JetWidth

Impact on Asymmetry(Data) and Response(MC)

Denis Rathjens

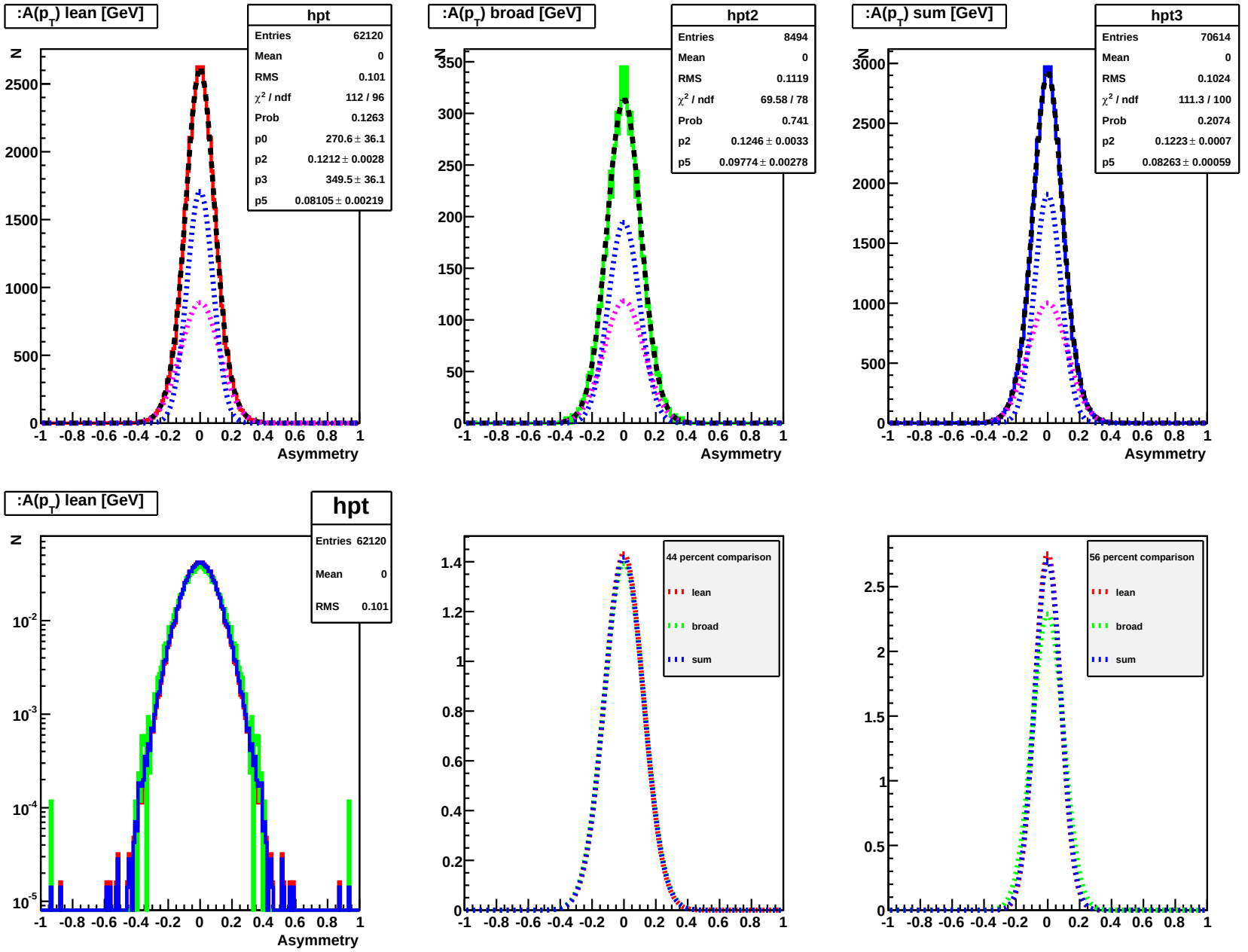
Institut für Experimentalphysik, Universität Hamburg

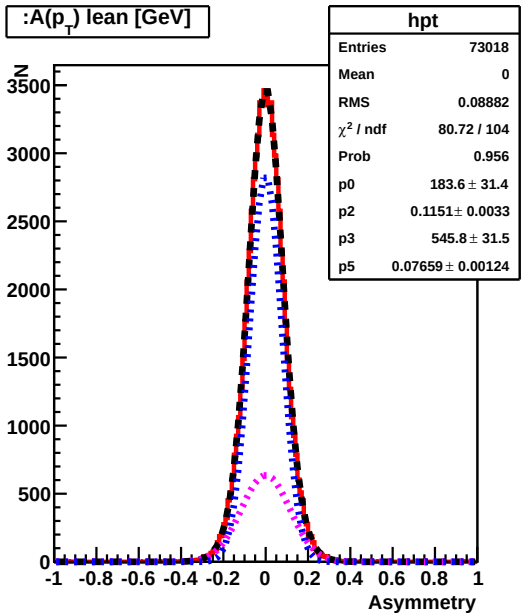
29. Octobre 2010

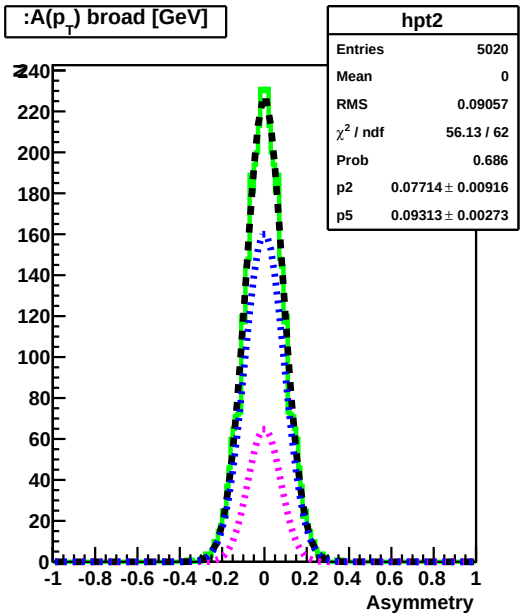
Table of Contents

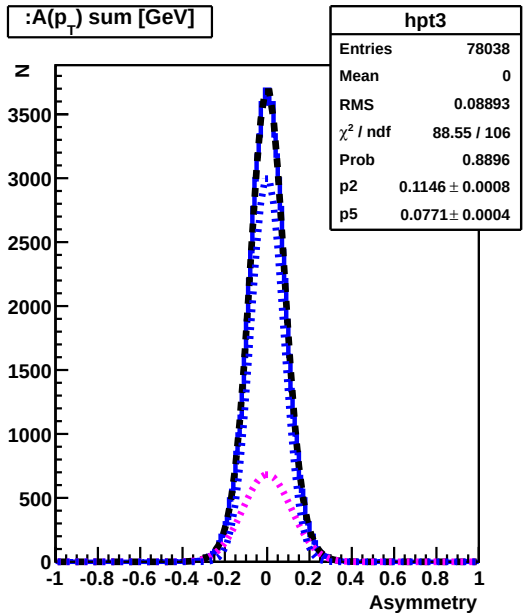
1. JW-dependent Asymmetry on Data
   - Calo-Asymmetry
   - PF-Asymmetry
2. JW-dependent Response on MC
   - fully corrected Calo Summer10 - Response
   - fully corrected Calo Summer10 - Tower Distribution
   - fully corrected Calo Summer10 - not L4-corrected Tower distribution
   - fully corrected Calo Summer10 - mismatched genjet response
   - fully corrected Calo Summer10 - flavour composition of tails
   - Summer10 Particle Flow - Response
3. Spring 10-Graphs

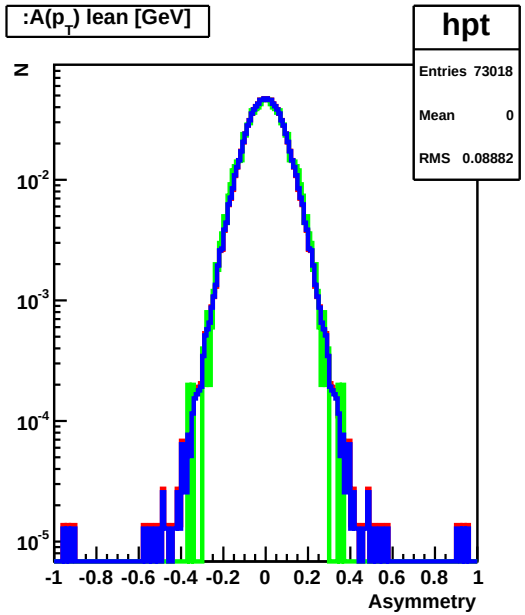
- studied on Calo- and PF-jets
- JetMETRun2010A-Sep17ReReco_v2_HLT_DiJetAve50UA
- Barrel only ($\eta < 1.2$)
- $\Delta\phi > 2.7$
- sum of corrected $P_t > 100$ GeV
- for Calo: n90Hits$\geq$ 2; FHPD$<$ 98%; 1 $>$EMF$\geq$ 0.1
- corrected $P_{t3} \leq 10\% * \frac{P_{t1}+P_{t2}}{2}$
- $\frac{\sigma[\phi]+\sigma[\eta]}{2} > 0.12$ for broad jets, else lean jets

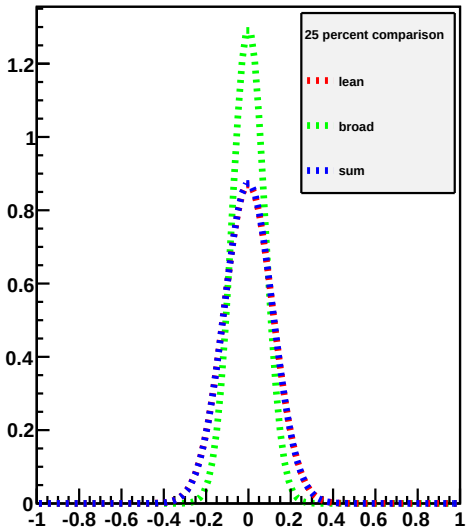

:A(p_T) lean [GeV]
hpt
Entries 62120
Mean 0
RMS 0.101
χ² / ndf 112 / 96
Prob 0.1263
p0 270.6 ± 36.1
p2 0.1212 ± 0.0028
p3 349.5 ± 36.1
p5 0.08105 ± 0.00219
N
Asymmetry
:A(p_T) broad [GeV]
hpt2
Entries 8494
Mean 0
RMS 0.1119
χ² / ndf 69.58 / 78
Prob 0.741
p2 0.1246 ± 0.0033
p5 0.09774 ± 0.00278
N
Asymmetry
:A(p_T) sum [GeV]
hpt3
Entries 70614
Mean 0
RMS 0.1024
χ² / ndf 111.3 / 100
Prob 0.2074
p2 0.1223 ± 0.0007
p5 0.08263 ± 0.00059
N
Asymmetry
:A(p_T) lean [GeV]
hpt
Entries 62120
Mean 0
RMS 0.101
N
Asymmetry
44 percent comparison
lean
broad
sum
56 percent comparison
lean
broad
sum

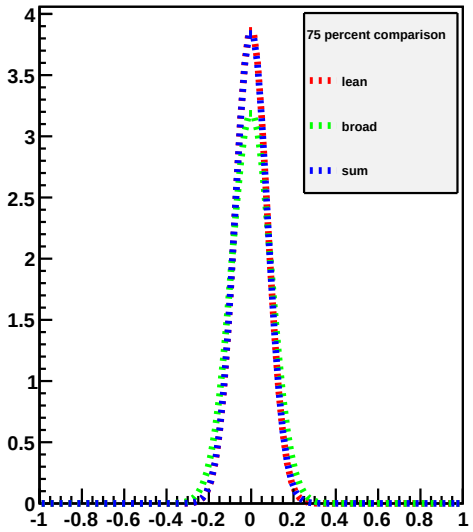

:A(p_T) lean [GeV]
hpt
Entries 73018
Mean 0
RMS 0.08882
χ² / ndf 80.72 / 104
Prob 0.956
p0 183.6 ± 31.4
p2 0.1151 ± 0.0033
p3 545.8 ± 31.5
p5 0.07659 ± 0.00124
N
Asymmetry


:A(p_T) broad [GeV]
hpt2
Entries 5020
Mean 0
RMS 0.09057
χ² / ndf 56.13 / 62
Prob 0.686
p2 0.07714 ± 0.00916
p5 0.09313 ± 0.00273
N
Asymmetry


:A(p_T) sum [GeV]
hpt3
Entries 78038
Mean 0
RMS 0.08893
χ² / ndf 88.55 / 106
Prob 0.8896
p2 0.1146 ± 0.0008
p5 0.0771 ± 0.0004
N
Asymmetry

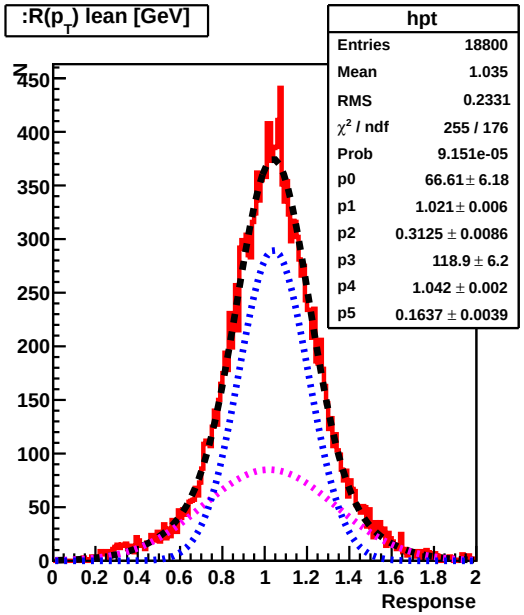

:A(p_T) lean [GeV]
hpt
Entries 73018
Mean 0
RMS 0.08882
N
Asymmetry

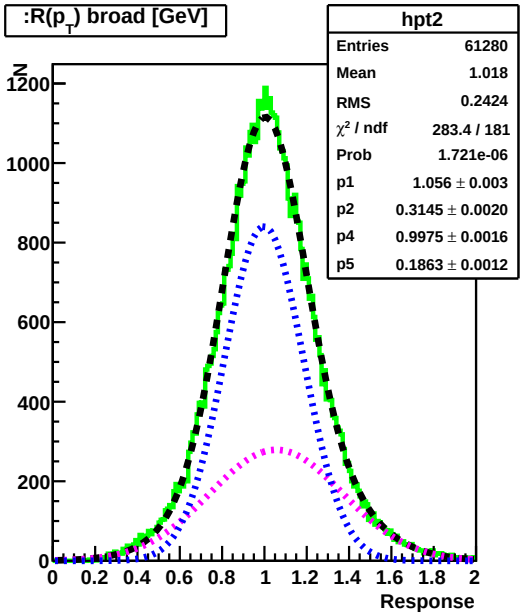

25 percent comparison
lean
broad
sum

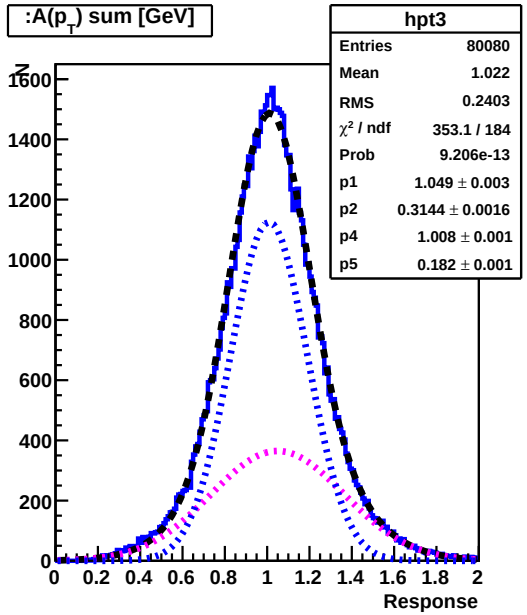

75 percent comparison
lean
broad
sum

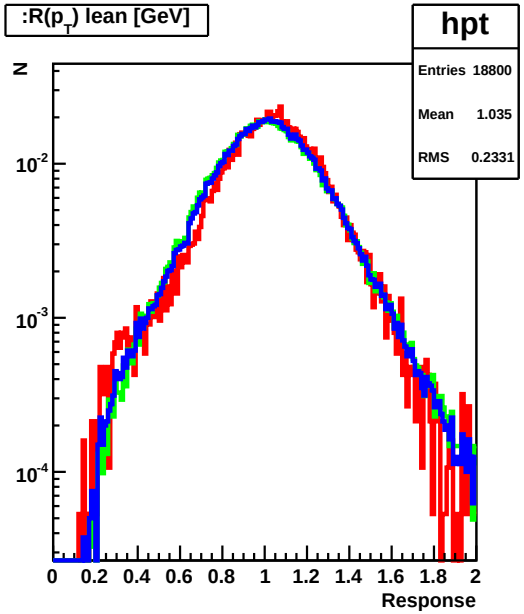
- leaner asymmetry for lean jets
- less high asymmetry events for lean jets
- low statistics for broad jets
- reproducable for MC-response?

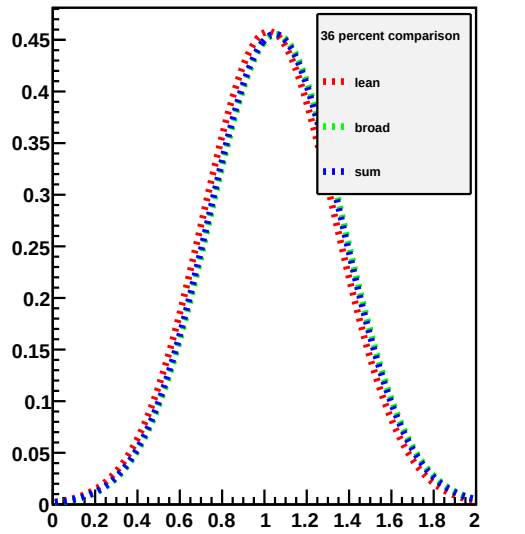
- studied on Calo- and PF-jets
- QCDFlat_Pt15to3000Summer10-START36_V9_S09-v1B
- QCDFlat_Pt15to3000Spring10-START3X_V26_S09-v1C
- Barrel only ($\eta < 1.2$)
- $\Delta\phi > 2.7$
- 3 GenJetP_t-Bins: $0 - 50$ GeV, $51 - 150$ GeV, $151 - 300$ GeV
- for Calo: n90Hits≥ 2; FHPD$< 98\%$; $1 >$ _EMF≥ 0.1
- corrected $P_{t3} \leq 10\% * \frac{P_{t1}+P_{t2}}{2}$
- $\frac{\sigma[\phi]+\sigma[\eta]}{2} > 0.12$ for broad jets, else lean jets
- 3 scenarios: fully corrected Calo Summer10, not L4-corrected Calo Summer10, PF

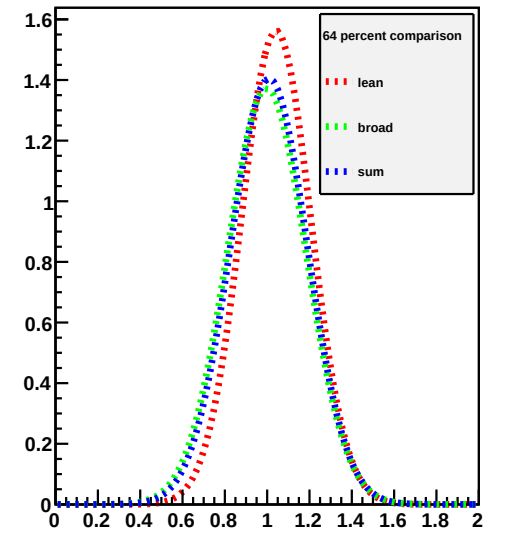

:R(p_T) lean [GeV]
hpt
Entries 18800
Mean 1.035
RMS 0.2331
χ² / ndf 255 / 176
Prob 9.151e-05
p0 66.61 ± 6.18
p1 1.021 ± 0.006
p2 0.3125 ± 0.0086
p3 118.9 ± 6.2
p4 1.042 ± 0.002
p5 0.1637 ± 0.0039
N
Response

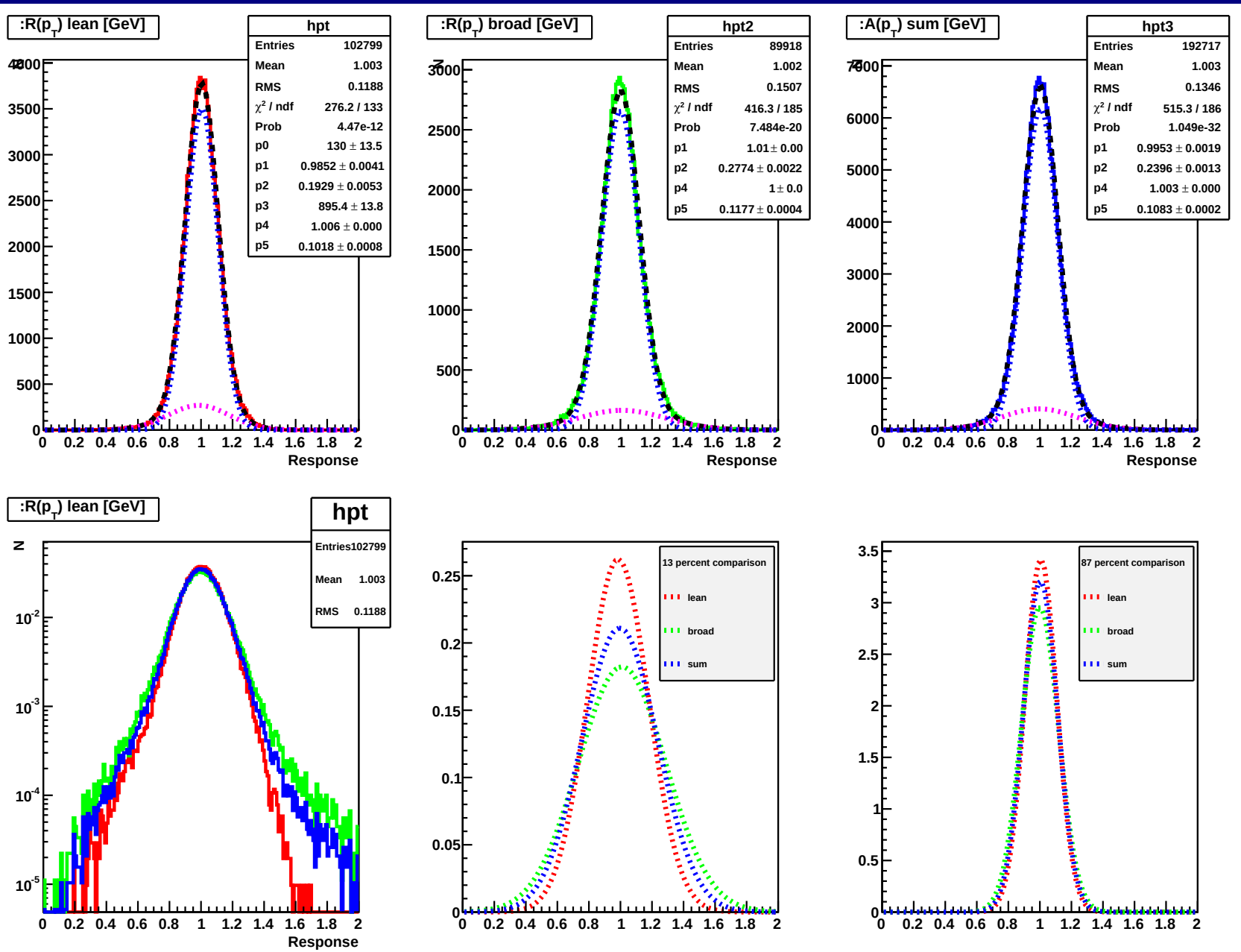

:R(p_T) broad [GeV]
hpt2
Entries 61280
Mean 1.018
RMS 0.2424
χ² / ndf 283.4 / 181
Prob 1.721e-06
p1 1.056 ± 0.003
p2 0.3145 ± 0.0020
p4 0.9975 ± 0.0016
p5 0.1863 ± 0.0012
N
Response

