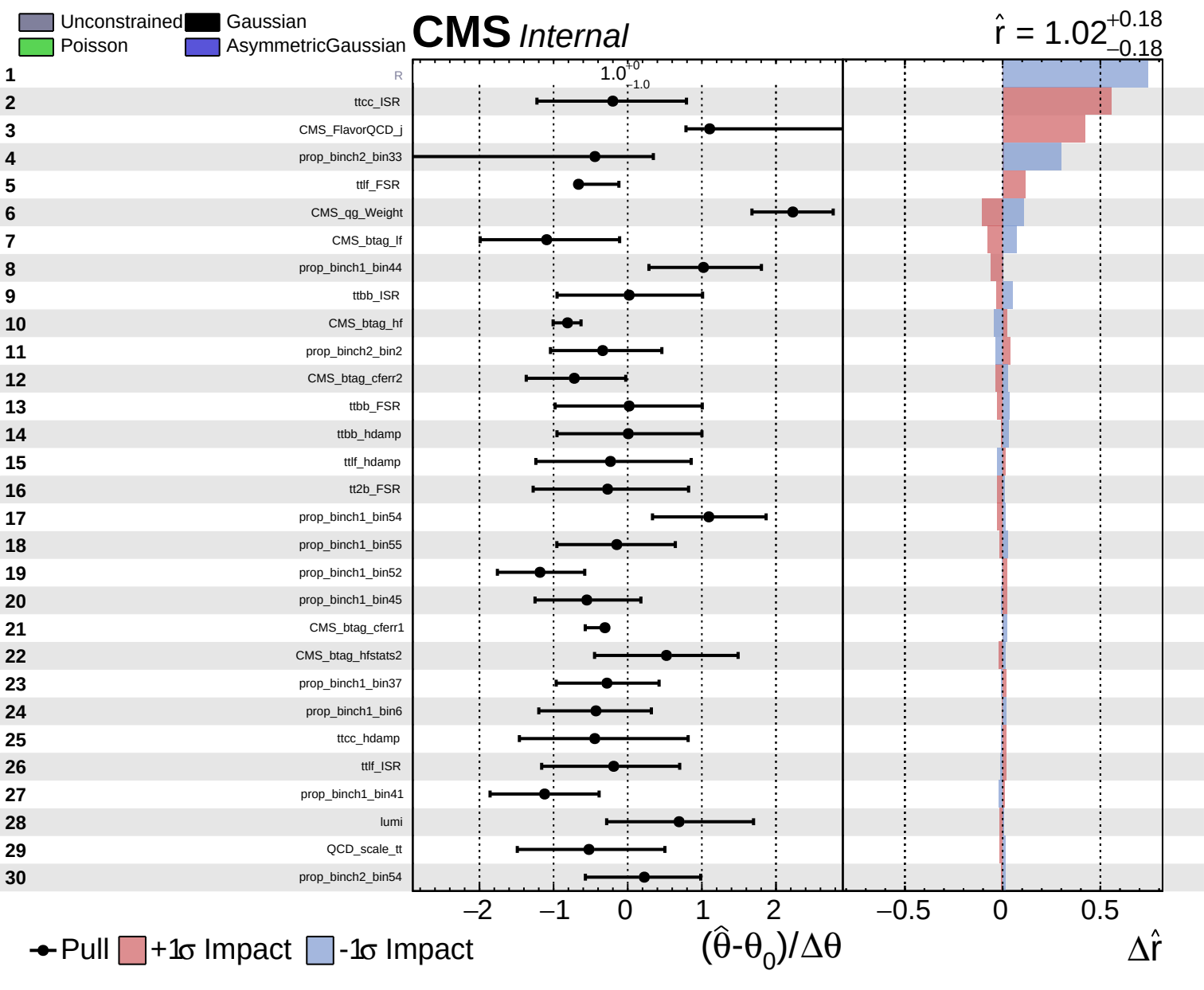
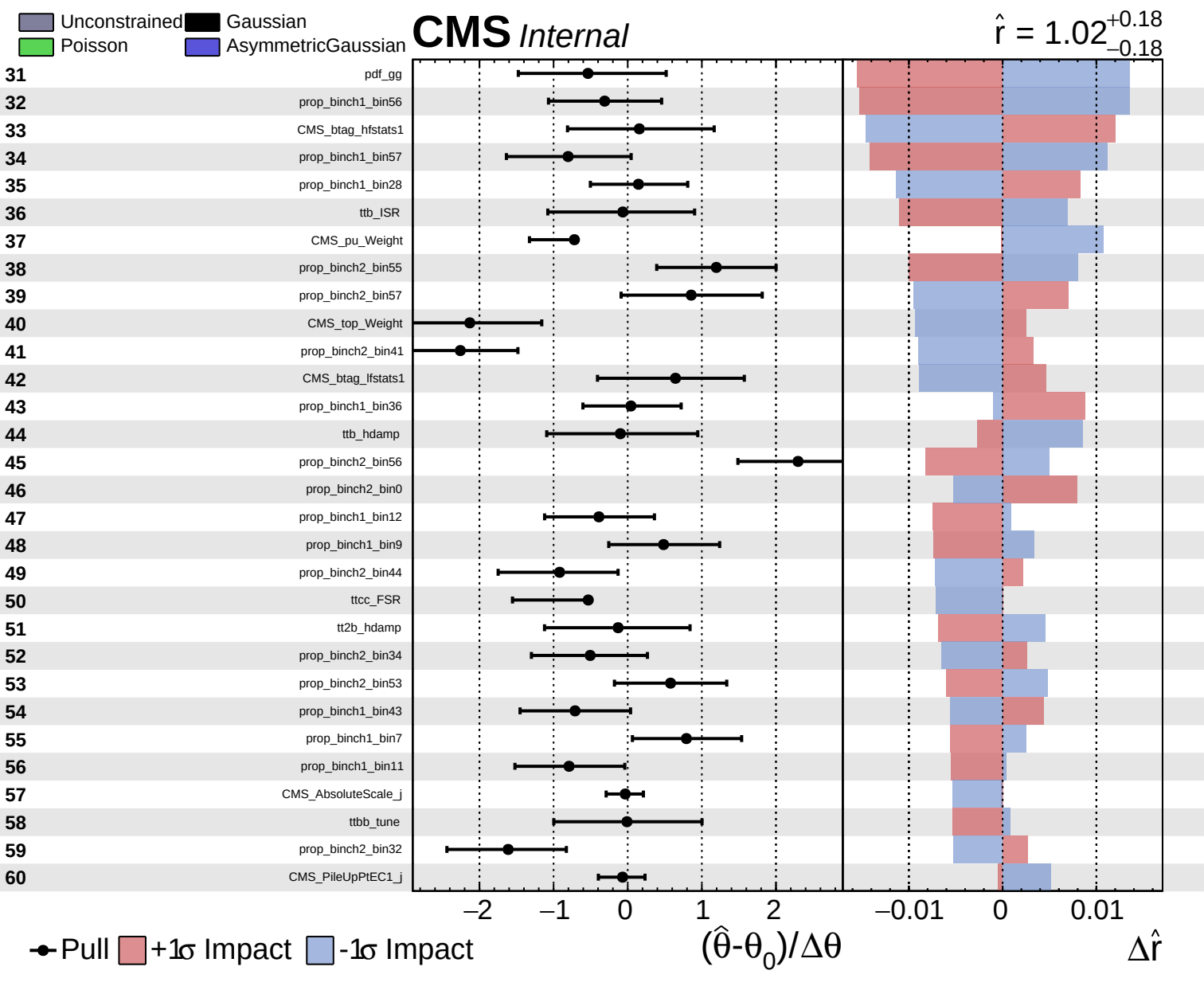
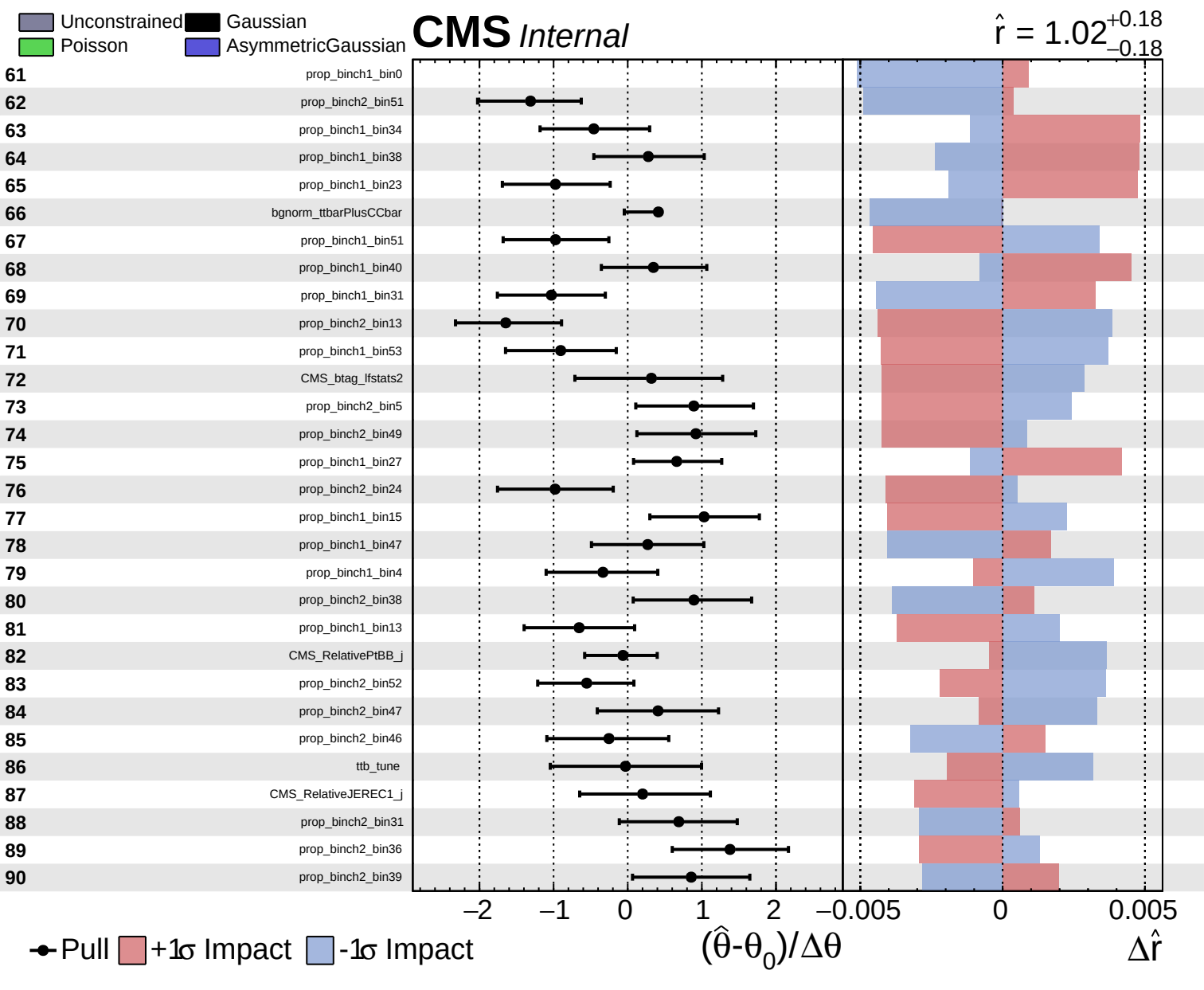
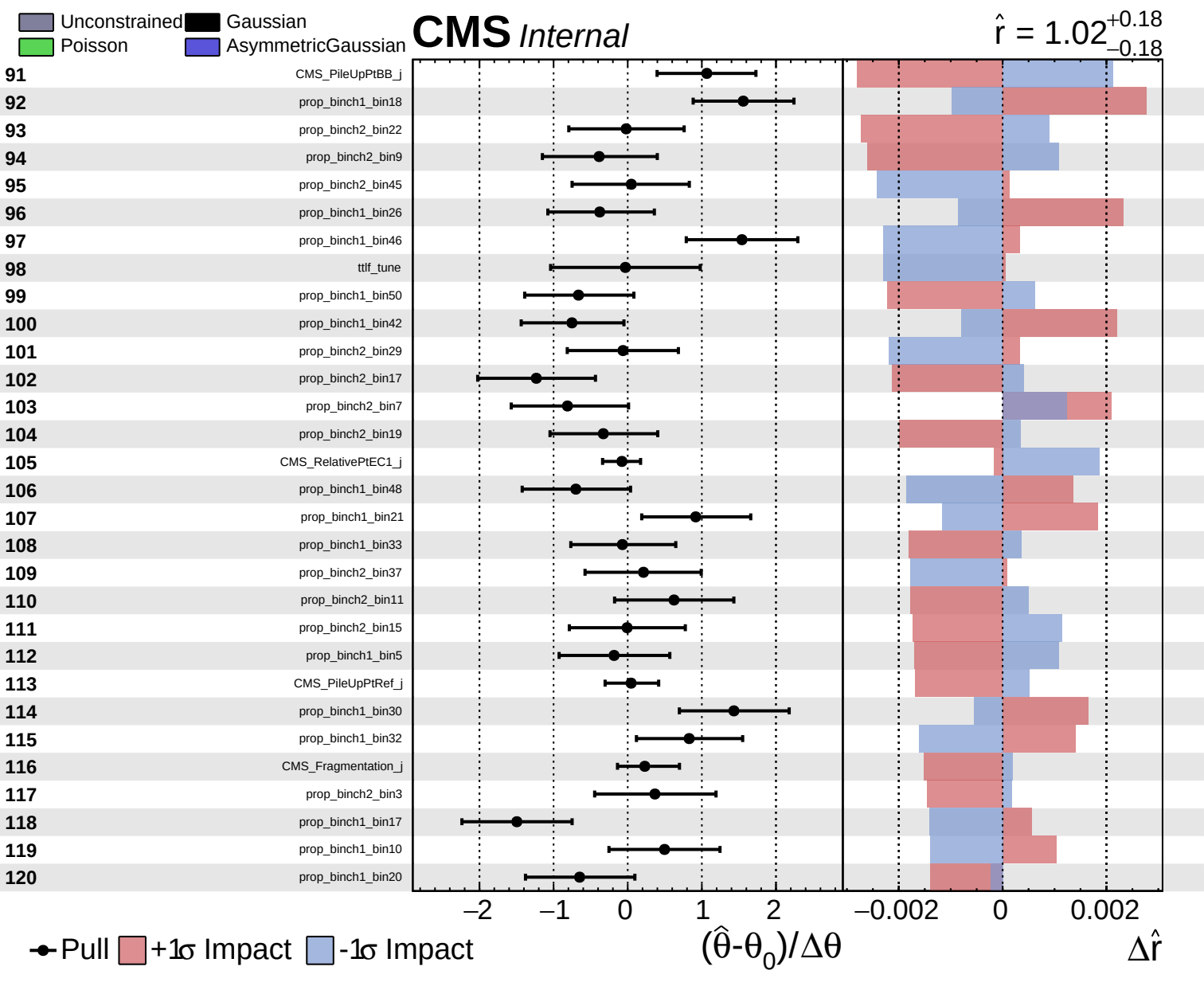
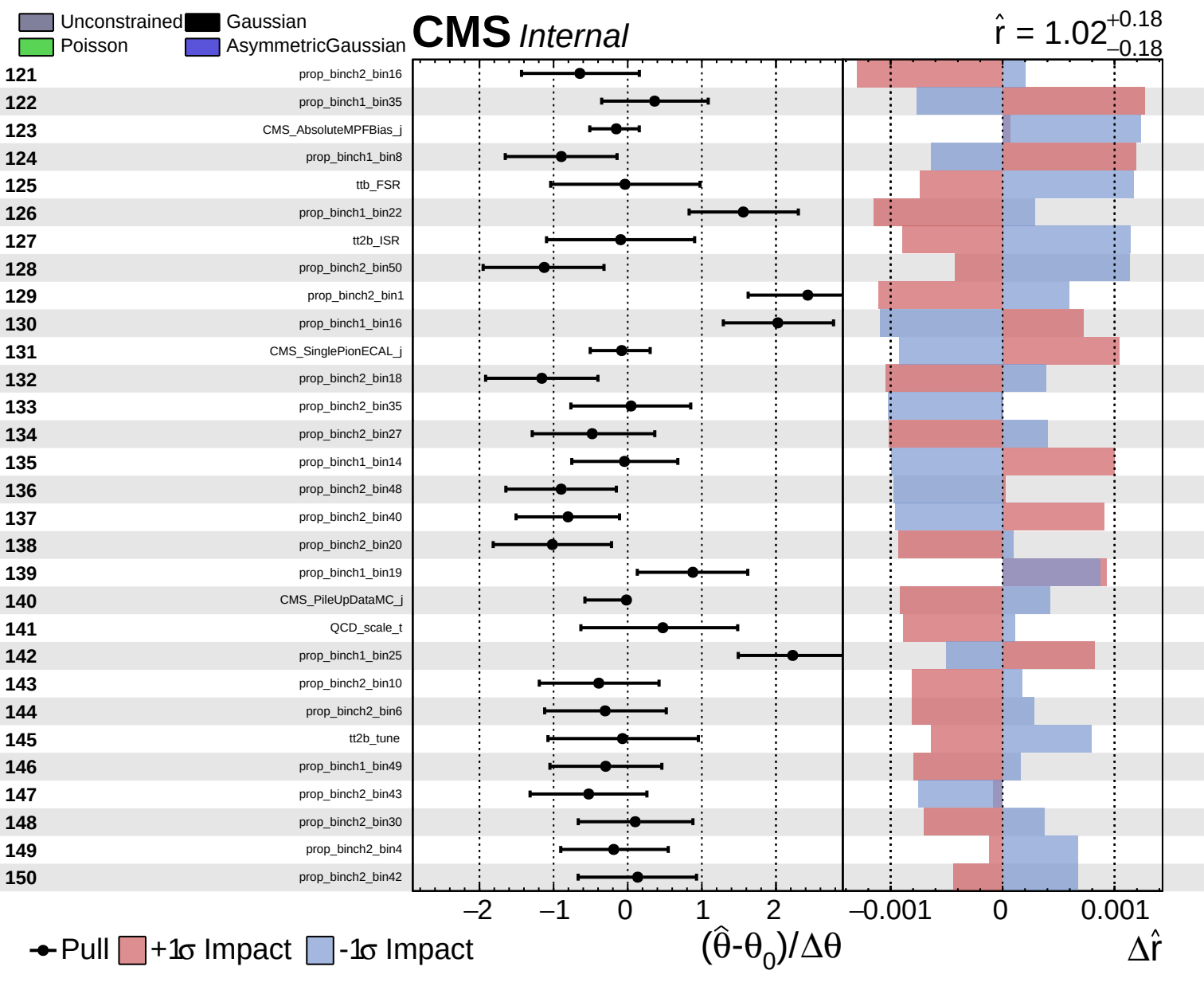
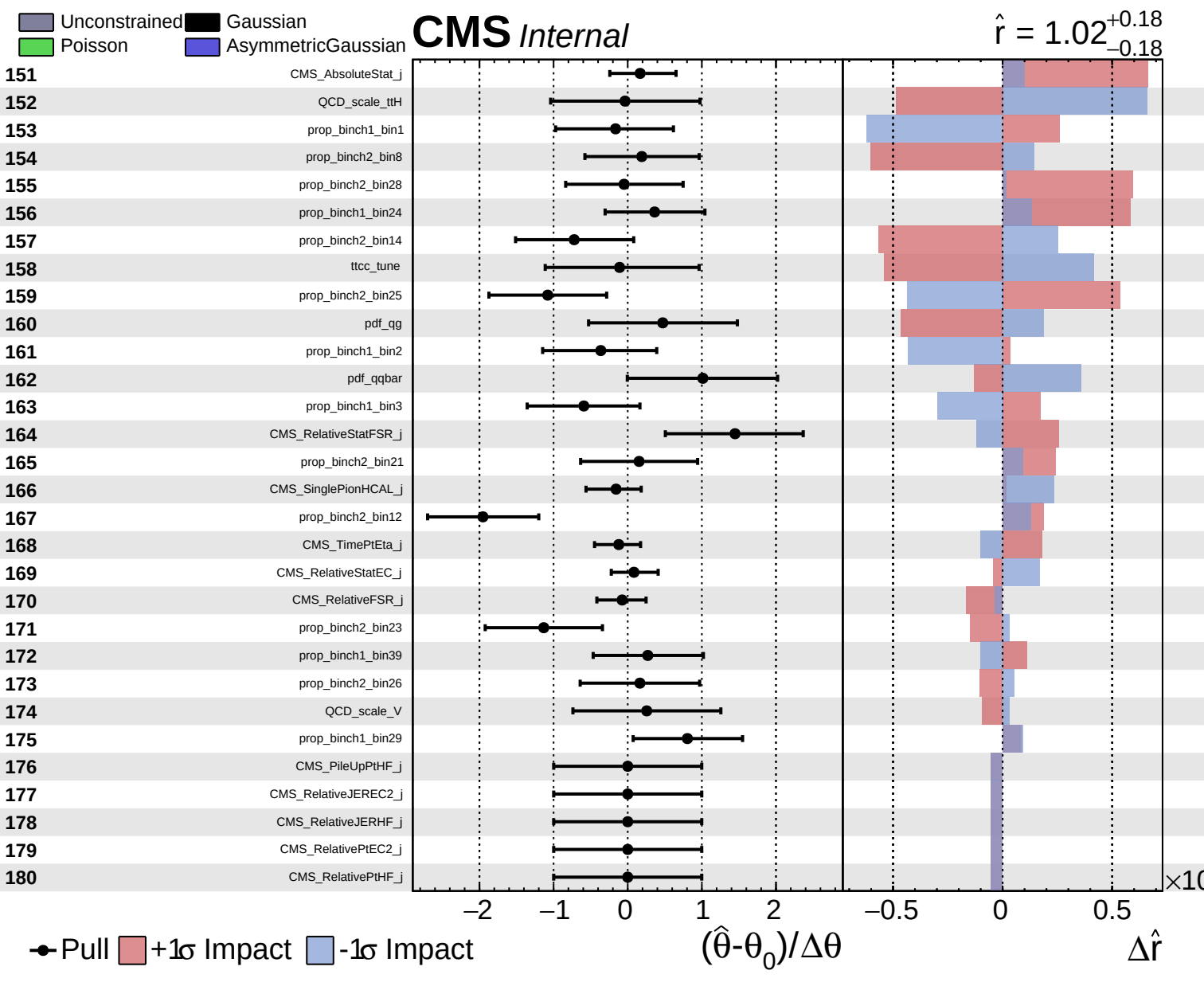

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 1.02 +0.18 −0.18
1 R 1.0 +0 −1.0
2 ttcc_ISR
3 CMS_FlavorQCD_j
4 prop_binch2_bin33
5 ttlf_FSR
6 CMS_qg_Weight
7 CMS_btag_lf
8 prop_binch1_bin44
9 ttbb_ISR
10 CMS_btag_hf
11 prop_binch2_bin2
12 CMS_btag_cferr2
13 ttbb_FSR
14 ttbb_hdamp
15 ttlf_hdamp
16 tt2b_FSR
17 prop_binch1_bin54
18 prop_binch1_bin55
