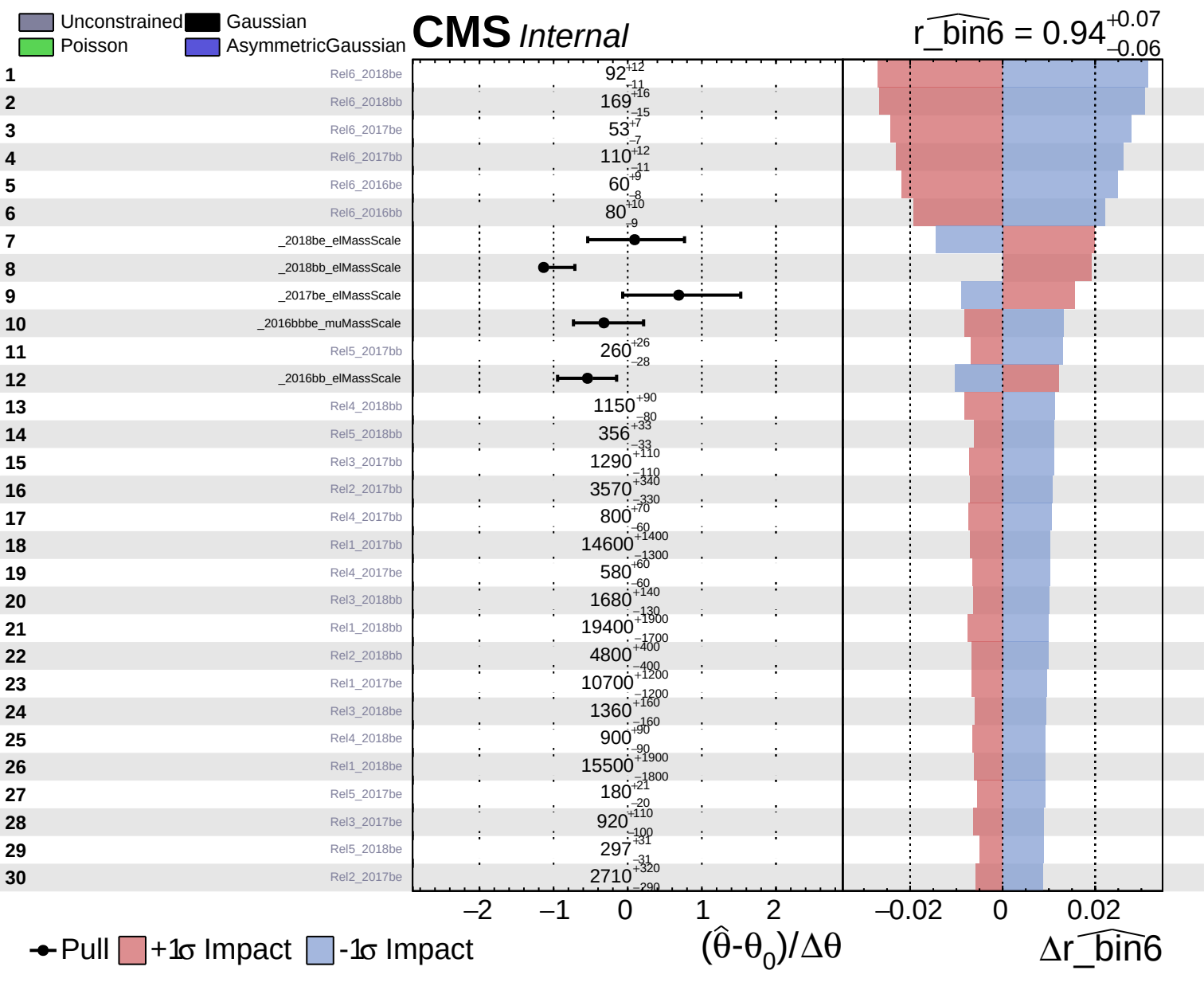
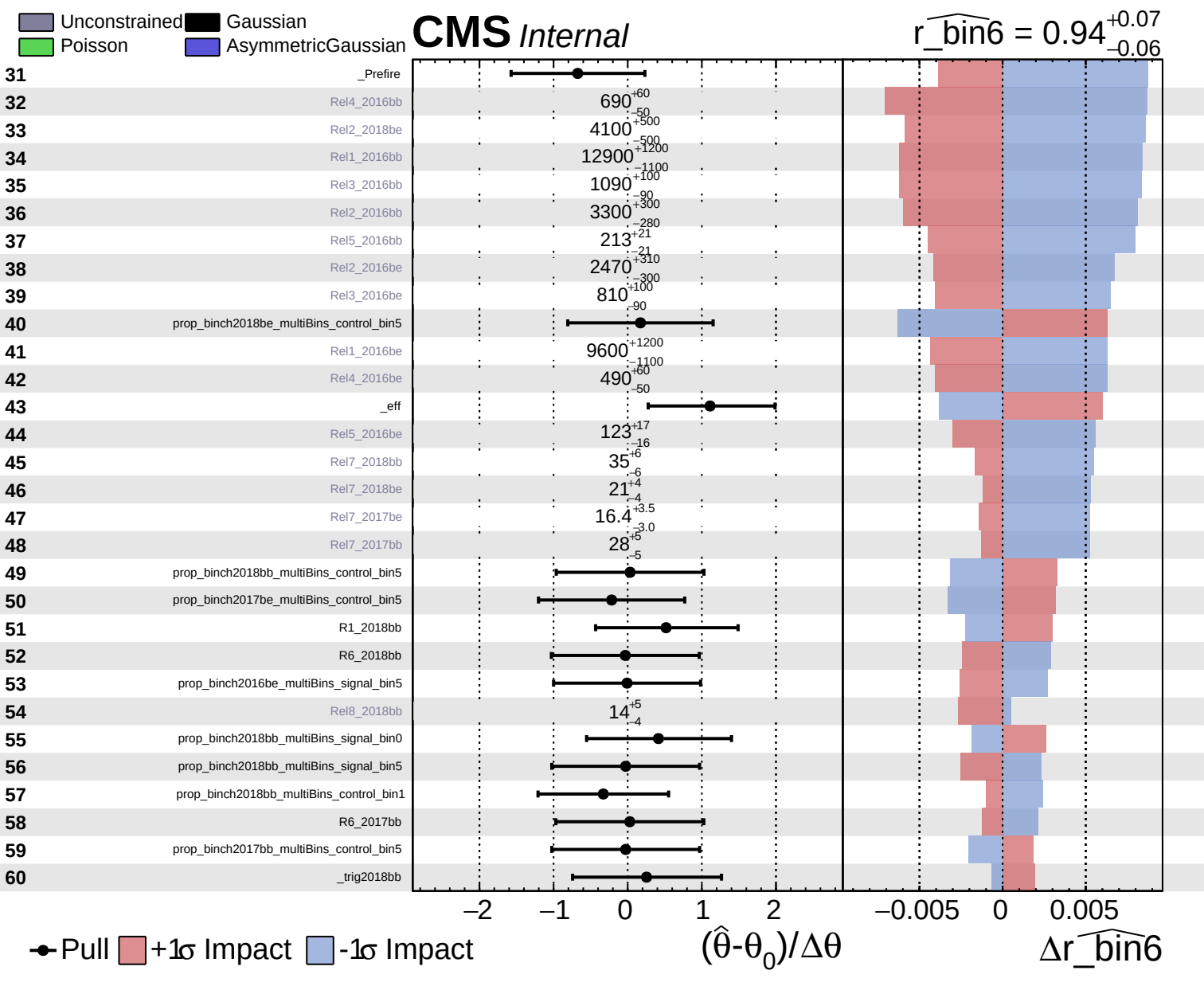
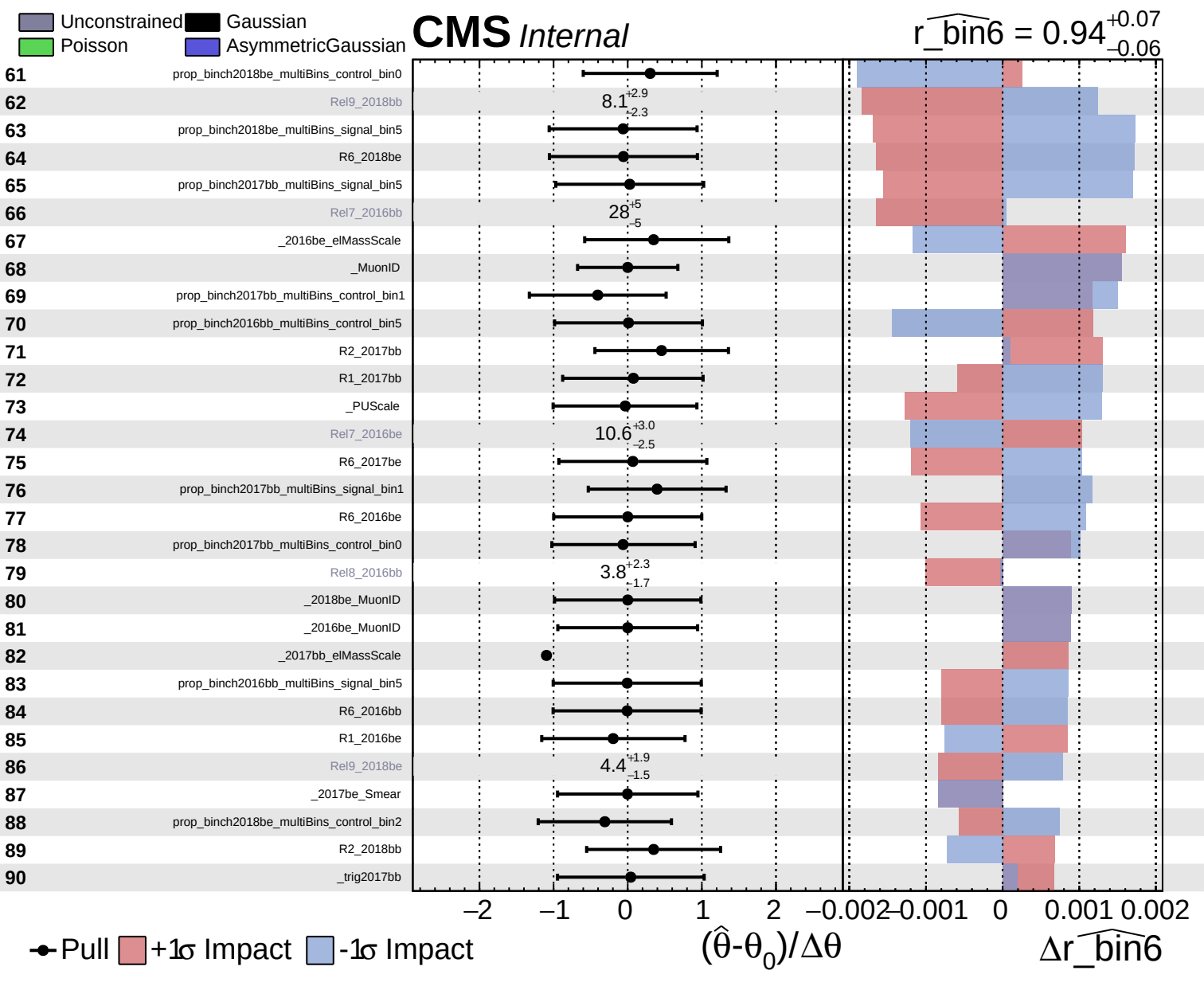
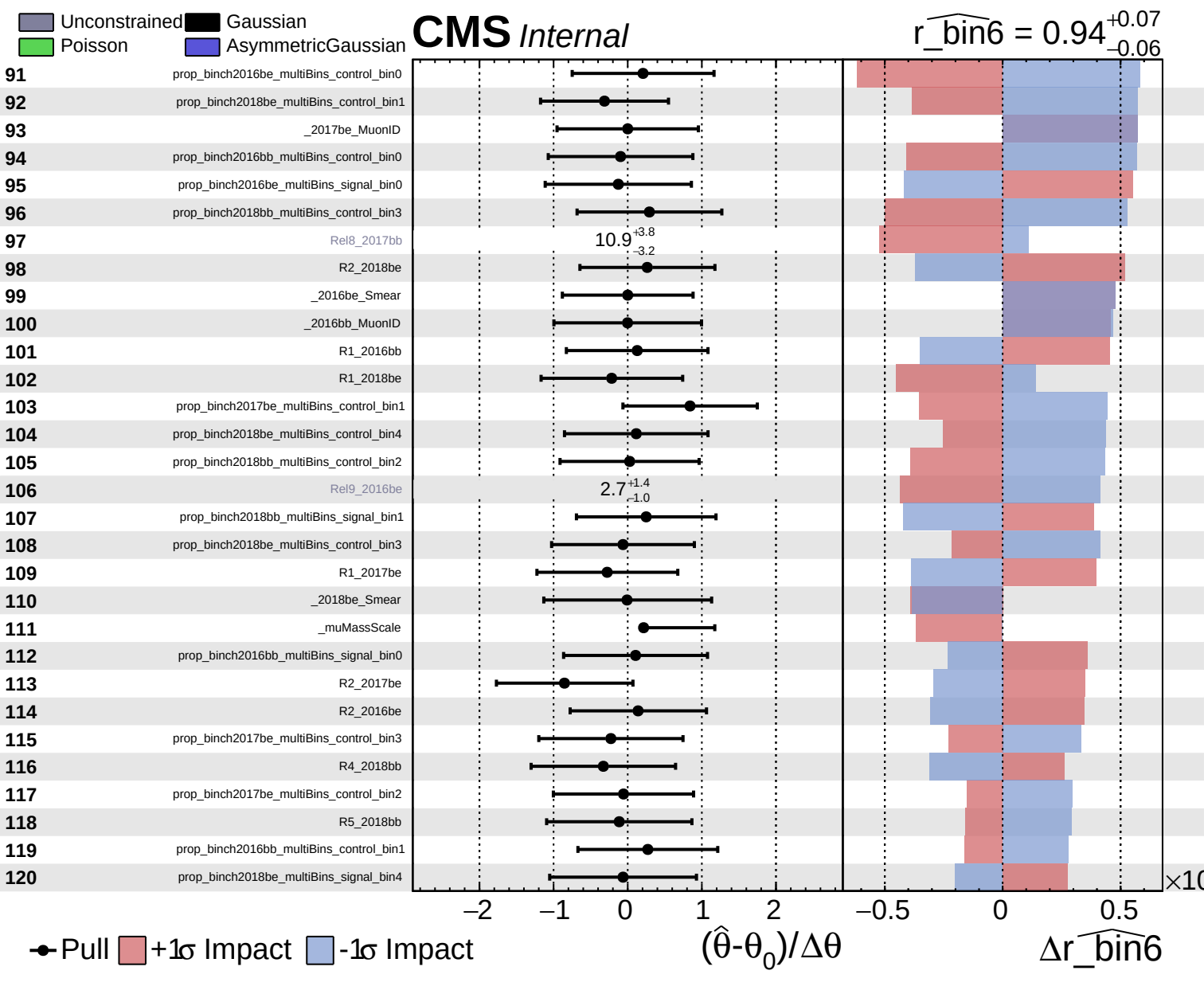
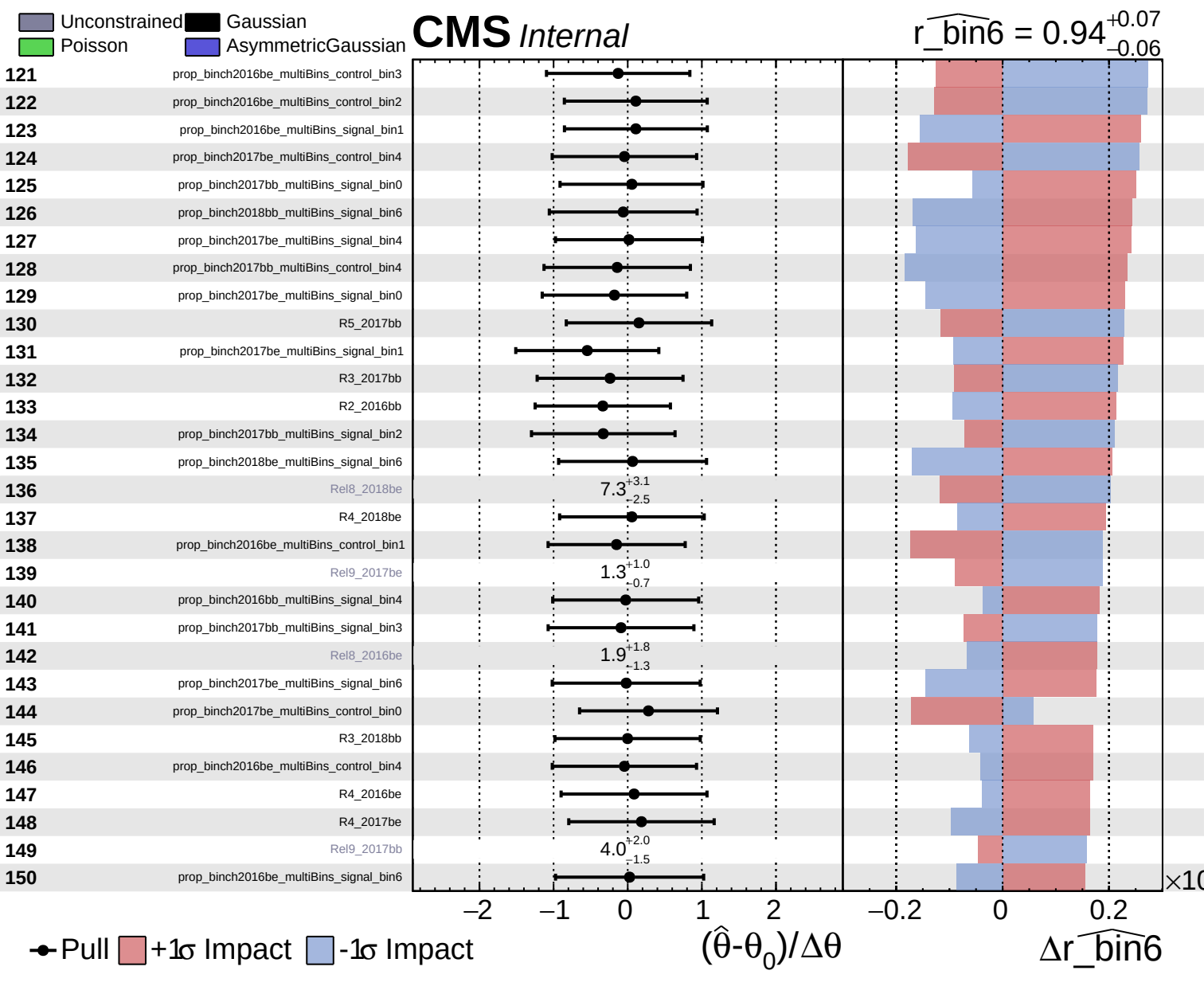
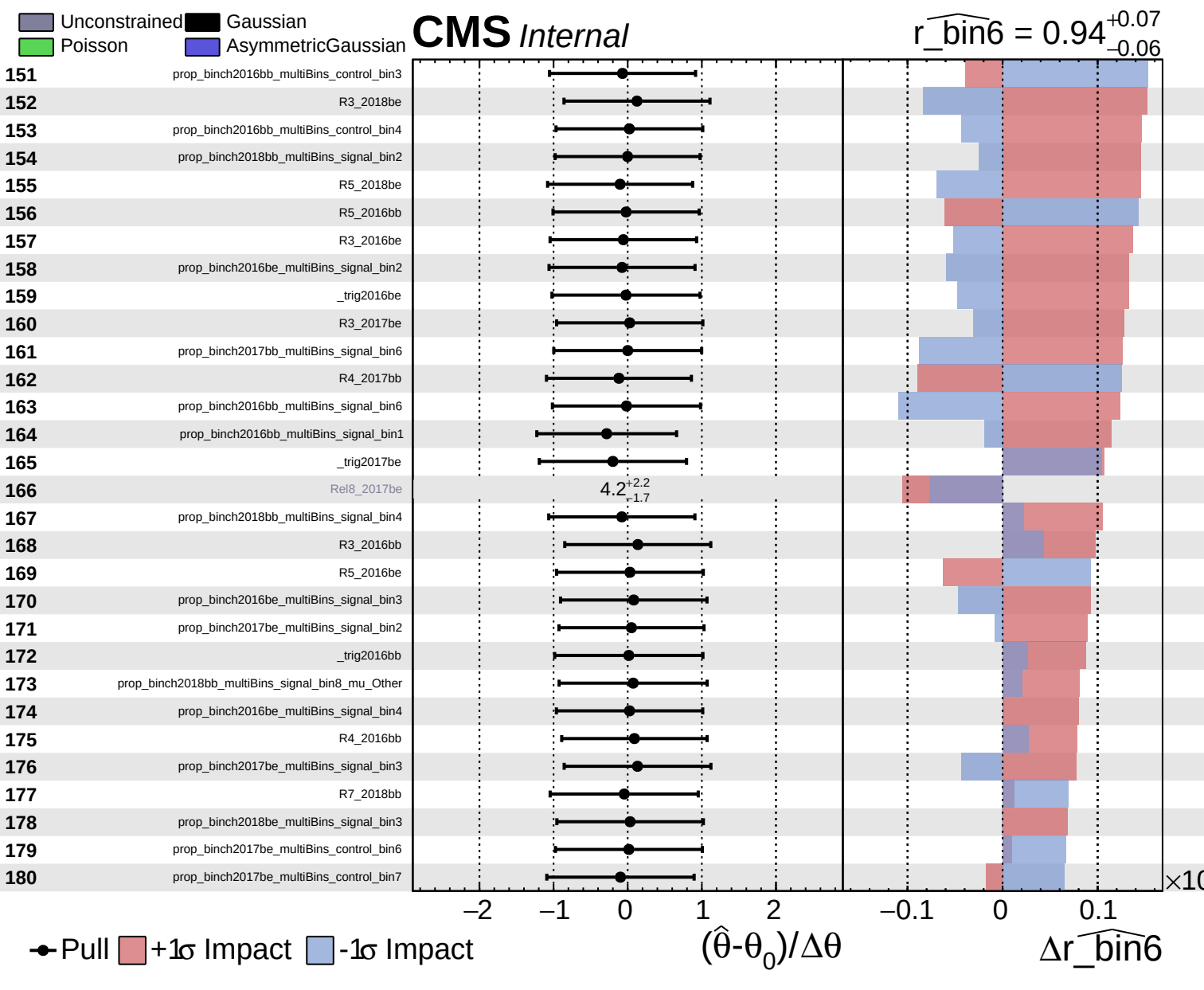

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
1 Rel6_2018be 92 +12 −11
2 Rel6_2018bb 169 +16 −15
3 Rel6_2017be 53 +7 −7
4 Rel6_2017bb 110 +12 −11
5 Rel6_2016be 60 +9 −8
6 Rel6_2016bb 80 +10 −9
7 _2018be_elMassScale
8 _2018bb_elMassScale
9 _2017be_elMassScale
10 _2016bbbe_muMassScale
11 Rel5_2017bb 260 +26 −28
12 _2016bb_elMassScale
13 Rel4_2018bb 1150 +90 −80
14 Rel5_2018bb 356 +33 −33
15 Rel3_2017bb 1290 +110 −110
16 Rel2_2017bb 3570 +340 −330
17 Rel4_2017bb 800 +70 −60
18 Rel1_2017bb 14600 +1400 −1300
19 Rel4_2017be 580 +60 −60
20 Rel3_2018bb 1680 +140 −130
21 Rel1_2018bb 19400 +1900 −1700
22 Rel2_2018bb 4800 +400 −400
23 Rel1_2017be 10700 +1200 −1200
24 Rel3_2018be 1360 +160 −160
25 Rel4_2018be 900 +90 −90
26 Rel1_2018be 15500 +1900 −1800
27 Rel5_2017be 180 +21 −20
28 Rel3_2017be 920 +110 −100
29 Rel5_2018be 297 +31 −31
30 Rel2_2017be 2710 +320 −290
−2 −1 0 1 2
−0.02 0 0.02
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr_bin6