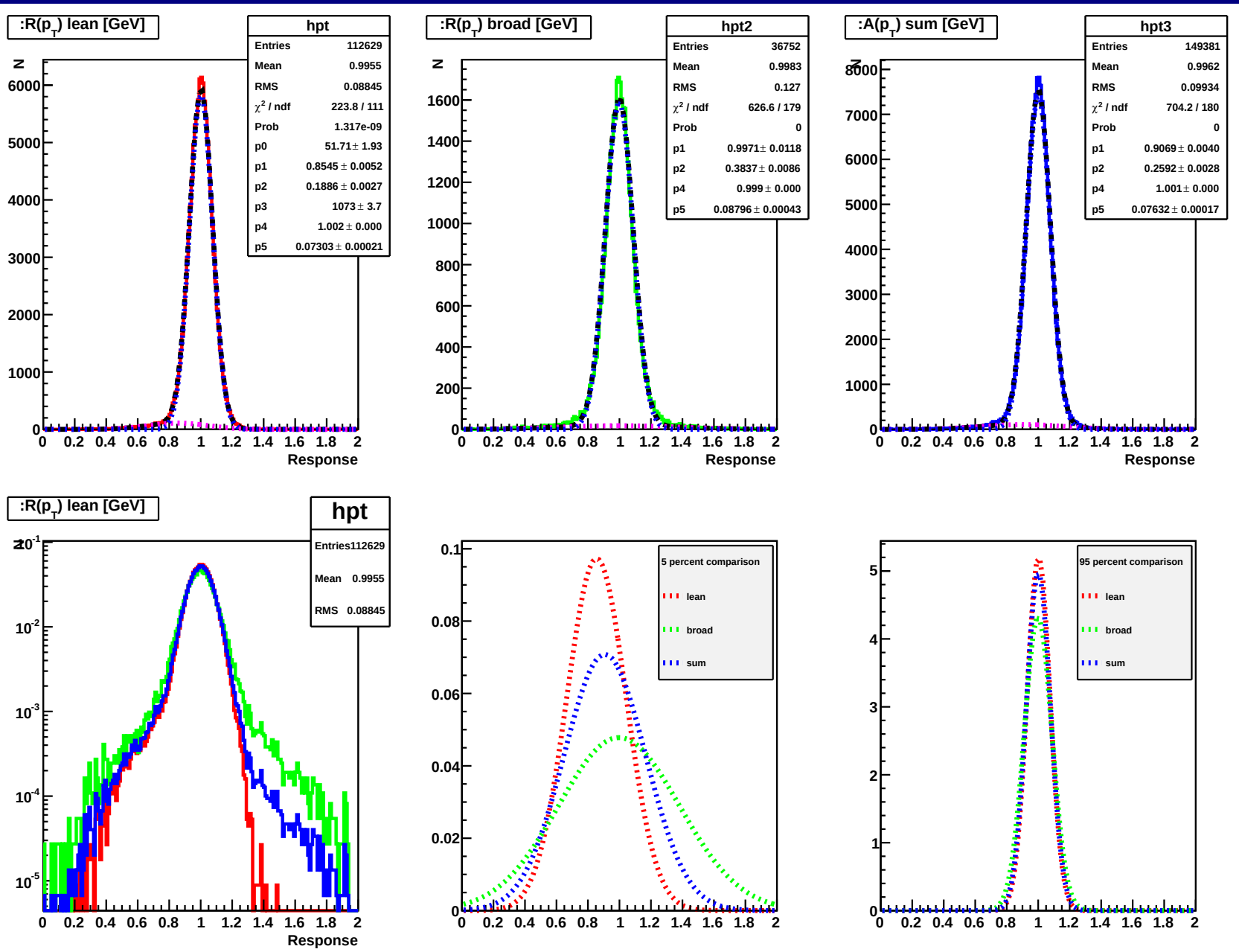

:A(p_T) sum [GeV]
hpt3
Entries 80080
Mean 1.022
RMS 0.2403
χ² / ndf 353.1 / 184
Prob 9.206e-13
p1 1.049 ± 0.003
p2 0.3144 ± 0.0016
p4 1.008 ± 0.001
p5 0.182 ± 0.001
N
Response


:R(p_T) lean [GeV]
hpt
Entries 18800
Mean 1.035
RMS 0.2331
N
Response


36 percent comparison
lean
broad
sum

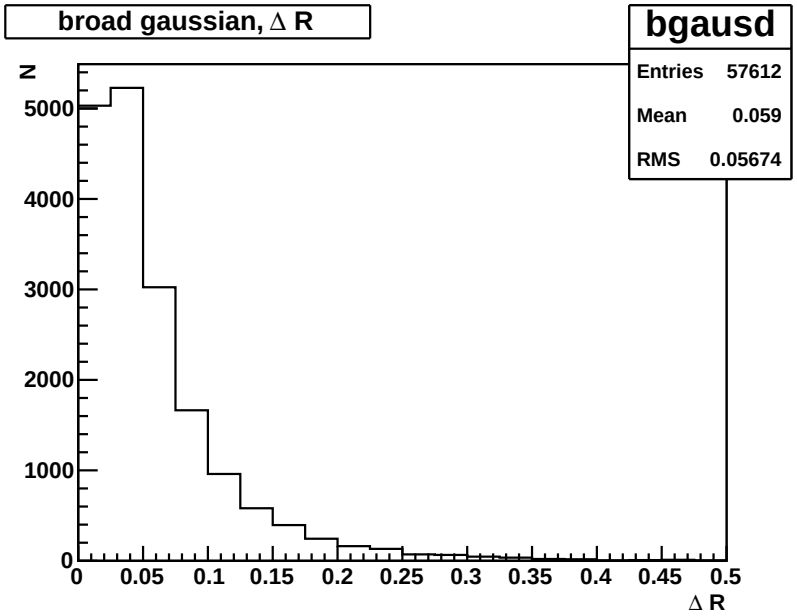

64 percent comparison
lean
broad
sum

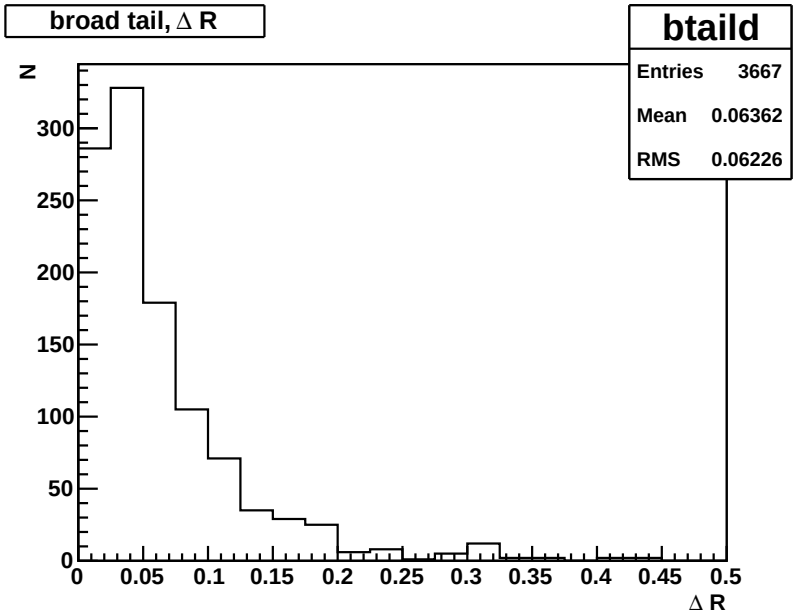

:R(p_T) lean [GeV]
hpt
Entries 102799
Mean 1.003
RMS 0.1188
χ² / ndf 276.2 / 133
Prob 4.47e-12
p0 130 ± 13.5
p1 0.9852 ± 0.0041
p2 0.1929 ± 0.0053
p3 895.4 ± 13.8
p4 1.006 ± 0.000
p5 0.1018 ± 0.0008
N
Response
:R(p_T) broad [GeV]
hpt2
Entries 89918
Mean 1.002
RMS 0.1507
χ² / ndf 416.3 / 185
Prob 7.484e-20
p1 1.01 ± 0.00
p2 0.2774 ± 0.0022
p4 1 ± 0.0
p5 0.1177 ± 0.0004
N
Response
:A(p_T) sum [GeV]
hpt3
Entries 192717
Mean 1.003
RMS 0.1346
χ² / ndf 515.3 / 186
Prob 1.049e-32
p1 0.9953 ± 0.0019
p2 0.2396 ± 0.0013
p4 1.003 ± 0.000
p5 0.1083 ± 0.0002
N
Response
:R(p_T) lean [GeV]
hpt
Entries102799
Mean 1.003
RMS 0.1188
N
Response
13 percent comparison
lean
broad
sum
87 percent comparison
lean
broad
sum

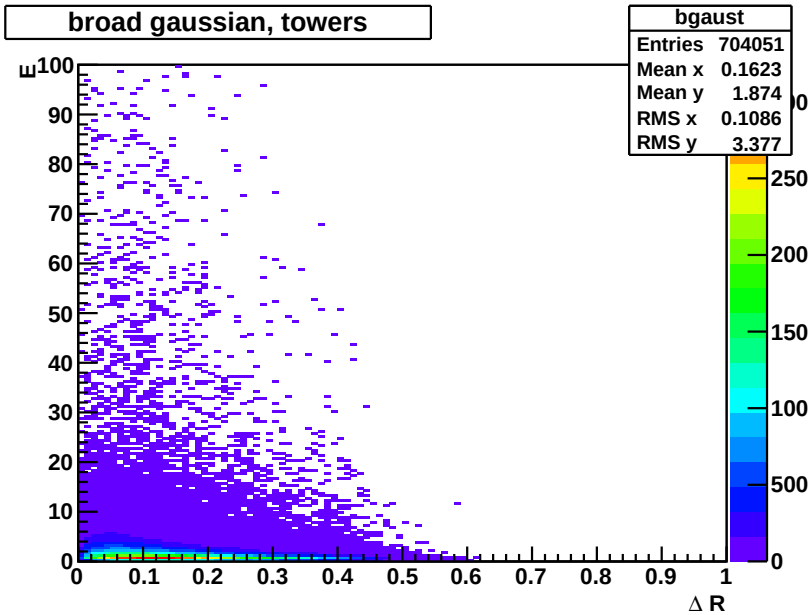

:R(p_T) lean [GeV]
hpt
Entries 112629
Mean 0.9955
RMS 0.08845
χ² / ndf 223.8 / 111
Prob 1.317e-09
p0 51.71 ± 1.93
p1 0.8545 ± 0.0052
p2 0.1886 ± 0.0027
p3 1073 ± 3.7
p4 1.002 ± 0.000
p5 0.07303 ± 0.00021
Response
:R(p_T) broad [GeV]
hpt2
Entries 36752
Mean 0.9983
RMS 0.127
χ² / ndf 626.6 / 179
Prob 0
p1 0.9971 ± 0.0118
p2 0.3837 ± 0.0086
p4 0.999 ± 0.000
p5 0.08796 ± 0.00043
Response
:A(p_T) sum [GeV]
hpt3
Entries 149381
Mean 0.9962
RMS 0.09934
χ² / ndf 704.2 / 180
Prob 0
p1 0.9069 ± 0.0040
p2 0.2592 ± 0.0028
p4 1.001 ± 0.000
p5 0.07632 ± 0.00017
Response
:R(p_T) lean [GeV]
hpt
Entries112629
Mean 0.9955
RMS 0.08845
Response
5 percent comparison
lean
broad
sum
95 percent comparison
lean
broad
sum

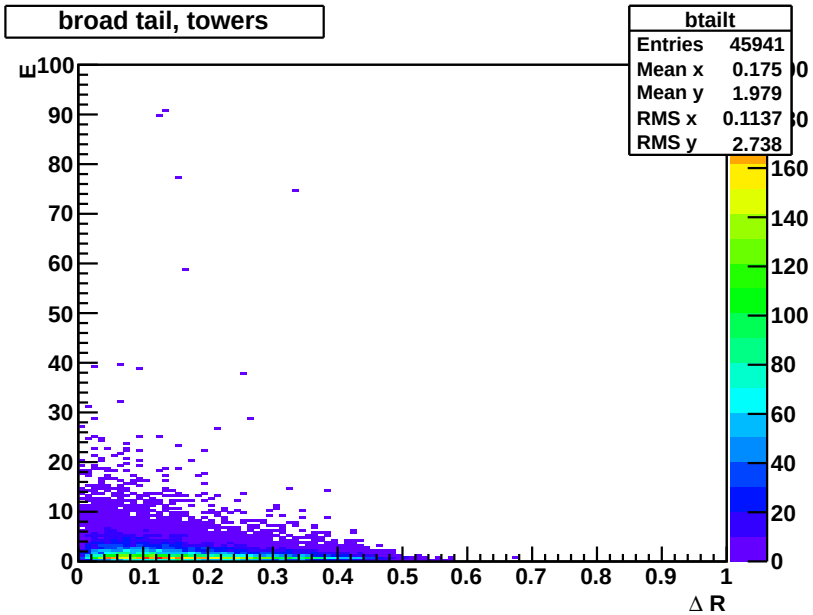
- similar response under trigger-treshold
- above leaner response for lean jets
- high P_t-tail only for broad jets
- e.g. the tail in bin 3 consists out of 0.9% of broad jet-events
- general attribute of broad jets, miscorrection, mismatch or misclustering?

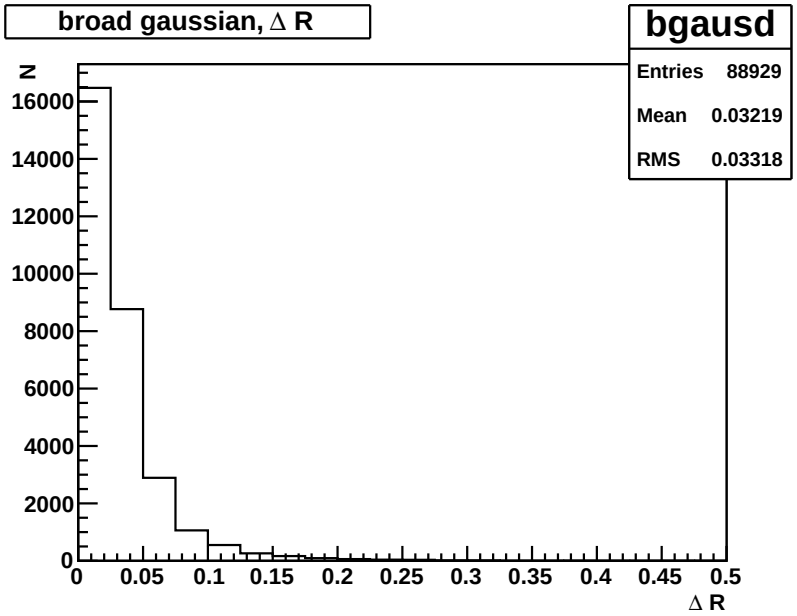
- same data and same cuts as prior
- only broad jets shown
- cut into two bins: tail-part and gaus-part
- displayed ΔR is defined as the distance in $\eta - \phi-$space
- for the upper two graphs ΔR is for the jet-centers in respect to their genjet-centers
- for the lower two graphs ΔR is the distance of the tower to the jet-center
- again in the P_t-Bins: $0 - 50$ GeV, $51 - 150$ GeV,$151 - 300$ GeV

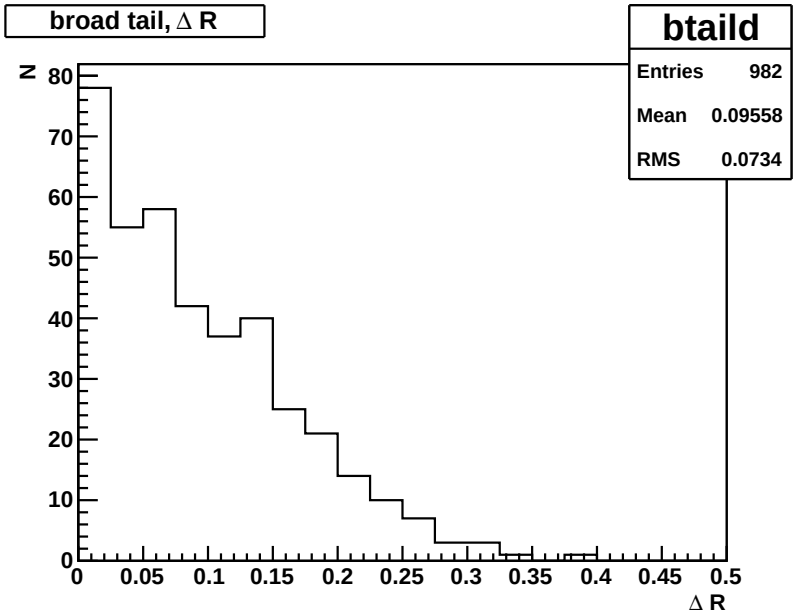

broad gaussian, Δ R
bgausd
Entries 57612
Mean 0.059
RMS 0.05674
N
Δ R

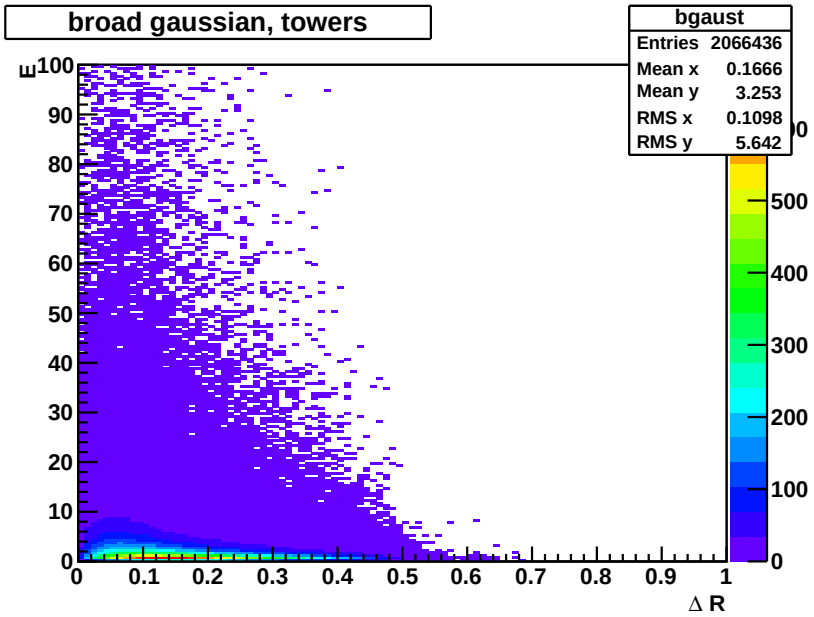

broad tail, Δ R
btaild
Entries 3667
Mean 0.06362
RMS 0.06226
N
Δ R

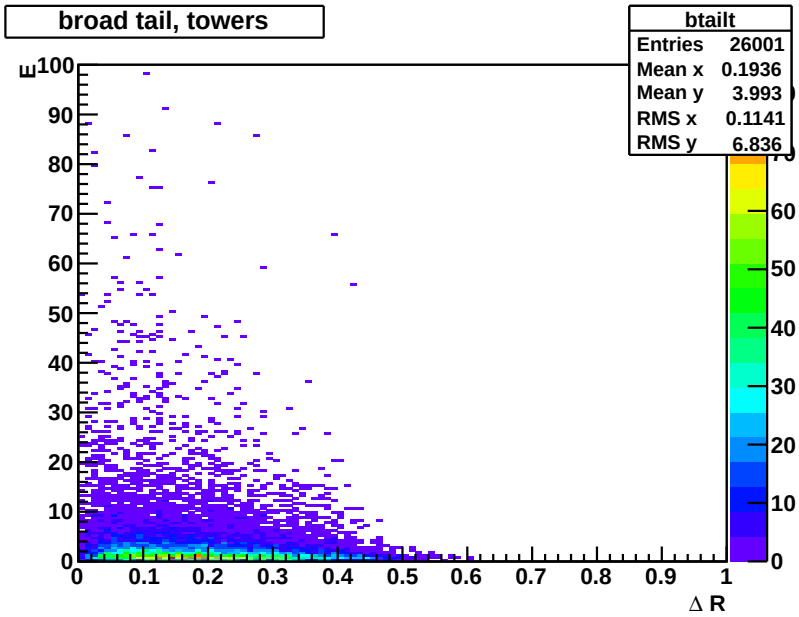

broad gaussian, towers
bgaust
Entries 704051
Mean x 0.1623
Mean y 1.874
RMS x 0.1086
RMS y 3.377
E
Δ R

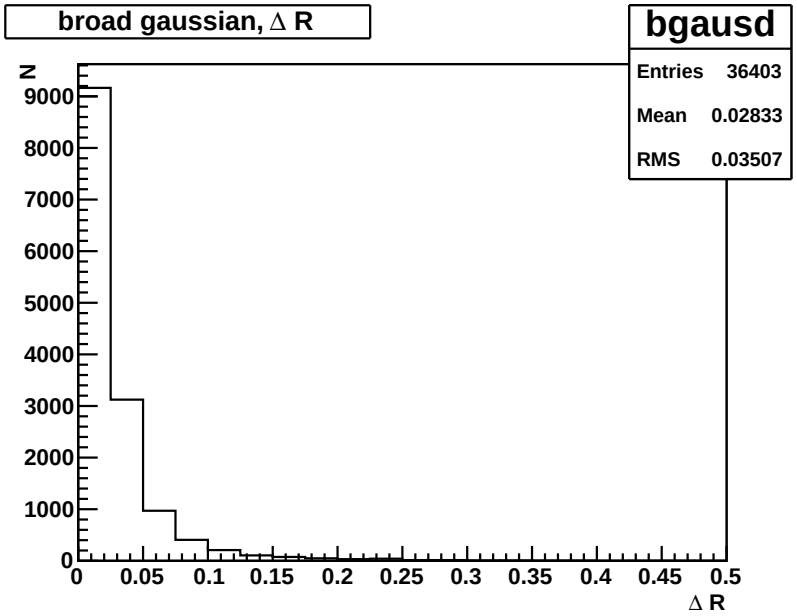

broad tail, towers
btailt
Entries 45941
Mean x 0.175
Mean y 1.979
RMS x 0.1137
RMS y 2.738
E
Δ R

