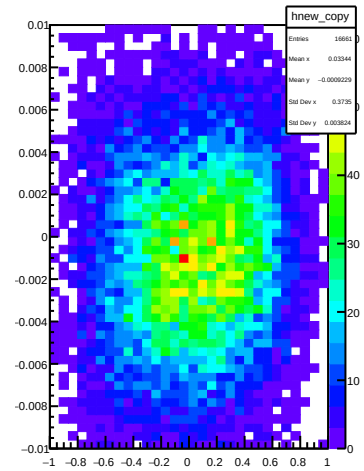
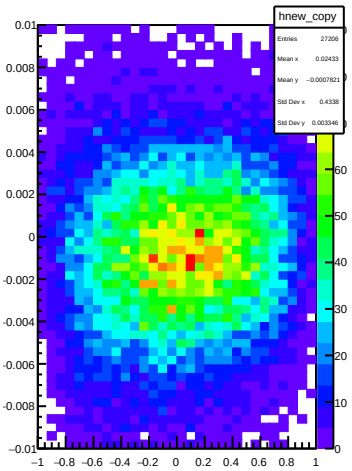
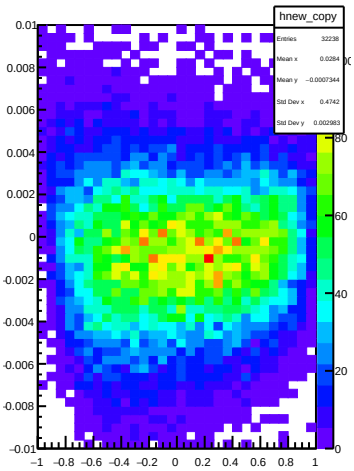
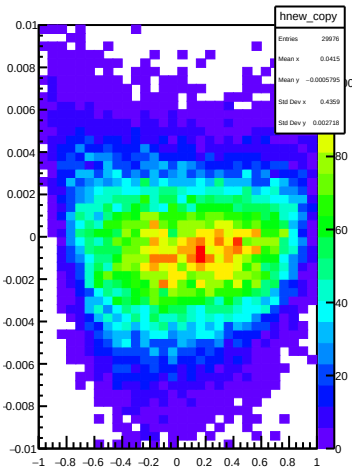
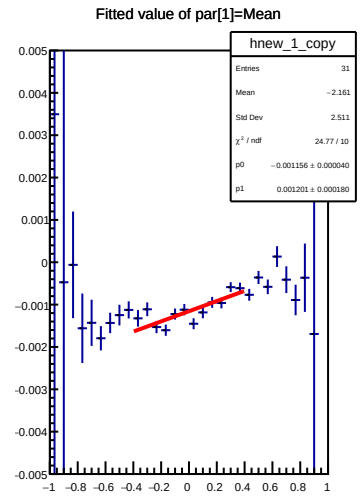
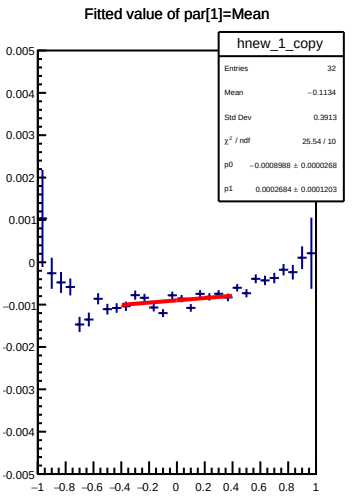

hnew_copy
Entries 16661
Mean x 0.03344
Mean y −0.0006229
Std Dev x 0.3735
Std Dev y 0.003824

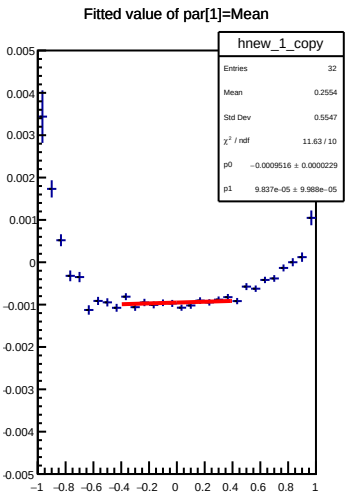

hnew_copy
Entries 27206
Mean x 0.02433
Mean y −0.0007821
Std Dev x 0.4338
Std Dev y 0.003346

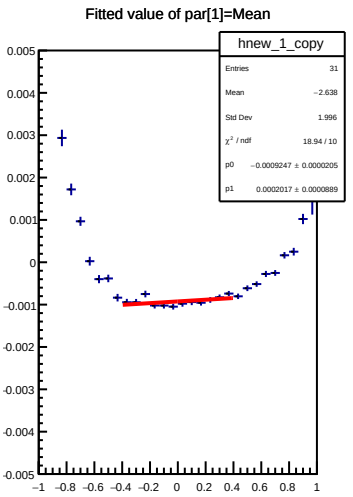

hnew_copy
Entries 32238
Mean x 0.0284
Mean y −0.0007344
Std Dev x 0.4742
Std Dev y 0.002983

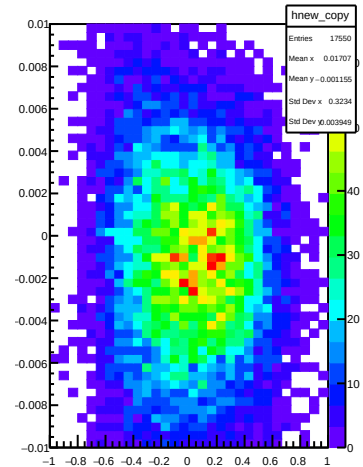

hnew_copy
Entries 29976
Mean x 0.0415
Mean y −0.0005795
Std Dev x 0.4359
Std Dev y 0.002718

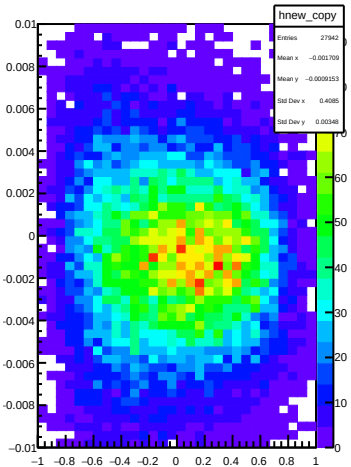

Fitted value of par[1]=Mean
hnew_1_copy
Entries 31
Mean −2.161
Std Dev 2.511
χ² / ndf 24.77 / 10
p0 −0.001156 ± 0.000040
p1 0.001201 ± 0.000180

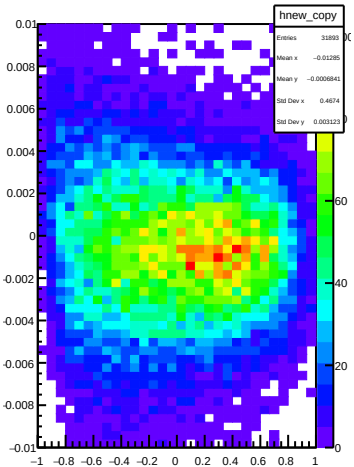

Fitted value of par[1]=Mean
hnew_1_copy
Entries 32
Mean −0.1134
Std Dev 0.3913
χ² / ndf 25.54 / 10
p0 −0.0008988 ± 0.0000268
p1 0.0002684 ± 0.0001203

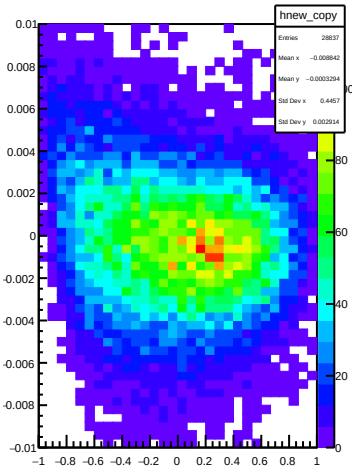

Fitted value of par[1]=Mean
hnew_1_copy
Entries 32
Mean 0.2554
Std Dev 0.5547
χ² / ndf 11.63 / 10
p0 −0.0009516 ± 0.0000229
p1 9.837e-05 ± 9.988e-05

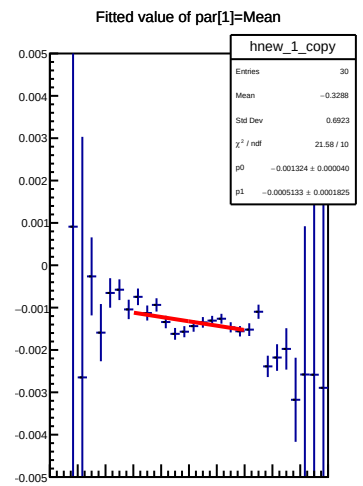

Fitted value of par[1]=Mean
hnew_1_copy
Entries 31
Mean −2.638
Std Dev 1.996
χ² / ndf 18.94 / 10
p0 −0.0009247 ± 0.0000205
p1 0.0002017 ± 0.0000889

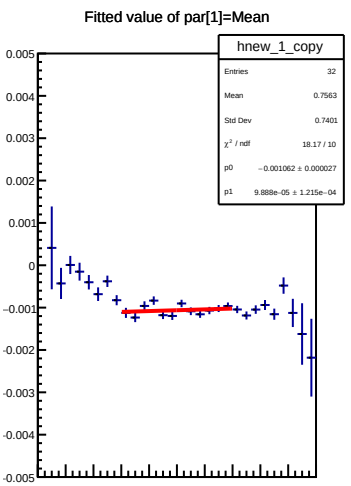

hnew_copy
Entries 17550
Mean x 0.01707
Mean y −0.001155
Std Dev x 0.3234
Std Dev y 0.003949

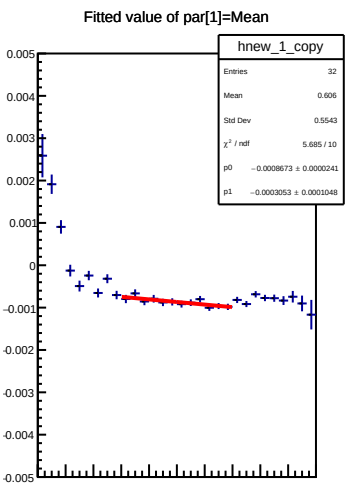

hnew_copy
Entries 27942
Mean x −0.001709
Mean y −0.0009153
Std Dev x 0.4085
Std Dev y 0.00348

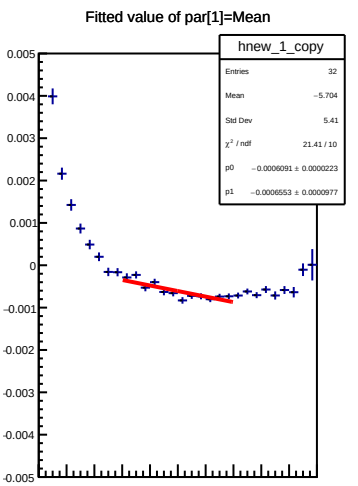

hnew_copy
Entries 31893
Mean x −0.01285
Mean y −0.0006841
Std Dev x 0.4674
Std Dev y 0.003123

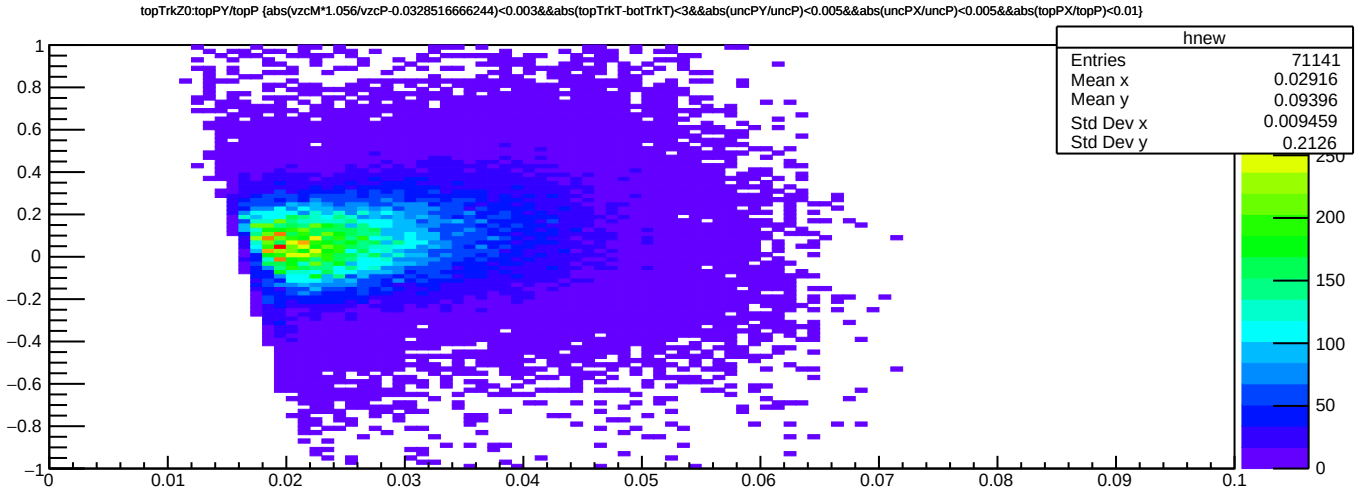

hnew_copy
Entries 28837
Mean x −0.008842
Mean y −0.0003294
Std Dev x 0.4457
Std Dev y 0.002914

