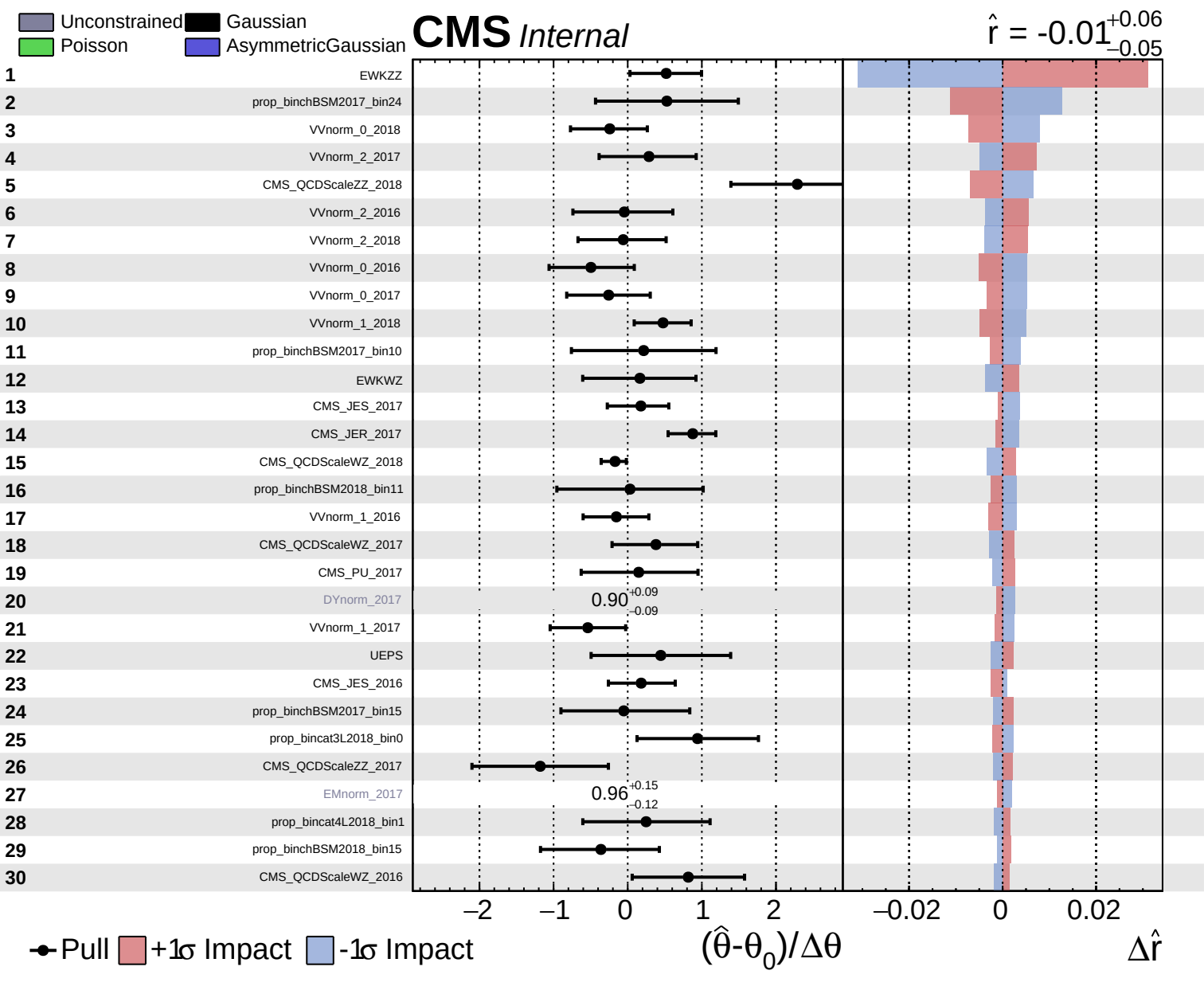
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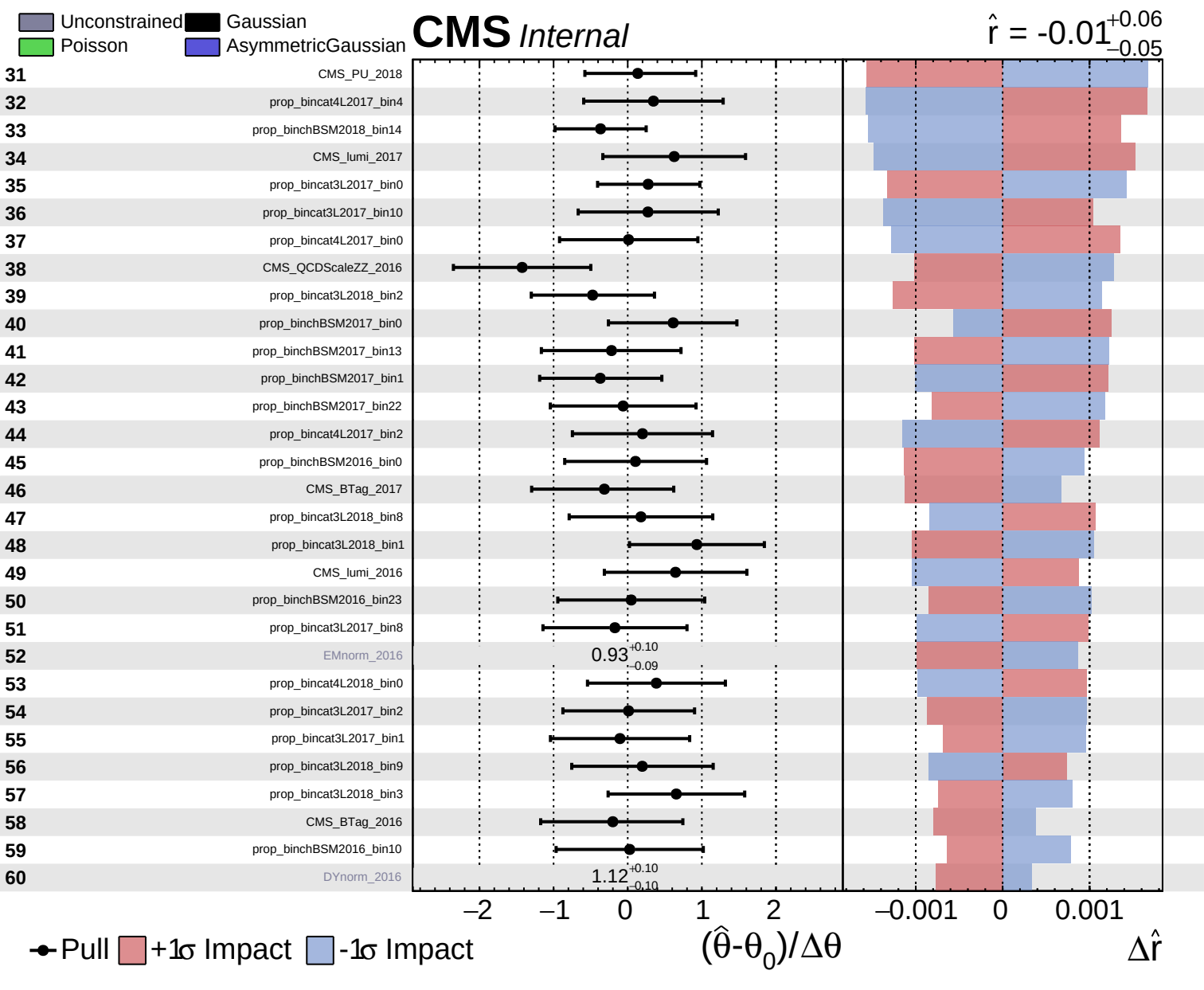
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = -0.01 +0.06 −0.05
1 EWKZZ
2 prop_binchBSM2017_bin24
3 VVnorm_0_2018
4 VVnorm_2_2017
5 CMS_QCDScaleZZ_2018
6 VVnorm_2_2016
7 VVnorm_2_2018
8 VVnorm_0_2016
9 VVnorm_0_2017
10 VVnorm_1_2018
11 prop_binchBSM2017_bin10
12 EWKWZ
13 CMS_JES_2017
14 CMS_JER_2017
15 CMS_QCDScaleWZ_2018
16 prop_binchBSM2018_bin11
17 VVnorm_1_2016
18 CMS_QCDScaleWZ_2017
19 CMS_PU_2017
20 DYnorm_2017
0.90 +0.09 −0.09
21 VVnorm_1_2017
22 UEPS
23 CMS_JES_2016
24 prop_binchBSM2017_bin15
25 prop_bincat3L2018_bin0
26 CMS_QCDScaleZZ_2017
27 EMnorm_2017
0.96 +0.15 −0.12
28 prop_bincat4L2018_bin1
29 prop_binchBSM2018_bin15
30 CMS_QCDScaleWZ_2016
−2 −1 0 1 2
−0.02 0 0.02