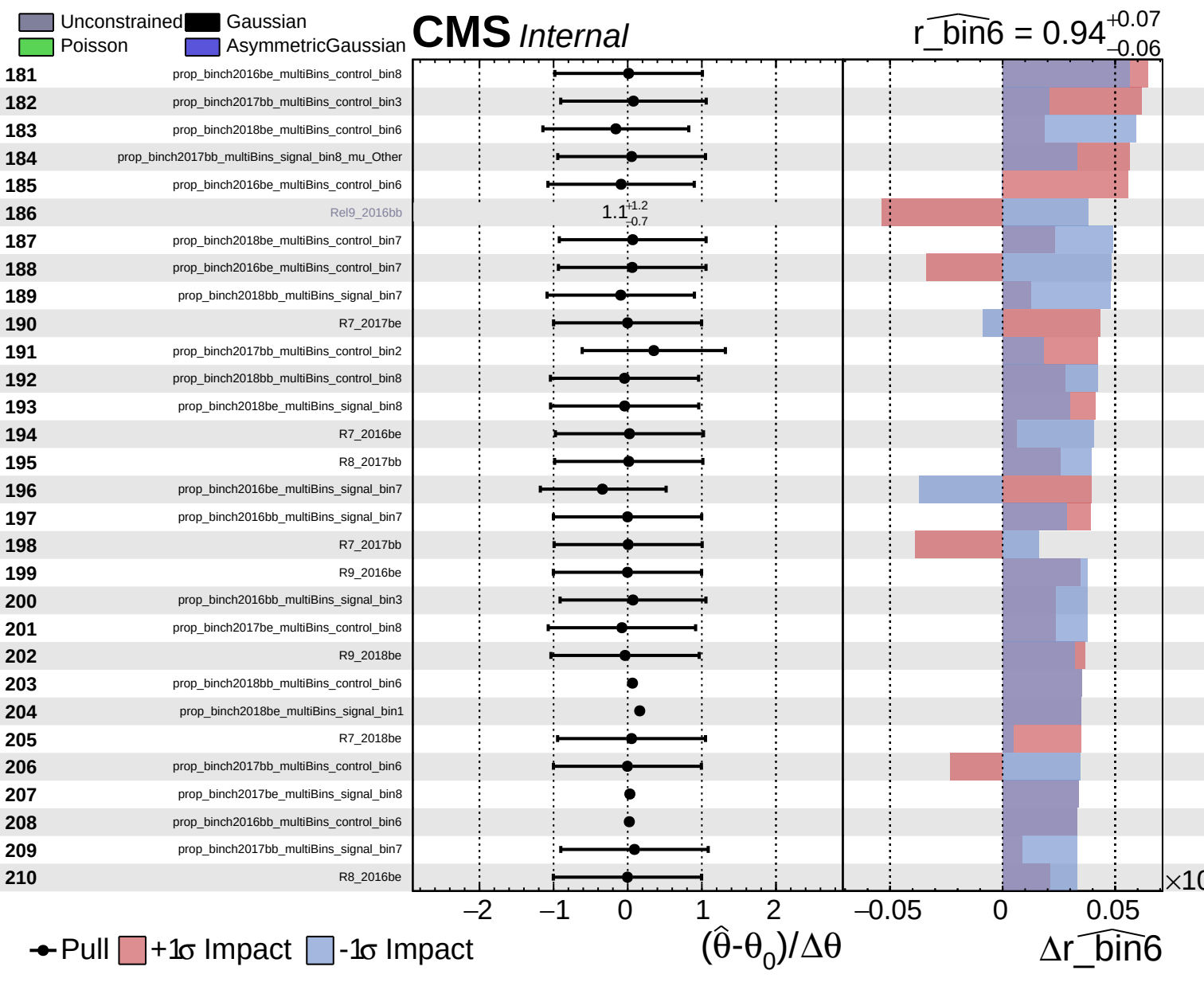

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
31 _Prefire
32 Rel4_2016bb
33 Rel2_2018be
34 Rel1_2016bb
35 Rel3_2016bb
36 Rel2_2016bb
37 Rel5_2016bb
38 Rel2_2016be
39 Rel3_2016be
40 prop_binch2018be_multiBins_control_bin5
41 Rel1_2016be
42 Rel4_2016be
43 _eff
44 Rel5_2016be
45 Rel7_2018bb
46 Rel7_2018be
47 Rel7_2017be
48 Rel7_2017bb
49 prop_binch2018bb_multiBins_control_bin5
50 prop_binch2017be_multiBins_control_bin5
51 R1_2018bb
52 R6_2018bb
53 prop_binch2016be_multiBins_signal_bin5
54 Rel8_2018bb
55 prop_binch2018bb_multiBins_signal_bin0
56 prop_binch2018bb_multiBins_signal_bin5
57 prop_binch2018bb_multiBins_control_bin1
58 R6_2017bb
59 prop_binch2017bb_multiBins_control_bin5
60 _trig2018bb
690 +60 −50
4100 +500 −500
12900 +1200 −1100
1090 +100 −90
3300 +300 −280
213 +21 −21
2470 +310 −300
810 +100 −90
9600 +1200 −1100
490 +60 −50
123 +17 −16
35 +6 −6
21 +4 −4
16.4 +3.5 −3.0
28 +5 −5
14 +5 −4
−2 −1 0 1 2
(θ̂-θ0)/Δθ
−0.005 0 0.005
Δr_bin6
Pull
+1σ Impact
-1σ Impact

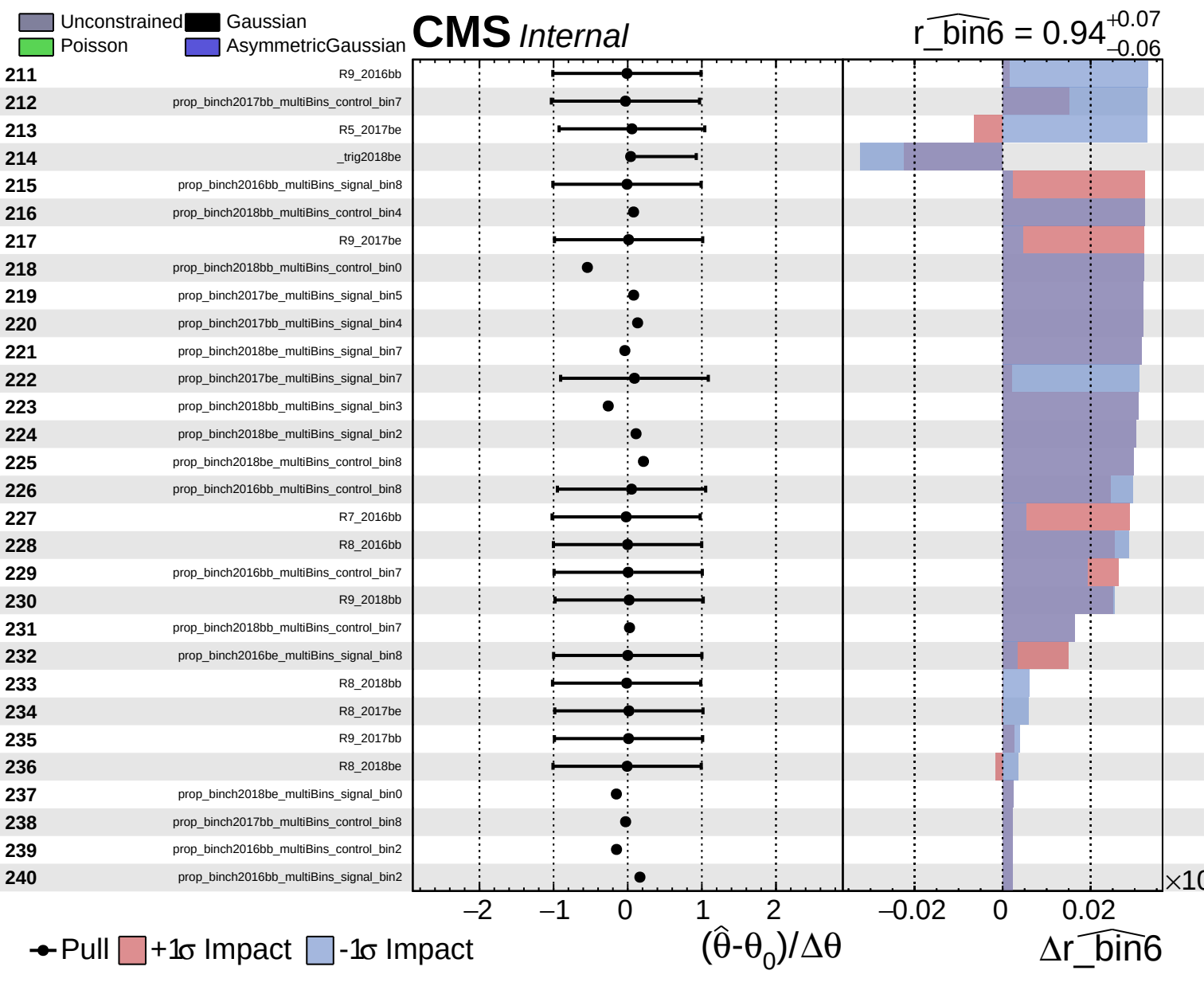

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
61 prop_binch2018be_multiBins_control_bin0