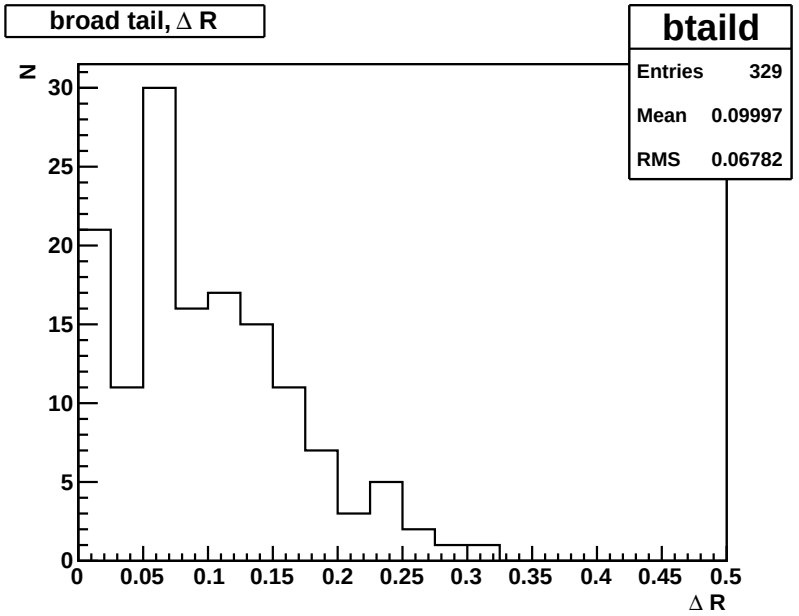

broad gaussian, Δ R
bgausd
Entries 88929
Mean 0.03219
RMS 0.03318
N
Δ R

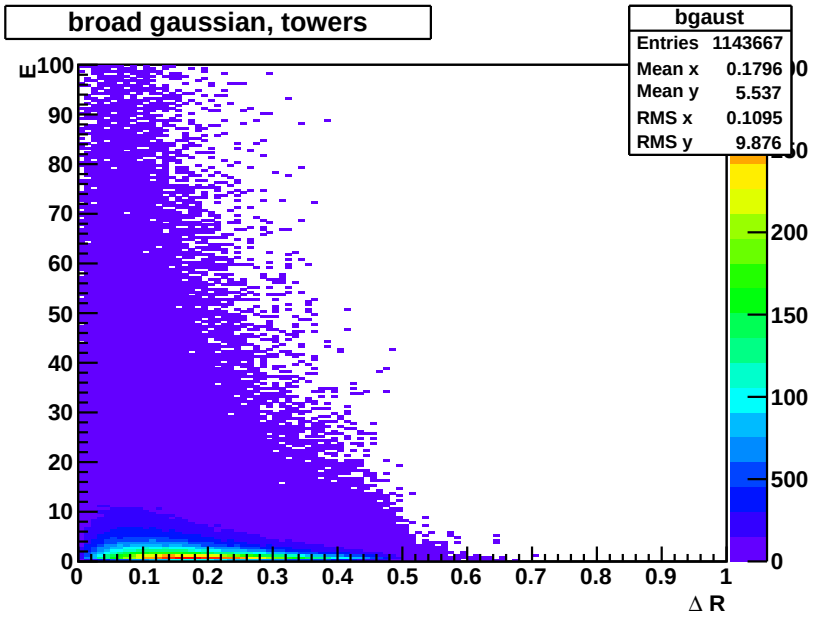

broad tail, Δ R
btaild
Entries 982
Mean 0.09558
RMS 0.0734
N
Δ R

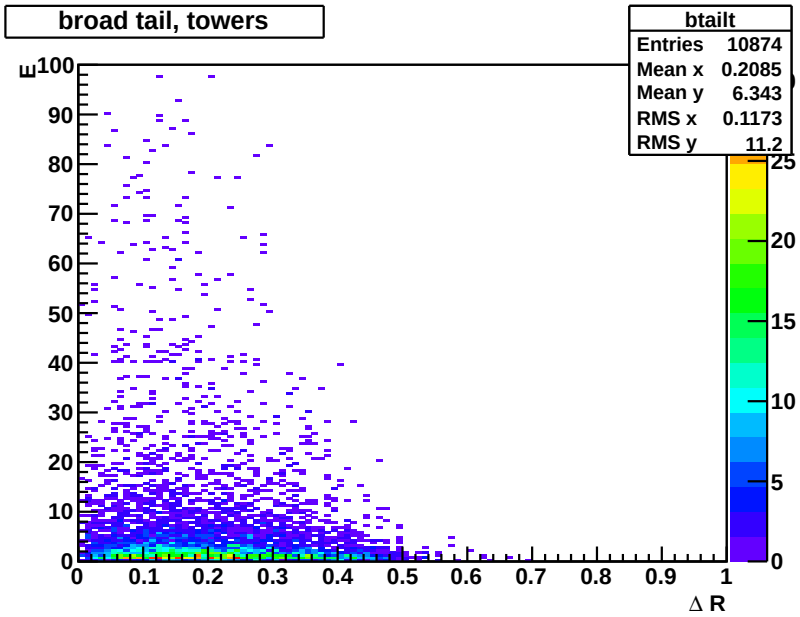

broad gaussian, towers
bgaust
Entries 2066436
Mean x 0.1666
Mean y 3.253
RMS x 0.1098
RMS y 5.642
E
Δ R


broad tail, towers
btailt
Entries 26001
Mean x 0.1936
Mean y 3.993
RMS x 0.1141
RMS y 6.836
E
Δ R

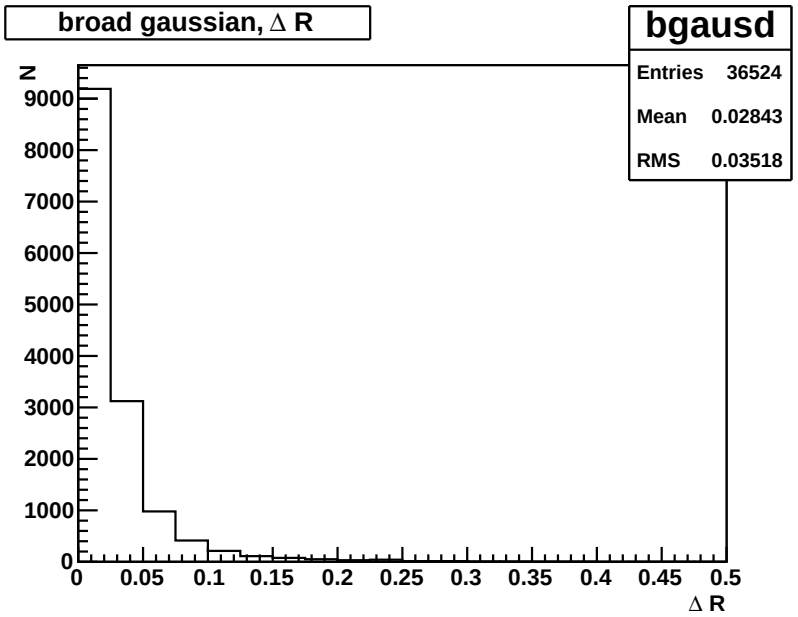

broad gaussian, Δ R
bgausd
Entries 36403
Mean 0.02833
RMS 0.03507
N
Δ R

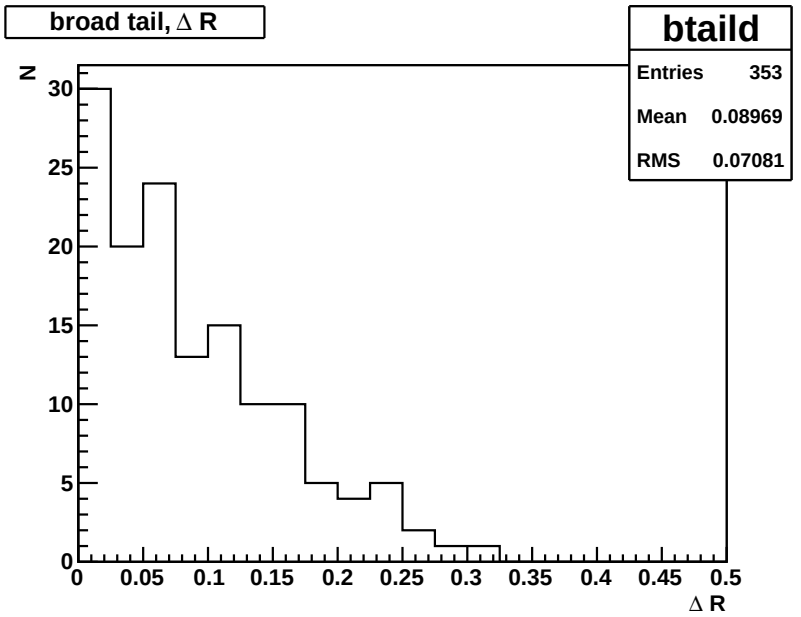

broad tail, Δ R
btaild
Entries 329
Mean 0.09997
RMS 0.06782
N
Δ R

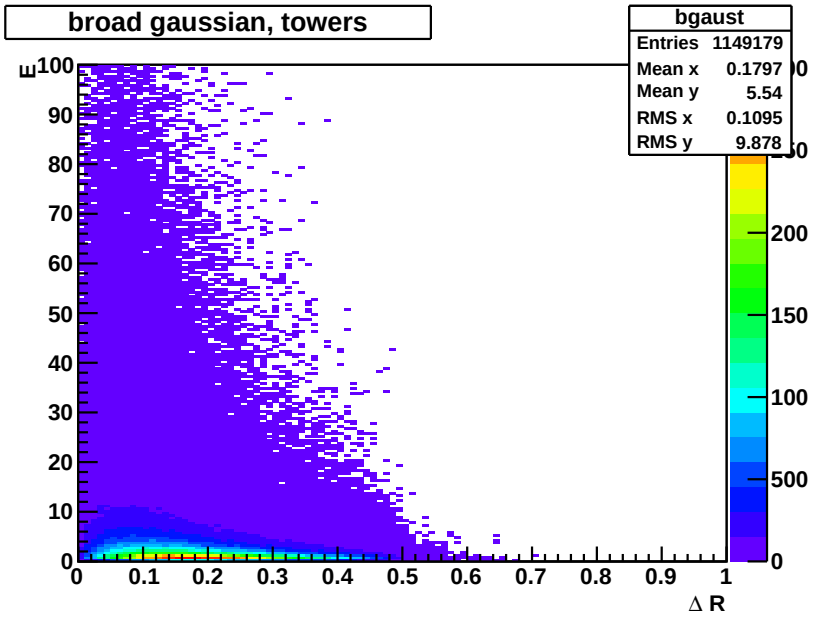

broad gaussian, towers
bgaust
Entries 1143667
Mean x 0.1796
Mean y 5.537
RMS x 0.1095
RMS y 9.876
E
Δ R

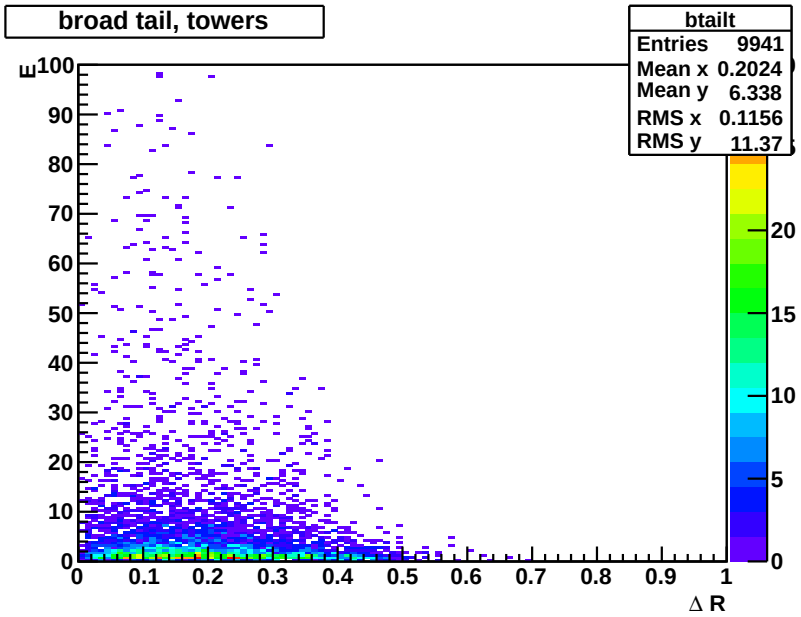

broad tail, towers
btailt
Entries 10874
Mean x 0.2085
Mean y 6.343
RMS x 0.1173
RMS y 11.2
E
Δ R

- no obvious misclustering (at least for low statistics)
- statistical exponential decrease of mismatch-distance of genjets for bin 1 and 2
- in bin 3 a considerable loss of nearly and correctly matched jets in the tail
- possible explanation of mismatches: 2 Genjets clustered together
- possible explanation for bin 3-anomaly: L4-correction


broad gaussian, Δ R
bgausd
Entries 36524
Mean 0.02843
RMS 0.03518
N
Δ R

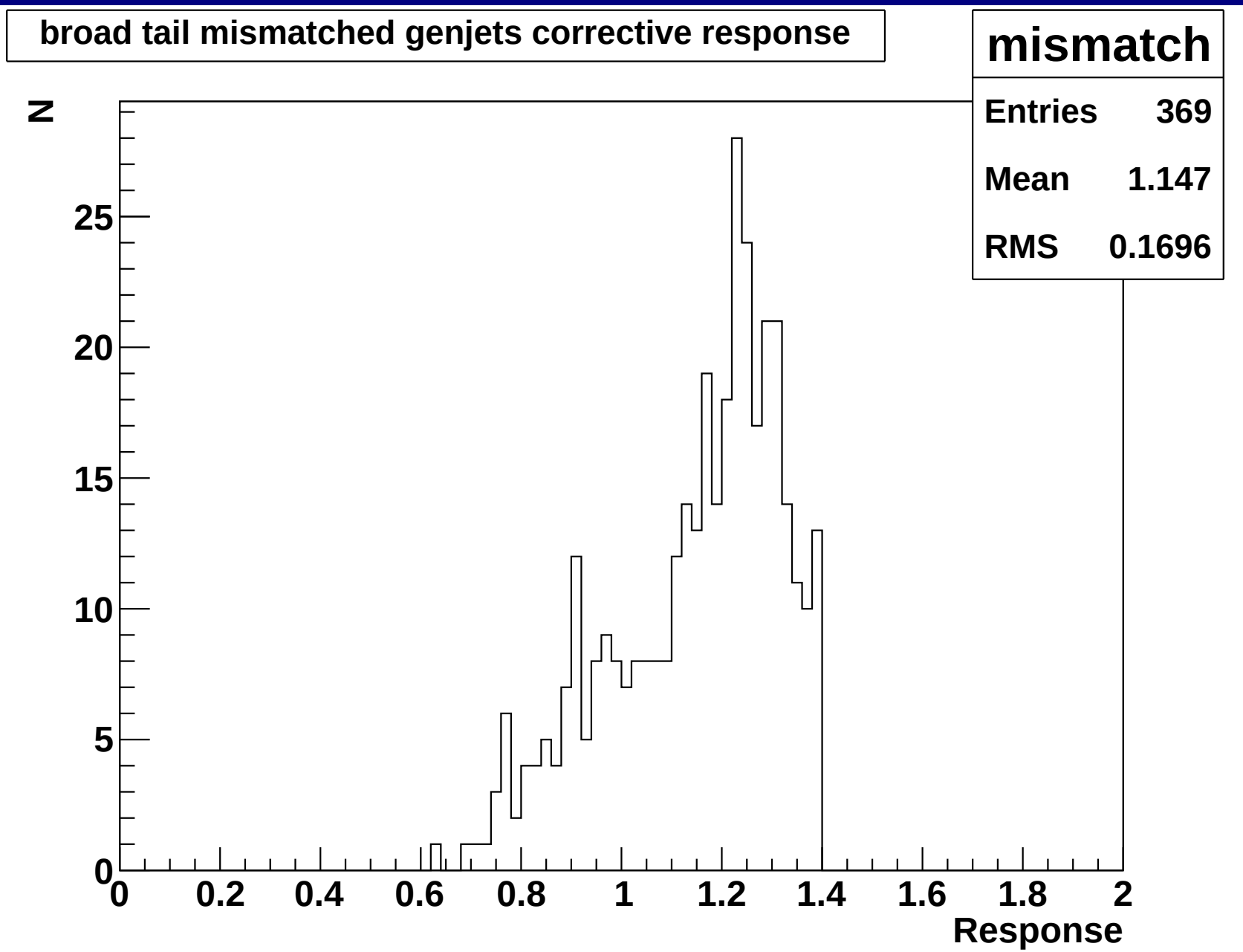

broad tail, Δ R
btaild
Entries 353
Mean 0.08969
RMS 0.07081
N
Δ R

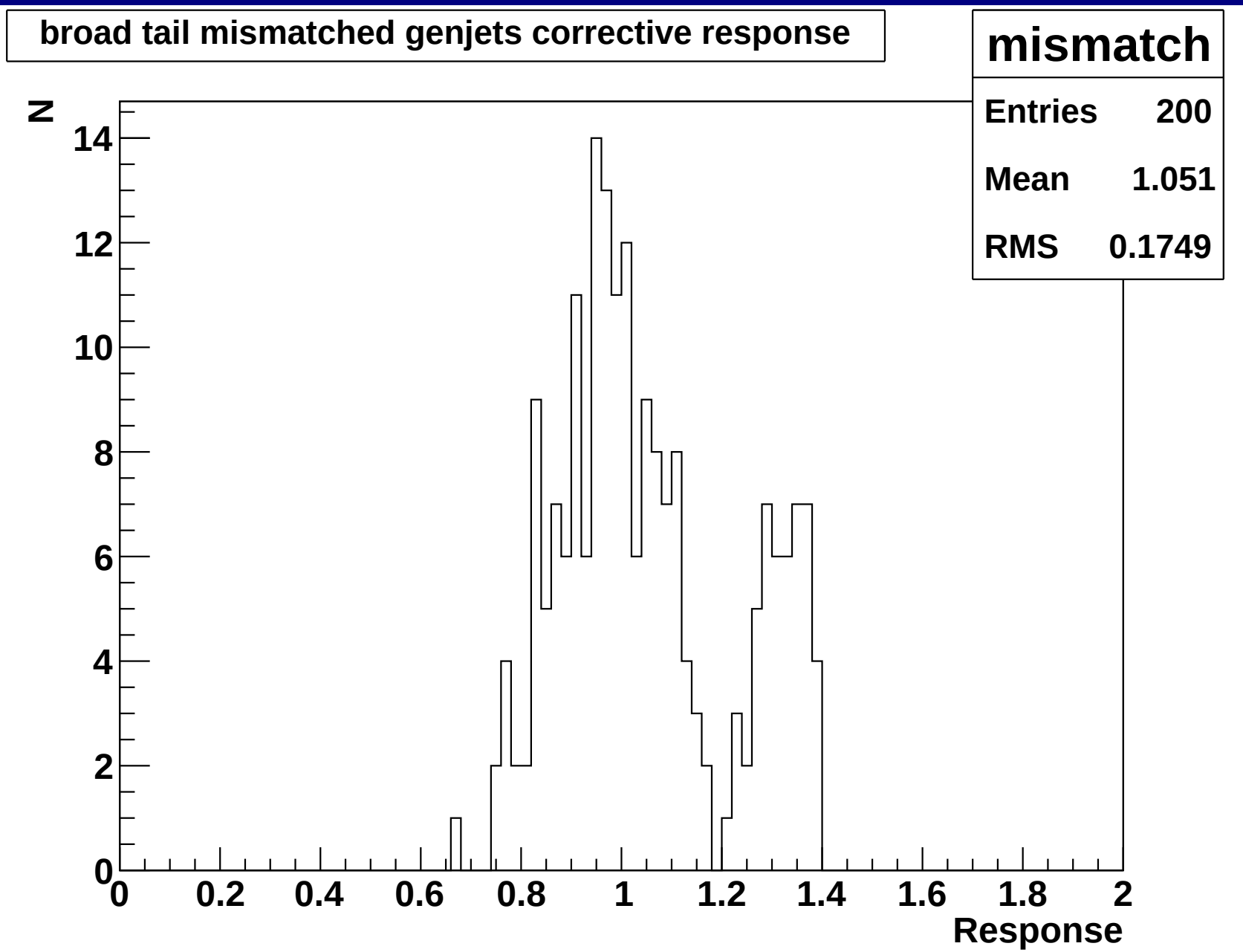

broad gaussian, towers
bgaust
Entries 1149179
Mean x 0.1797
Mean y 5.54
RMS x 0.1095
RMS y 9.878
E
Δ R