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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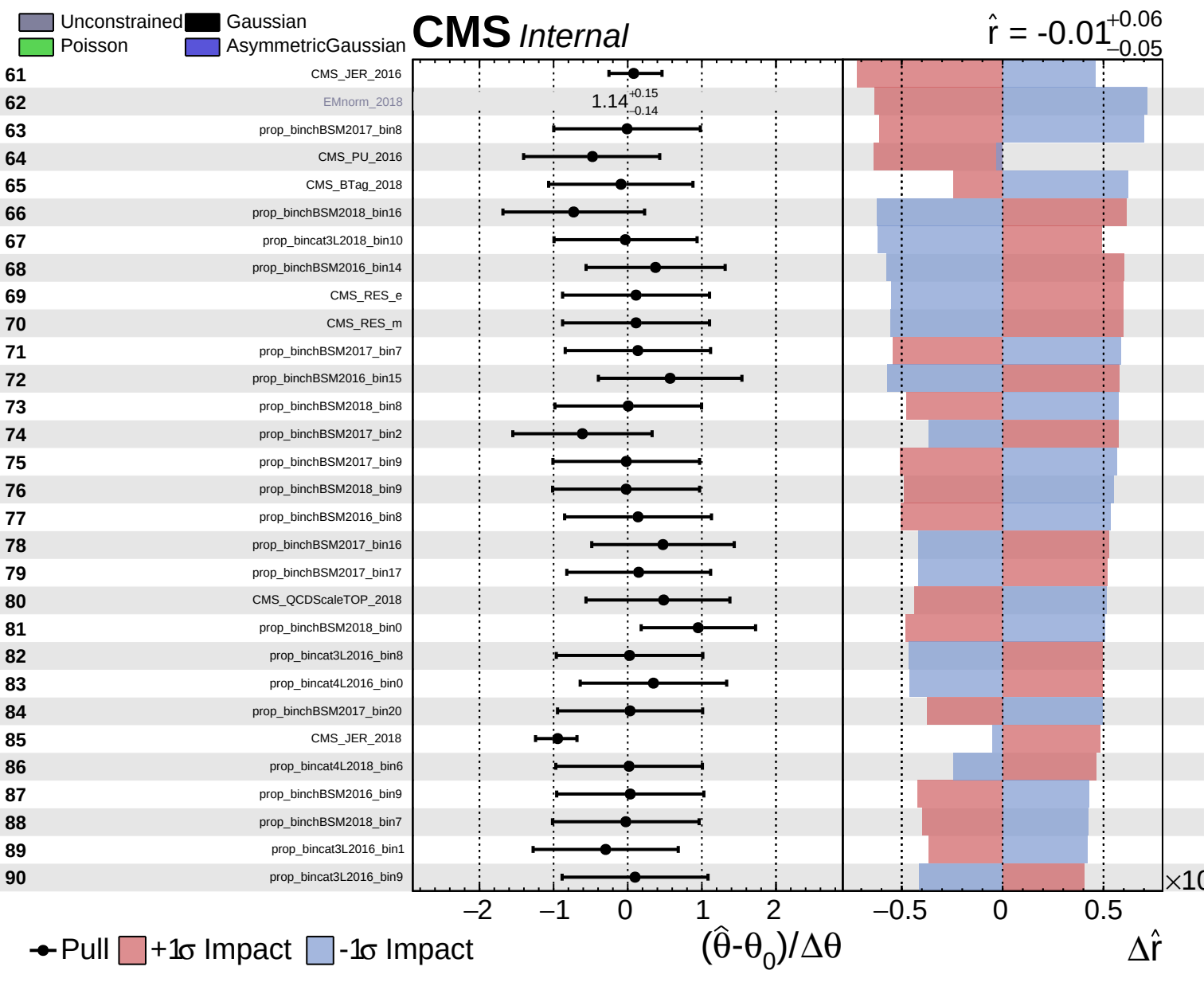
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = -0.01 +0.06 −0.05
31 CMS_PU_2018
32 prop_bincat4L2017_bin4
33 prop_binchBSM2018_bin14
34 CMS_lumi_2017
35 prop_bincat3L2017_bin0
36 prop_bincat3L2017_bin10
37 prop_bincat4L2017_bin0
38 CMS_QCDScaleZZ_2016
39 prop_bincat3L2018_bin2
40 prop_binchBSM2017_bin0
41 prop_binchBSM2017_bin13
42 prop_binchBSM2017_bin1
43 prop_binchBSM2017_bin22
44 prop_bincat4L2017_bin2
45 prop_binchBSM2016_bin0
46 CMS_BTag_2017
47 prop_bincat3L2018_bin8
48 prop_bincat3L2018_bin1
49 CMS_lumi_2016
50 prop_binchBSM2016_bin23
51 prop_bincat3L2017_bin8
52 EMnorm_2016
0.93 +0.10 −0.09
53 prop_bincat4L2018_bin0
54 prop_bincat3L2017_bin2
55 prop_bincat3L2017_bin1
56 prop_bincat3L2018_bin9
57 prop_bincat3L2018_bin3
58 CMS_BTag_2016