62 Rel9_2018bb
8.1 +2.9 −2.3
63 prop_binch2018be_multiBins_signal_bin5
64 R6_2018be
65 prop_binch2017bb_multiBins_signal_bin5
66 Rel7_2016bb
28 +5 −5
67 _2016be_elMassScale
68 _MuonID
69 prop_binch2017bb_multiBins_control_bin1
70 prop_binch2016bb_multiBins_control_bin5
71 R2_2017bb
72 R1_2017bb
73 _PUScale
74 Rel7_2016be
10.6 +3.0 −2.5
75 R6_2017be
76 prop_binch2017bb_multiBins_signal_bin1
77 R6_2016be
78 prop_binch2017bb_multiBins_control_bin0
79 Rel8_2016bb
3.8 +2.3 −1.7
80 _2018be_MuonID
81 _2016be_MuonID
82 _2017bb_elMassScale
83 prop_binch2016bb_multiBins_signal_bin5
84 R6_2016bb
85 R1_2016be
86 Rel9_2018be
4.4 +1.9 −1.5
87 _2017be_Smear
88 prop_binch2018be_multiBins_control_bin2
89 R2_2018bb
90 _trig2017bb
−2 −1 0 1 2
(θ̂-θ0)/Δθ
−0.002 −0.001 0 0.001 0.002
Δr_bin6
Pull
+1σ Impact
-1σ Impact

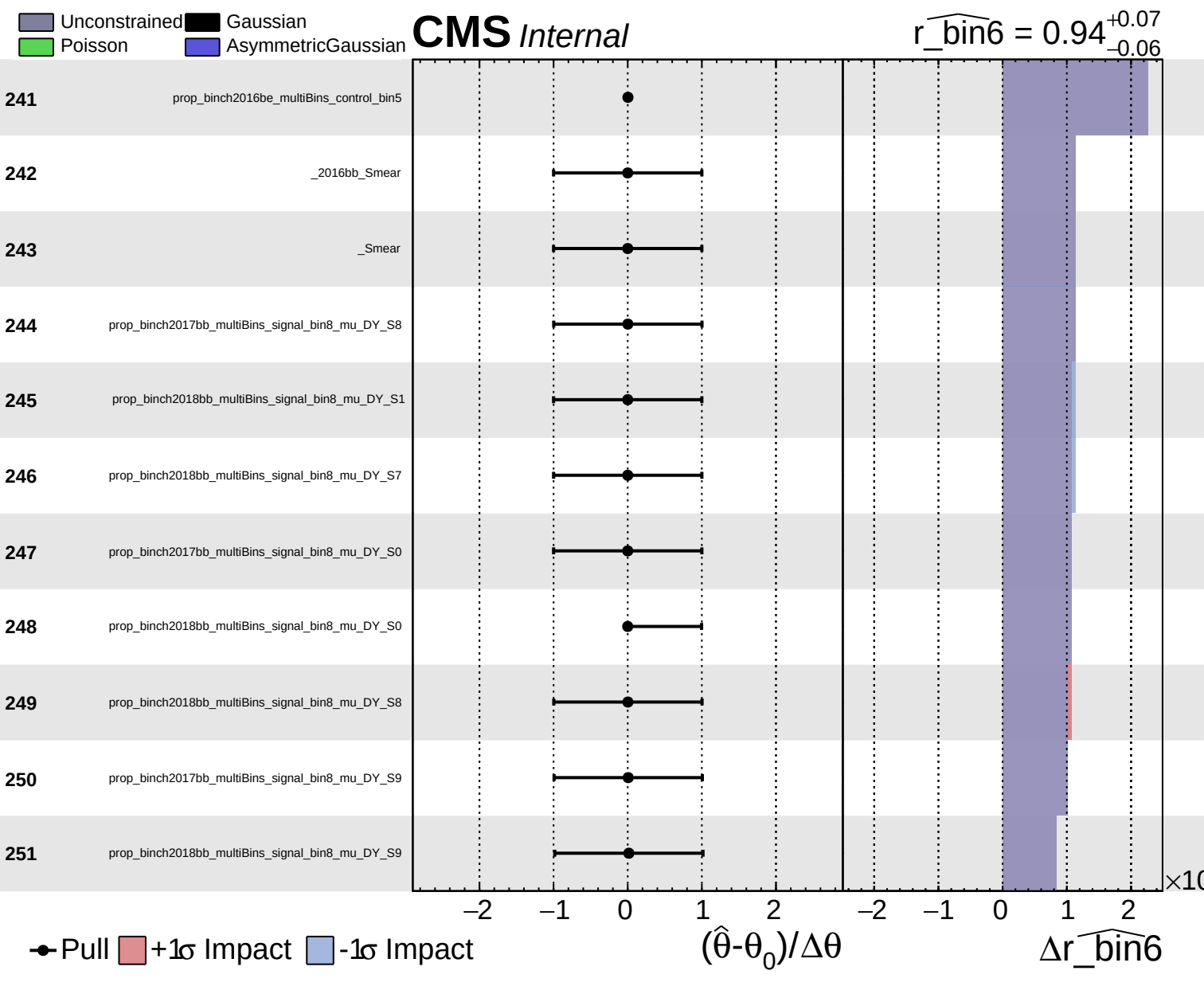

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
91 prop_binch2016be_multiBins_control_bin0
92 prop_binch2018be_multiBins_control_bin1
93 _2017be_MuonID
94 prop_binch2016bb_multiBins_control_bin0
95 prop_binch2016be_multiBins_signal_bin0
96 prop_binch2018bb_multiBins_control_bin3
97 Rel8_2017bb
10.9 +3.8 −3.2
98 R2_2018be