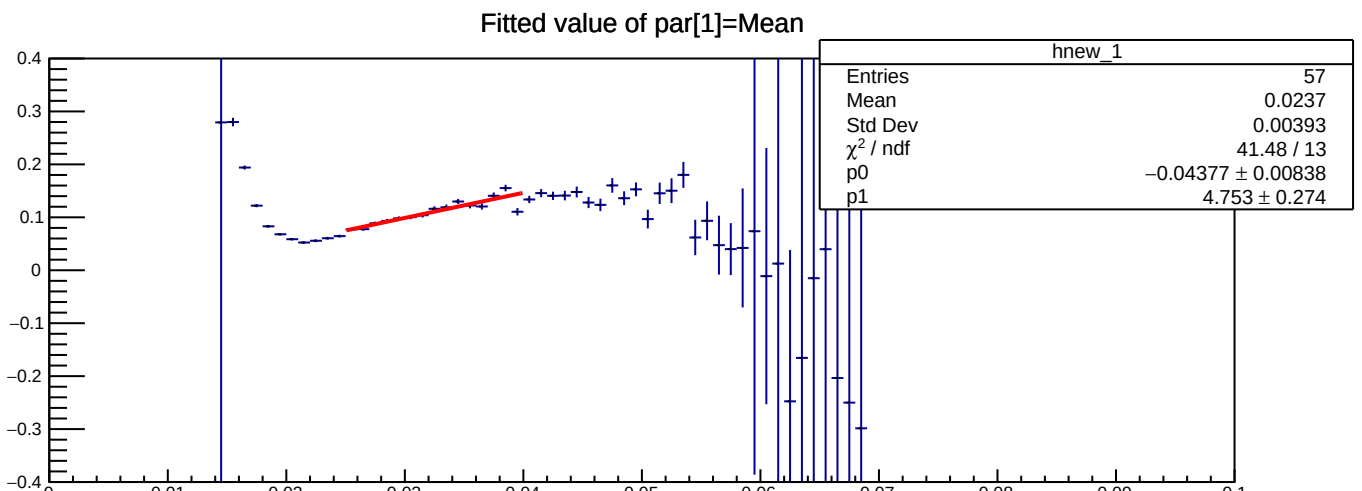

Fitted value of par[1]=Mean
hnew_1_copy
Entries 30
Mean −0.3288
Std Dev 0.6923
χ² / ndf 21.58 / 10
p0 −0.001324 ± 0.000040
p1 −0.0005133 ± 0.0001825

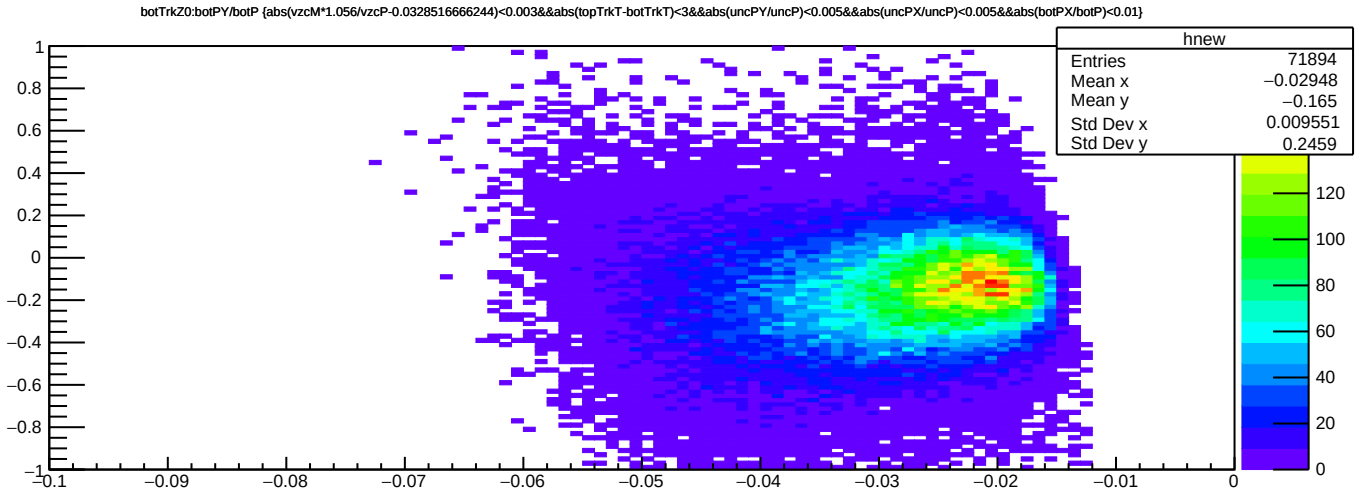

Fitted value of par[1]=Mean
hnew_1_copy
Entries 32
Mean 0.7563
Std Dev 0.7401
χ² / ndf 18.17 / 10
p0 −0.001062 ± 0.000027
p1 9.888e-05 ± 1.215e-04

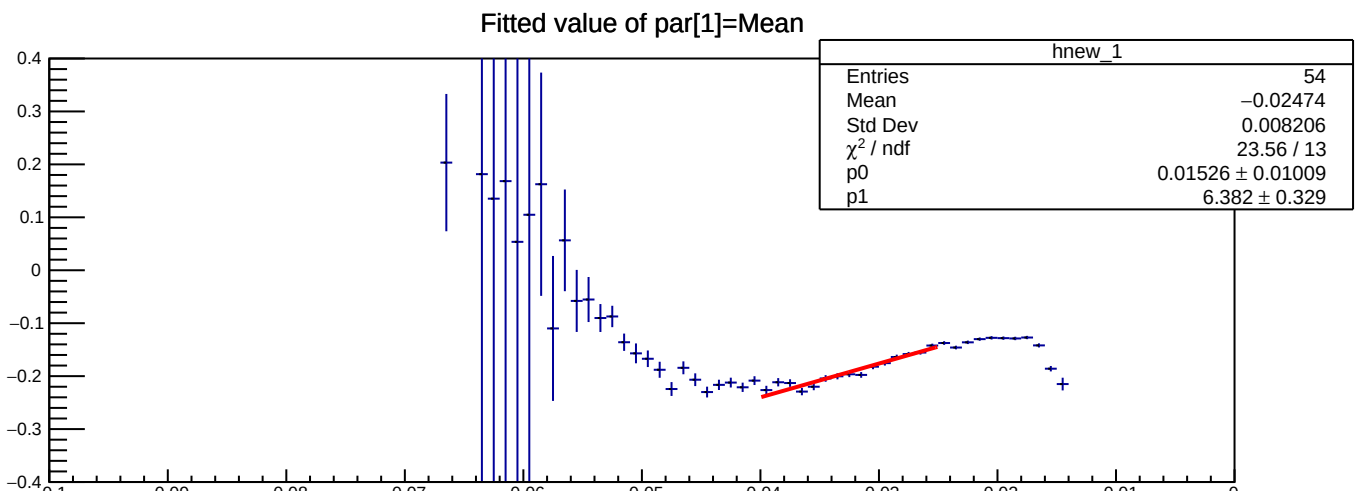

Fitted value of par[1]=Mean
hnew_1_copy
Entries 32
Mean 0.606
Std Dev 0.5543
χ² / ndf 5.685 / 10
p0 −0.0008673 ± 0.0000241
p1 −0.0003053 ± 0.0001048

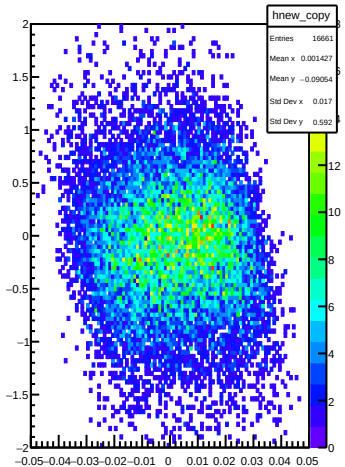

Fitted value of par[1]=Mean
hnew_1_copy
Entries 32
Mean −5.704
Std Dev 5.41
χ² / ndf 21.41 / 10
p0 −0.0006091 ± 0.0000223
p1 −0.0006553 ± 0.0000977

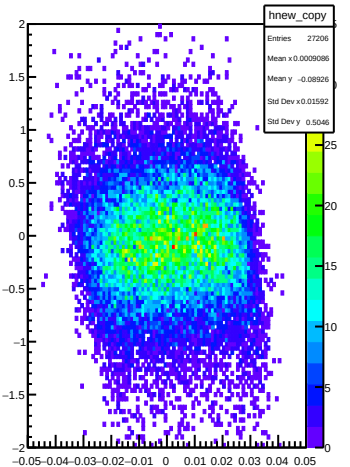

topTrkZ0:topPY/topP {abs(vzcM*1.056/vzcP-0.0328516666244)<0.003&&abs(topTrkT-botTrkT)<3&&abs(uncPY/uncP)<0.005&&abs(uncPX/uncP)<0.005&&abs(topPX/topP)<0.01}
hnew
Entries 71141
Mean x 0.02916
Mean y 0.09396
Std Dev x 0.009459
Std Dev y 0.2126

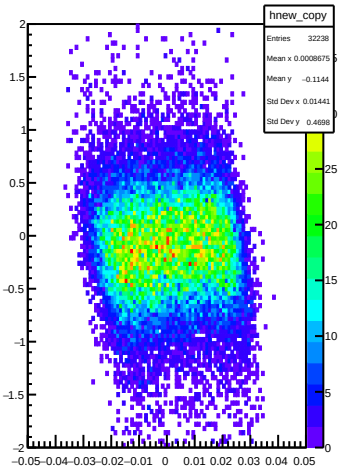

Fitted value of par[1]=Mean
hnew_1
Entries 57
Mean 0.0237
Std Dev 0.00393
χ² / ndf 41.48 / 13
p0 −0.04377 ± 0.00838
p1 4.753 ± 0.274

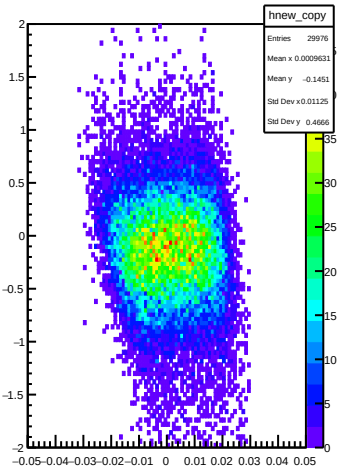

botTrkZ0:botPY/botP {abs(vzcM*1.056/vzcP-0.0328516666244)<0.003&&abs(topTrkT-botTrkT)<3&&abs(uncPY/uncP)<0.005&&abs(uncPX/uncP)<0.005&&abs(botPX/botP)<0.01}
hnew
Entries 71894
Mean x −0.02948
Mean y −0.165
Std Dev x 0.009551
Std Dev y 0.2459

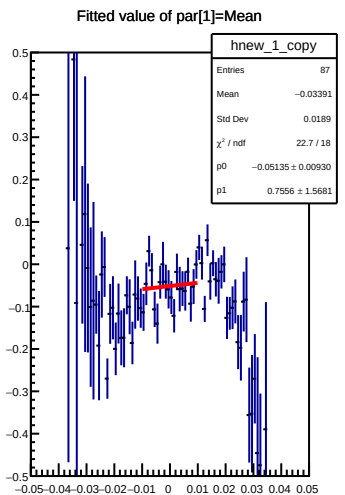

Fitted value of par[1]=Mean
hnew_1
Entries 54
Mean −0.02474
Std Dev 0.008206
χ² / ndf 23.56 / 13
p0 0.01526 ± 0.01009
p1 6.382 ± 0.329