59 prop_binchBSM2016_bin10
60 DYnorm_2016
1.12 +0.10 −0.10
−2 −1 0 1 2
−0.001 0 0.001
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂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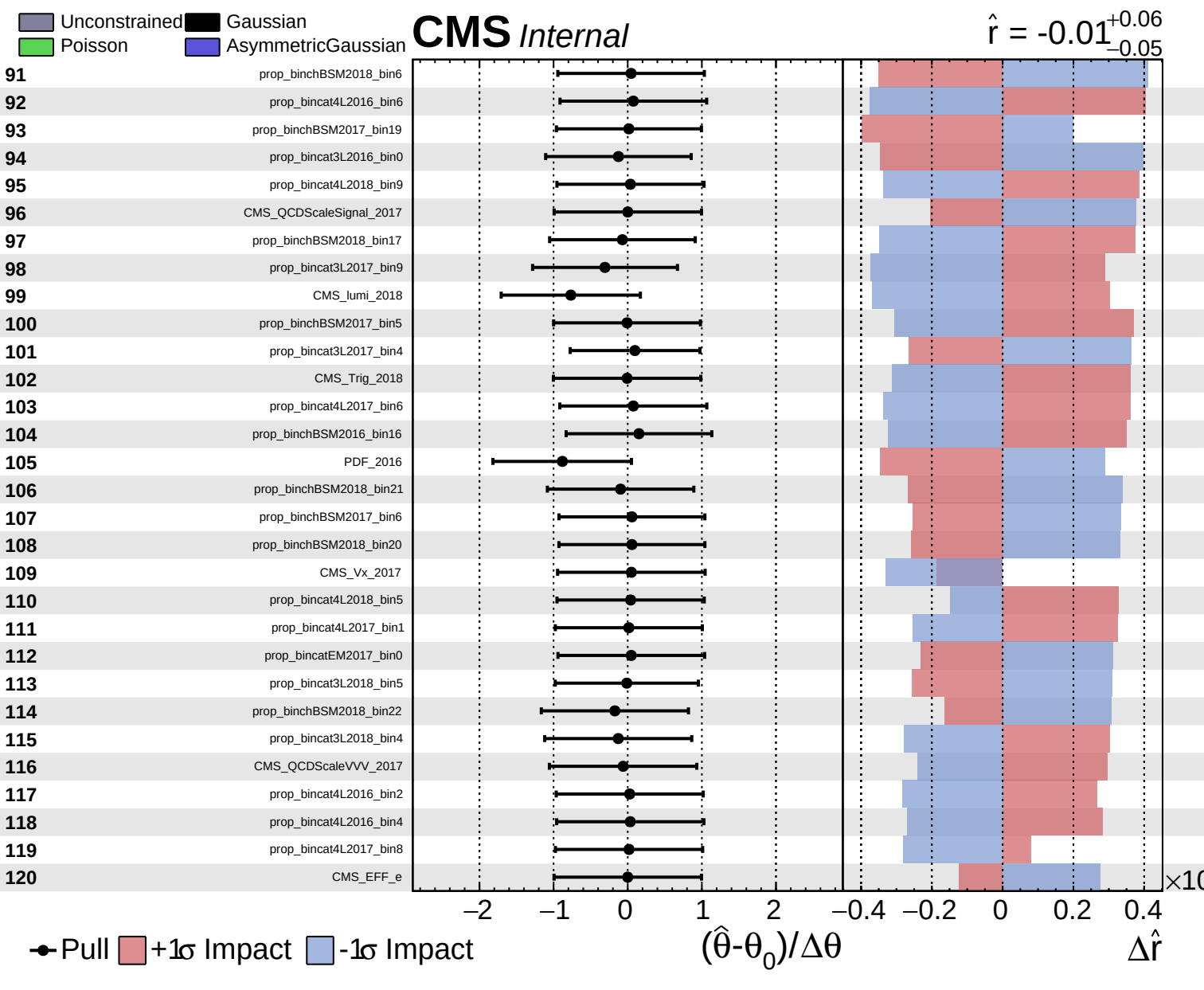
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = -0.01 +0.06 −0.05
1.14 +0.15 −0.14
61 CMS_JER_2016
62 EMnorm_2018
63 prop_binchBSM2017_bin8
64 CMS_PU_2016
65 CMS_BTag_2018
66 prop_binchBSM2018_bin16
67 prop_bincat3L2018_bin10
68 prop_binchBSM2016_bin14
69 CMS_RES_e
70 CMS_RES_m
71 prop_binchBSM2017_bin7
72 prop_binchBSM2016_bin15
73 prop_binchBSM2018_bin8
74 prop_binchBSM2017_bin2
75 prop_binchBSM2017_bin9
76 prop_binchBSM2018_bin9
77 prop_binchBSM2016_bin8
78 prop_binchBSM2017_bin16
79 prop_binchBSM2017_bin17
80 CMS_QCDScaleTOP_2018
81 prop_binchBSM2018_bin0
82 prop_bincat3L2016_bin8
83 prop_bincat4L2016_bin0
84 prop_binchBSM2017_bin20