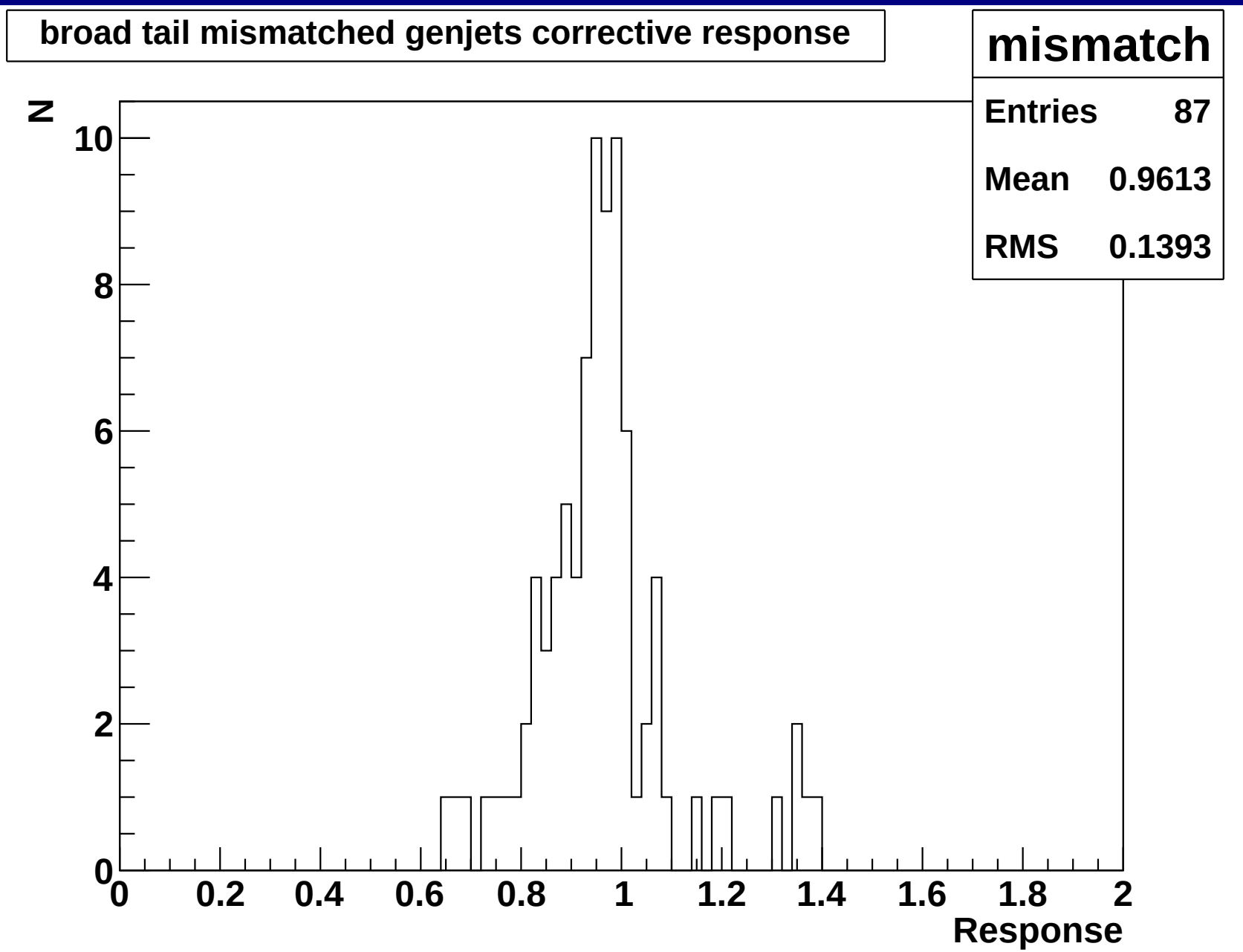

broad tail, towers
btailt
Entries 9941
Mean x 0.2024
Mean y 6.338
RMS x 0.1156
RMS y 11.37
E
Δ R

- L4-correction moves 24 of 353 events out of the tail
- preferedly jets with tower-concentrations close to MC-Truth are moved
- the rest of the distribution is slightly altered and best consistent with multijet-clustering

- step 1: find another genjet in $R < 0.3$
- step 2: check corrected response: $0.6 < \frac{P_{t,Jet}}{P_{t,Genjet0}+P_{t,Genjeti}} < 1.4$
- if true, it counts as improvement and is added to the following hists

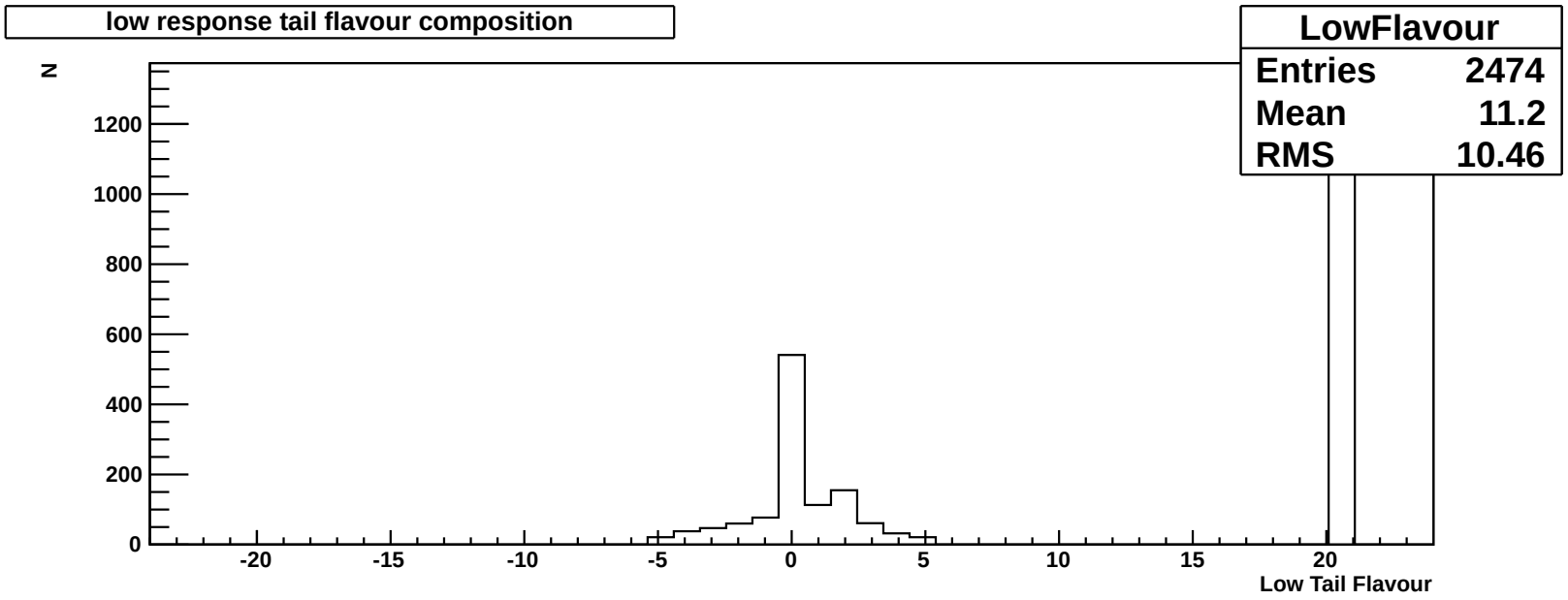

broad tail mismatched genjets corrective response
mismatch
Entries 369
Mean 1.147
RMS 0.1696
N
25
20
15
10
5
0
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Response

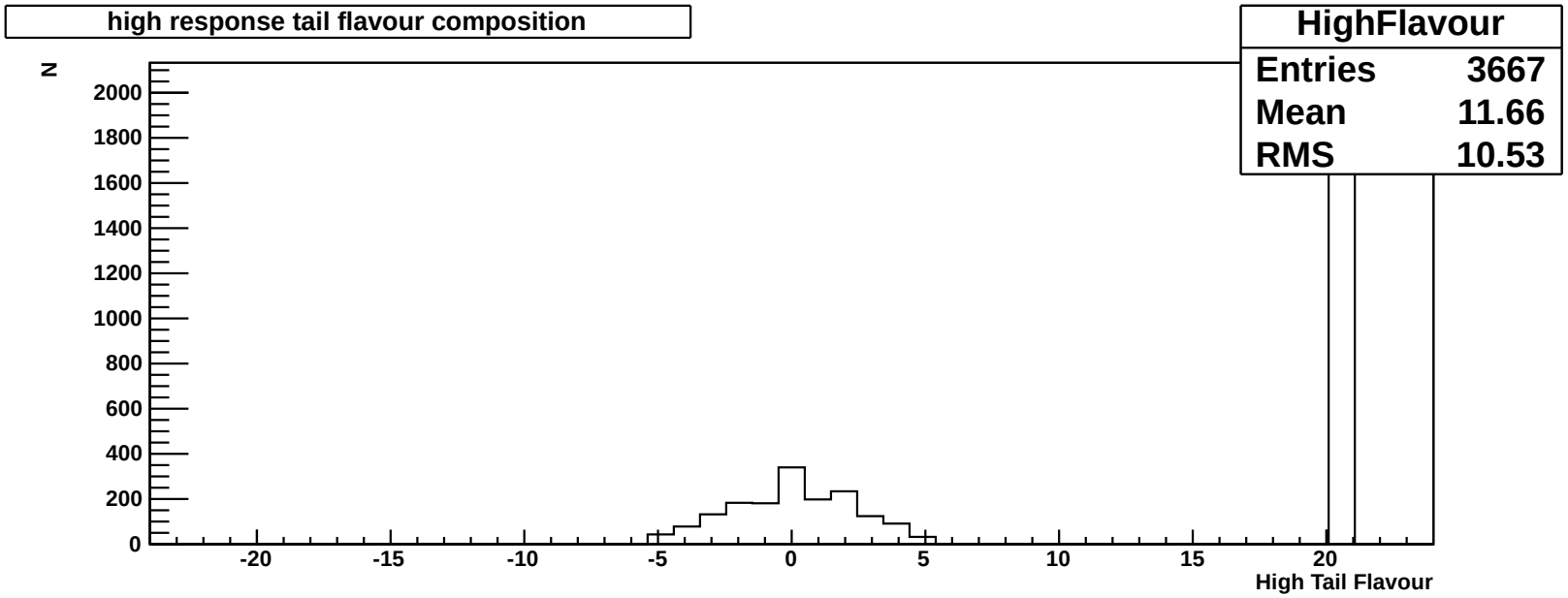

broad tail mismatched genjets corrective response
mismatch
Entries 200
Mean 1.051
RMS 0.1749
N
0
2
4
6
8
10
12
14
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Response

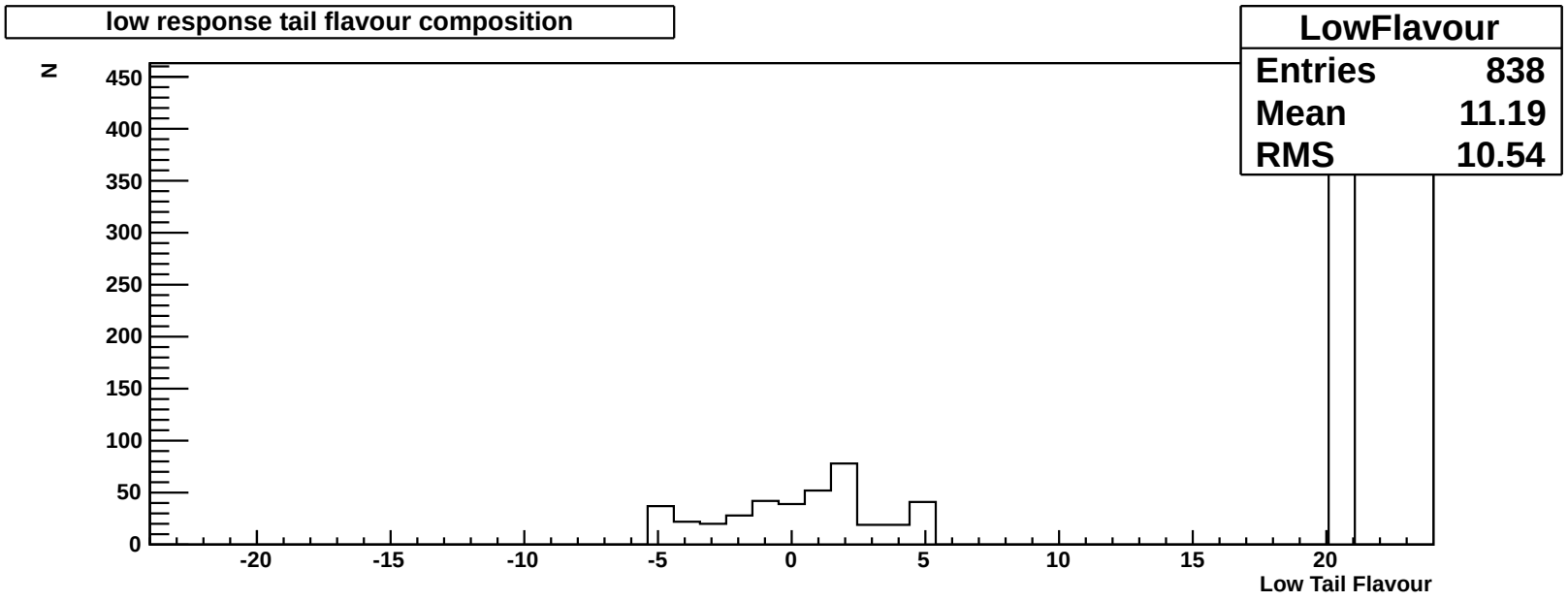

broad tail mismatched genjets corrective response
mismatch
Entries 87
Mean 0.9613
RMS 0.1393
N
10
8
6
4
2
0
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Response

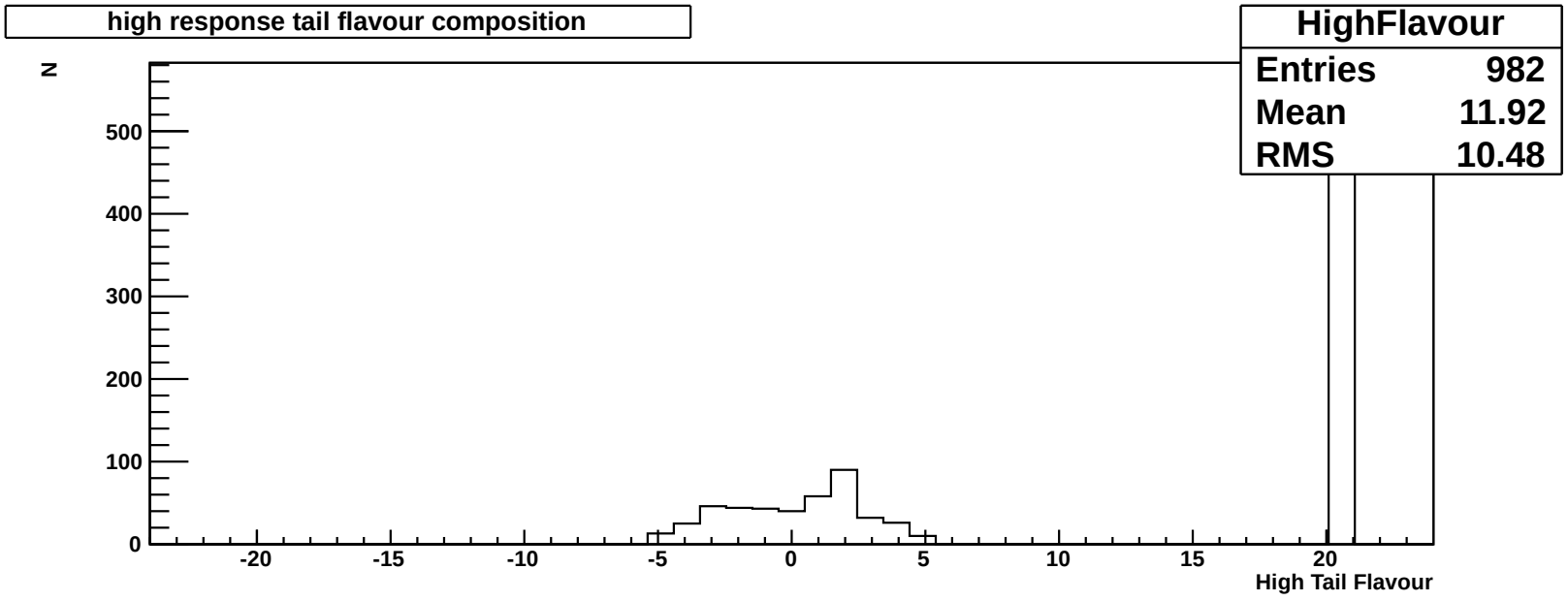
- responsible for up to 26% of events in the tail
- new gaussian core, possibly truly doubleclustered events
- also events close to 1.4, possibly NOT truly doubleclustered events
- therefore 15-20% reduction of tail-events due to mismatching

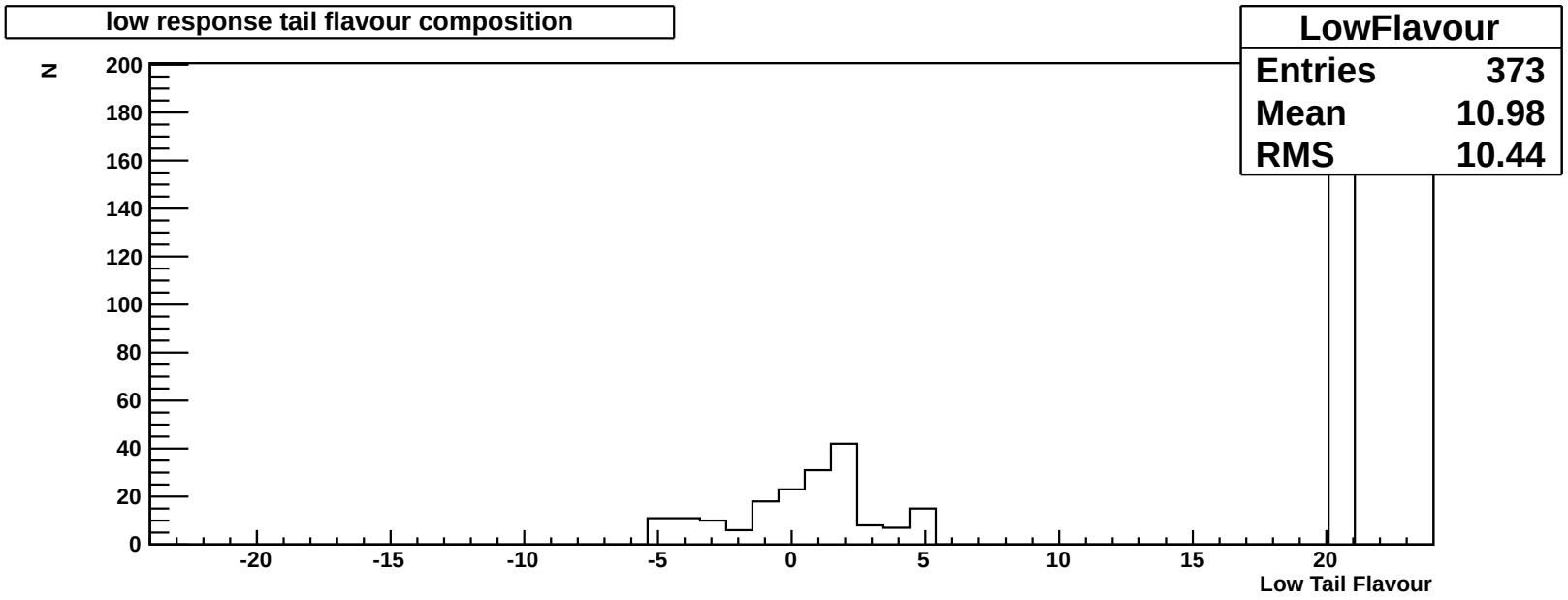
- check on possible physical explanation by displaying MC-particle-Truth (algo)
- checked for low tail (Response < 0.6) and high tail (Response > 1.4)

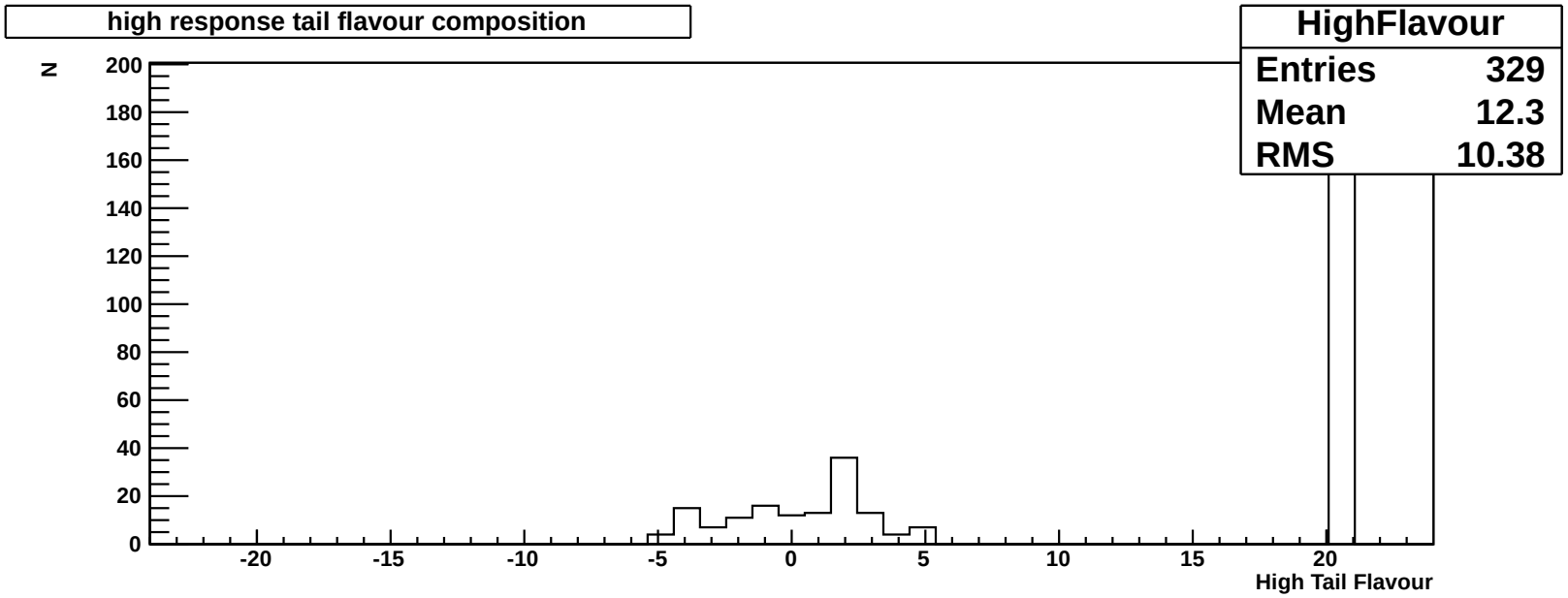

low response tail flavour composition
LowFlavour
Entries 2474
Mean 11.2
RMS 10.46
N
1200
1000
800
600
400
200
0
-20
-15
-10
-5
0
5
10
15
20
Low Tail Flavour


high response tail flavour composition
HighFlavour
Entries 3667
Mean 11.66
RMS 10.53
N
2000
1800
1600
1400
1200
1000
800
600
400
200
0
-20
-15
-10
-5
0
5
10
15
20
High Tail Flavour


low response tail flavour composition
LowFlavour
Entries 838
Mean 11.19
RMS 10.54
N
450
400
350
300
250
200
150
100
50
0
-20
-15
-10
-5
0
5
10
15
20
Low Tail Flavour