19 prop_binch1_bin52
20 prop_binch1_bin45
21 CMS_btag_cferr1
22 CMS_btag_hfstats2
23 prop_binch1_bin37
24 prop_binch1_bin6
25 ttcc_hdamp
26 ttlf_ISR
27 prop_binch1_bin41
28 lumi
29 QCD_scale_tt
30 prop_binch2_bin54
−2 −1 0 1 2
−0.5 0 0.5
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂

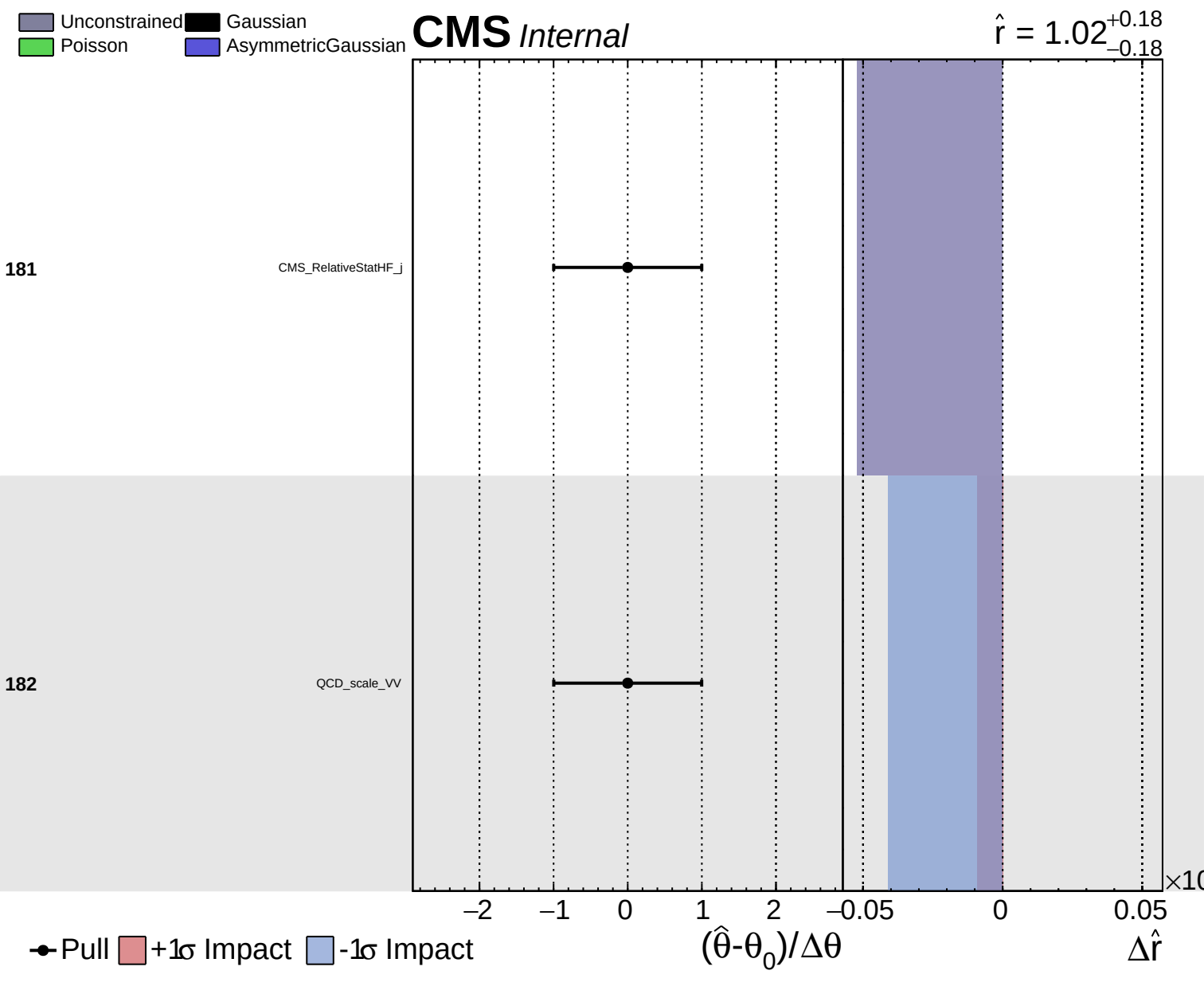

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 1.02 +0.18 −0.18
31 pdf_gg
32 prop_binch1_bin56
33 CMS_btag_hfstats1
34 prop_binch1_bin57
35 prop_binch1_bin28
36 ttb_ISR
37 CMS_pu_Weight
38 prop_binch2_bin55
39 prop_binch2_bin57
40 CMS_top_Weight
