reco matches
hymnor
Entries 132851
8000
7000
6000
5000
4000
3000
2000
1000
0
-5 -4 -3 -2 -1 0 1 2 3 4 5

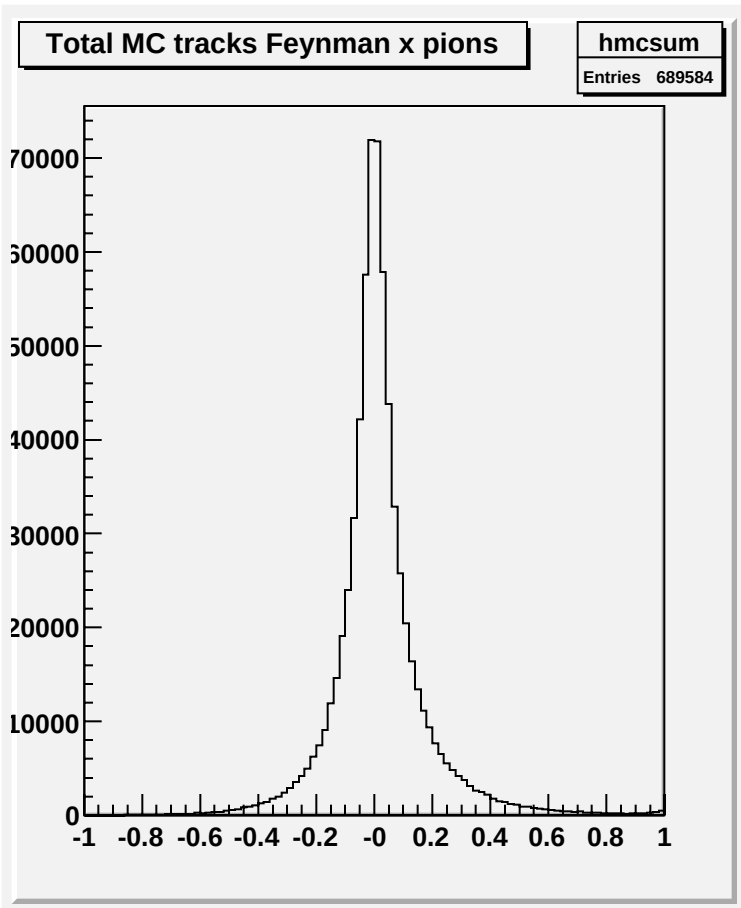

Efficiency Rapidity
heffp
Entries 753001
1
0.8
0.6
0.4
0.2
0
-5 -4 -3 -2 -1 0 1 2 3 4 5