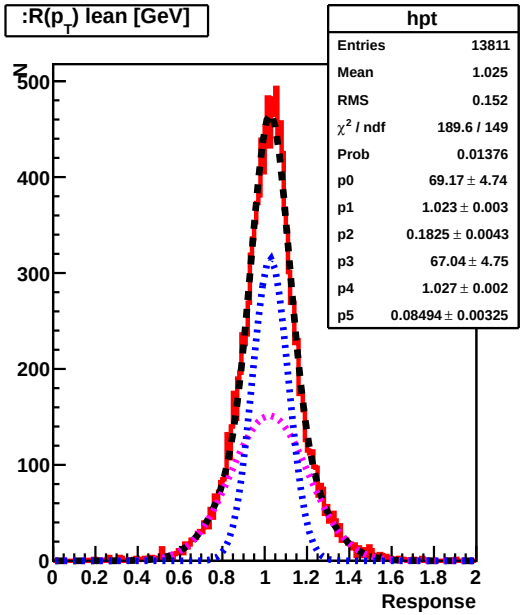

high response tail flavour composition
HighFlavour
Entries 982
Mean 11.92
RMS 10.48
N
500
400
300
200
100
0
-20
-15
-10
-5
0
5
10
15
20
High Tail Flavour

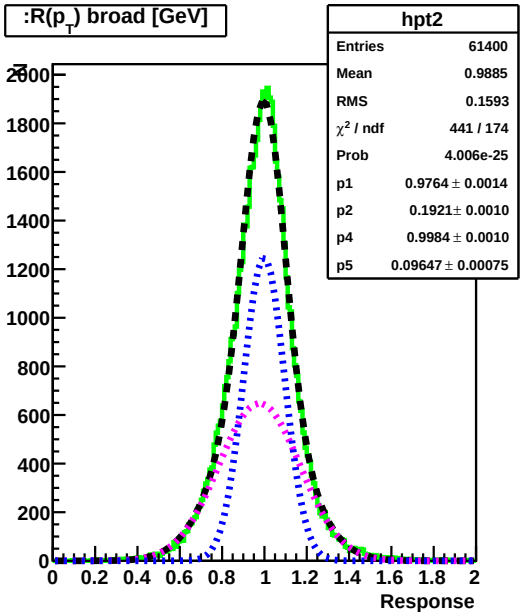

low response tail flavour composition
N
200
180
160
140
120
100
80
60
40
20
0
-20
-15
-10
-5
0
5
10
15
20
Low Tail Flavour
LowFlavour
Entries 373
Mean 10.98
RMS 10.44

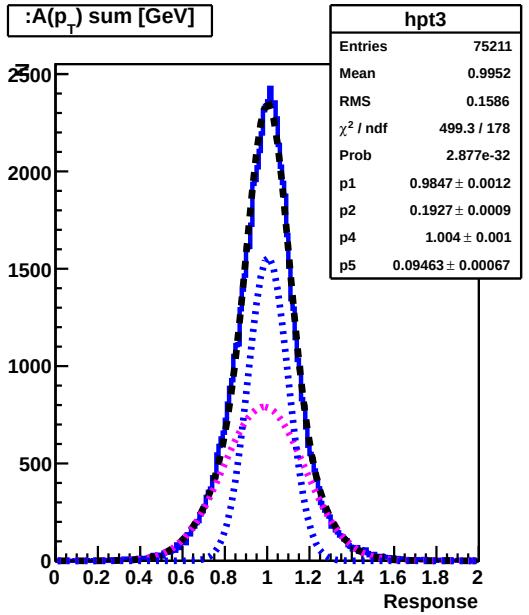

high response tail flavour composition
N
200
180
160
140
120
100
80
60
40
20
0
-20
-15
-10
-5
0
5
10
15
20
High Tail Flavour
HighFlavour
Entries 329
Mean 12.3
RMS 10.38

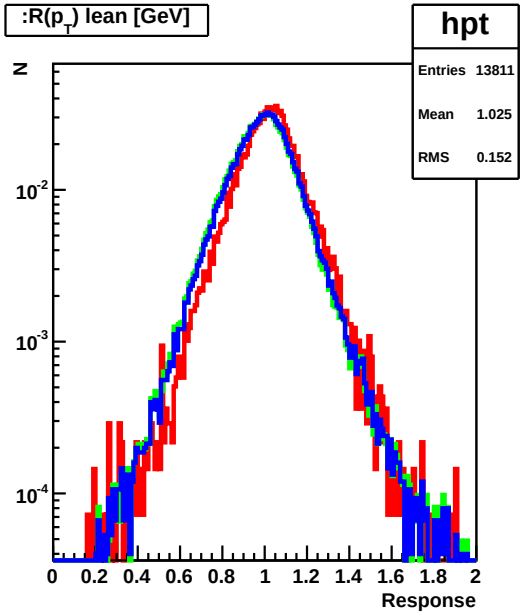
- mostly gluon-jets (as expected of a pp-collider)
- more b events for the low tail than high tail (expected $P_{t,miss}$)
- an excess of up-quarks, especially in bin 3

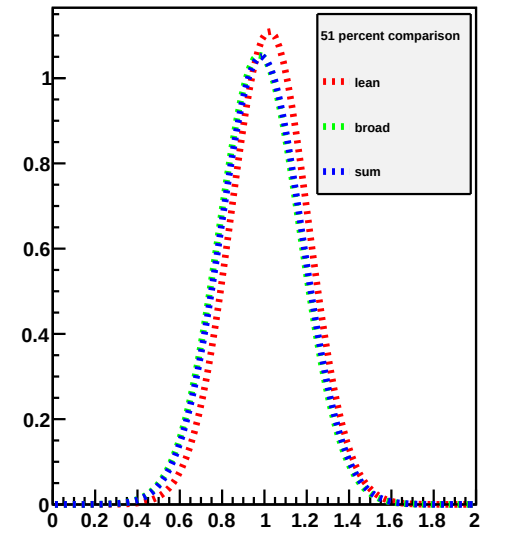
- QCDFlat_Pt15to3000Summer10-START36_V9_S09-v1B
- Barrel only ($\eta < 1.2$)
- $\Delta\phi > 2.7$
- 3 GenJetP_t-Bins: $0 - 50$ GeV, $51 - 150$ GeV, $151 - 300$ GeV
- corrected $P_{t3} \leq 10\% * \frac{P_{t1}+P_{t2}}{2}$
- $\frac{\sigma[\phi]+\sigma[\eta]}{2} > 0.12$ for broad jets, else lean jets
- no tower-data or flavour information included in the sample

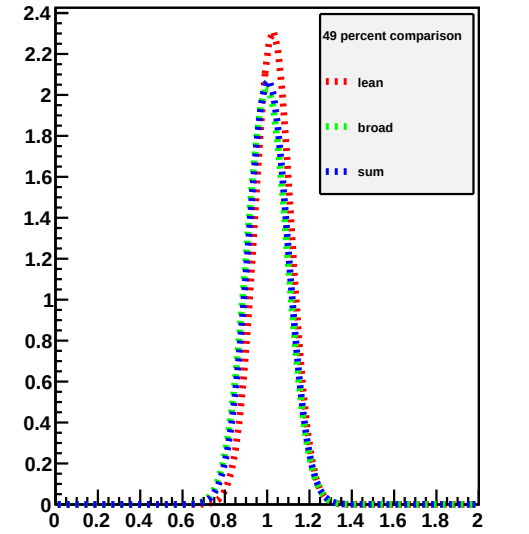

:R(p_T) lean [GeV]
hpt
Entries 13811
Mean 1.025
RMS 0.152
χ² / ndf 189.6 / 149
Prob 0.01376
p0 69.17 ± 4.74
p1 1.023 ± 0.003
p2 0.1825 ± 0.0043
p3 67.04 ± 4.75
p4 1.027 ± 0.002
p5 0.08494 ± 0.00325
N
Response

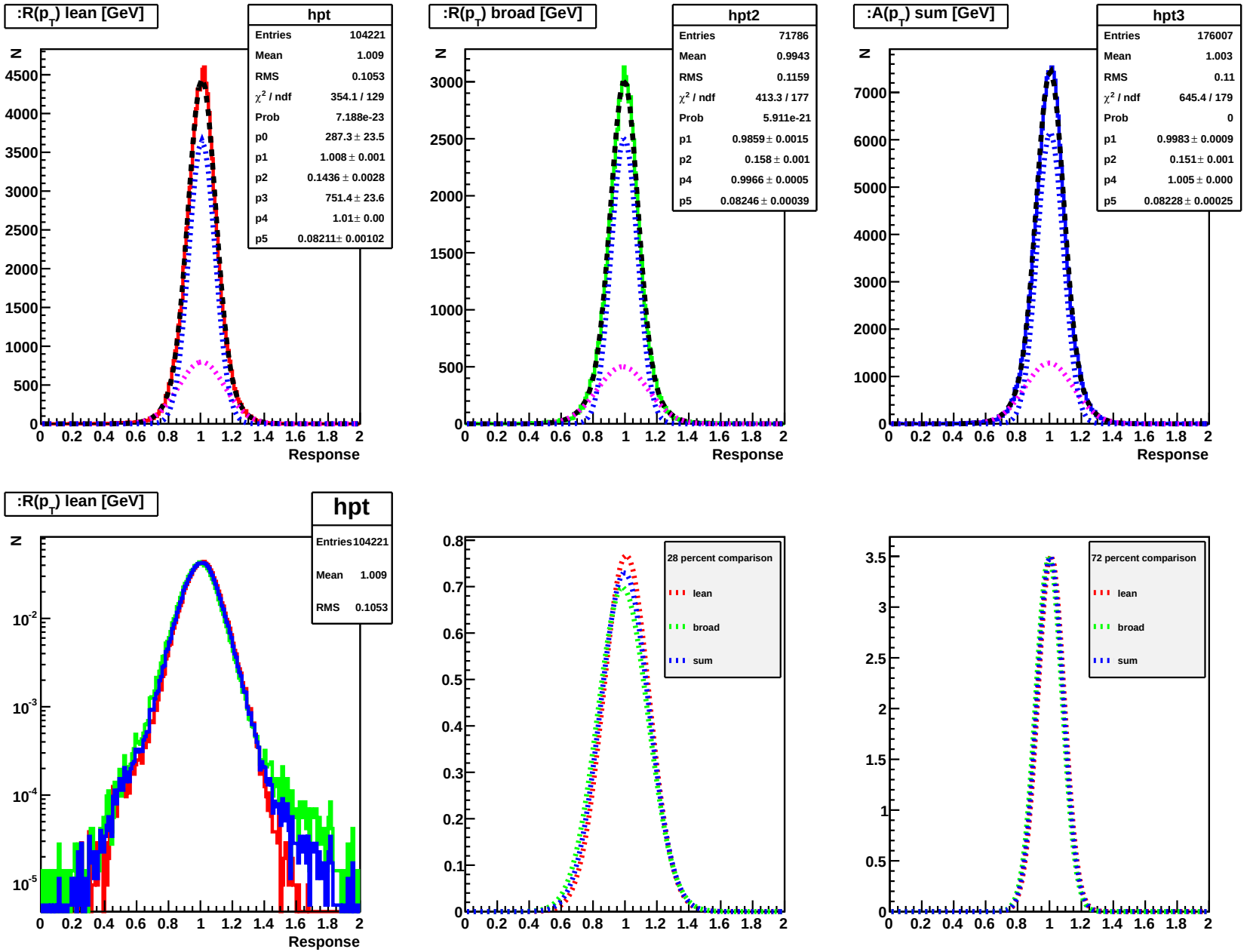

:R(p_T) broad [GeV]
hpt2
Entries 61400
Mean 0.9885
RMS 0.1593
χ² / ndf 441 / 174
Prob 4.006e-25
p1 0.9764 ± 0.0014
p2 0.1921 ± 0.0010
p4 0.9984 ± 0.0010
p5 0.09647 ± 0.00075
N
Response

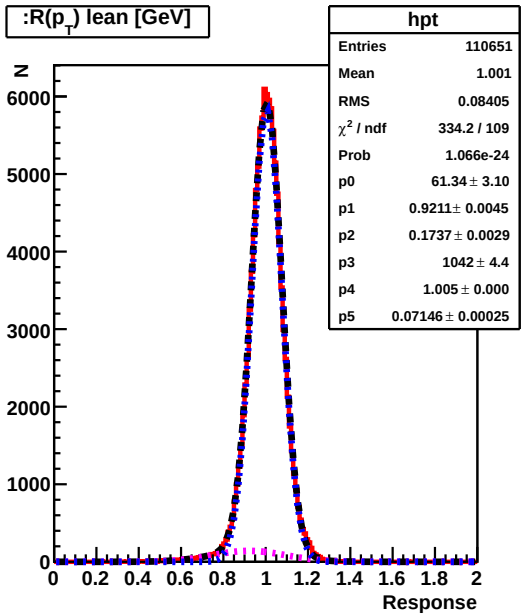

:A(p_T) sum [GeV]
hpt3
Entries 75211
Mean 0.9952
RMS 0.1586
χ² / ndf 499.3 / 178
Prob 2.877e-32
p1 0.9847 ± 0.0012
p2 0.1927 ± 0.0009
p4 1.004 ± 0.001
p5 0.09463 ± 0.00067
N
Response

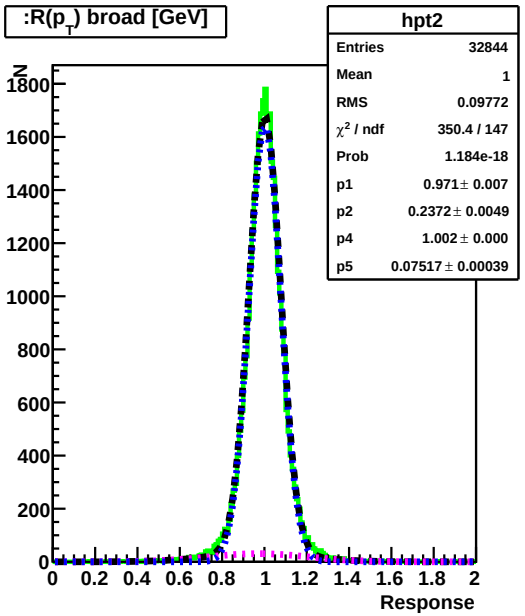

:R(p_T) lean [GeV]
hpt
Entries 13811
Mean 1.025
RMS 0.152
N
Response

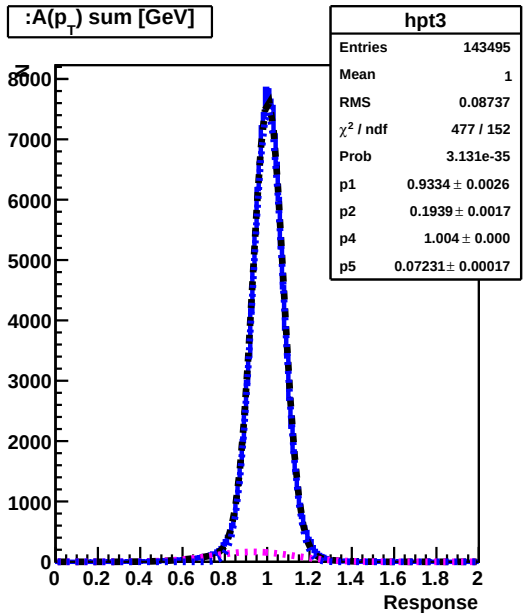

51 percent comparison
lean
broad
sum

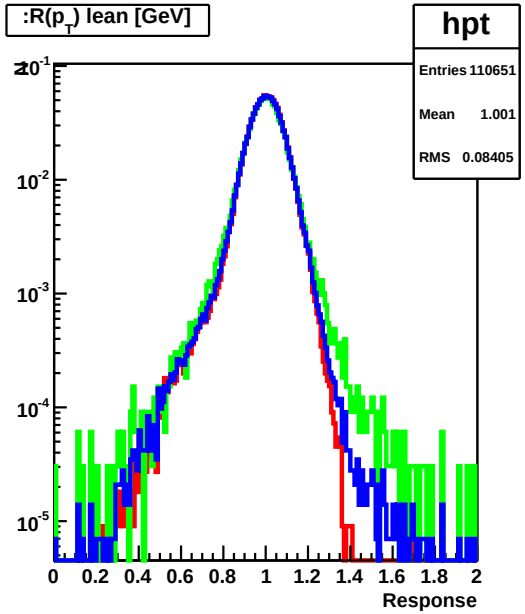

49 percent comparison
lean
broad
sum

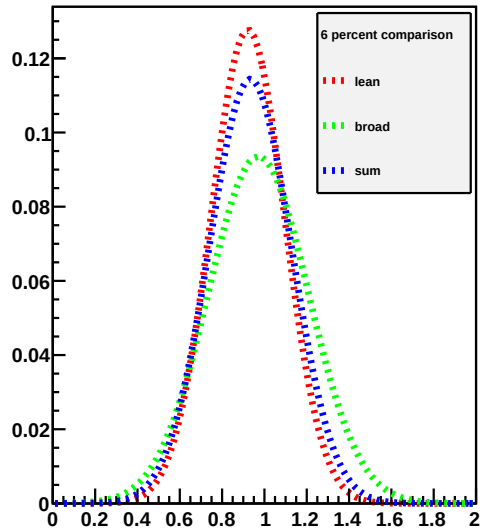

:R(p_T) lean [GeV]
hpt
Entries 104221
Mean 1.009
RMS 0.1053
χ² / ndf 354.1 / 129
Prob 7.188e-23
p0 287.3 ± 23.5
p1 1.008 ± 0.001
p2 0.1436 ± 0.0028
p3 751.4 ± 23.6
p4 1.01 ± 0.00
p5 0.08211 ± 0.00102
N
Response
:R(p_T) broad [GeV]
hpt2
Entries 71786
Mean 0.9943
RMS 0.1159
χ² / ndf 413.3 / 177
Prob 5.911e-21
p1 0.9859 ± 0.0015
p2 0.158 ± 0.001
p4 0.9966 ± 0.0005
p5 0.08246 ± 0.00039
:A(p_T) sum [GeV]
hpt3
Entries 176007
Mean 1.003
RMS 0.11
χ² / ndf 645.4 / 179
Prob 0
p1 0.9983 ± 0.0009
p2 0.151 ± 0.001
p4 1.005 ± 0.000
p5 0.08228 ± 0.00025
:R(p_T) lean [GeV]
hpt
Entries 104221
Mean 1.009
RMS 0.1053
28 percent comparison
lean
broad
sum
72 percent comparison
lean
broad
sum

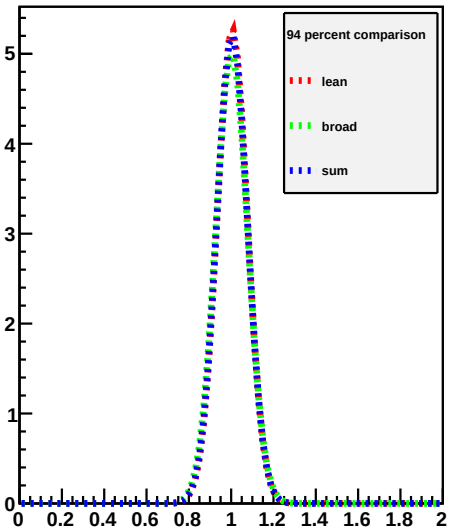

:R(p_T) lean [GeV]
hpt
Entries 110651
Mean 1.001
RMS 0.08405
χ² / ndf 334.2 / 109
Prob 1.066e-24
p0 61.34 ± 3.10
p1 0.9211 ± 0.0045
p2 0.1737 ± 0.0029
p3 1042 ± 4.4
p4 1.005 ± 0.000
p5 0.07146 ± 0.00025
Response


:R(p_T) broad [GeV]
hpt2
Entries 32844
Mean 1
RMS 0.09772
χ² / ndf 350.4 / 147
Prob 1.184e-18
p1 0.971 ± 0.007
p2 0.2372 ± 0.0049
p4 1.002 ± 0.000
p5 0.07517 ± 0.00039
Response


:A(p_T) sum [GeV]
hpt3
Entries 143495
Mean 1
RMS 0.08737
χ² / ndf 477 / 152
Prob 3.131e-35
p1 0.9334 ± 0.0026
p2 0.1939 ± 0.0017
p4 1.004 ± 0.000
p5 0.07231 ± 0.00017
Response