85 CMS_JER_2018
86 prop_bincat4L2018_bin6
87 prop_binchBSM2016_bin9
88 prop_binchBSM2018_bin7
89 prop_bincat3L2016_bin1
90 prop_bincat3L2016_bin9
−2 −1 0 1 2
−0.5 0 0.5
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂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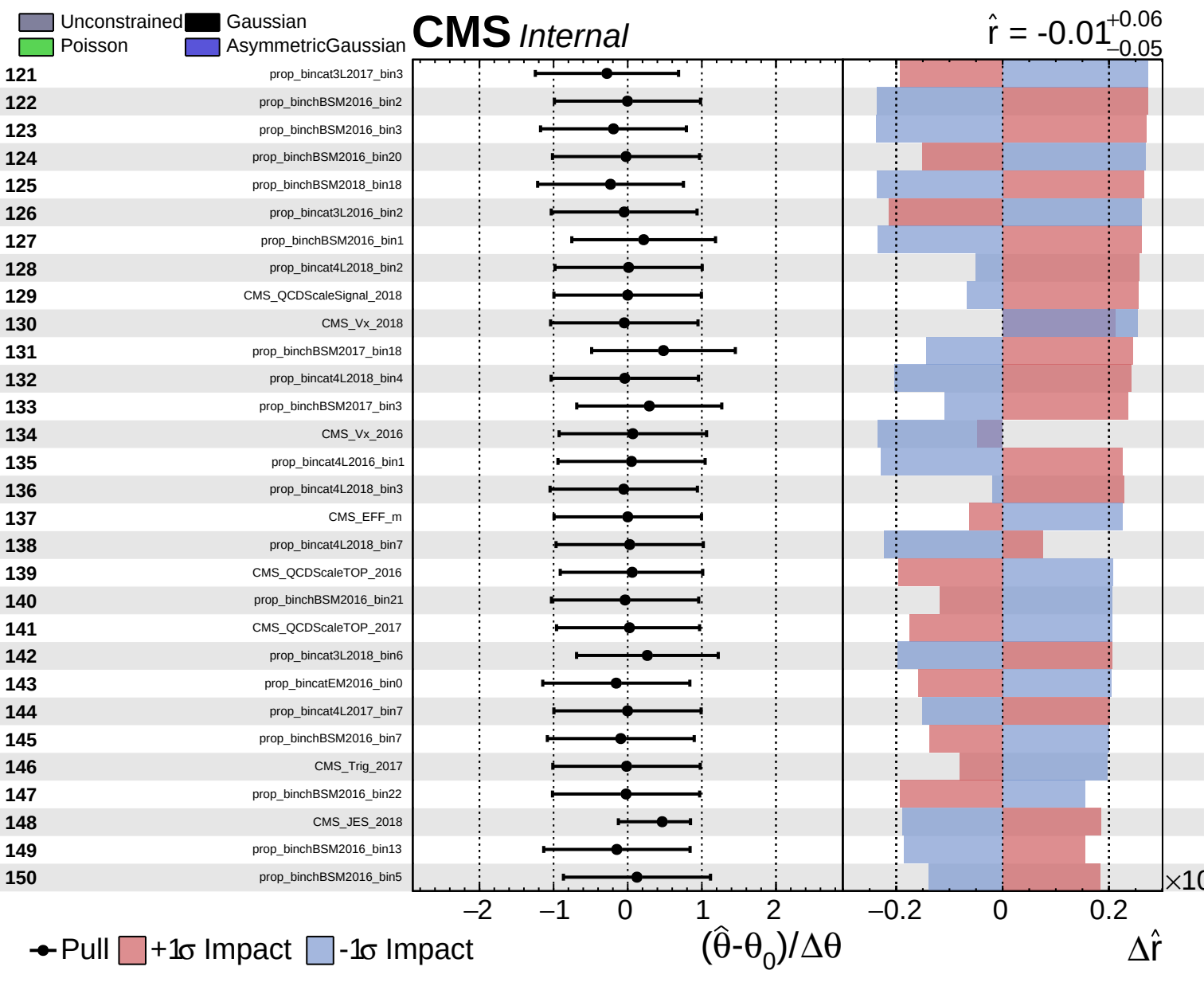
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = -0.01 +0.06 −0.05
91 prop_binchBSM2018_bin6
92 prop_bincat4L2016_bin6
93 prop_binchBSM2017_bin19
94 prop_bincat3L2016_bin0
95 prop_bincat4L2018_bin9
96 CMS_QCDScaleSignal_2017
97 prop_binchBSM2018_bin17
98 prop_bincat3L2017_bin9
99 CMS_lumi_2018
100 prop_binchBSM2017_bin5
101 prop_bincat3L2017_bin4
102 CMS_Trig_2018
103 prop_bincat4L2017_bin6
104 prop_binchBSM2016_bin16
105 PDF_2016
106 prop_binchBSM2018_bin21
107 prop_binchBSM2017_bin6
108 prop_binchBSM2018_bin20
109 CMS_Vx_2017