99 _2016be_Smear
100 _2016bb_MuonID
101 R1_2016bb
102 R1_2018be
103 prop_binch2017be_multiBins_control_bin1
104 prop_binch2018be_multiBins_control_bin4
105 prop_binch2018bb_multiBins_control_bin2
106 Rel9_2016be
2.7 +1.4 −1.0
107 prop_binch2018bb_multiBins_signal_bin1
108 prop_binch2018be_multiBins_control_bin3
109 R1_2017be
110 _2018be_Smear
111 _muMassScale
112 prop_binch2016bb_multiBins_signal_bin0
113 R2_2017be
114 R2_2016be
115 prop_binch2017be_multiBins_control_bin3
116 R4_2018bb
117 prop_binch2017be_multiBins_control_bin2
118 R5_2018bb
119 prop_binch2016bb_multiBins_control_bin1
120 prop_binch2018be_multiBins_signal_bin4
−2 −1 0 1 2
−0.5 0 0.5
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr_bin6


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
121 prop_binch2016be_multiBins_control_bin3
122 prop_binch2016be_multiBins_control_bin2
123 prop_binch2016be_multiBins_signal_bin1
124 prop_binch2017be_multiBins_control_bin4
125 prop_binch2017bb_multiBins_signal_bin0
126 prop_binch2018bb_multiBins_signal_bin6
127 prop_binch2017be_multiBins_signal_bin4
128 prop_binch2017bb_multiBins_control_bin4
129 prop_binch2017be_multiBins_signal_bin0
130 R5_2017bb