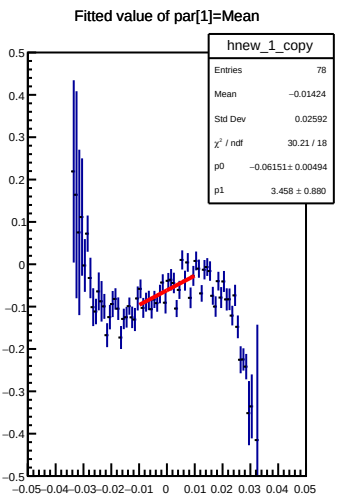

hnew_copy
Entries 16661
Mean x 0.001427
Mean y −0.09054
Std Dev x 0.017
Std Dev y 0.592

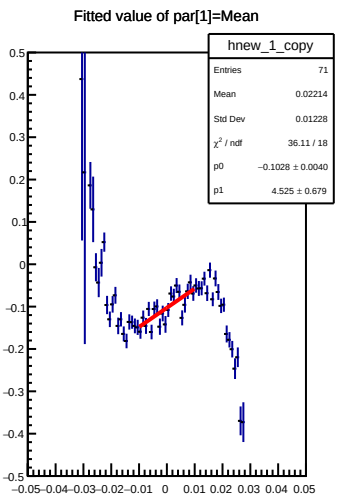

hnew_copy
Entries 27206
Mean x 0.0009086
Mean y −0.08926
Std Dev x 0.01592
Std Dev y 0.5046

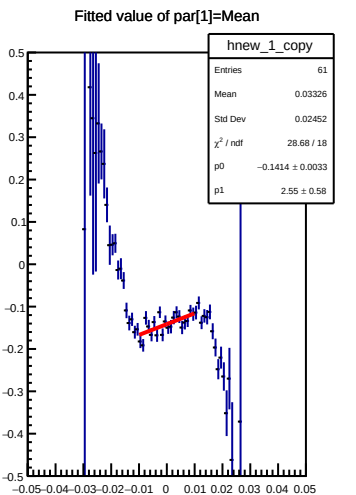

hnew_copy
Entries 32238
Mean x 0.0008675
Mean y −0.1144
Std Dev x 0.01441
Std Dev y 0.4698

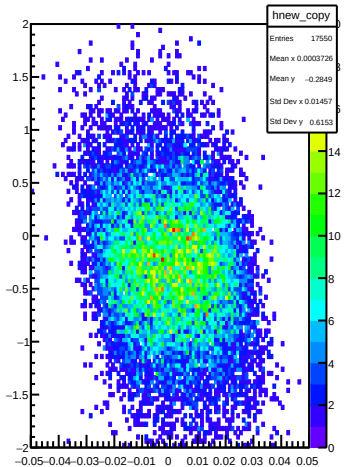

hnew_copy
Entries 29976
Mean x 0.0009631
Mean y −0.1451
Std Dev x 0.01125
Std Dev y 0.4666

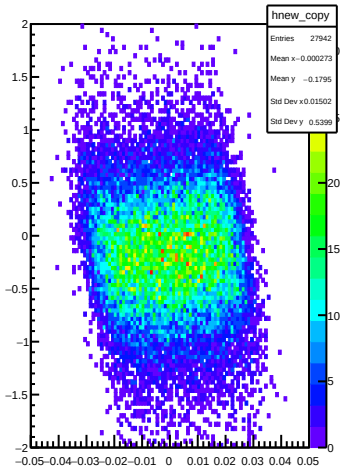

Fitted value of par[1]=Mean
hnew_1_copy
Entries 87
Mean −0.03391
Std Dev 0.0189
χ² / ndf 22.7 / 18
p0 −0.05135 ± 0.00930
p1 0.7556 ± 1.5681

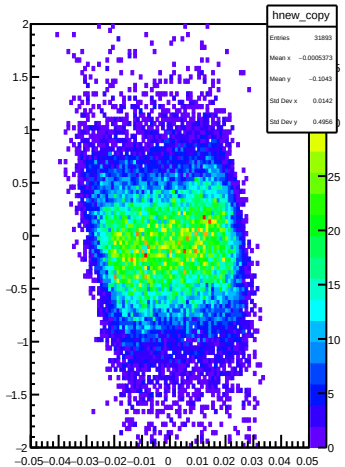

Fitted value of par[1]=Mean
hnew_1_copy
Entries 78
Mean −0.01424
Std Dev 0.02592
χ² / ndf 30.21 / 18
p0 −0.06151 ± 0.00494
p1 3.458 ± 0.880

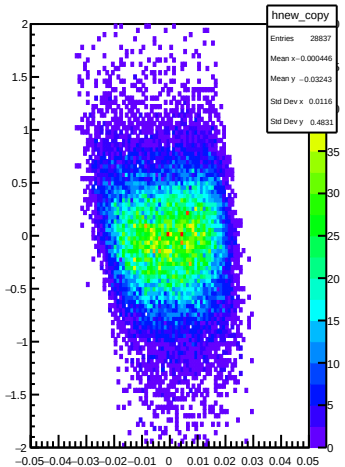

Fitted value of par[1]=Mean
hnew_1_copy
Entries 71
Mean 0.02214
Std Dev 0.01228
χ² / ndf 36.11 / 18
p0 −0.1028 ± 0.0040
p1 4.525 ± 0.679

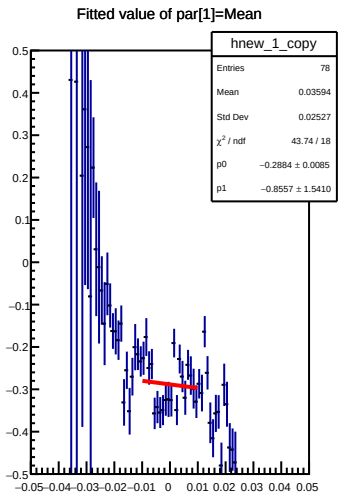

Fitted value of par[1]=Mean
hnew_1_copy
Entries 61
Mean 0.03326
Std Dev 0.02452
χ² / ndf 28.68 / 18
p0 −0.1414 ± 0.0033
p1 2.55 ± 0.58

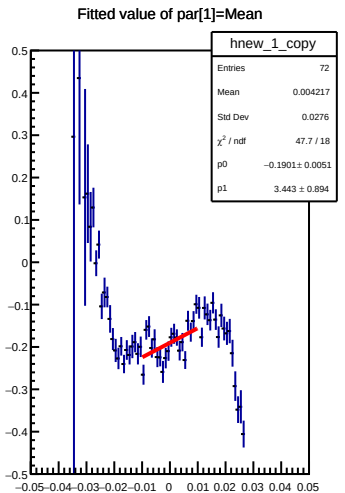

hnew_copy
Entries 17550
Mean x 0.0003726
Mean y −0.2849
Std Dev x 0.01457
Std Dev y 0.6153

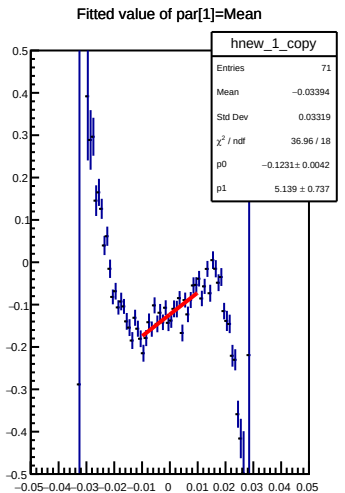

hnew_copy
Entries 27942
Mean x −0.000273
Mean y −0.1795
Std Dev x 0.01502
Std Dev y 0.5399

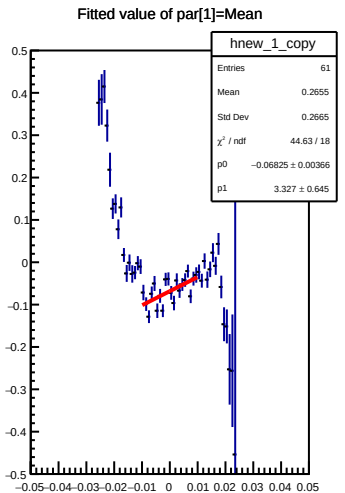

hnew_copy
Entries 31893
Mean x −0.0005373
Mean y −0.1043
Std Dev x 0.0142
Std Dev y 0.4956

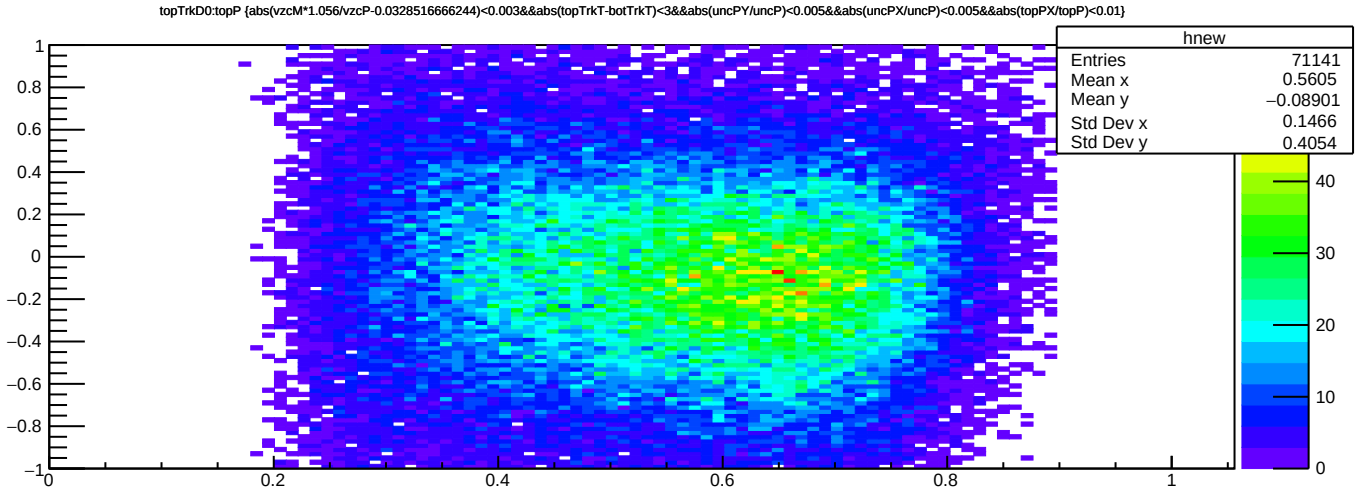

hnew_copy
Entries 28837
Mean x −0.000446
Mean y −0.03243
Std Dev x 0.0116
Std Dev y 0.4831

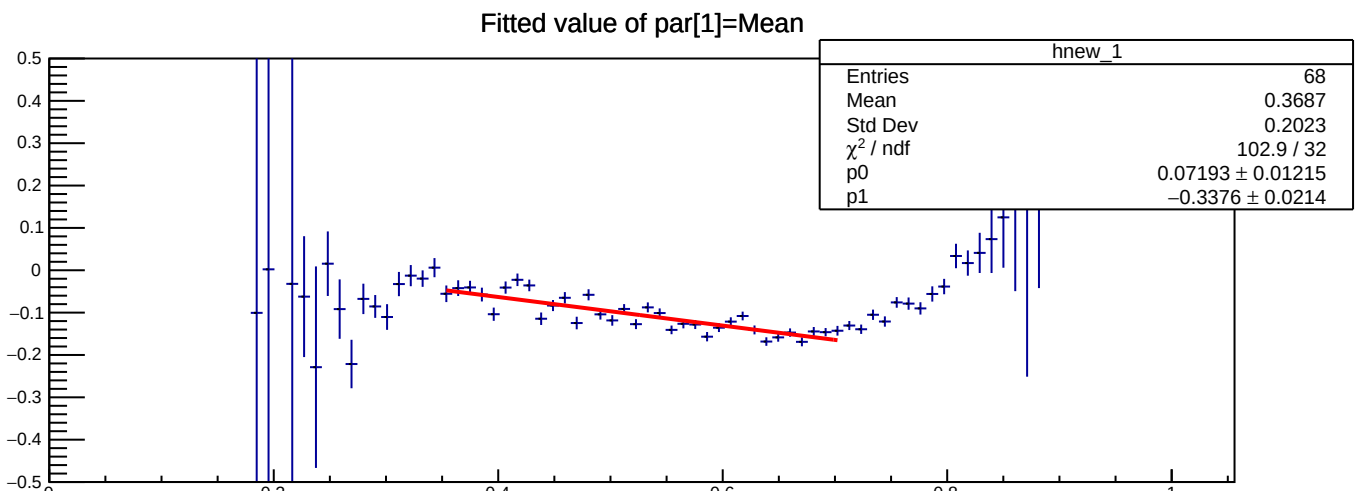

Fitted value of par[1]=Mean
hnew_1_copy
Entries 78
Mean 0.03594
Std Dev 0.02527
χ² / ndf 43.74 / 18
p0 −0.2884 ± 0.0085
p1 −0.8557 ± 1.5410