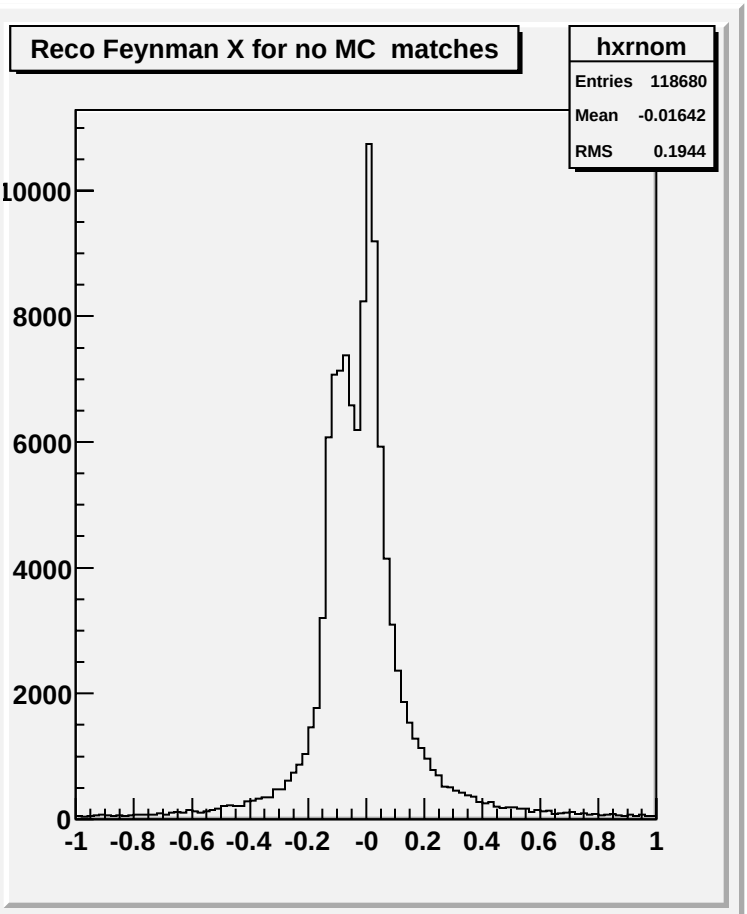

Total MC tracks Feynman x
hmcsum
Entries 885852
Mean -0.01127
RMS 0.2467
80000
70000
60000
50000
40000
30000
20000
10000
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1

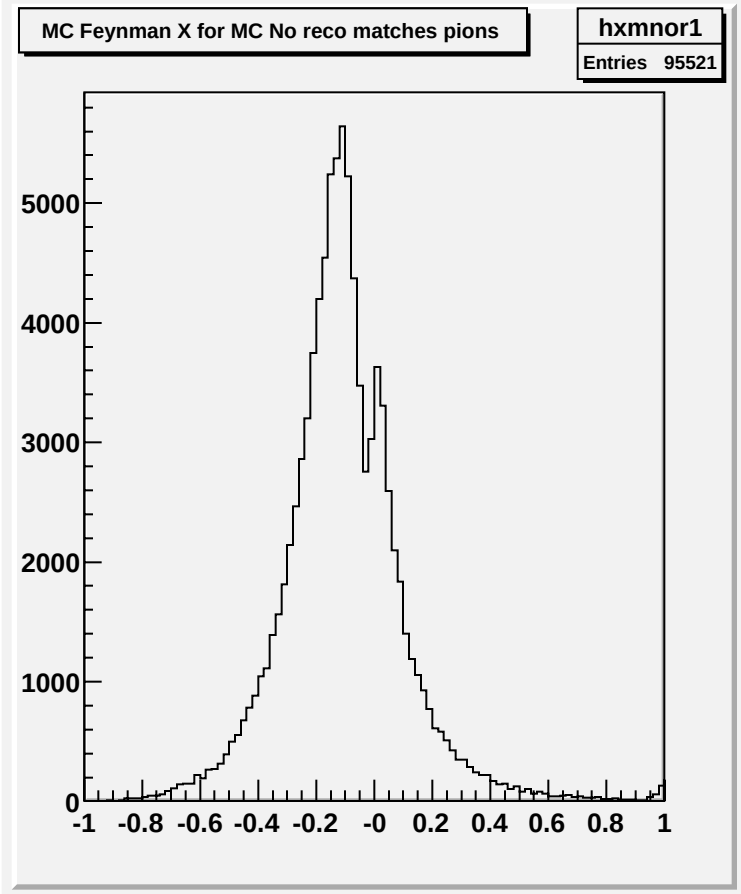

Reco Feynman X for no MC matches
hxrnom
Entries 118680
Mean -0.01642
RMS 0.1944
10000
8000
6000
4000
2000
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1