110 prop_bincat4L2018_bin5
111 prop_bincat4L2017_bin1
112 prop_bincatEM2017_bin0
113 prop_bincat3L2018_bin5
114 prop_binchBSM2018_bin22
115 prop_bincat3L2018_bin4
116 CMS_QCDScaleVVV_2017
117 prop_bincat4L2016_bin2
118 prop_bincat4L2016_bin4
119 prop_bincat4L2017_bin8
120 CMS_EFF_e
−2 −1 0 1 2
−0.4 −0.2 0 0.2 0.4
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂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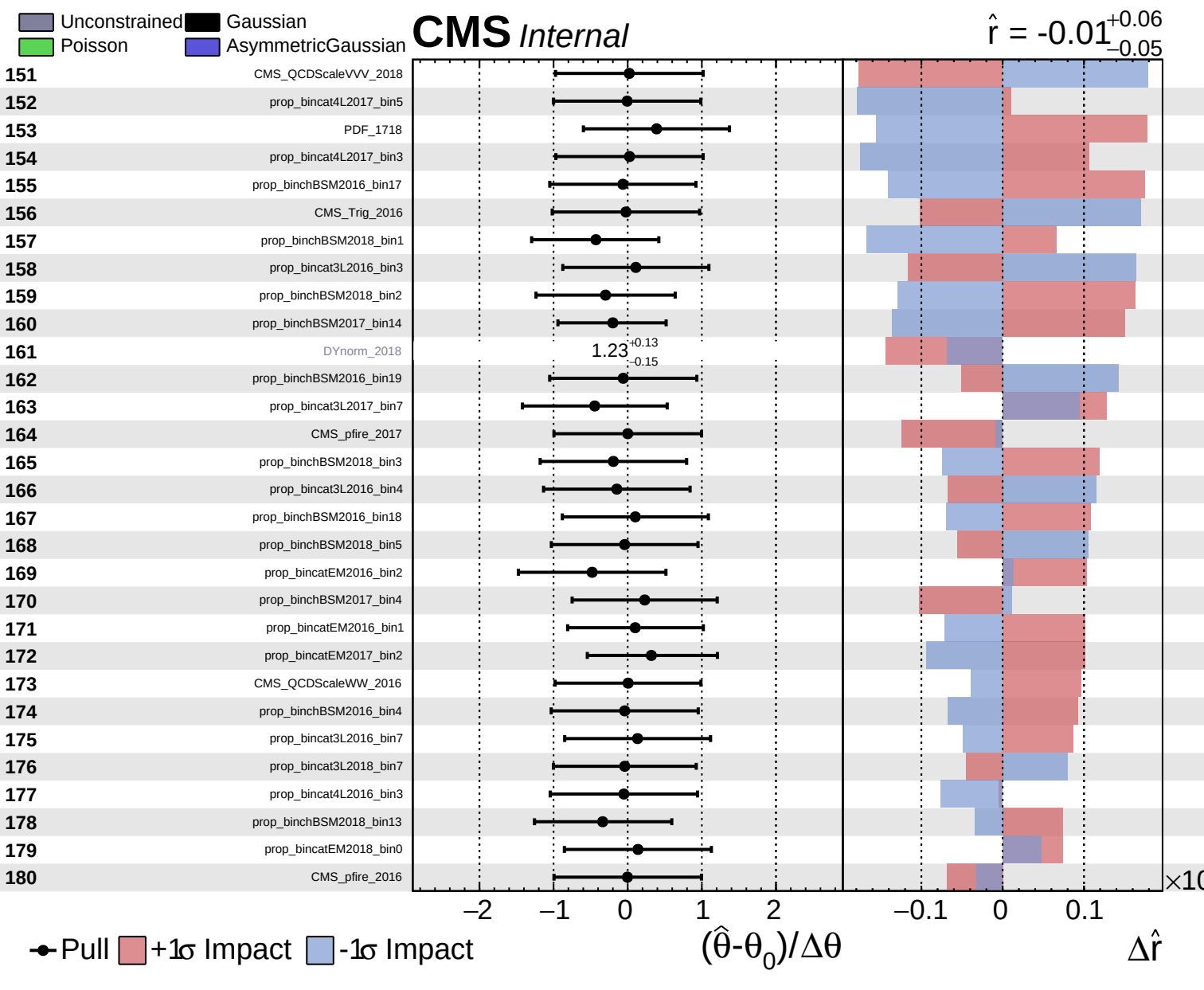
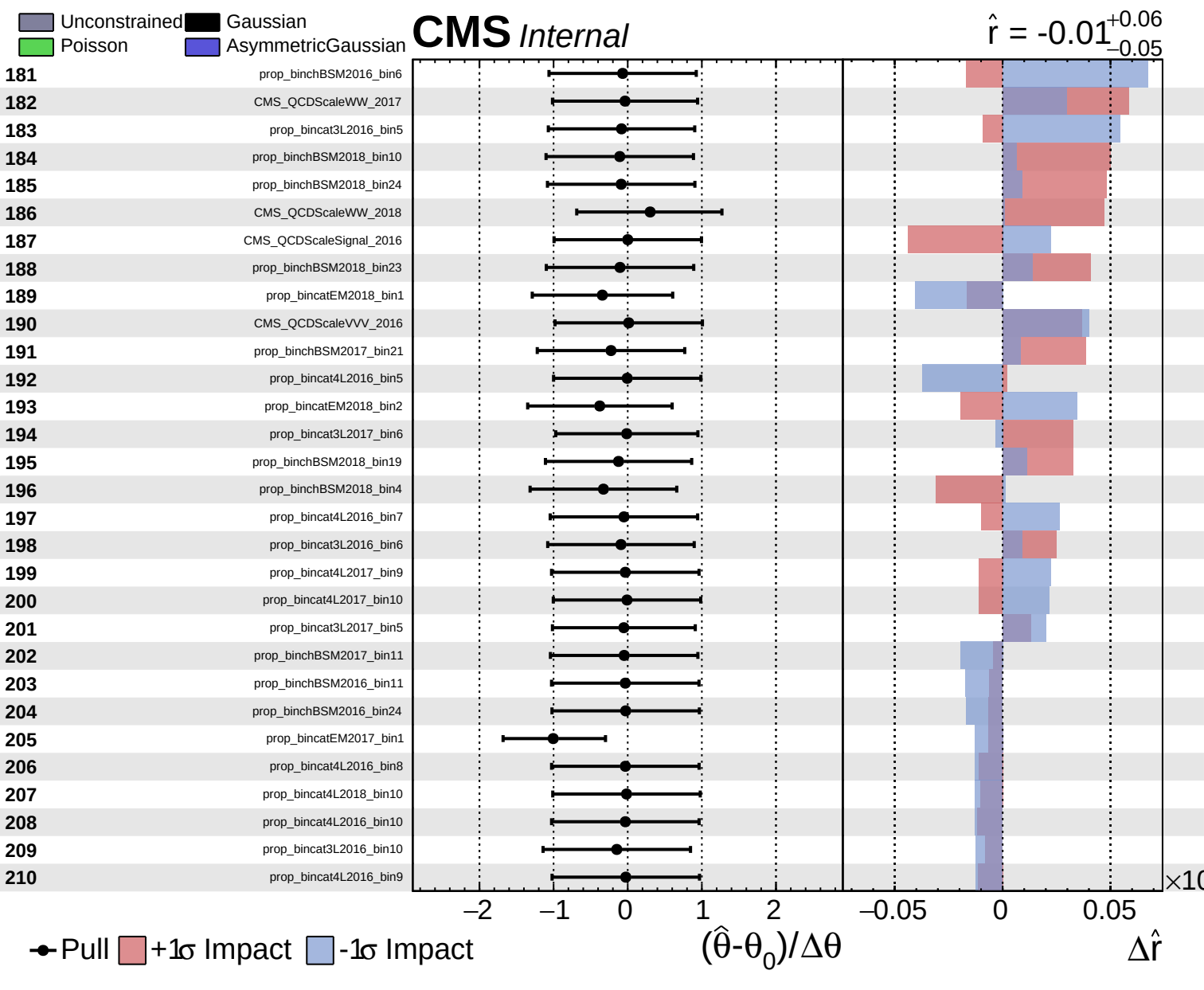
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = -0.01 +0.06 −0.05
121 prop_bincat3L2017_bin3
122 prop_binchBSM2016_bin2
123 prop_binchBSM2016_bin3
124 prop_binchBSM2016_bin20
125 prop_binchBSM2018_bin18
126 prop_bincat3L2016_bin2
127 prop_binchBSM2016_bin1
128 prop_bincat4L2018_bin2
129 CMS_QCDScaleSignal_2018
130 CMS_Vx_2018
131 prop_binchBSM2017_bin18
132 prop_bincat4L2018_bin4