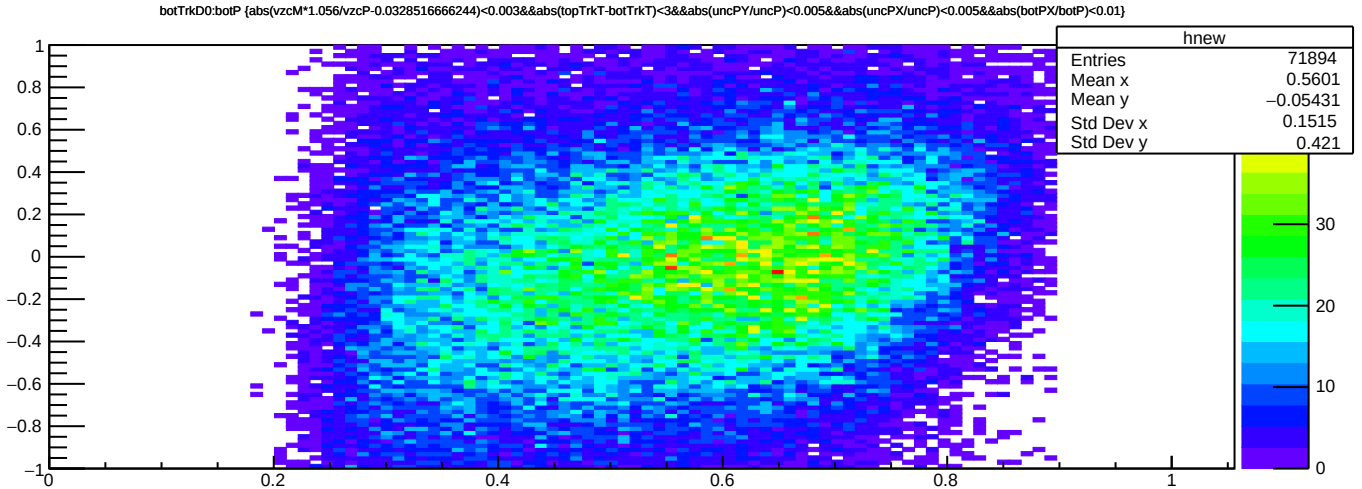

Fitted value of par[1]=Mean
hnew_1_copy
Entries 72
Mean 0.004217
Std Dev 0.0276
χ² / ndf 47.7 / 18
p0 −0.1901 ± 0.0051
p1 3.443 ± 0.894

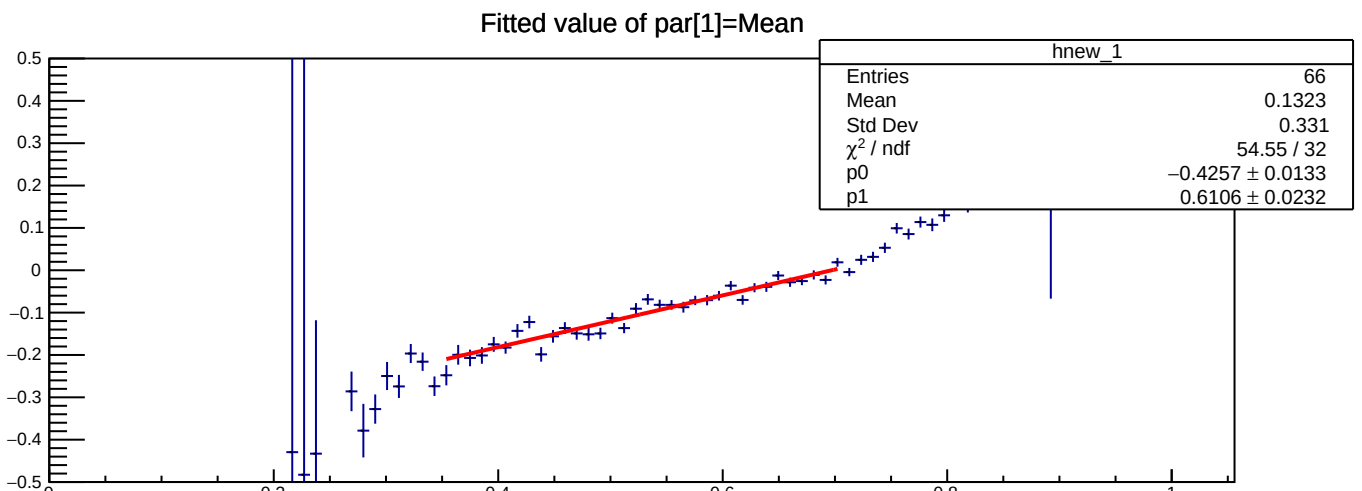

Fitted value of par[1]=Mean
hnew_1_copy
Entries 71
Mean −0.03394
Std Dev 0.03319
χ² / ndf 36.96 / 18
p0 −0.1231 ± 0.0042
p1 5.139 ± 0.737

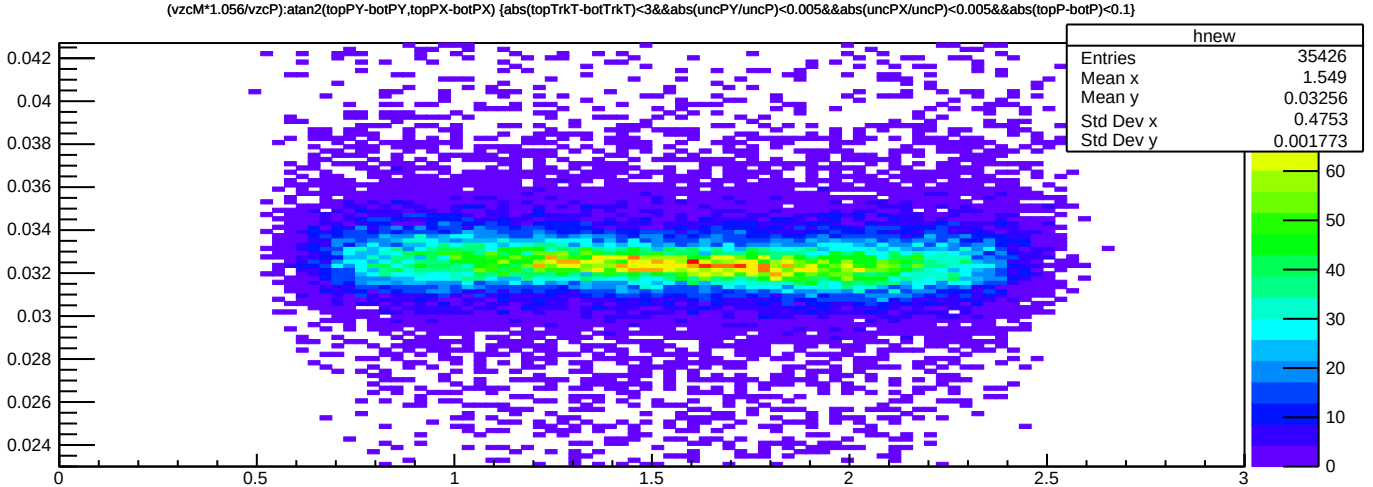

Fitted value of par[1]=Mean
hnew_1_copy
Entries 61
Mean 0.2655
Std Dev 0.2665
χ² / ndf 44.63 / 18
p0 −0.06825 ± 0.00366
p1 3.327 ± 0.645

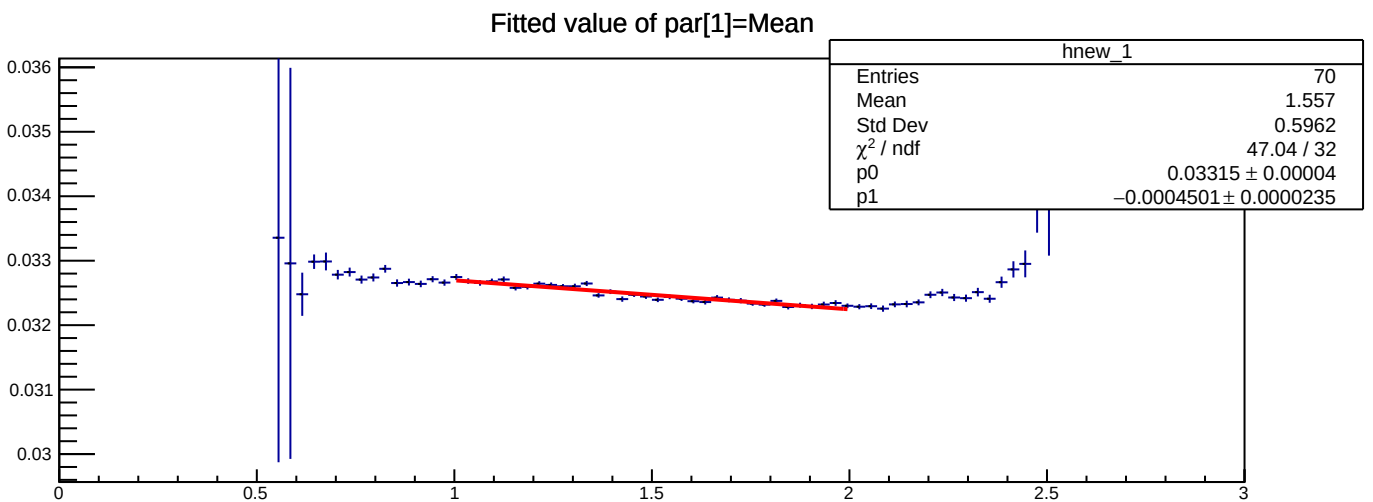

topTrkD0:topP {abs(vzcM*1.056/vzcP-0.0328516666244)<0.003&&abs(topTrkT-botTrkT)<3&&abs(uncPY/uncP)<0.005&&abs(uncPX/uncP)<0.005&&abs(topPX/topP)<0.01}
hnew
Entries 71141
Mean x 0.5605
Mean y −0.08901
Std Dev x 0.1466
Std Dev y 0.4054

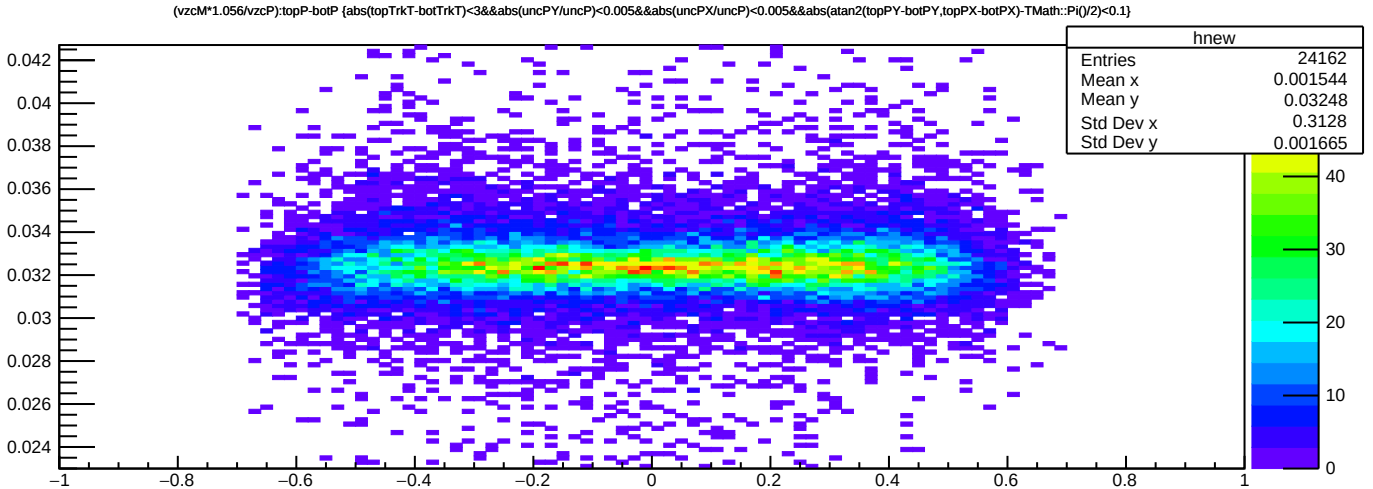

Fitted value of par[1]=Mean
hnew_1
Entries 68
Mean 0.3687
Std Dev 0.2023
χ² / ndf 102.9 / 32
p0 0.07193 ± 0.01215
p1 −0.3376 ± 0.0214