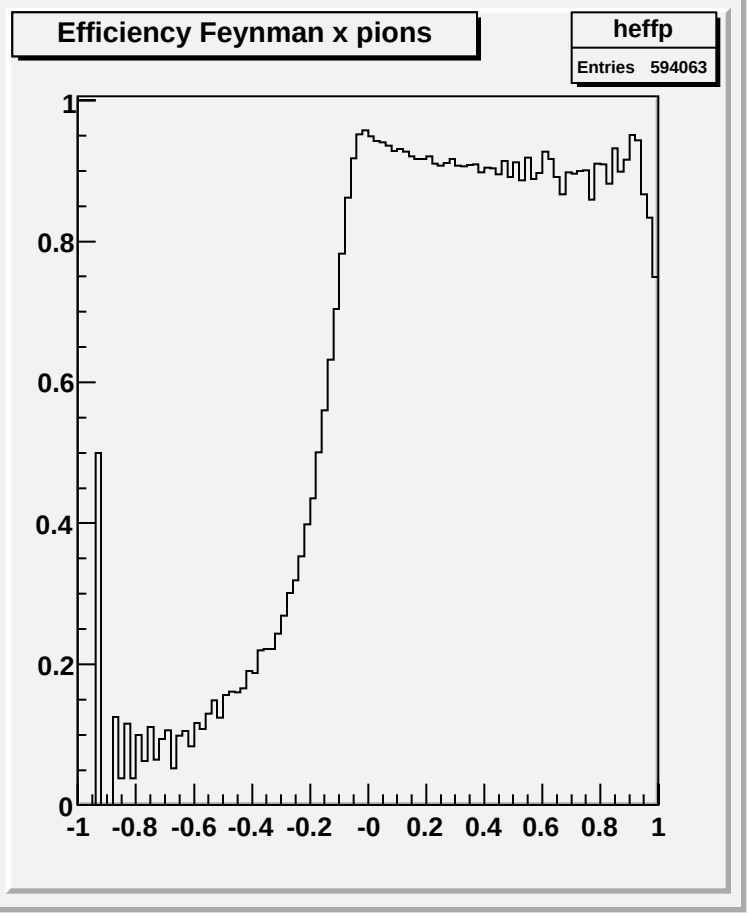

MC Feynman X for MC No reco matches
hxmnor
Entries 132851
Mean -0.1858
RMS 0.3479
6000
5000
4000
3000
2000
1000
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1

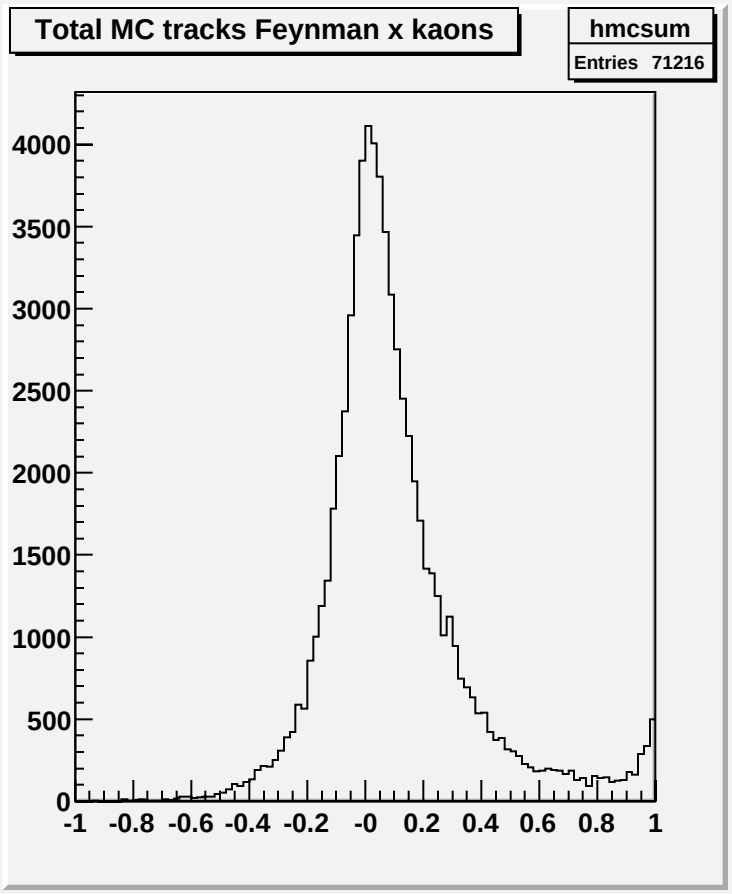

Efficiency Feynman x
heffp
Entries 753001
Mean 0.1409
RMS 0.5224
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1