131 prop_binch2017be_multiBins_signal_bin1
132 R3_2017bb
133 R2_2016bb
134 prop_binch2017bb_multiBins_signal_bin2
135 prop_binch2018be_multiBins_signal_bin6
136 Rel8_2018be
7.3 +3.1 −2.5
137 R4_2018be
138 prop_binch2016be_multiBins_control_bin1
139 Rel9_2017be
1.3 +1.0 −0.7
140 prop_binch2016bb_multiBins_signal_bin4
141 prop_binch2017bb_multiBins_signal_bin3
142 Rel8_2016be
1.9 +1.8 −1.3
143 prop_binch2017be_multiBins_signal_bin6
144 prop_binch2017be_multiBins_control_bin0
145 R3_2018bb
146 prop_binch2016be_multiBins_control_bin4
147 R4_2016be
148 R4_2017be
149 Rel9_2017bb
4.0 +2.0 −1.5
150 prop_binch2016be_multiBins_signal_bin6
−2
−1
0
1
2
−0.2
0
0.2
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr_bin6


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
151 prop_binch2016bb_multiBins_control_bin3
152 R3_2018be
153 prop_binch2016bb_multiBins_control_bin4
154 prop_binch2018bb_multiBins_signal_bin2
155 R5_2018be
156 R5_2016bb
157 R3_2016be
158 prop_binch2016be_multiBins_signal_bin2
159 _trig2016be
160 R3_2017be
161 prop_binch2017bb_multiBins_signal_bin6
162 R4_2017bb
163 prop_binch2016bb_multiBins_signal_bin6
164 prop_binch2016bb_multiBins_signal_bin1