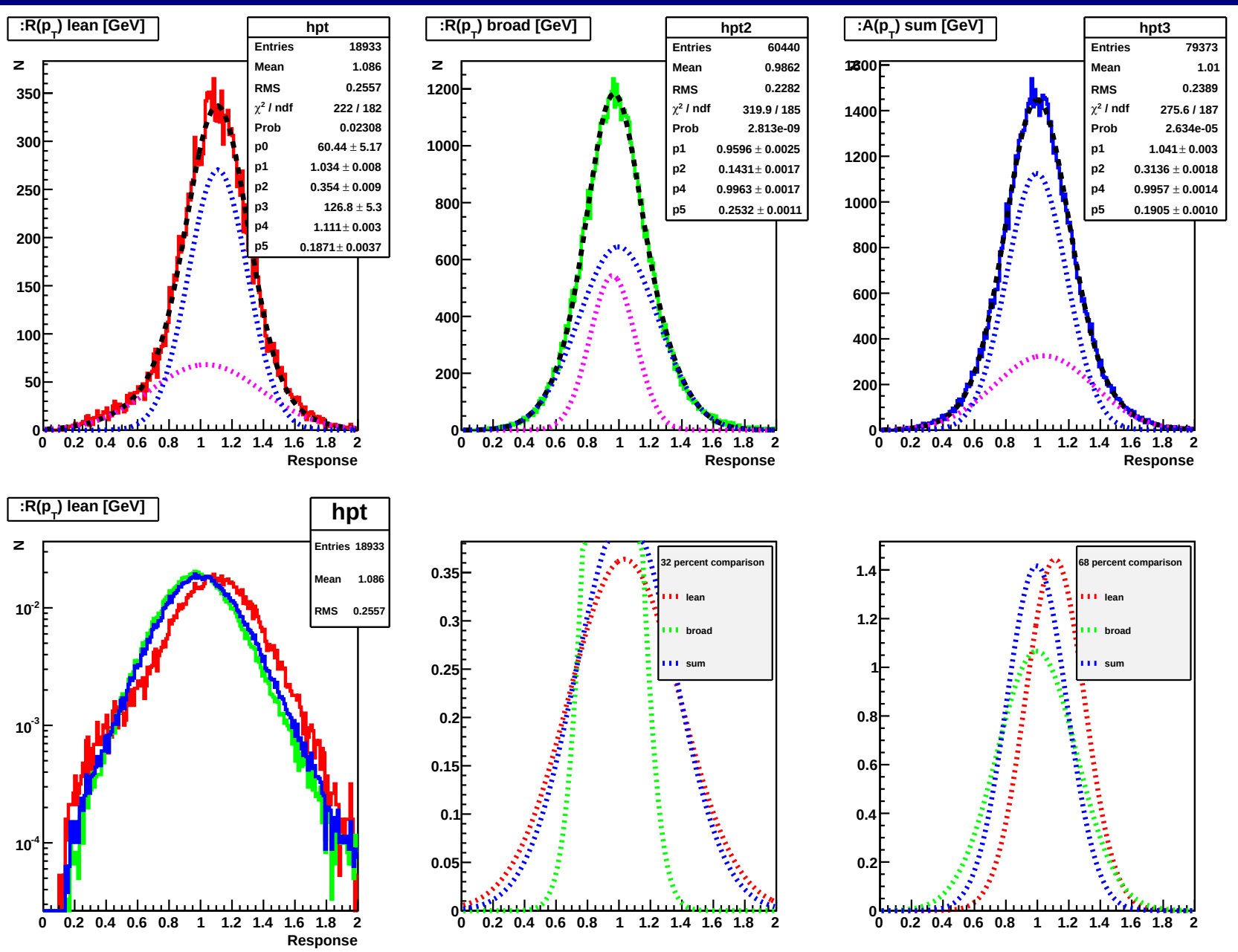

:R(p_T) lean [GeV]
hpt
Entries 110651
Mean 1.001
RMS 0.08405
Response

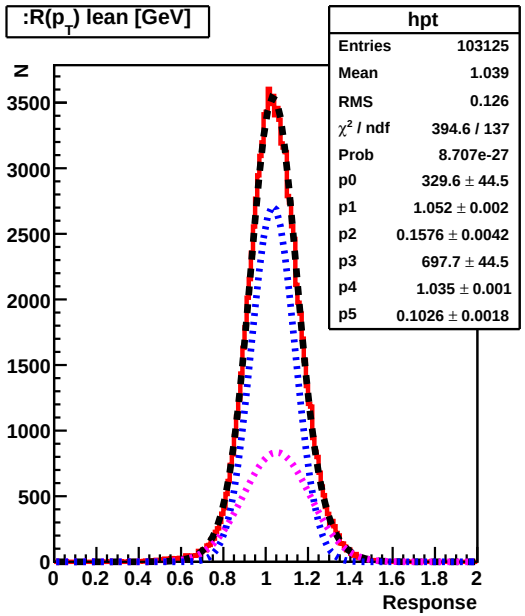

6 percent comparison
lean
broad
sum

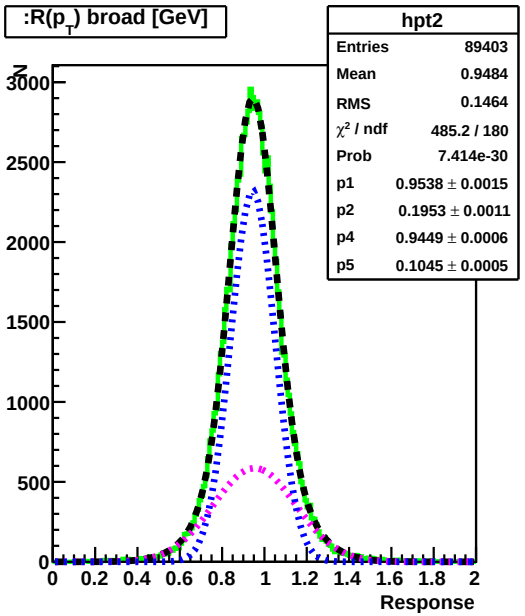

94 percent comparison
lean
broad
sum

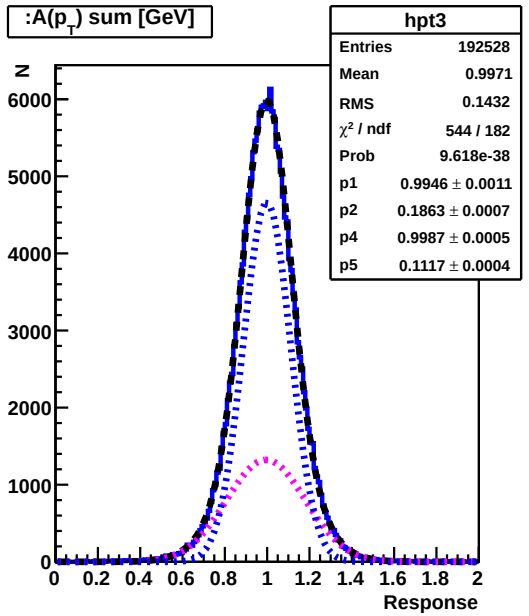
- almost the same results as for Calo, but less tail events
- lean jets have a leaner distribution for 75% of events
- but: broad jets have a leaner distribution for 25% of events
- possible relation to particle-flow trackerdata for low-energy-particles

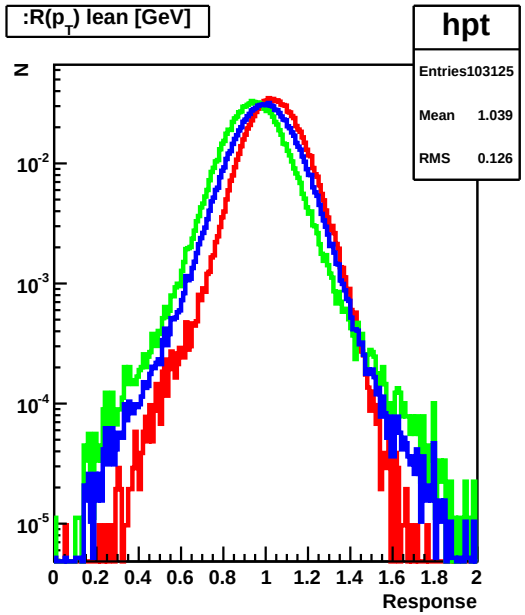
Any questions?

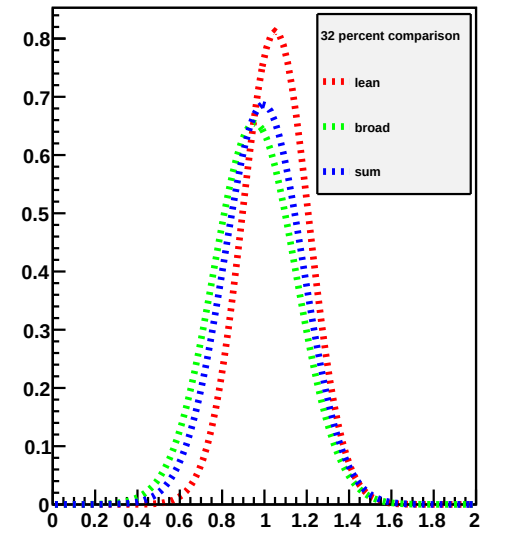

:R(p_T) lean [GeV]
hpt
Entries 18933
Mean 1.086
RMS 0.2557
χ² / ndf 222 / 182
Prob 0.02308
p0 60.44 ± 5.17
p1 1.034 ± 0.008
p2 0.354 ± 0.009
p3 126.8 ± 5.3
p4 1.111 ± 0.003
p5 0.1871 ± 0.0037
N
Response
:R(p_T) broad [GeV]
hpt2
Entries 60440
Mean 0.9862
RMS 0.2282
χ² / ndf 319.9 / 185
Prob 2.813e-09
p1 0.9596 ± 0.0025
p2 0.1431 ± 0.0017
p4 0.9963 ± 0.0017
p5 0.2532 ± 0.0011
N
Response
:A(p_T) sum [GeV]
hpt3
Entries 79373
Mean 1.01
RMS 0.2389
χ² / ndf 275.6 / 187
Prob 2.634e-05
p1 1.041 ± 0.003
p2 0.3136 ± 0.0018
p4 0.9957 ± 0.0014
p5 0.1905 ± 0.0010
N
Response
:R(p_T) lean [GeV]
hpt
Entries 18933
Mean 1.086
RMS 0.2557
N
Response
32 percent comparison
lean
broad
sum
68 percent comparison
lean
broad
sum

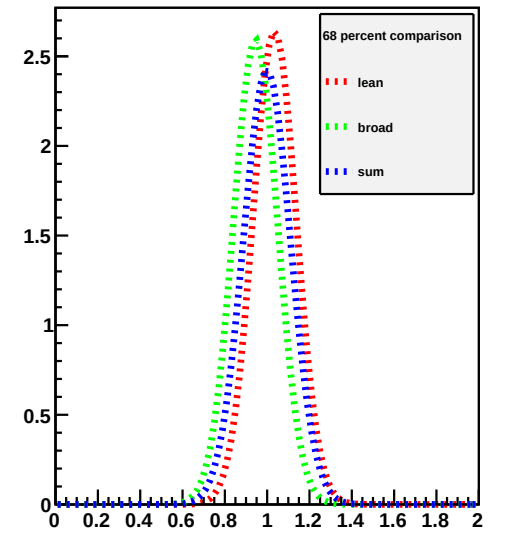

:R(p_T) lean [GeV]
hpt
Entries 103125
Mean 1.039
RMS 0.126
χ² / ndf 394.6 / 137
Prob 8.707e-27
p0 329.6 ± 44.5
p1 1.052 ± 0.002
p2 0.1576 ± 0.0042
p3 697.7 ± 44.5
p4 1.035 ± 0.001
p5 0.1026 ± 0.0018
N
Response

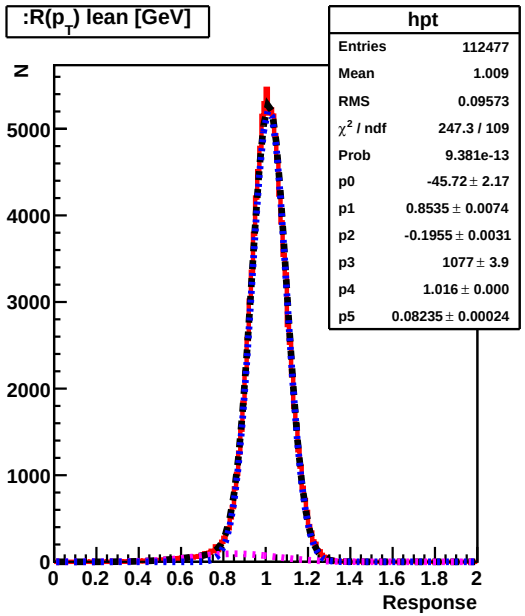

:R(p_T) broad [GeV]
hpt2
Entries 89403
Mean 0.9484
RMS 0.1464
χ² / ndf 485.2 / 180
Prob 7.414e-30
p1 0.9538 ± 0.0015
p2 0.1953 ± 0.0011
p4 0.9449 ± 0.0006
p5 0.1045 ± 0.0005
N
Response

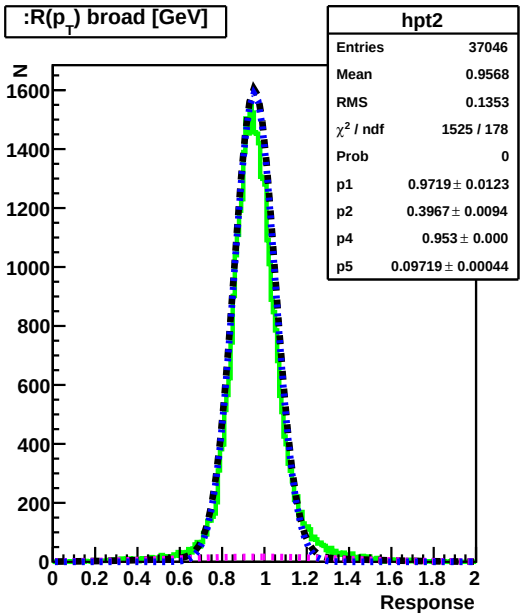

:A(p_T) sum [GeV]
hpt3
Entries 192528
Mean 0.9971
RMS 0.1432
χ² / ndf 544 / 182
Prob 9.618e-38
p1 0.9946 ± 0.0011
p2 0.1863 ± 0.0007
p4 0.9987 ± 0.0005
p5 0.1117 ± 0.0004
N
Response

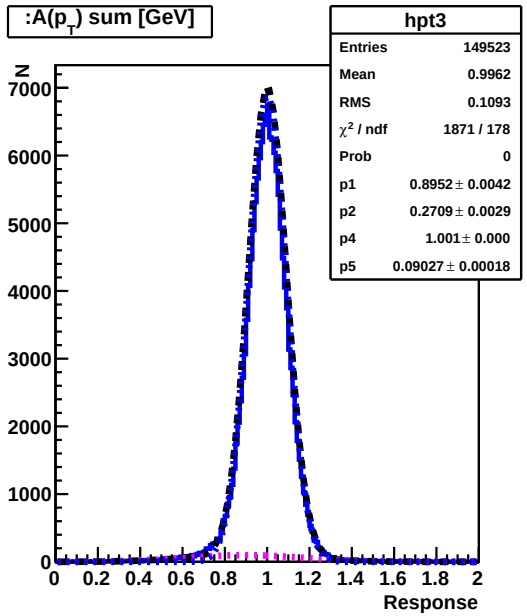

:R(p_T) lean [GeV]
hpt
Entries103125
Mean 1.039
RMS 0.126
N
Response

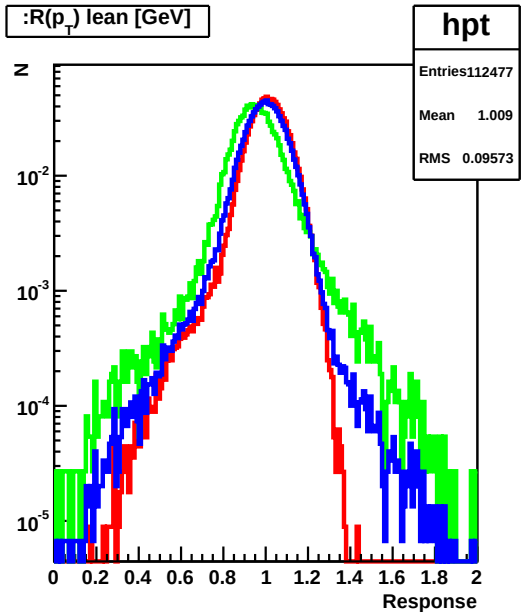

32 percent comparison
lean
broad
sum

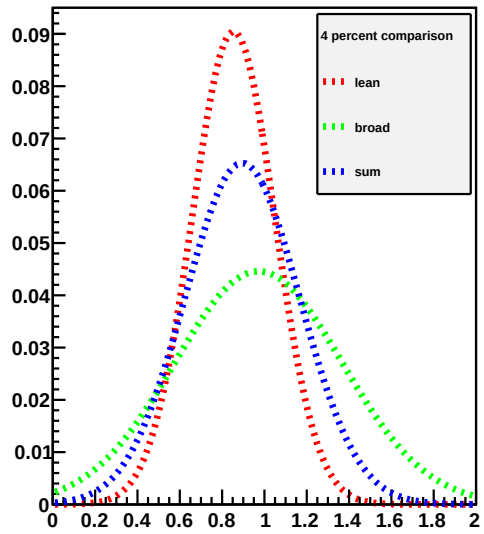

68 percent comparison
lean
broad
sum

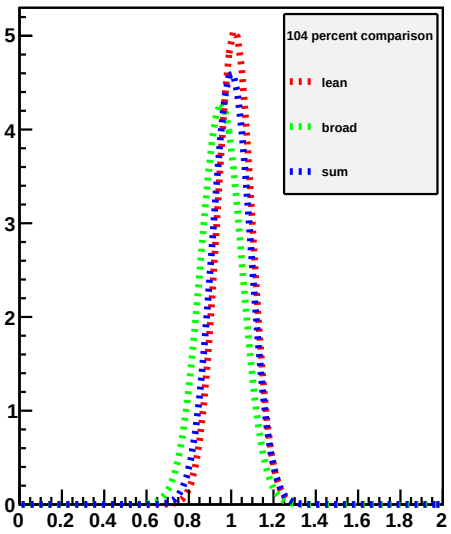

:R(p_T) lean [GeV]
hpt
Entries 112477
Mean 1.009
RMS 0.09573
χ² / ndf 247.3 / 109
Prob 9.381e-13
p0 -45.72 ± 2.17
p1 0.8535 ± 0.0074
p2 -0.1955 ± 0.0031
p3 1077 ± 3.9
p4 1.016 ± 0.000
p5 0.08235 ± 0.00024
N
Response

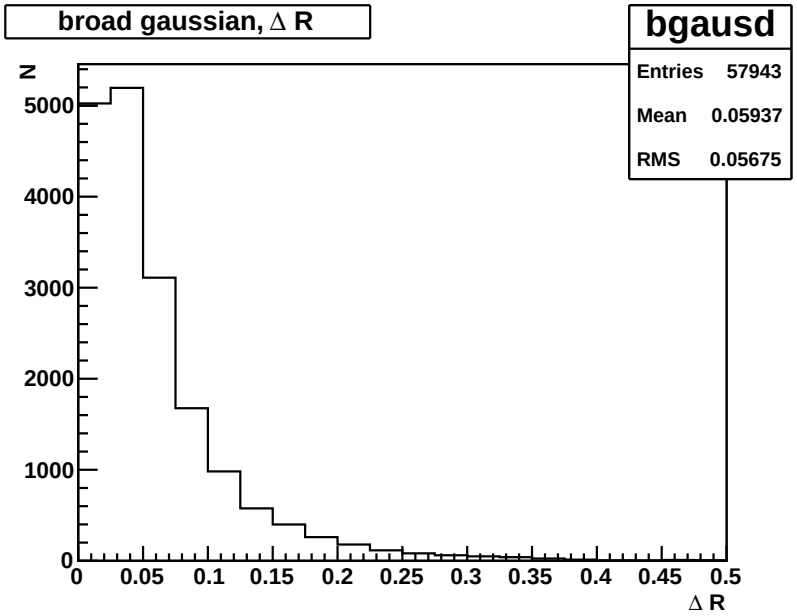

:R(p_T) broad [GeV]
hpt2
Entries 37046
Mean 0.9568
RMS 0.1353
χ² / ndf 1525 / 178
Prob 0
p1 0.9719 ± 0.0123
p2 0.3967 ± 0.0094
p4 0.953 ± 0.000
p5 0.09719 ± 0.00044
N
Response

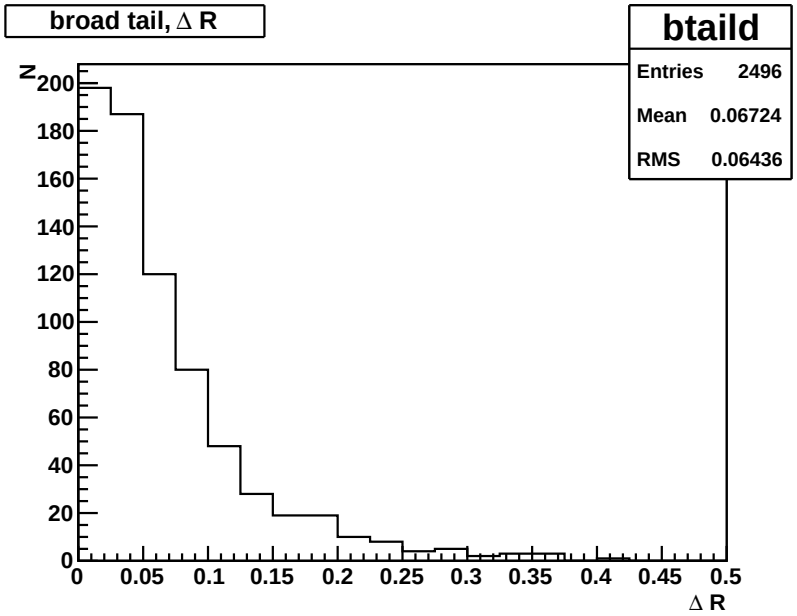

:A(p_T) sum [GeV]
hpt3
Entries 149523
Mean 0.9962
RMS 0.1093
χ² / ndf 1871 / 178
Prob 0
p1 0.8952 ± 0.0042
p2 0.2709 ± 0.0029
p4 1.001 ± 0.000
p5 0.09027 ± 0.00018
N
Response