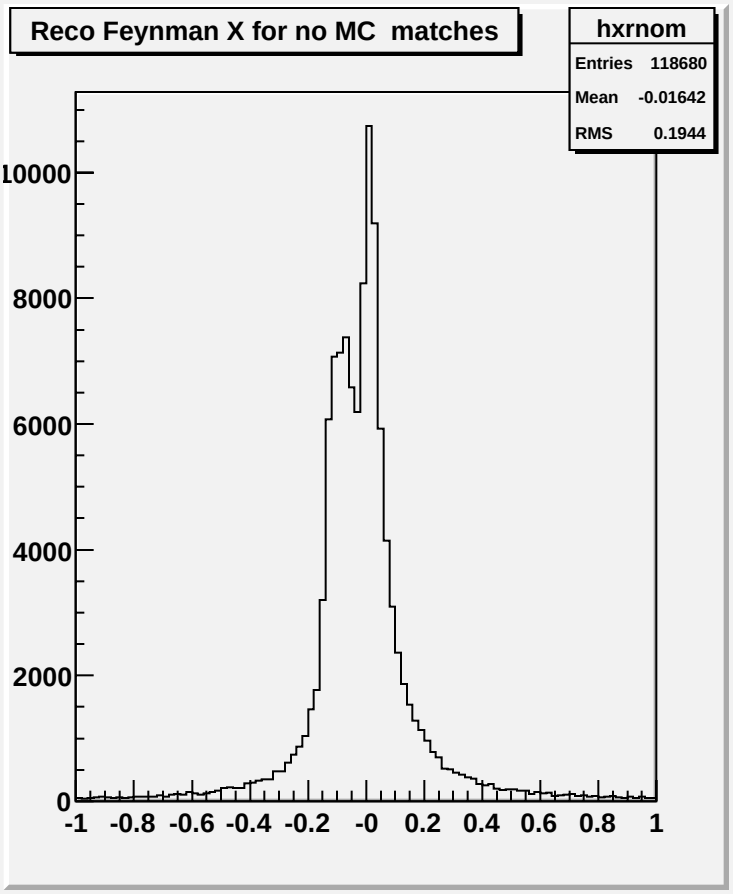

Total MC tracks Feynman x pions
hmcsum
Entries 689584
70000
60000
50000
40000
30000
20000
10000
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1

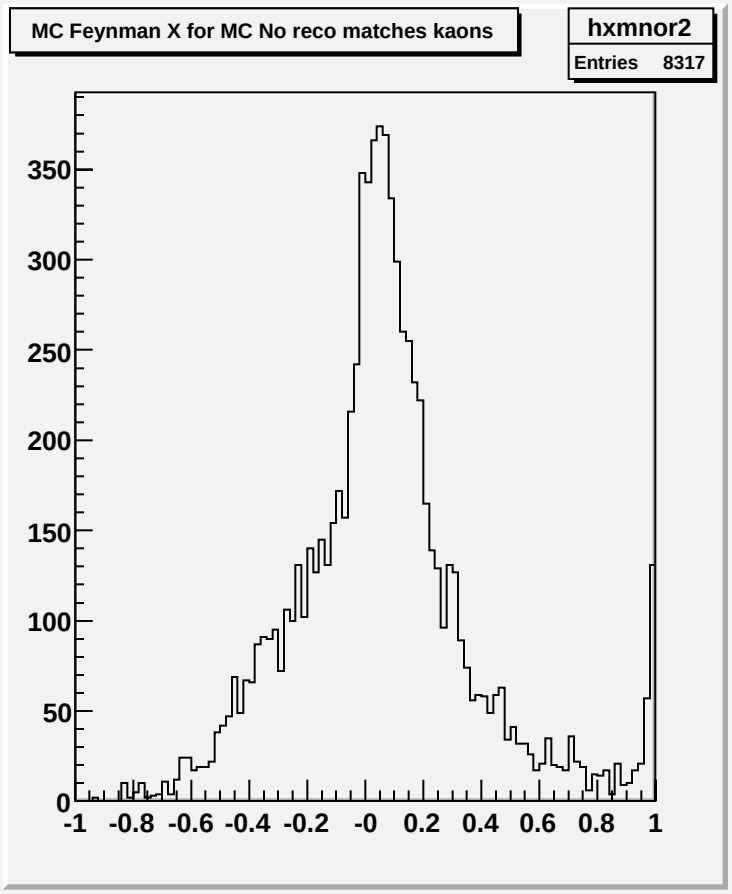

Reco Feynman X for no MC matches
hxrnom
Entries 118680
Mean -0.01642
RMS 0.1944
10000
8000
6000
4000
2000
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1