165 _trig2017be
166 Rel8_2017be
4.2 +2.2 −1.7
167 prop_binch2018bb_multiBins_signal_bin4
168 R3_2016bb
169 R5_2016be
170 prop_binch2016be_multiBins_signal_bin3
171 prop_binch2017be_multiBins_signal_bin2
172 _trig2016bb
173 prop_binch2018bb_multiBins_signal_bin8_mu_Other
174 prop_binch2016be_multiBins_signal_bin4
175 R4_2016bb
176 prop_binch2017be_multiBins_signal_bin3
177 R7_2018bb
178 prop_binch2018be_multiBins_signal_bin3
179 prop_binch2017be_multiBins_control_bin6
180 prop_binch2017be_multiBins_control_bin7
−2
−1
0
1
2
−0.1
0
0.1
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr_bin6


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
181 prop_binch2016be_multiBins_control_bin8
182 prop_binch2017bb_multiBins_control_bin3
183 prop_binch2018be_multiBins_control_bin6
184 prop_binch2017bb_multiBins_signal_bin8_mu_Other
185 prop_binch2016be_multiBins_control_bin6
186 Rel9_2016bb
1.1 +1.2 −0.7
187 prop_binch2018be_multiBins_control_bin7
188 prop_binch2016be_multiBins_control_bin7
189 prop_binch2018bb_multiBins_signal_bin7
190 R7_2017be
191 prop_binch2017bb_multiBins_control_bin2
192 prop_binch2018bb_multiBins_control_bin8
193 prop_binch2018be_multiBins_signal_bin8