133 prop_binchBSM2017_bin3
134 CMS_Vx_2016
135 prop_bincat4L2016_bin1
136 prop_bincat4L2018_bin3
137 CMS_EFF_m
138 prop_bincat4L2018_bin7
139 CMS_QCDScaleTOP_2016
140 prop_binchBSM2016_bin21
141 CMS_QCDScaleTOP_2017
142 prop_bincat3L2018_bin6
143 prop_bincatEM2016_bin0
144 prop_bincat4L2017_bin7
145 prop_binchBSM2016_bin7
146 CMS_Trig_2017
147 prop_binchBSM2016_bin22
148 CMS_JES_2018
149 prop_binchBSM2016_bin13
150 prop_binchBSM2016_bin5
×10
−2
−1
0
1
2
−0.2
0
0.2
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = -0.01 +0.06 −0.05
151 CMS_QCDScaleVVV_2018
152 prop_bincat4L2017_bin5
153 PDF_1718
154 prop_bincat4L2017_bin3
155 prop_binchBSM2016_bin17
156 CMS_Trig_2016
157 prop_binchBSM2018_bin1
158 prop_bincat3L2016_bin3
159 prop_binchBSM2018_bin2
160 prop_binchBSM2017_bin14
161 DYnorm_2018
1.23 +0.13 −0.15
162 prop_binchBSM2016_bin19
163 prop_bincat3L2017_bin7