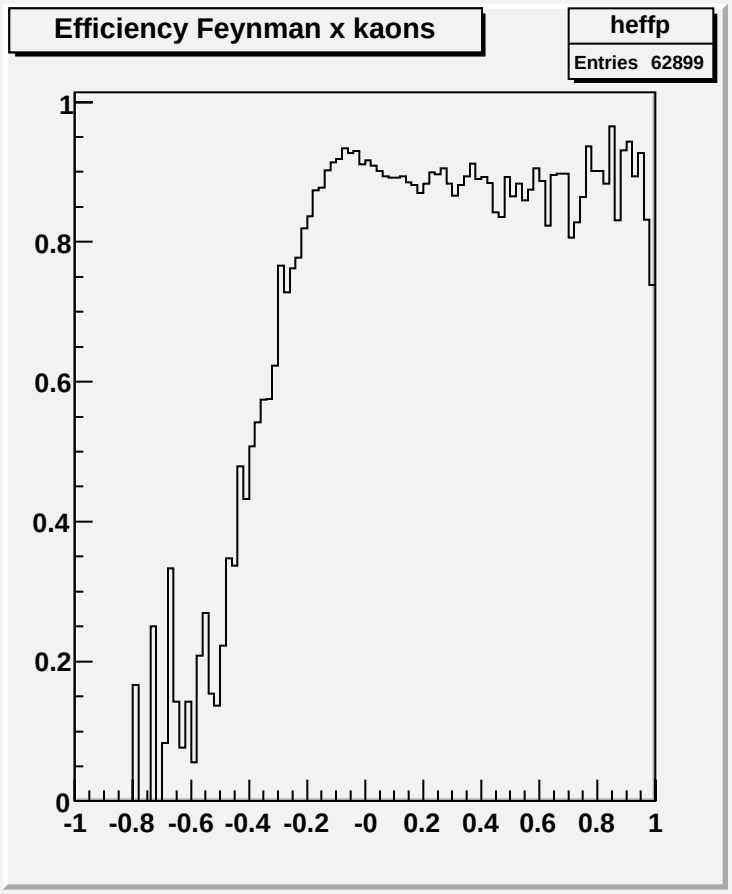

MC Feynman X for MC No reco matches pions
hxmnor1
Entries 95521
5000
4000
3000
2000
1000
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1

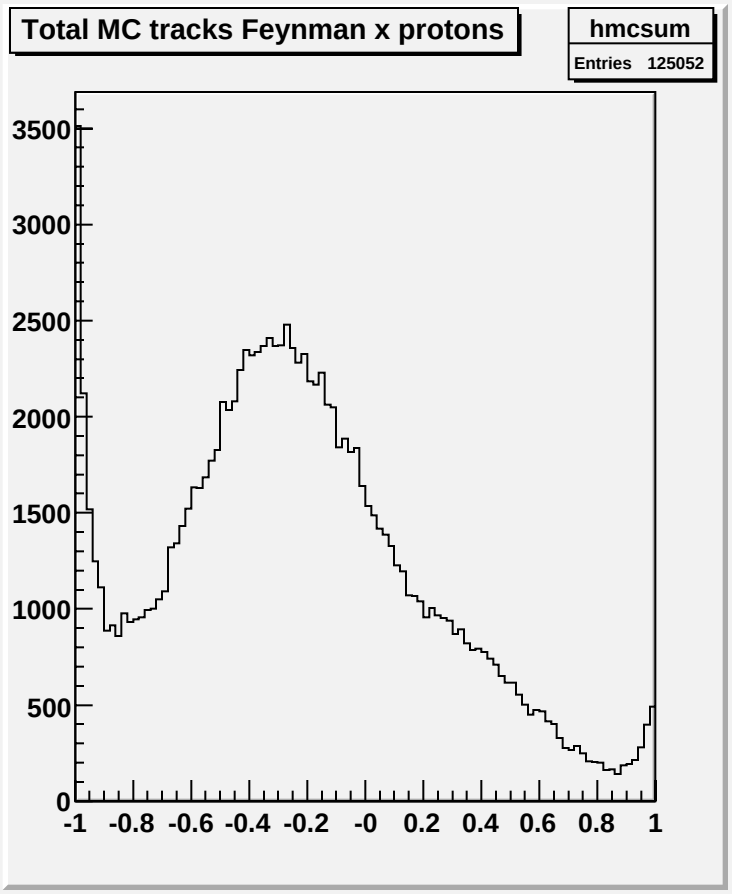

Efficiency Feynman x pions
heffp
Entries 594063
1
0.8
0.6
0.4
0.2
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1