41 prop_binch2_bin41
42 CMS_btag_lfstats1
43 prop_binch1_bin36
44 ttb_hdamp
45 prop_binch2_bin56
46 prop_binch2_bin0
47 prop_binch1_bin12
48 prop_binch1_bin9
49 prop_binch2_bin44
50 ttcc_FSR
51 tt2b_hdamp
52 prop_binch2_bin34
53 prop_binch2_bin53
54 prop_binch1_bin43
55 prop_binch1_bin7
56 prop_binch1_bin11
57 CMS_AbsoluteScale_j
58 ttbb_tune
59 prop_binch2_bin32
60 CMS_PileUpPtEC1_j
−2 −1 0 1 2
−0.01 0 0.01
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 1.02 +0.18 −0.18
61 prop_binch1_bin0
62 prop_binch2_bin51
63 prop_binch1_bin34
64 prop_binch1_bin38
65 prop_binch1_bin23
66 bgnorm_ttbarPlusCCbar
67 prop_binch1_bin51
68 prop_binch1_bin40
69 prop_binch1_bin31
70 prop_binch2_bin13
71 prop_binch1_bin53
72 CMS_btag_lfstats2
73 prop_binch2_bin5
74 prop_binch2_bin49
75 prop_binch1_bin27
76 prop_binch2_bin24
77 prop_binch1_bin15
78 prop_binch1_bin47
79 prop_binch1_bin4
80 prop_binch2_bin38
81 prop_binch1_bin13
82 CMS_RelativePtBB_j
83 prop_binch2_bin52
84 prop_binch2_bin47
85 prop_binch2_bin46
86 ttb_tune
87 CMS_RelativeJEREC1_j
88 prop_binch2_bin31
89 prop_binch2_bin36
90 prop_binch2_bin39
−2 −1 0 1 2
−0.005 0 0.005
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 1.02 +0.18 −0.18