164 CMS_pfire_2017
165 prop_binchBSM2018_bin3
166 prop_bincat3L2016_bin4
167 prop_binchBSM2016_bin18
168 prop_binchBSM2018_bin5
169 prop_bincatEM2016_bin2
170 prop_binchBSM2017_bin4
171 prop_bincatEM2016_bin1
172 prop_bincatEM2017_bin2
173 CMS_QCDScaleWW_2016
174 prop_binchBSM2016_bin4
175 prop_bincat3L2016_bin7
176 prop_bincat3L2018_bin7
177 prop_bincat4L2016_bin3
178 prop_binchBSM2018_bin13
179 prop_bincatEM2018_bin0
180 CMS_pfire_2016
−2 −1 0 1 2
−0.1 0 0.1
×10
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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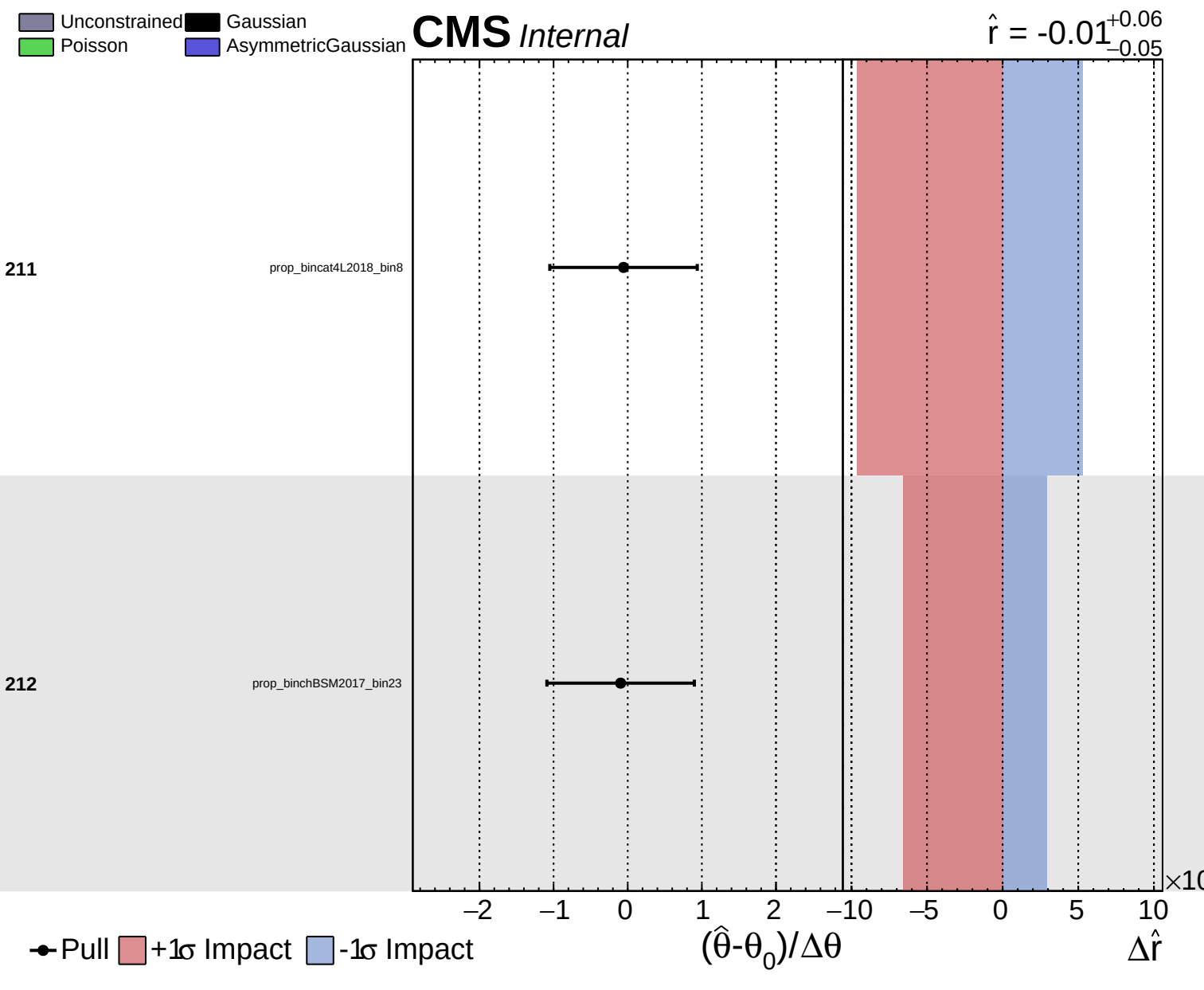
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = -0.01 +0.06 −0.05
181 prop_binchBSM2016_bin6
182 CMS_QCDScaleWW_2017
183 prop_bincat3L2016_bin5
184 prop_binchBSM2018_bin10
185 prop_binchBSM2018_bin24
186 CMS_QCDScaleWW_2018
187 CMS_QCDScaleSignal_2016
188 prop_binchBSM2018_bin23
189 prop_bincatEM2018_bin1
190 CMS_QCDScaleVVV_2016
191 prop_binchBSM2017_bin21
192 prop_bincat4L2016_bin5
193 prop_bincatEM2018_bin2
194 prop_bincat3L2017_bin6
195 prop_binchBSM2018_bin19
196 prop_binchBSM2018_bin4
197 prop_bincat4L2016_bin7
198 prop_bincat3L2016_bin6
199 prop_bincat4L2017_bin9
200 prop_bincat4L2017_bin10
201 prop_bincat3L2017_bin5
202 prop_binchBSM2017_bin11
203 prop_binchBSM2016_bin11
204 prop_binchBSM2016_bin24
205 prop_bincatEM2017_bin1
206 prop_bincat4L2016_bin8
207 prop_bincat4L2018_bin10
208 prop_bincat4L2016_bin10
209 prop_bincat3L2016_bin10
210 prop_bincat4L2016_bin9
−2 −1 0 1 2
−0.05 0 0.05
×10
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = -0.01 +0.06 −0.05
211
prop_bincat4L2018_bin8
212
prop_binchBSM2017_bin23
−2
−1
0
1
2
−10
−5
0
5
10
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