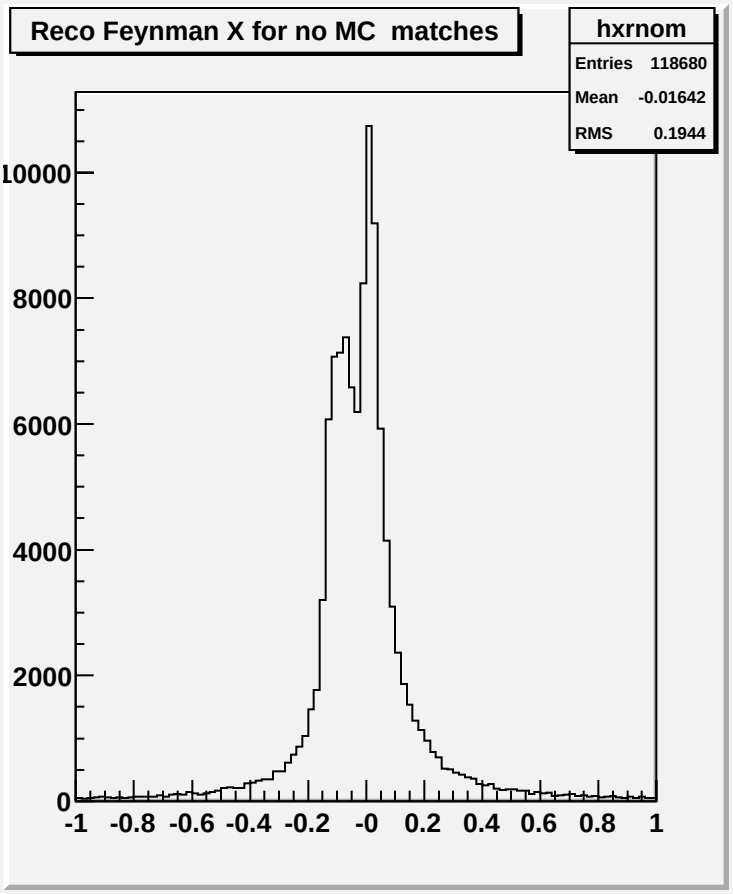

Total MC tracks Feynman x kaons
hmcsum
Entries 71216
4000
3500
3000
2500
2000
1500
1000
500
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1