91 CMS_PileUpPtBB_j
92 prop_binch1_bin18
93 prop_binch2_bin22
94 prop_binch2_bin9
95 prop_binch2_bin45
96 prop_binch1_bin26
97 prop_binch1_bin46
98 ttlf_tune
99 prop_binch1_bin50
100 prop_binch1_bin42
101 prop_binch2_bin29
102 prop_binch2_bin17
103 prop_binch2_bin7
104 prop_binch2_bin19
105 CMS_RelativePtEC1_j
106 prop_binch1_bin48
107 prop_binch1_bin21
108 prop_binch1_bin33
109 prop_binch2_bin37
110 prop_binch2_bin11
111 prop_binch2_bin15
112 prop_binch1_bin5
113 CMS_PileUpPtRef_j
114 prop_binch1_bin30
115 prop_binch1_bin32
116 CMS_Fragmentation_j
117 prop_binch2_bin3
118 prop_binch1_bin17
119 prop_binch1_bin10
120 prop_binch1_bin20
−2
−1
0
1
2
−0.002
0
0.002
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 1.02 +0.18 −0.18
121 prop_binch2_bin16
122 prop_binch1_bin35
123 CMS_AbsoluteMPFBias_j
124 prop_binch1_bin8
125 ttb_FSR
126 prop_binch1_bin22
127 tt2b_ISR
128 prop_binch2_bin50
129 prop_binch2_bin1
130 prop_binch1_bin16
131 CMS_SinglePionECAL_j
132 prop_binch2_bin18
133 prop_binch2_bin35
134 prop_binch2_bin27
135 prop_binch1_bin14
136 prop_binch2_bin48
137 prop_binch2_bin40
138 prop_binch2_bin20
139 prop_binch1_bin19
140 CMS_PileUpDataMC_j