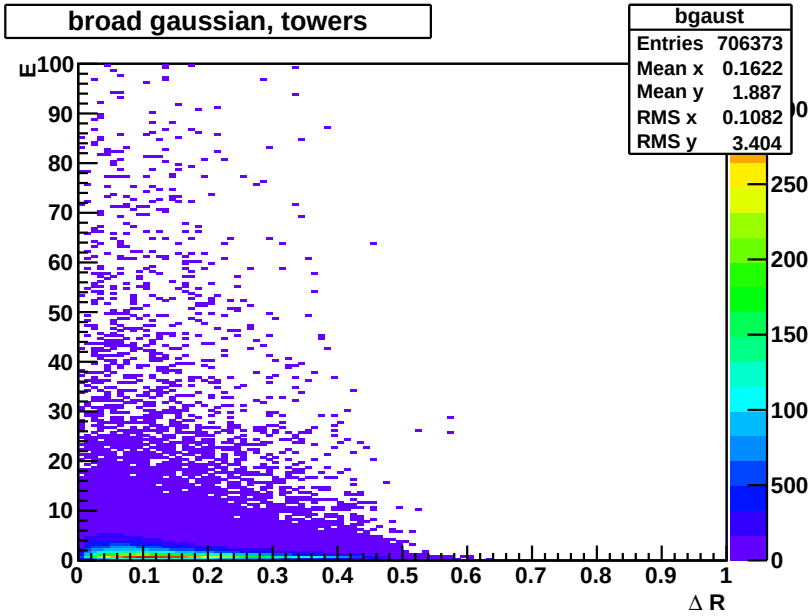

:R(p_T) lean [GeV]
hpt
Entries 112477
Mean 1.009
RMS 0.09573
N
Response

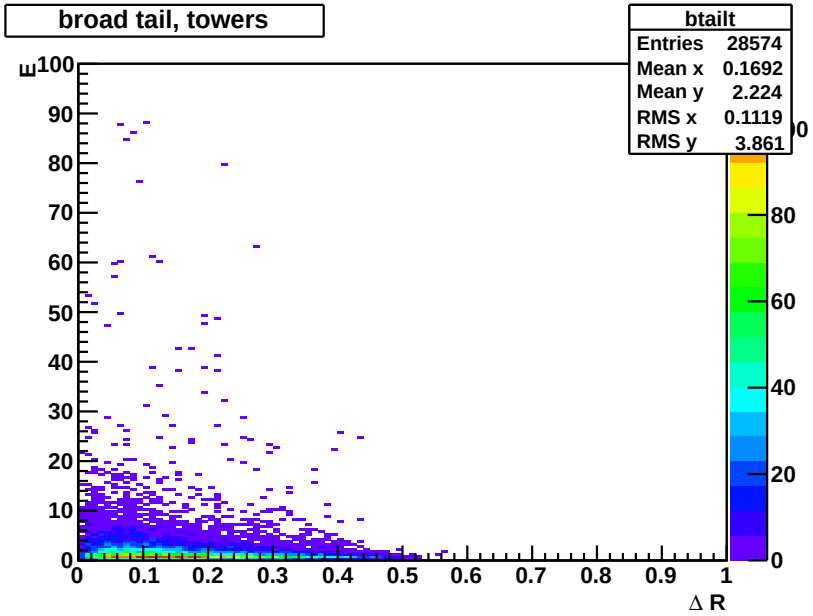

4 percent comparison
lean
broad
sum

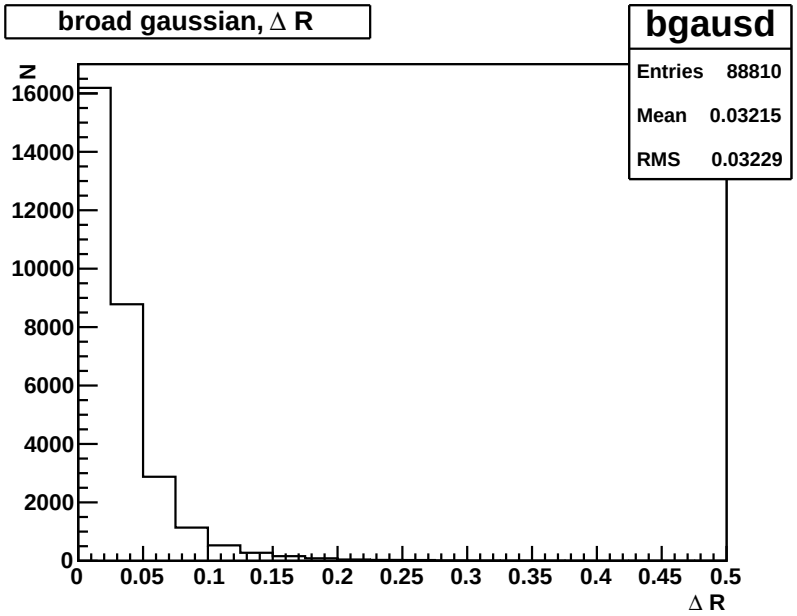

104 percent comparison
lean
broad
sum

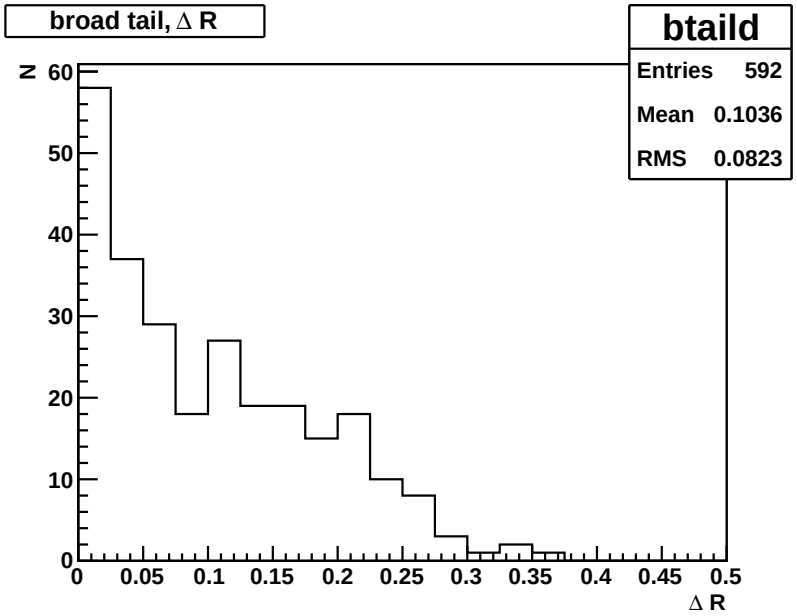

broad gaussian, Δ R
bgausd
Entries 57943
Mean 0.05937
RMS 0.05675
N
Δ R

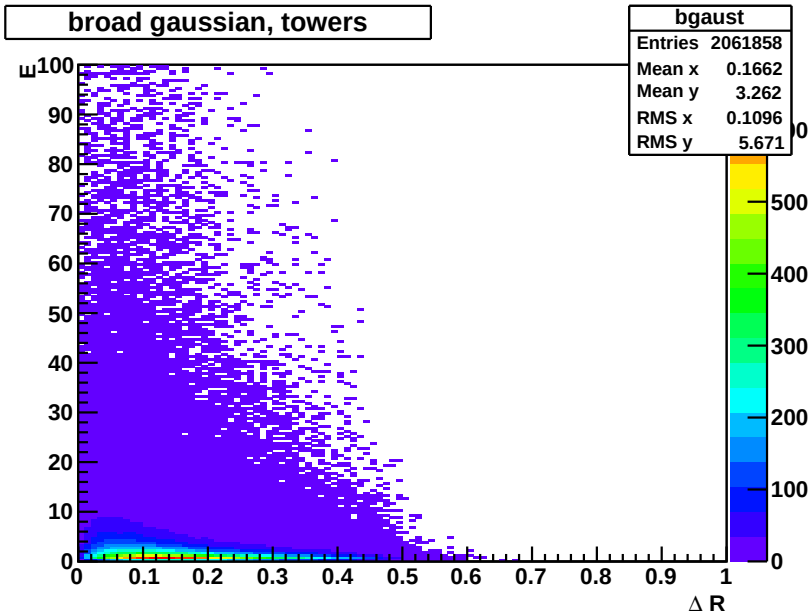

broad tail, Δ R
btaild
Entries 2496
Mean 0.06724
RMS 0.06436
N
Δ R

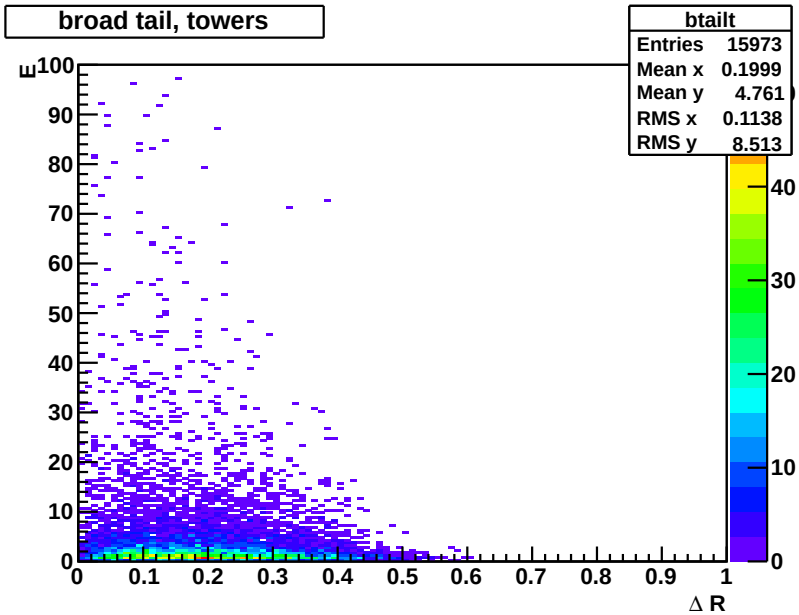

broad gaussian, towers
bgaust
Entries 706373
Mean x 0.1622
Mean y 1.887
RMS x 0.1082
RMS y 3.404
E
Δ R

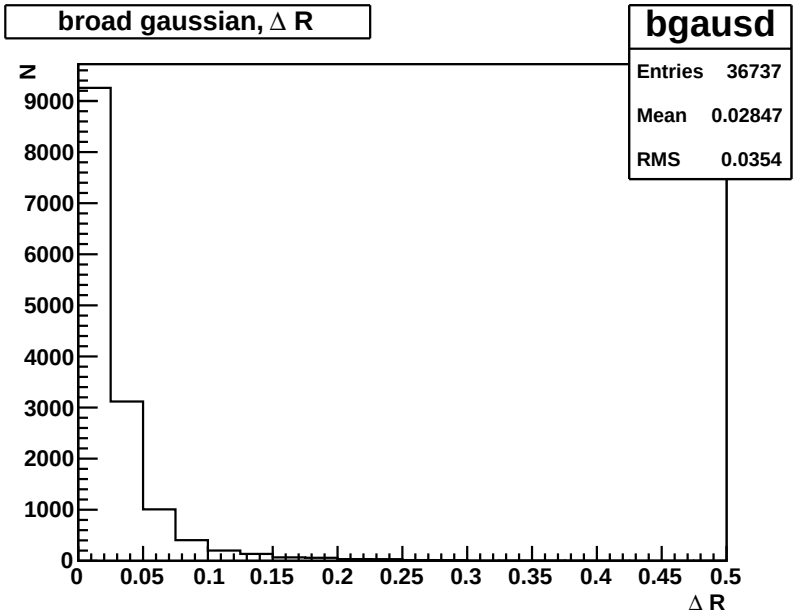

broad tail, towers
btailt
Entries 28574
Mean x 0.1692
Mean y 2.224
RMS x 0.1119
RMS y 3.861
E
Δ R

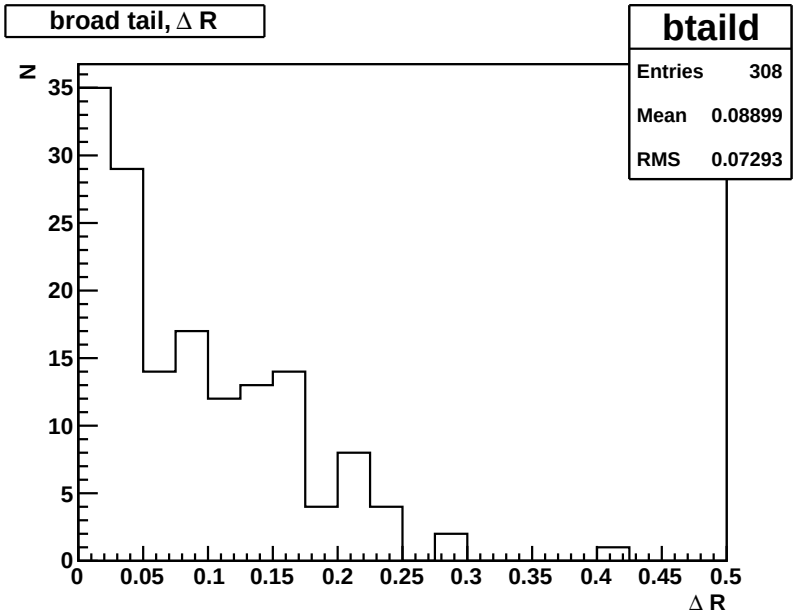

broad gaussian, Δ R
bgausd
Entries 88810
Mean 0.03215
RMS 0.03229
N
Δ R

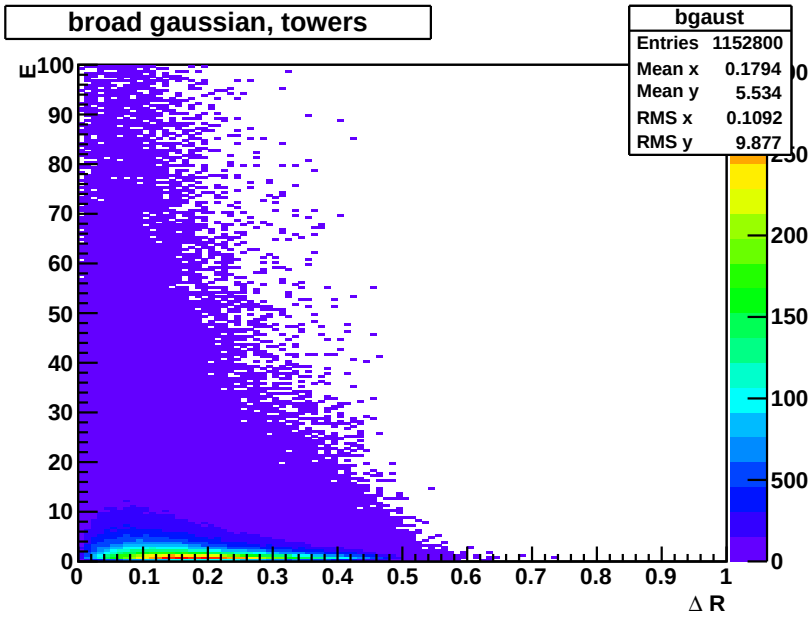

broad tail, Δ R
btaild
Entries 592
Mean 0.1036
RMS 0.0823
N
Δ R

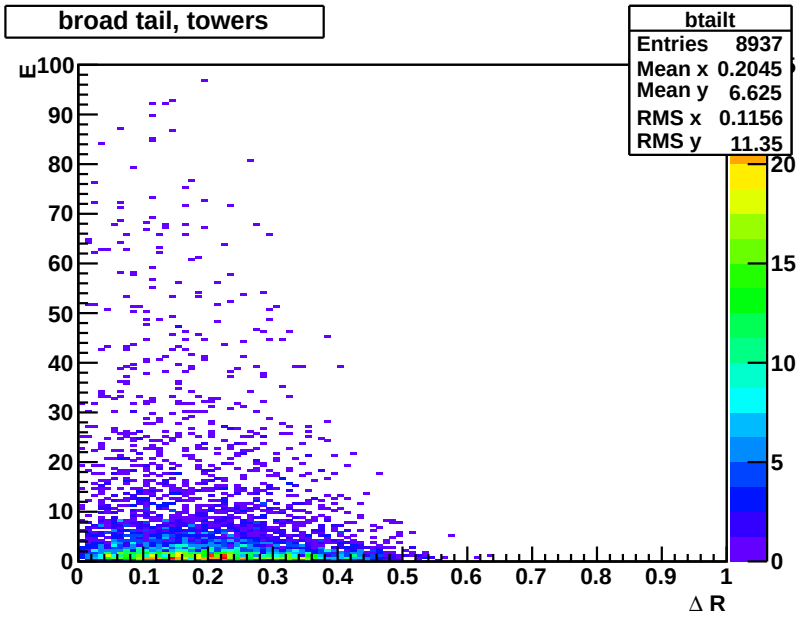

broad gaussian, towers
bgaust
Entries 2061858
Mean x 0.1662
Mean y 3.262
RMS x 0.1096
RMS y 5.671
E
Δ R

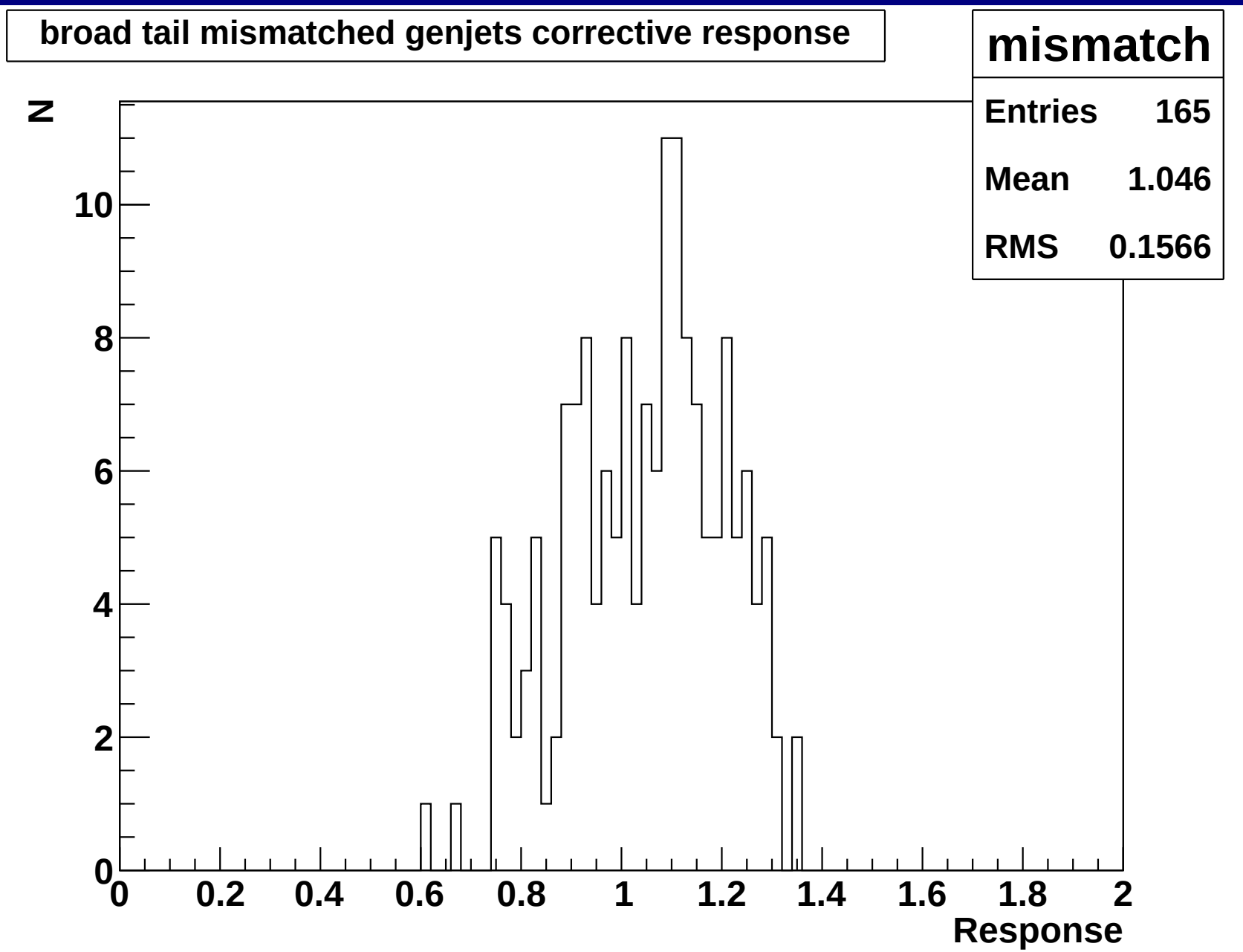

broad tail, towers
btailt
Entries 15973
Mean x 0.1999
Mean y 4.761
RMS x 0.1138
RMS y 8.513
E
Δ R