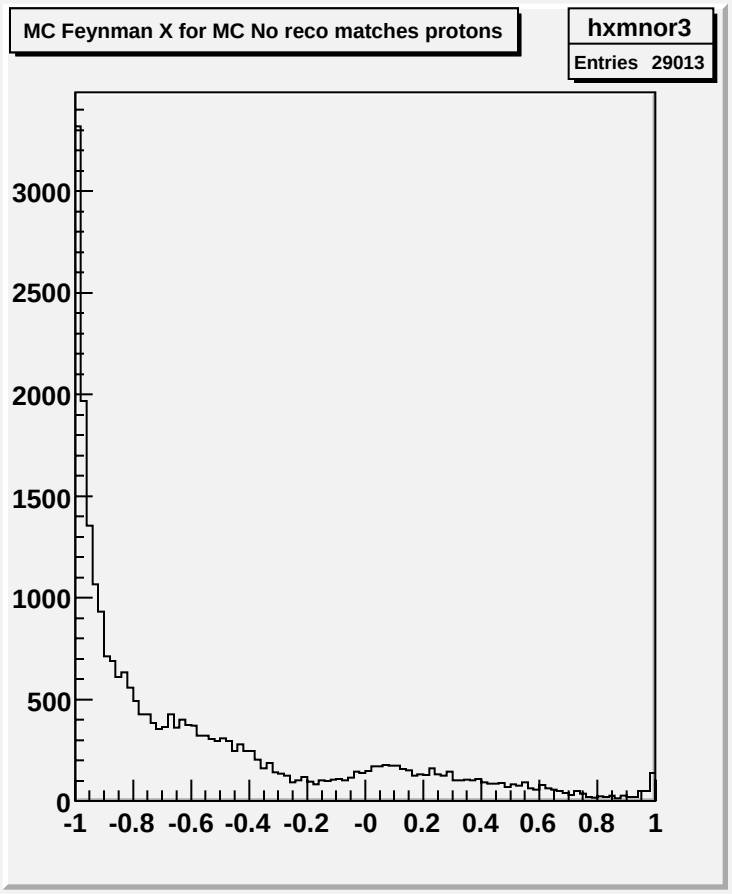

Reco Feynman X for no MC matches
hxrnom
Entries 118680
Mean -0.01642
RMS 0.1944
10000
8000
6000
4000
2000
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1

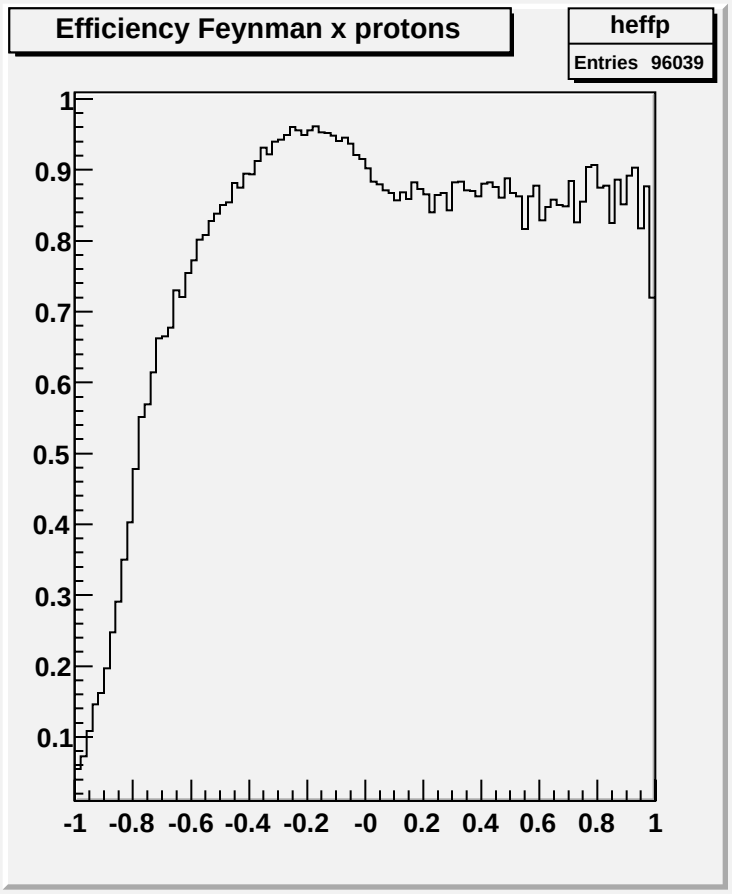

MC Feynman X for MC No reco matches kaons
hxmnor2
Entries 8317
350
300
250
200
150
100
50
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1


Efficiency Feynman x kaons
heffp
Entries 62899
1
0.8
0.6
0.4
0.2
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1


Total MC tracks Feynman x protons
hmcsum
Entries 125052
3500
3000
2500
2000
1500
1000
500
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1


Reco Feynman X for no MC matches
hxrnom
Entries 118680
Mean -0.01642
RMS 0.1944
10000
8000
6000
4000
2000
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1


MC Feynman X for MC No reco matches protons
hxmnor3
Entries 29013
3000
2500
2000
1500
1000
500
0
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1


Efficiency Feynman x protons
heffp
Entries 96039
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
-1 -0.8 -0.6 -0.4 -0.2 -0 0.2 0.4 0.6 0.8 1