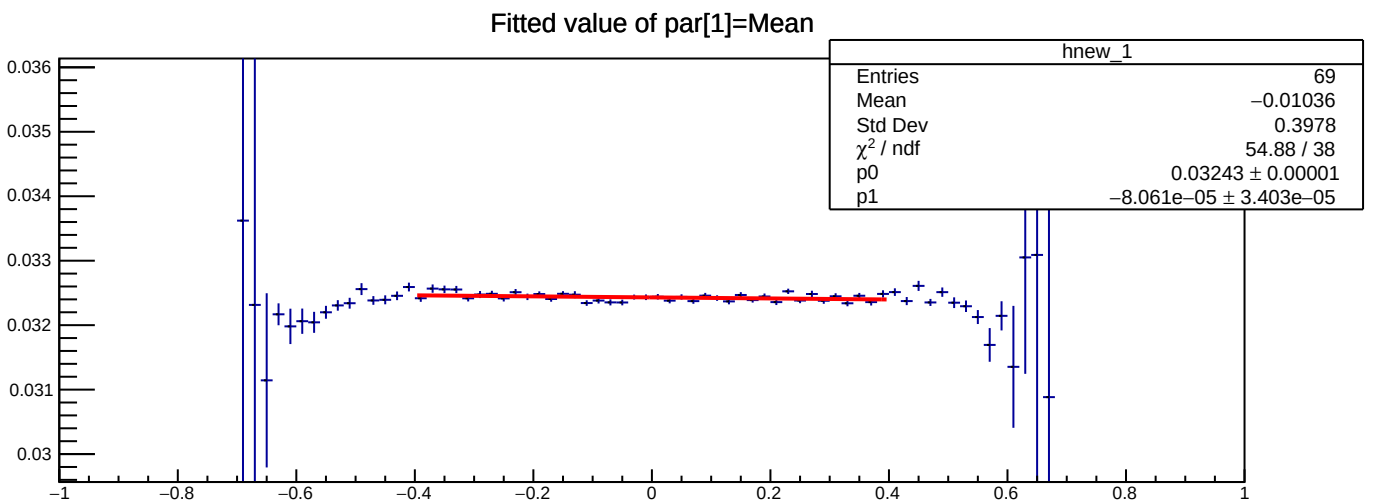

botTrkD0:botP {abs(vzcM*1.056/vzcP-0.0328516666244)<0.003&&abs(topTrkT-botTrkT)<3&&abs(uncPY/uncP)<0.005&&abs(uncPX/uncP)<0.005&&abs(botPX/botP)<0.01}
hnew
Entries 71894
Mean x 0.5601
Mean y −0.05431
Std Dev x 0.1515
Std Dev y 0.421

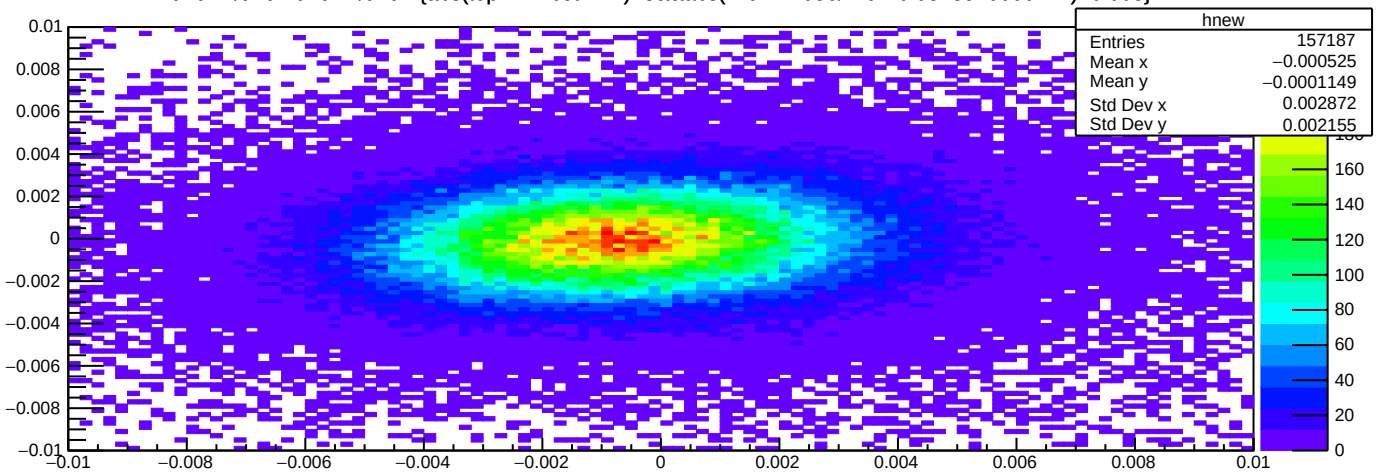

Fitted value of par[1]=Mean
hnew_1
Entries 66
Mean 0.1323
Std Dev 0.331
χ² / ndf 54.55 / 32
p0 −0.4257 ± 0.0133
p1 0.6106 ± 0.0232

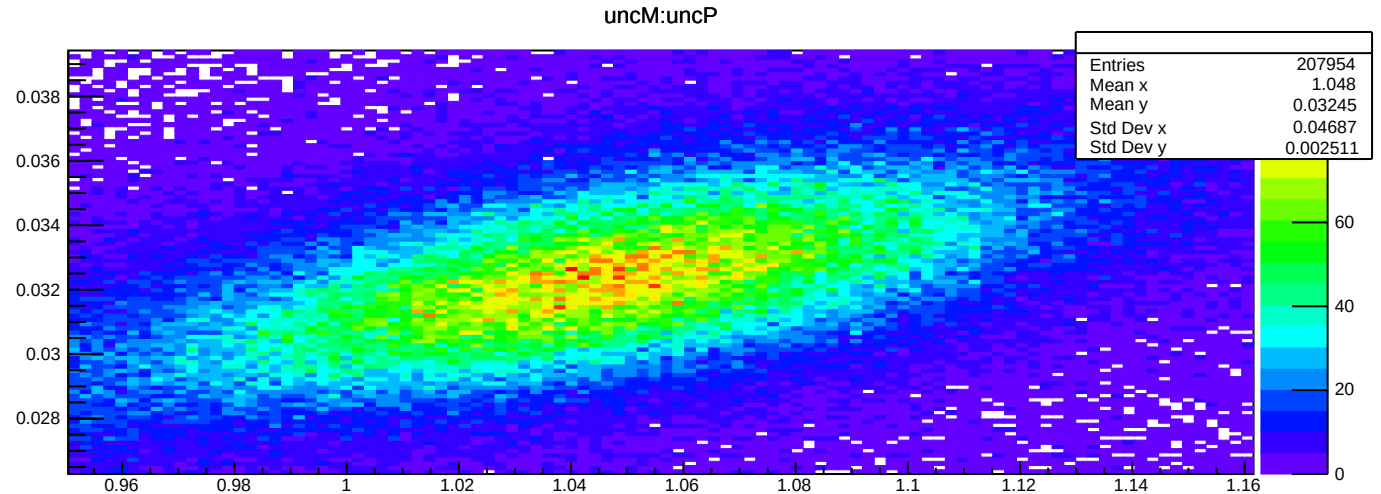

(vzcM*1.056/vzcP):atan2(topPY-botPY,topPX-botPX) {abs(topTrkT-botTrkT)<3&&abs(uncPY/uncP)<0.005&&abs(uncPX/uncP)<0.005&&abs(topP-botP)<0.1}
hnew
Entries 35426
Mean x 1.549
Mean y 0.03256
Std Dev x 0.4753
Std Dev y 0.001773
0.042
0.04
0.038
0.036
0.034
0.032
0.03
0.028
0.026
0.024
0
0.5
1
1.5
2
2.5
3
60
50
40
30
20
10
0


Fitted value of par[1]=Mean
hnew_1
Entries 70
Mean 1.557
Std Dev 0.5962
χ² / ndf 47.04 / 32
p0 0.03315 ± 0.00004
p1 −0.0004501 ± 0.0000235
0.036
0.035
0.034
0.033
0.032
0.031
0.03
0
0.5
1
1.5
2
2.5
3

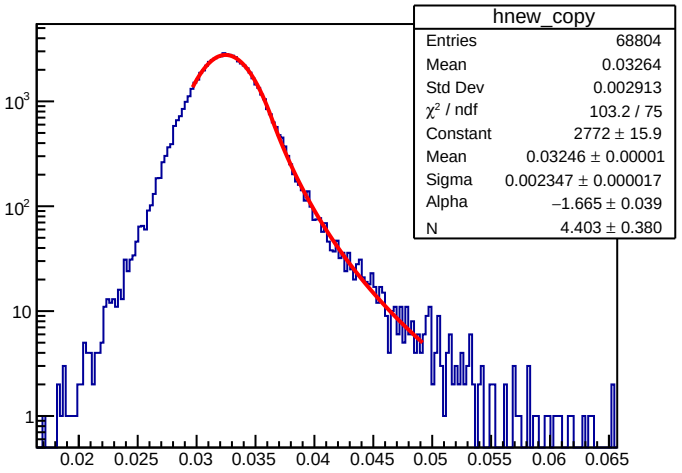

(vzcM*1.056/vzcP):topP-botP {abs(topTrkT-botTrkT)<3&&abs(uncPY/uncP)<0.005&&abs(uncPX/uncP)<0.005&&abs(atan2(topPY-botPY,topPX-botPX)-TMath::Pi()/2)<0.1}
hnew
Entries 24162
Mean x 0.001544
Mean y 0.03248
Std Dev x 0.3128
Std Dev y 0.001665


Fitted value of par[1]=Mean
hnew_1
Entries 69
Mean −0.01036
Std Dev 0.3978
χ² / ndf 54.88 / 38
p0 0.03243 ± 0.00001
p1 −8.061e−05 ± 3.403e−05

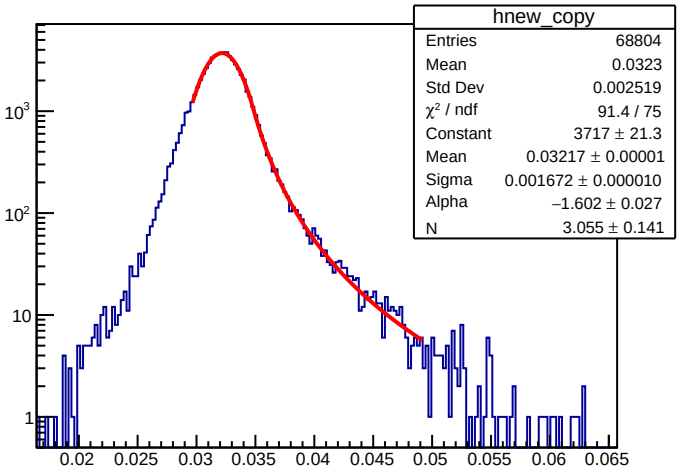

uncPY/uncP:uncPX/uncP {abs(topTrkT-botTrkT)<3&&abs(vzcM*1.056/vzcP-0.0328516666244)<0.003}
hnew
Entries 157187
Mean x −0.000525
Mean y −0.0001149
Std Dev x 0.002872
Std Dev y 0.002155
0.01
0.008
0.006
0.004
0.002
0
−0.002
−0.004
−0.006
−0.008
−0.01
−0.01
−0.008
−0.006
−0.004
−0.002
0
0.002
0.004
0.006
0.008
0.01
160
140
120
100
80
60
40
20
0


uncM:uncP
Entries 207954
Mean x 1.048
Mean y 0.03245
Std Dev x 0.04687
Std Dev y 0.002511
0.038
0.036
0.034
0.032
0.03
0.028
0.96
0.98
1
1.02
1.04
1.06
1.08
1.1
1.12
1.14
1.16
60
40
20
0

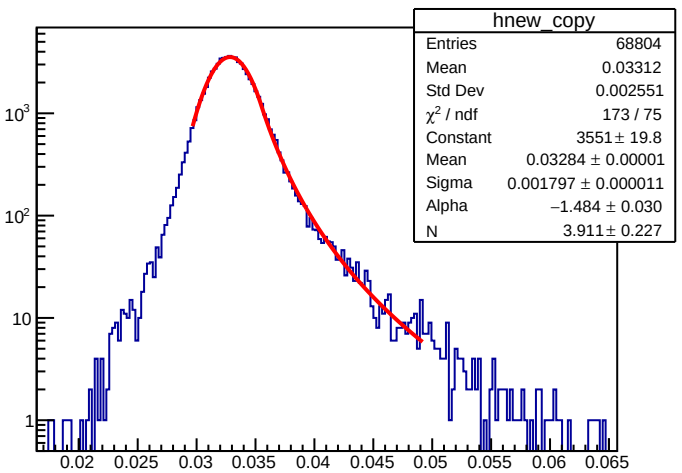
uncM (max(topMatchChisq,botMatchChisq)<5&&abs(topCIT-botCIT)<2&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005)