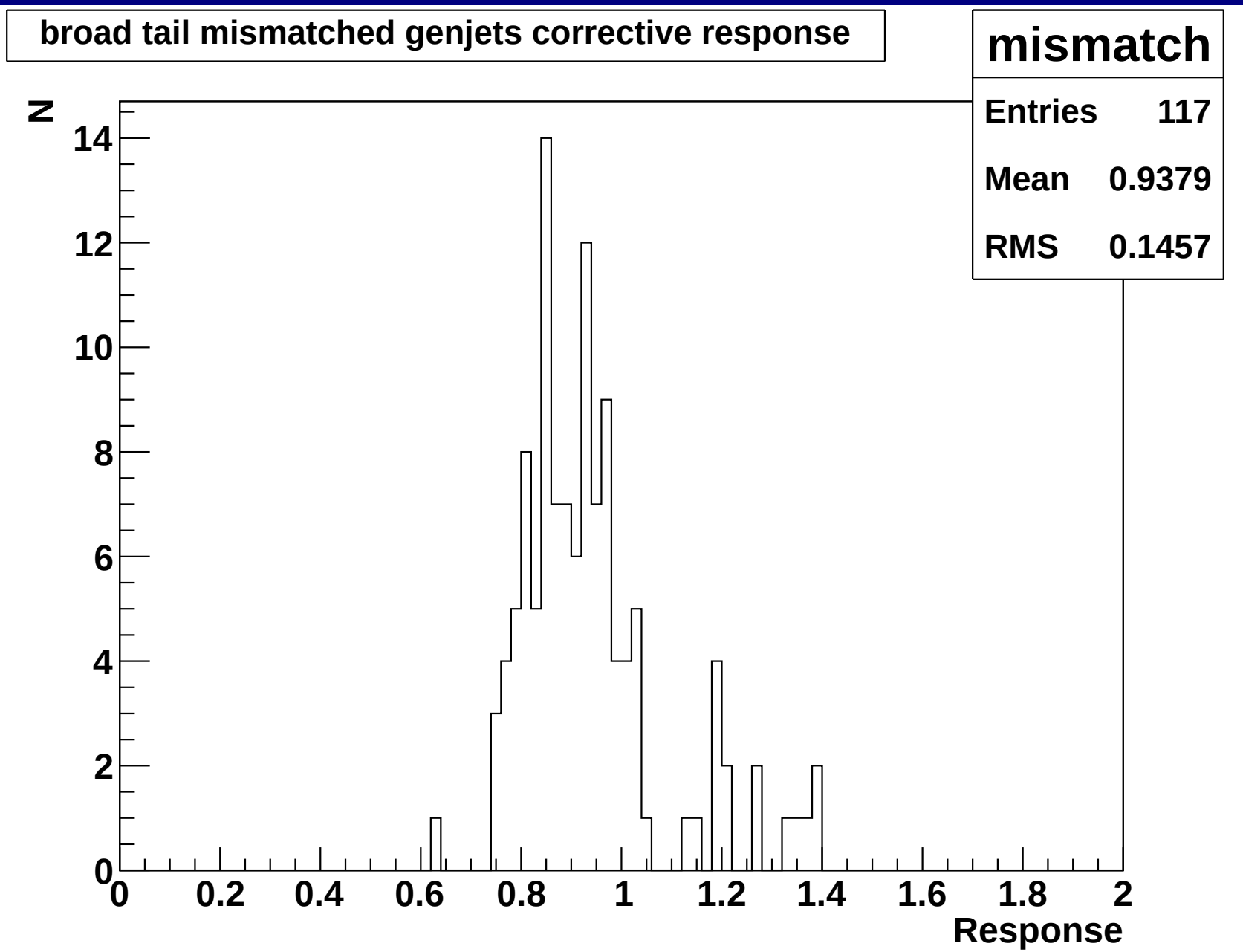

broad gaussian, Δ R
bgausd
Entries 36737
Mean 0.02847
RMS 0.0354
N
Δ R

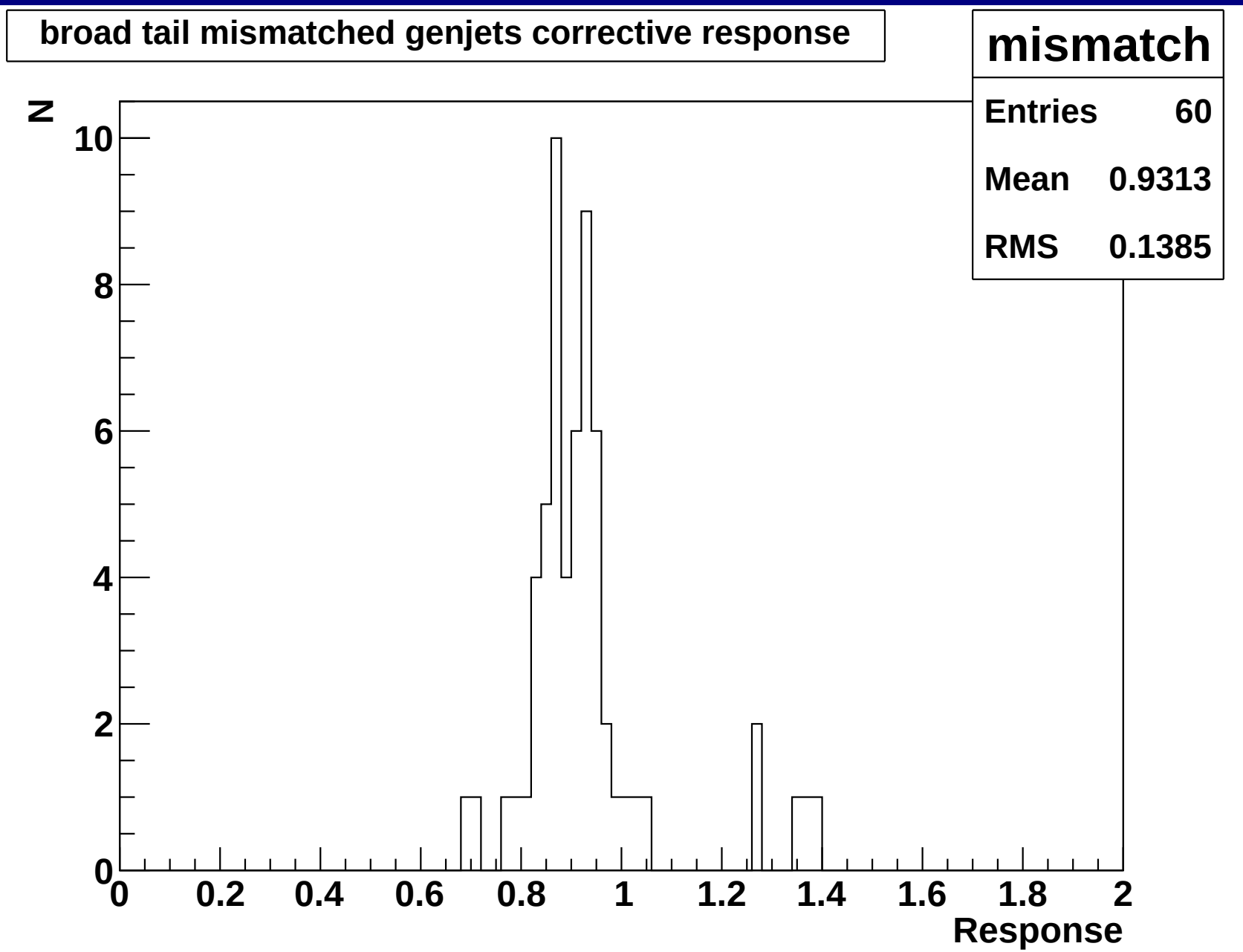

broad tail, Δ R
btaild
Entries 308
Mean 0.08899
RMS 0.07293
N
Δ R

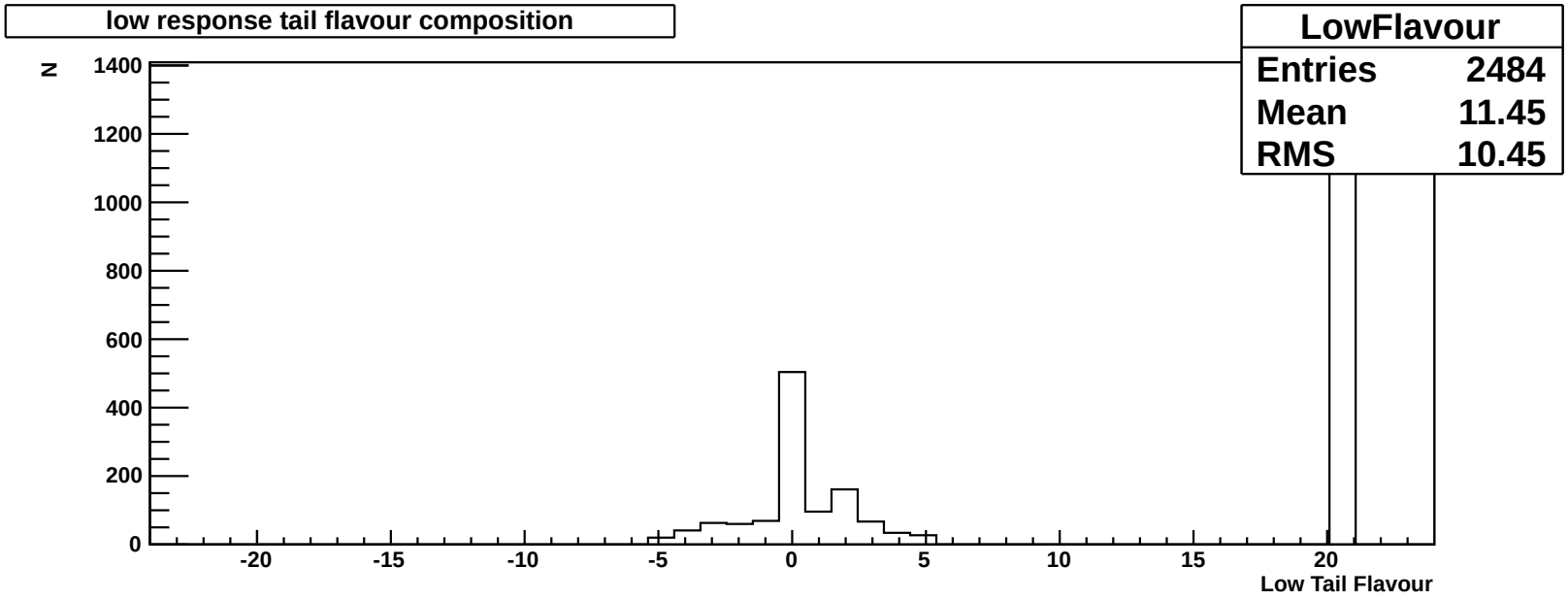

broad gaussian, towers
bgaust
Entries 1152800
Mean x 0.1794
Mean y 5.534
RMS x 0.1092
RMS y 9.877
E
Δ R

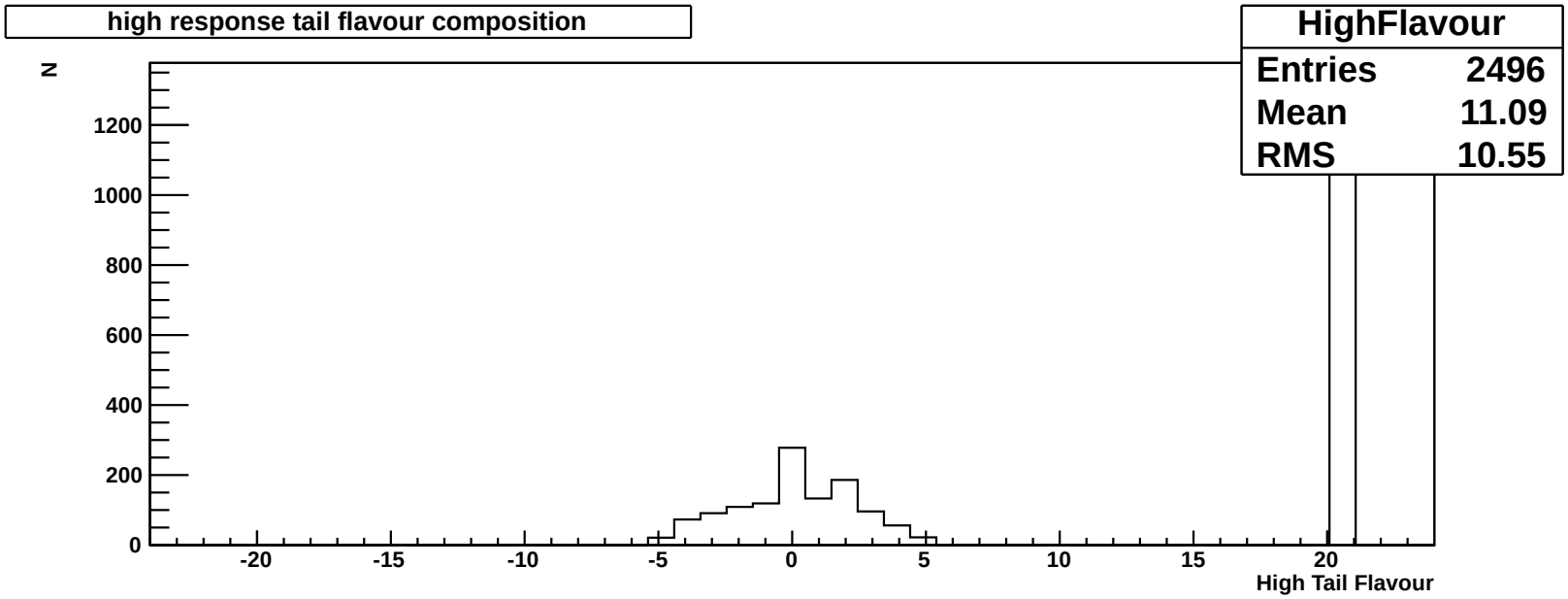

broad tail, towers
btailt
Entries 8937
Mean x 0.2045
Mean y 6.625
RMS x 0.1156
RMS y 11.35
E
Δ R

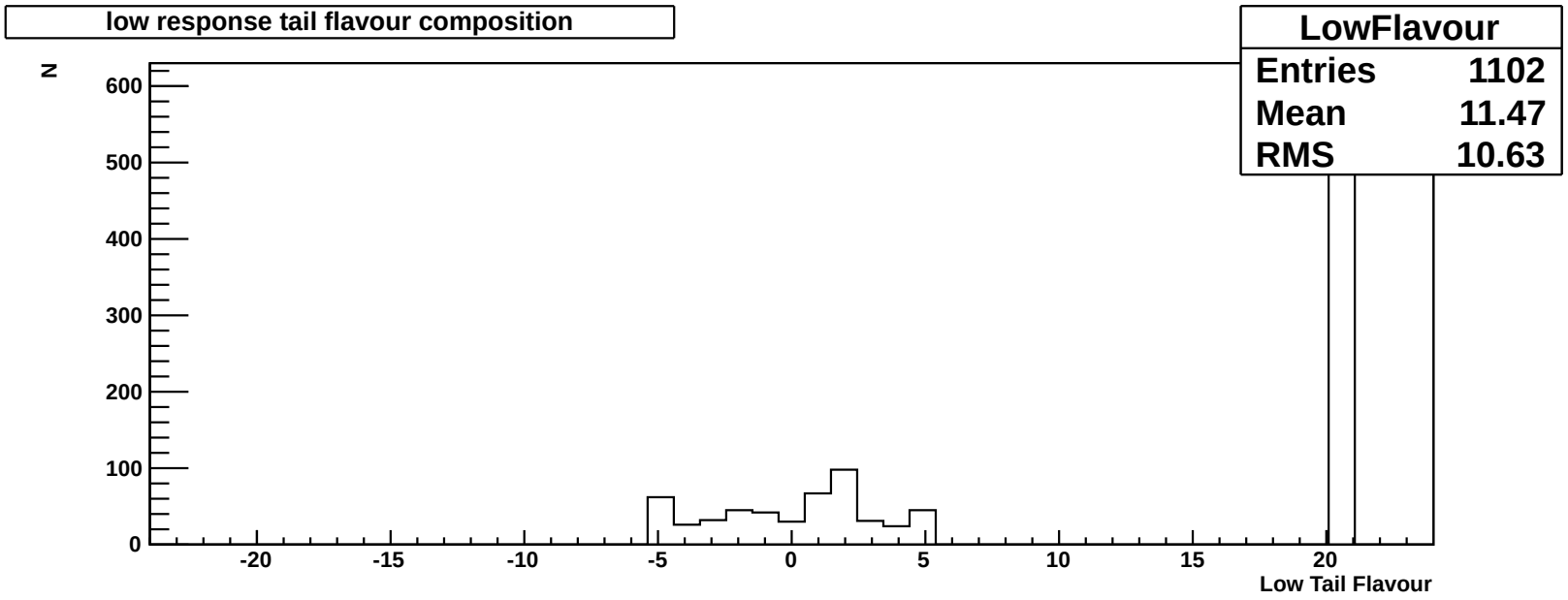

broad tail mismatched genjets corrective response
mismatch
Entries 165
Mean 1.046
RMS 0.1566
N
10
8
6
4
2
0
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Response

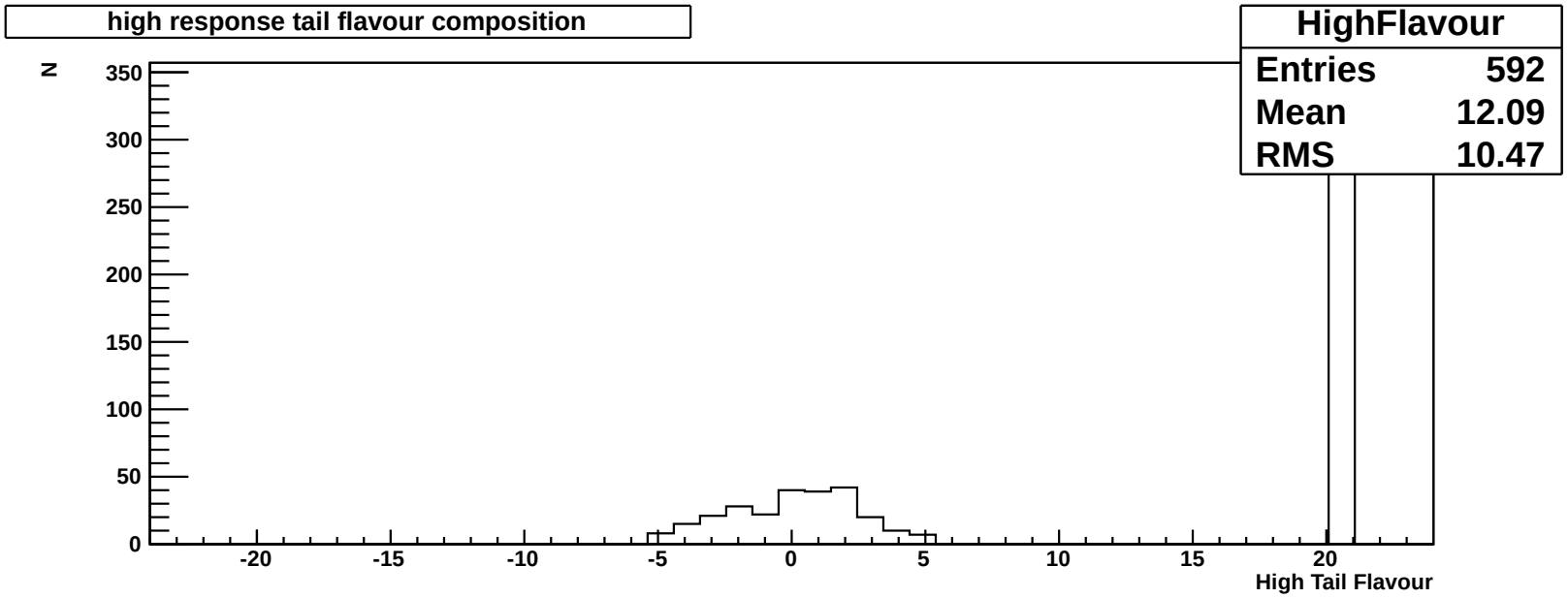

broad tail mismatched genjets corrective response
mismatch
Entries 117
Mean 0.9379
RMS 0.1457
N
0
2
4
6
8
10
12
14
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Response

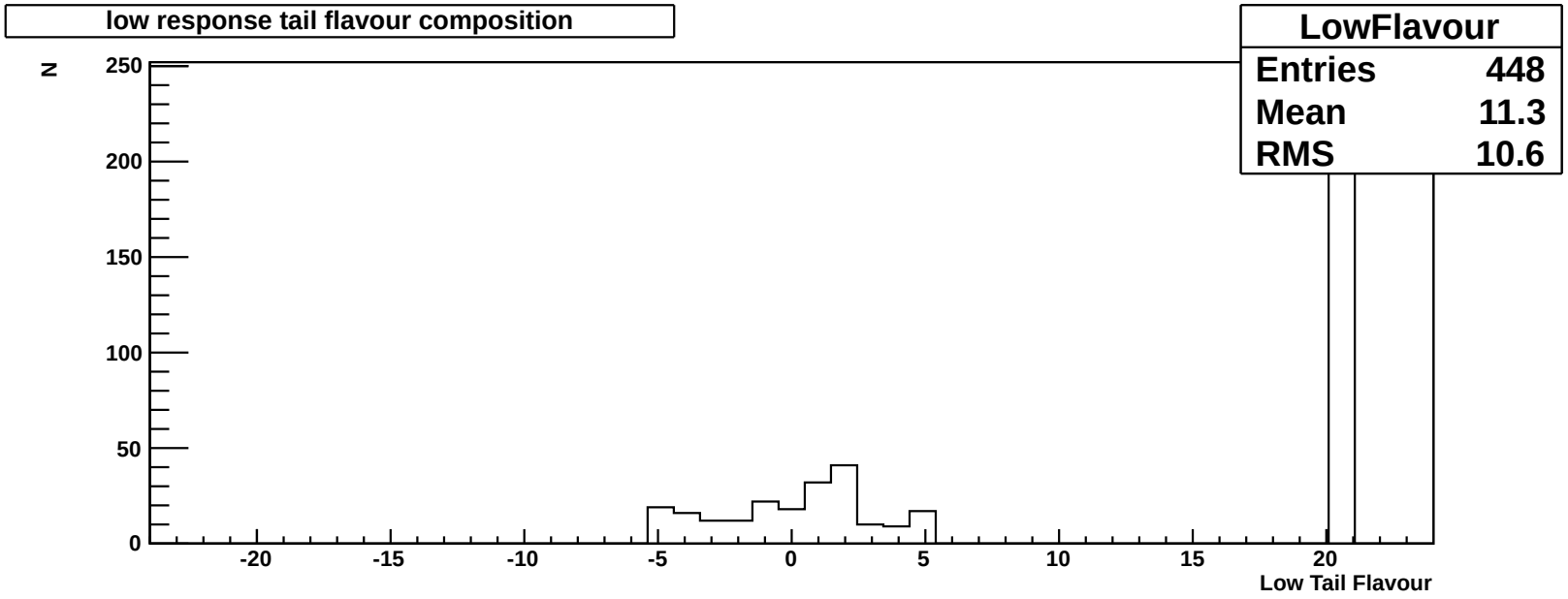

broad tail mismatched genjets corrective response
mismatch
Entries 60
Mean 0.9313
RMS 0.1385
N
10
8
6
4
2
0
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Response

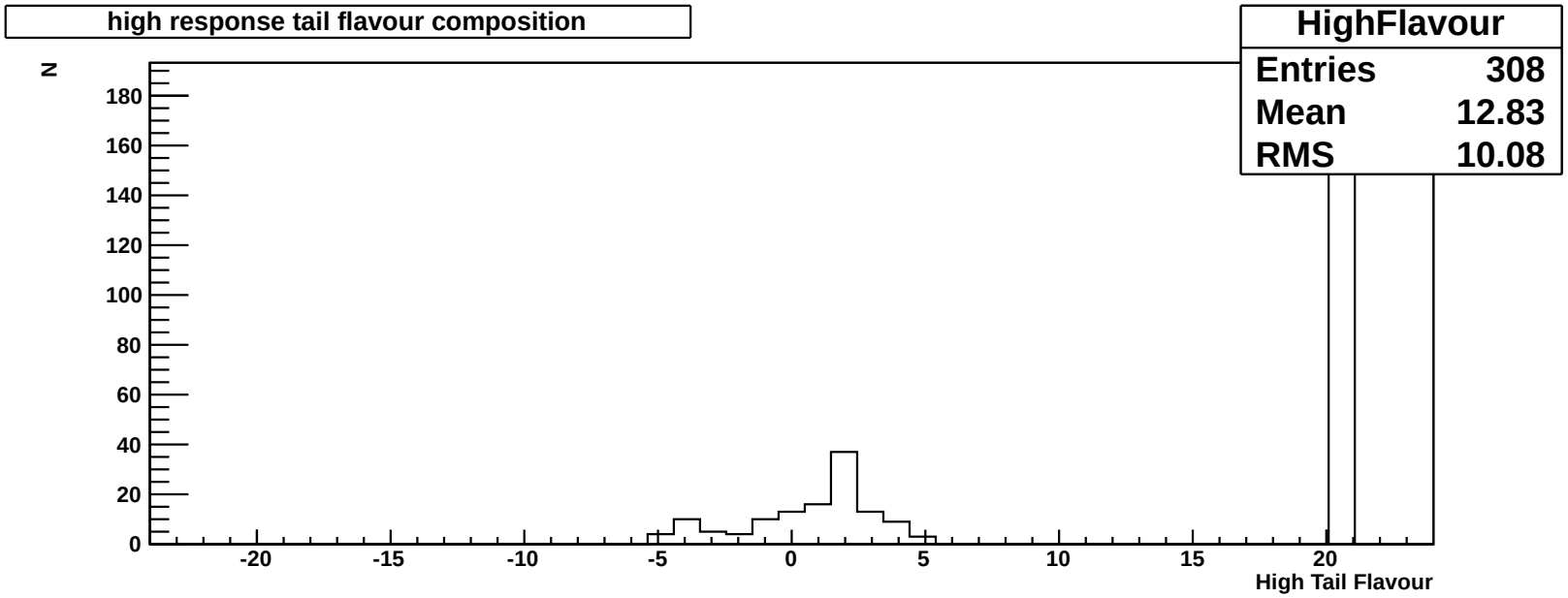

low response tail flavour composition
LowFlavour
Entries 2484
Mean 11.45
RMS 10.45
N
1400
1200
1000
800
600
400
200
0
-20
-15
-10
-5
0
5
10
15
20
Low Tail Flavour


high response tail flavour composition
HighFlavour
Entries 2496
Mean 11.09
RMS 10.55
N
1200
1000
800
600
400
200
0
-20
-15
-10
-5
0
5
10
15
20
High Tail Flavour


low response tail flavour composition
LowFlavour
Entries 1102
Mean 11.47
RMS 10.63
N
600
500
400
300
200
100
0
-20
-15
-10
-5
0
5
10
15
20
Low Tail Flavour


high response tail flavour composition
HighFlavour
Entries 592
Mean 12.09
RMS 10.47
N
350
300
250
200
150
100
50
0
-20
-15
-10
-5
0
5
10
15
20
High Tail Flavour


low response tail flavour composition
LowFlavour
Entries 448
Mean 11.3
RMS 10.6
N
250
200
150
100
50
0
-20
-15
-10
-5
0
5
10
15
20
Low Tail Flavour


high response tail flavour composition
HighFlavour
Entries 308
Mean 12.83
RMS 10.08
N
180
160
140
120
100
80
60
40
20
0
-20
-15
-10
-5
0
5
10
15
20
High Tail Flavour