194 R7_2016be
195 R8_2017bb
196 prop_binch2016be_multiBins_signal_bin7
197 prop_binch2016bb_multiBins_signal_bin7
198 R7_2017bb
199 R9_2016be
200 prop_binch2016bb_multiBins_signal_bin3
201 prop_binch2017be_multiBins_control_bin8
202 R9_2018be
203 prop_binch2018bb_multiBins_control_bin6
204 prop_binch2018be_multiBins_signal_bin1
205 R7_2018be
206 prop_binch2017bb_multiBins_control_bin6
207 prop_binch2017be_multiBins_signal_bin8
208 prop_binch2016bb_multiBins_control_bin6
209 prop_binch2017bb_multiBins_signal_bin7
210 R8_2016be
−2 −1 0 1 2
−0.05 0 0.05
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr_bin6


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
211 R9_2016bb
212 prop_binch2017bb_multiBins_control_bin7
213 R5_2017be
214 _trig2018be
215 prop_binch2016bb_multiBins_signal_bin8
216 prop_binch2018bb_multiBins_control_bin4
217 R9_2017be
218 prop_binch2018bb_multiBins_control_bin0
219 prop_binch2017be_multiBins_signal_bin5
220 prop_binch2017bb_multiBins_signal_bin4
221 prop_binch2018be_multiBins_signal_bin7
222 prop_binch2017be_multiBins_signal_bin7
223 prop_binch2018bb_multiBins_signal_bin3
224 prop_binch2018be_multiBins_signal_bin2
225 prop_binch2018be_multiBins_control_bin8