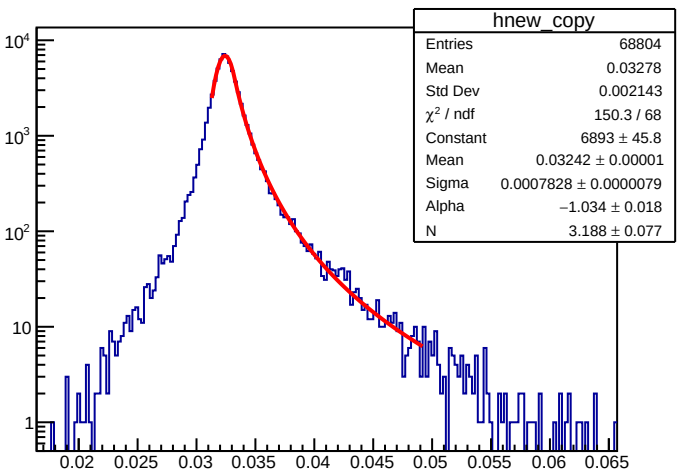

vzcM (max(topMatchChisq,botMatchChisq)<5&&abs(topCIT-botCIT)<2&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005)

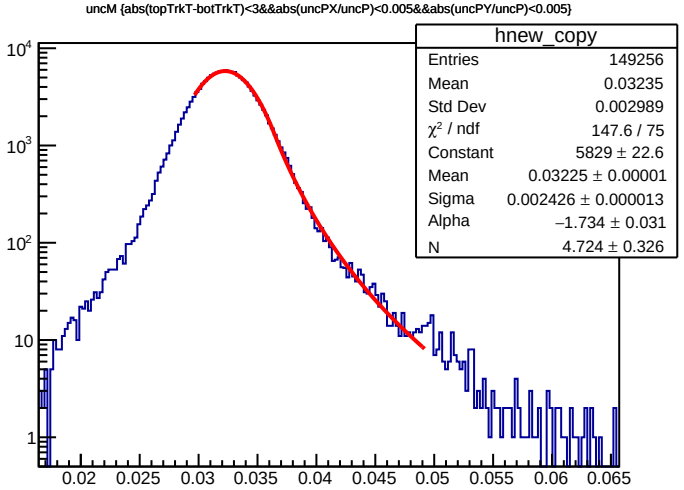


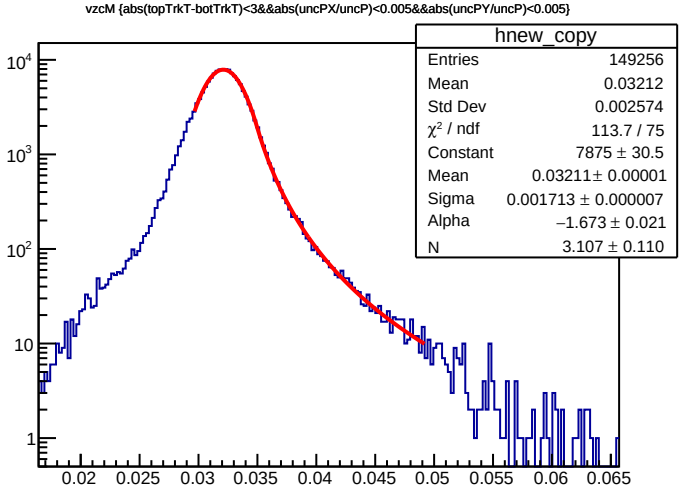

uncM*1.056/uncP (max(topMatchChisq,botMatchChisq)<5&&abs(topCIT-botCIT)<2&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005)

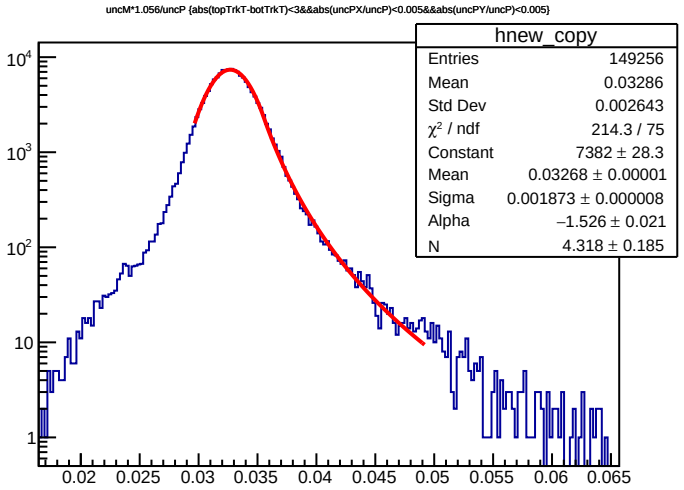


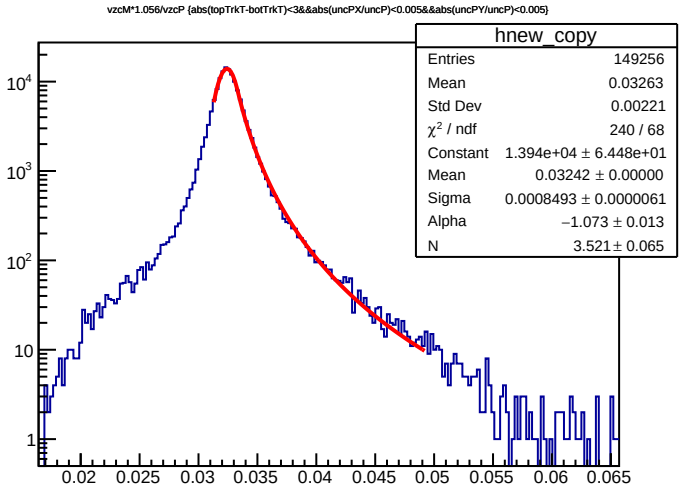

vzcM*1.056/vzcP (max(topMatchChisq,botMatchChisq)<5&&abs(topCIT-botCIT)<2&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005)

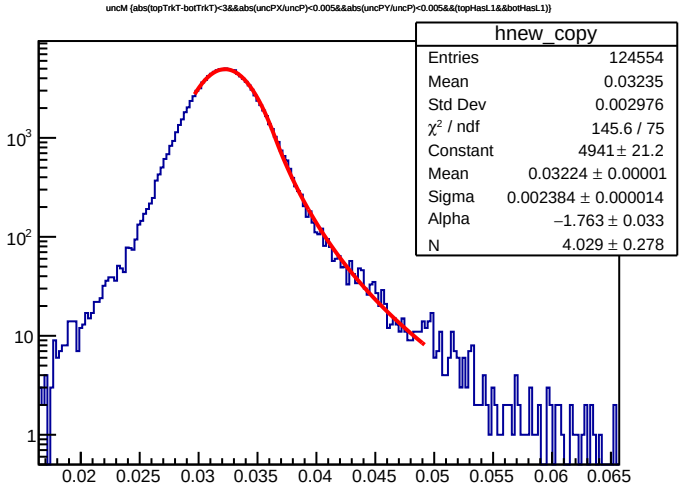


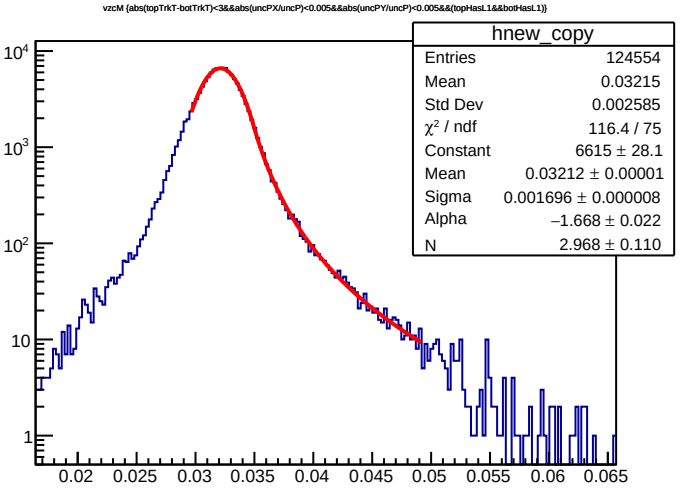

uncM {abs(topTrkT-botTrkT)<3&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005}
hnew_copy
Entries 149256
Mean 0.03235
Std Dev 0.002989
χ² / ndf 147.6 / 75
Constant 5829 ± 22.6
Mean 0.03225 ± 0.00001
Sigma 0.002426 ± 0.000013
Alpha −1.734 ± 0.031
N 4.724 ± 0.326

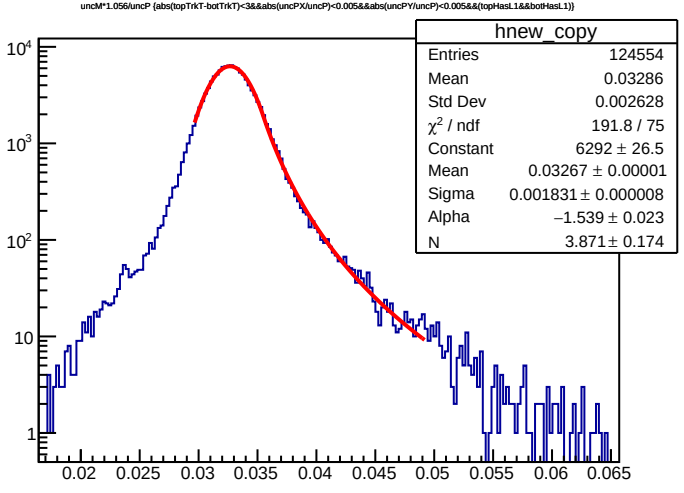

vzcM {abs(topTrkT-botTrkT)<3&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005}
hnew_copy
Entries 149256
Mean 0.03212
Std Dev 0.002574
χ² / ndf 113.7 / 75
Constant 7875 ± 30.5
Mean 0.03211± 0.00001
Sigma 0.001713 ± 0.000007
Alpha −1.673 ± 0.021
N 3.107 ± 0.110

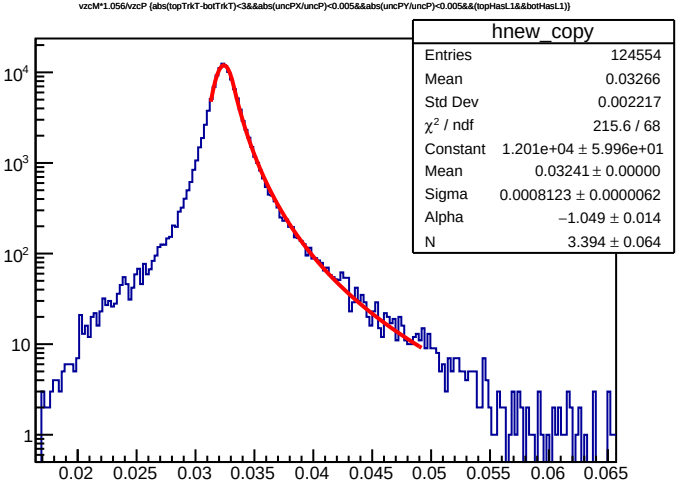

uncM*1.056/uncP {abs(topTrkT-botTrkT)<3&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005}
hnew_copy
Entries 149256
Mean 0.03286
Std Dev 0.002643
χ² / ndf 214.3 / 75
Constant 7382 ± 28.3
Mean 0.03268 ± 0.00001
Sigma 0.001873 ± 0.000008
Alpha −1.526 ± 0.021
N 4.318 ± 0.185


vzcM*1.056/vzcP {abs(topTrkT-botTrkT)<3&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005}
hnew_copy
Entries 149256
Mean 0.03263
Std Dev 0.00221
χ² / ndf 240 / 68
Constant 1.394e+04 ± 6.448e+01
Mean 0.03242 ± 0.00000
Sigma 0.0008493 ± 0.0000061
Alpha −1.073 ± 0.013
N 3.521± 0.065