141 QCD_scale_t
142 prop_binch1_bin25
143 prop_binch2_bin10
144 prop_binch2_bin6
145 tt2b_tune
146 prop_binch1_bin49
147 prop_binch2_bin43
148 prop_binch2_bin30
149 prop_binch2_bin4
150 prop_binch2_bin42
−2 −1 0 1 2
−0.001 0 0.001
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 1.02 +0.18 −0.18
151 CMS_AbsoluteStat_j
152 QCD_scale_ttH
153 prop_binch1_bin1
154 prop_binch2_bin8
155 prop_binch2_bin28
156 prop_binch1_bin24
157 prop_binch2_bin14
158 ttcc_tune
159 prop_binch2_bin25
160 pdf_qg
161 prop_binch1_bin2
162 pdf_qqbar
163 prop_binch1_bin3
164 CMS_RelativeStatFSR_j
165 prop_binch2_bin21
166 CMS_SinglePionHCAL_j
167 prop_binch2_bin12
168 CMS_TimePtEta_j
169 CMS_RelativeStatEC_j
170 CMS_RelativeFSR_j
171 prop_binch2_bin23
172 prop_binch1_bin39
173 prop_binch2_bin26
174 QCD_scale_V
175 prop_binch1_bin29
176 CMS_PileUpPtHF_j
177 CMS_RelativeJEREC2_j
178 CMS_RelativeJERHF_j
179 CMS_RelativePtEC2_j
180 CMS_RelativePtHF_j
−2 −1 0 1 2
−0.5 0 0.5
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
$\hat{r} = 1.02^{+0.18}_{-0.18}$
181
CMS_RelativeStatHF_j
182
QCD_scale_VV
×10
–2
–1
0
1
2
–0.05
0
0.05
Pull
+1σ Impact
-1σ Impact
$(\hat{\theta}-\theta_0)/\Delta\theta$
$\Delta\hat{r}$