226 prop_binch2016bb_multiBins_control_bin8
227 R7_2016bb
228 R8_2016bb
229 prop_binch2016bb_multiBins_control_bin7
230 R9_2018bb
231 prop_binch2018bb_multiBins_control_bin7
232 prop_binch2016be_multiBins_signal_bin8
233 R8_2018bb
234 R8_2017be
235 R9_2017bb
236 R8_2018be
237 prop_binch2018be_multiBins_signal_bin0
238 prop_binch2017bb_multiBins_control_bin8
239 prop_binch2016bb_multiBins_control_bin2
240 prop_binch2016bb_multiBins_signal_bin2
−2 −1 0 1 2
−0.02 0 0.02
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr_bin6


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
241 prop_binch2016be_multiBins_control_bin5
242 _2016bb_Smear
243 _Smear
244 prop_binch2017bb_multiBins_signal_bin8_mu_DY_S8
245 prop_binch2018bb_multiBins_signal_bin8_mu_DY_S1
246 prop_binch2018bb_multiBins_signal_bin8_mu_DY_S7
247 prop_binch2017bb_multiBins_signal_bin8_mu_DY_S0
248 prop_binch2018bb_multiBins_signal_bin8_mu_DY_S0
249 prop_binch2018bb_multiBins_signal_bin8_mu_DY_S8
250 prop_binch2017bb_multiBins_signal_bin8_mu_DY_S9
251 prop_binch2018bb_multiBins_signal_bin8_mu_DY_S9
×10
−2 −1 0 1 2
−2 −1 0 1 2
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr_bin6