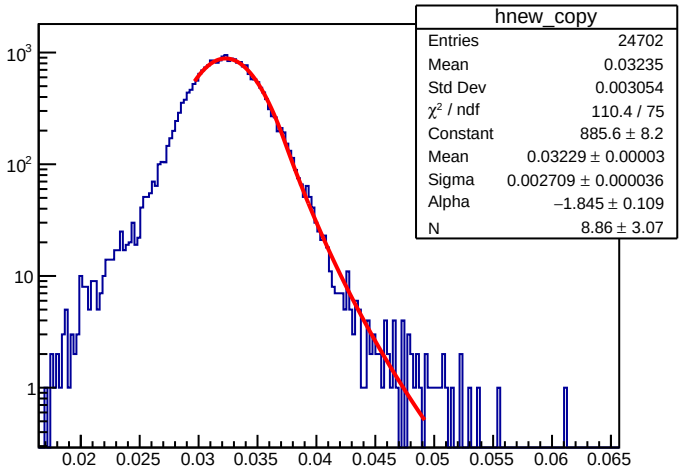

uncM {abs(topTrkT-botTrkT)<3&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&(topHasL1&&botHasL1)}
hnew_copy
Entries 124554
Mean 0.03235
Std Dev 0.002976
χ² / ndf 145.6 / 75
Constant 4941 ± 21.2
Mean 0.03224 ± 0.00001
Sigma 0.002384 ± 0.000014
Alpha −1.763 ± 0.033
N 4.029 ± 0.278


vzcM {abs(topTrkT-botTrkT)<3&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&(topHasL1&&botHasL1)}
hnew_copy
Entries 124554
Mean 0.03215
Std Dev 0.002585
χ² / ndf 116.4 / 75
Constant 6615 ± 28.1
Mean 0.03212 ± 0.00001
Sigma 0.001696 ± 0.000008
Alpha −1.668 ± 0.022
N 2.968 ± 0.110

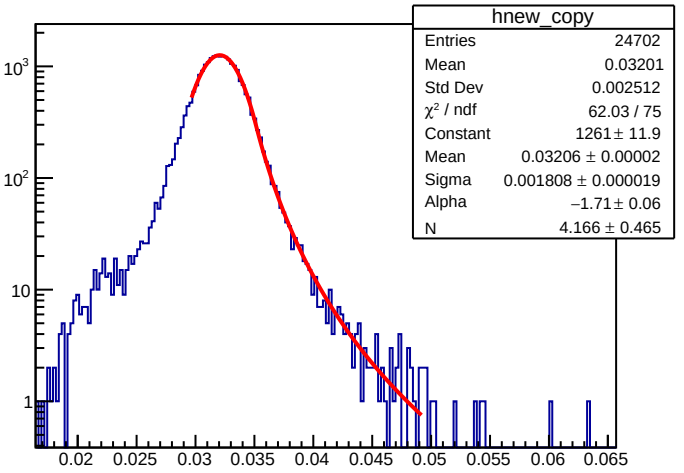

uncM*1.056/uncP {abs(topTrkT-botTrkT)<3&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&(topHasL1&&botHasL1)}
hnew_copy
Entries 124554
Mean 0.03286
Std Dev 0.002628
χ² / ndf 191.8 / 75
Constant 6292 ± 26.5
Mean 0.03267 ± 0.00001
Sigma 0.001831 ± 0.000008
Alpha −1.539 ± 0.023
N 3.871 ± 0.174


vzcM*1.056/vzcP {abs(topTrkT-botTrkT)<3&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&(topHasL1&&botHasL1)}
hnew_copy
Entries 124554
Mean 0.03266
Std Dev 0.002217
χ² / ndf 215.6 / 68
Constant 1.201e+04 ± 5.996e+01
Mean 0.03241 ± 0.00000
Sigma 0.0008123 ± 0.0000062
Alpha −1.049 ± 0.014
N 3.394 ± 0.064

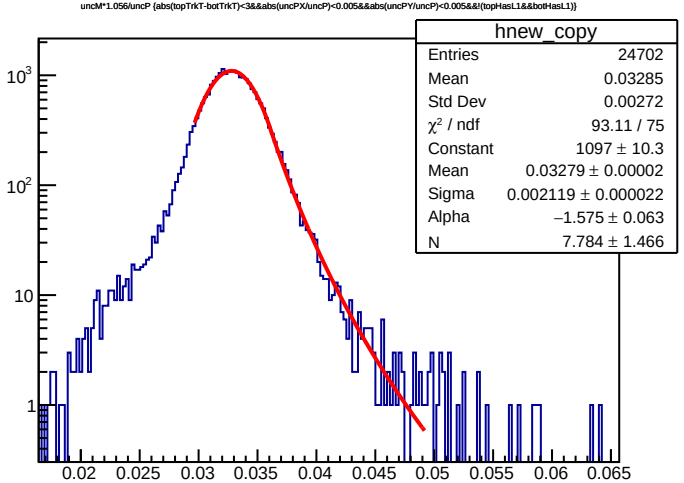
uncM {abs(topTrkT-botTrkT)<3&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&!(topHasL1&&botHasL1)}



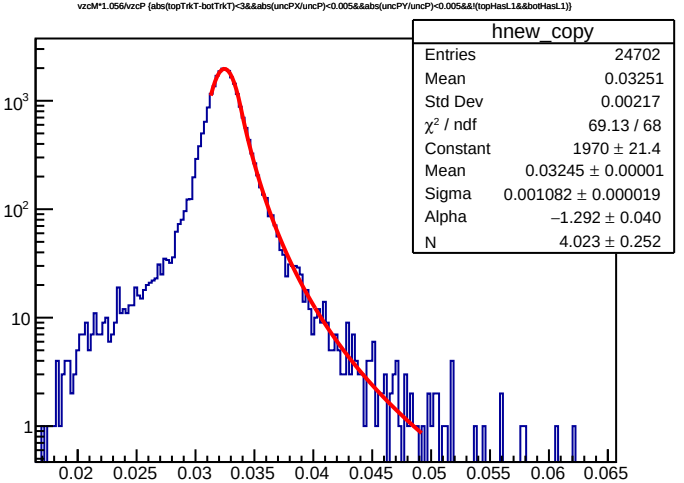

vzcM {abs(topTrkT-botTrkT)<3&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&!(topHasL1&&botHasL1)}

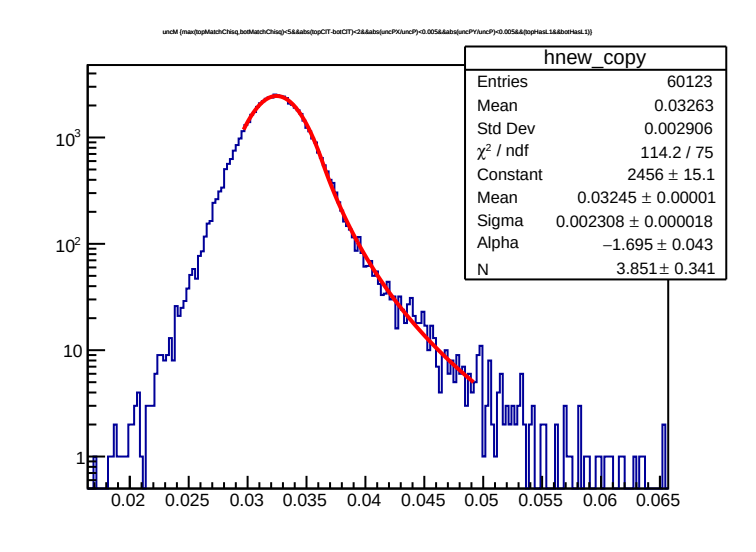


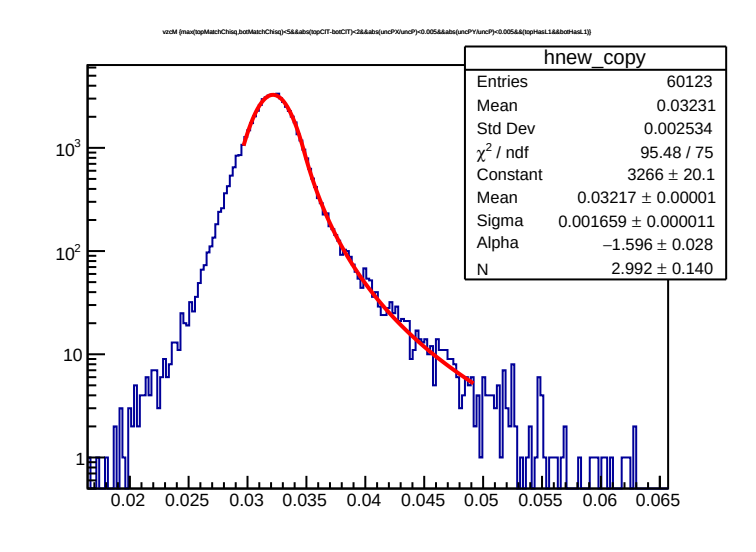

uncM*1.056/uncP {abs(topTrkT-botTrkT)<3&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&!(topHasL1&&botHasL1)}

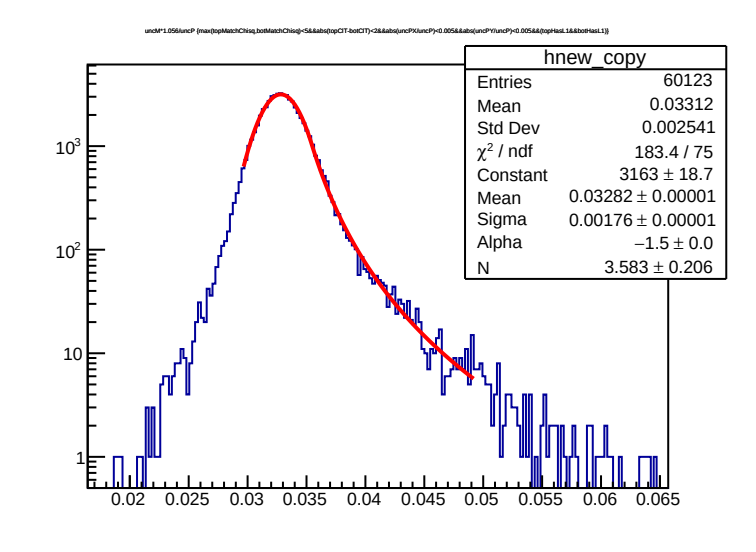


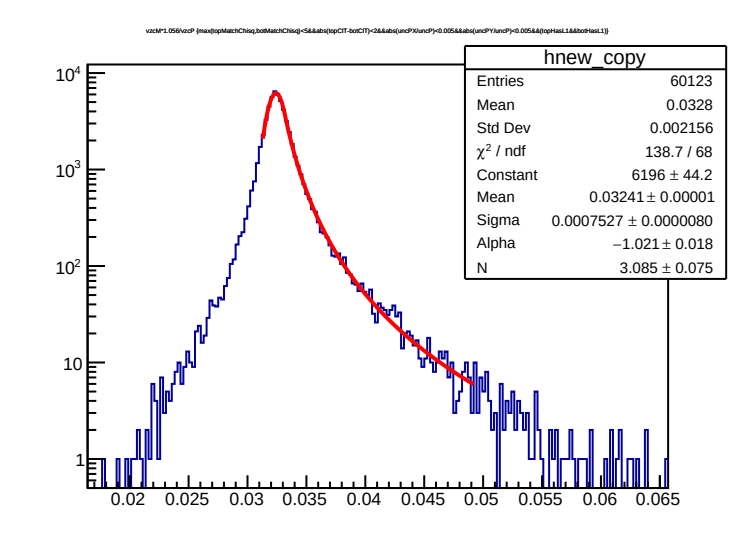

vzcM*1.056/vzcP {abs(topTrkT-botTrkT)<3&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&!(topHasL1&&botHasL1)}

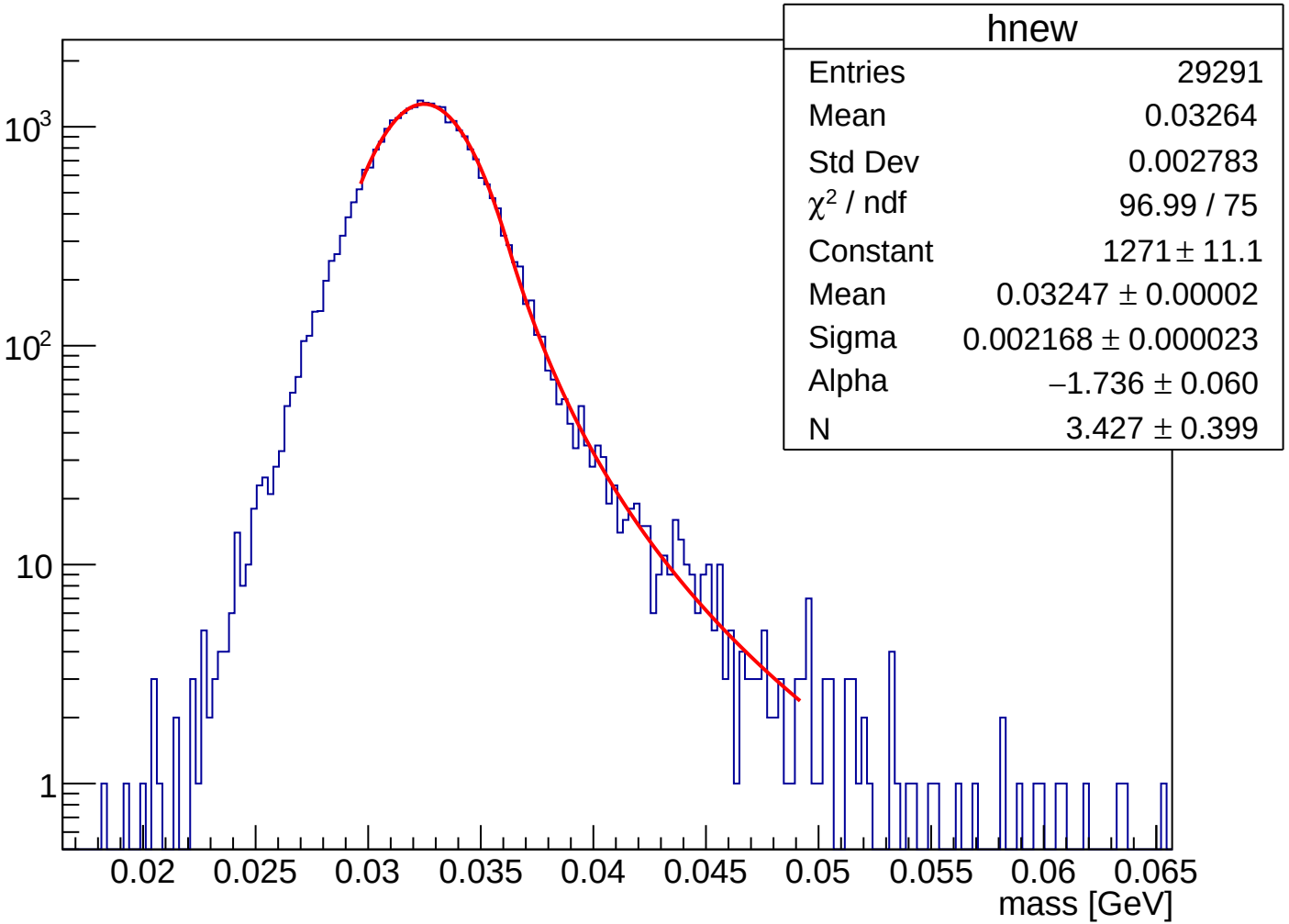


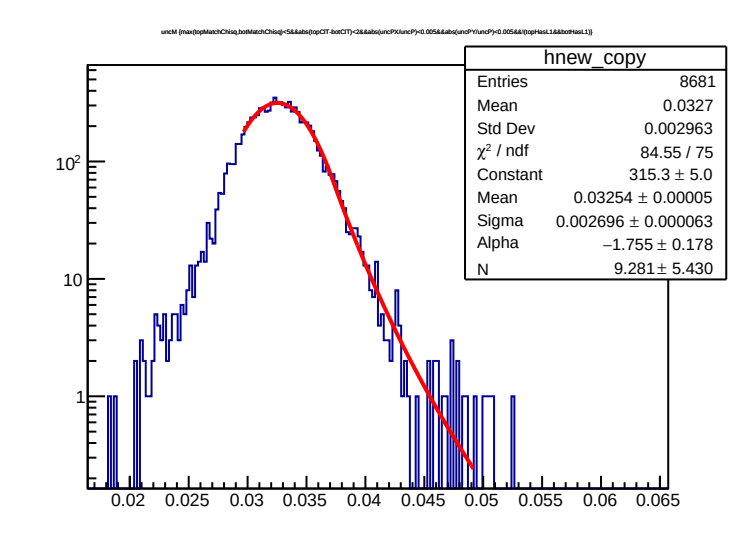

uncM (max(topMatchChisq,botMatchChisq)<5&&abs(topCIT-botCIT)<2&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&(topHasL1&&botHasL1))
hnew_copy
Entries 60123
Mean 0.03263
Std Dev 0.002906
χ² / ndf 114.2 / 75
Constant 2456 ± 15.1
Mean 0.03245 ± 0.00001
Sigma 0.002308 ± 0.000018
Alpha −1.695 ± 0.043
N 3.851 ± 0.341

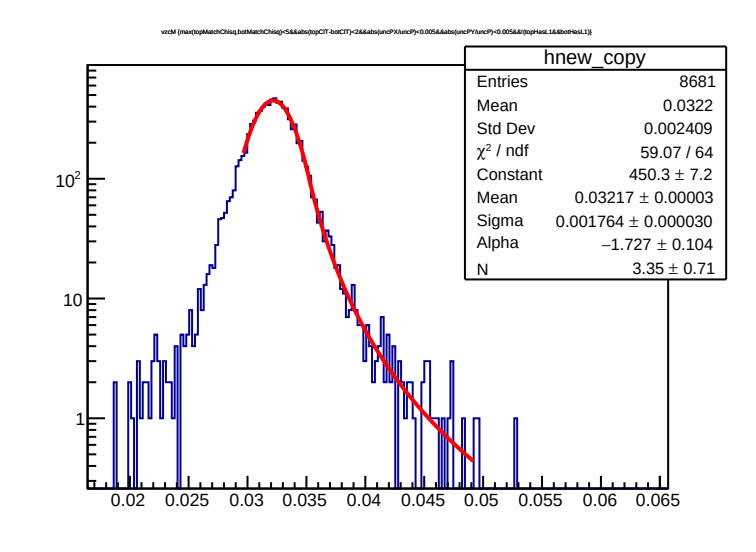

vzcM (max(topMatchChisq,botMatchChisq)<5&&abs(topCIT-botCIT)<2&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&(topHasL1&&botHasL1))
hnew_copy
Entries 60123
Mean 0.03231
Std Dev 0.002534
χ² / ndf 95.48 / 75
Constant 3266 ± 20.1
Mean 0.03217 ± 0.00001
Sigma 0.001659 ± 0.000011
Alpha −1.596 ± 0.028
N 2.992 ± 0.140

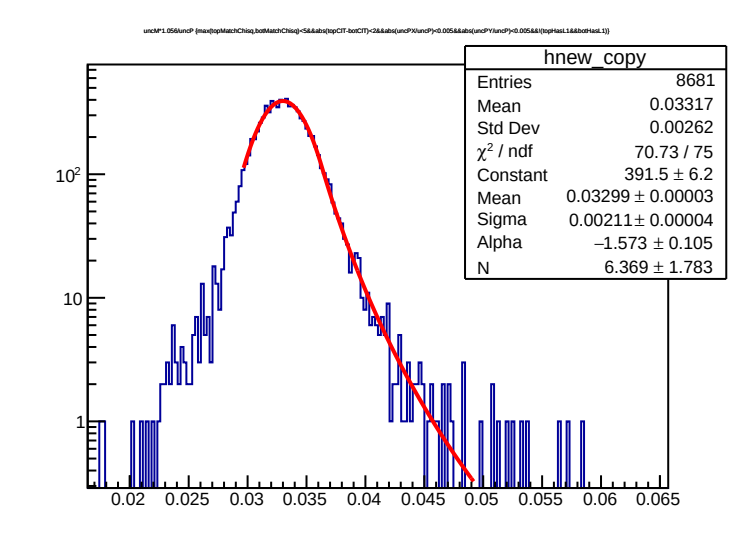

uncM*1.056/uncP (max(topMatchChisq,botMatchChisq)<5&&abs(topCIT-botCIT)<2&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&(topHasL1&&botHasL1))
hnew_copy
Entries 60123
Mean 0.03312
Std Dev 0.002541
χ² / ndf 183.4 / 75
Constant 3163 ± 18.7
Mean 0.03282 ± 0.00001
Sigma 0.00176 ± 0.00001
Alpha −1.5 ± 0.0
N 3.583 ± 0.206

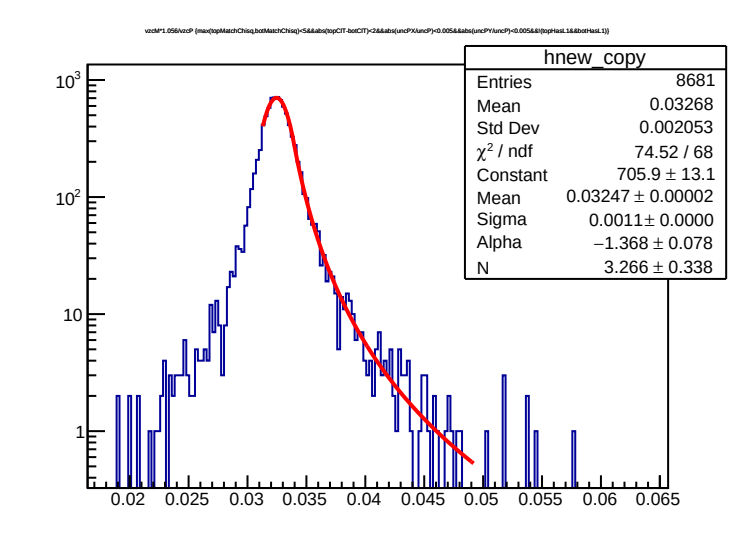

vzcM*1.056/vzcP (max(topMatchChisq,botMatchChisq)<5&&abs(topCIT-botCIT)<2&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&(topHasL1&&botHasL1))
hnew_copy
Entries 60123
Mean 0.0328
Std Dev 0.002156
χ² / ndf 138.7 / 68
Constant 6196 ± 44.2
Mean 0.03241 ± 0.00001
Sigma 0.0007527 ± 0.0000080
Alpha −1.021 ± 0.018
N 3.085 ± 0.075


Moller mass resolution
hnew
Entries 29291
Mean 0.03264
Std Dev 0.002783
χ² / ndf 96.99 / 75
Constant 1271 ± 11.1
Mean 0.03247 ± 0.00002
Sigma 0.002168 ± 0.000023
Alpha −1.736 ± 0.060
N 3.427 ± 0.399
10³
10²
10
1
0.02
0.025
0.03
0.035
0.04
0.045
0.05
0.055
0.06
0.065
mass [GeV]


uncM (max(topMatchChisq,botMatchChisq)<5&&abs(topCIT-botCIT)<2&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&!(topHasL1&&botHasL1))
hnew_copy
Entries 8681
Mean 0.0327
Std Dev 0.002963
χ² / ndf 84.55 / 75
Constant 315.3 ± 5.0
Mean 0.03254 ± 0.00005
Sigma 0.002696 ± 0.000063
Alpha −1.755 ± 0.178
N 9.281 ± 5.430
10²
10
1
0.02 0.025 0.03 0.035 0.04 0.045 0.05 0.055 0.06 0.065


vzcM (max(topMatchChisq,botMatchChisq)<5&&abs(topCIT-botCIT)<2&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&!(topHasL1&&botHasL1))
hnew_copy
Entries 8681
Mean 0.0322
Std Dev 0.002409
χ² / ndf 59.07 / 64
Constant 450.3 ± 7.2
Mean 0.03217 ± 0.00003
Sigma 0.001764 ± 0.000030
Alpha −1.727 ± 0.104
N 3.35 ± 0.71
10²
10
1
0.02 0.025 0.03 0.035 0.04 0.045 0.05 0.055 0.06 0.065


uncM*1.056/uncP (max(topMatchChisq,botMatchChisq)<5&&abs(topCIT-botCIT)<2&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&!(topHasL1&&botHasL1))
hnew_copy
Entries 8681
Mean 0.03317
Std Dev 0.00262
χ² / ndf 70.73 / 75
Constant 391.5 ± 6.2
Mean 0.03299 ± 0.00003
Sigma 0.00211 ± 0.00004
Alpha −1.573 ± 0.105
N 6.369 ± 1.783
10²
10
1
0.02 0.025 0.03 0.035 0.04 0.045 0.05 0.055 0.06 0.065


vzcM*1.056/vzcP (max(topMatchChisq,botMatchChisq)<5&&abs(topCIT-botCIT)<2&&abs(uncPX/uncP)<0.005&&abs(uncPY/uncP)<0.005&&!(topHasL1&&botHasL1))
hnew_copy
Entries 8681
Mean 0.03268
Std Dev 0.002053
χ² / ndf 74.52 / 68
Constant 705.9 ± 13.1
Mean 0.03247 ± 0.00002
Sigma 0.0011 ± 0.0000
Alpha −1.368 ± 0.078
N 3.266 ± 0.338
10³
10²
10
1
0.02 0.025 0.03 0.035 0.04 0.045 0.05 0.055 0.06 0.065