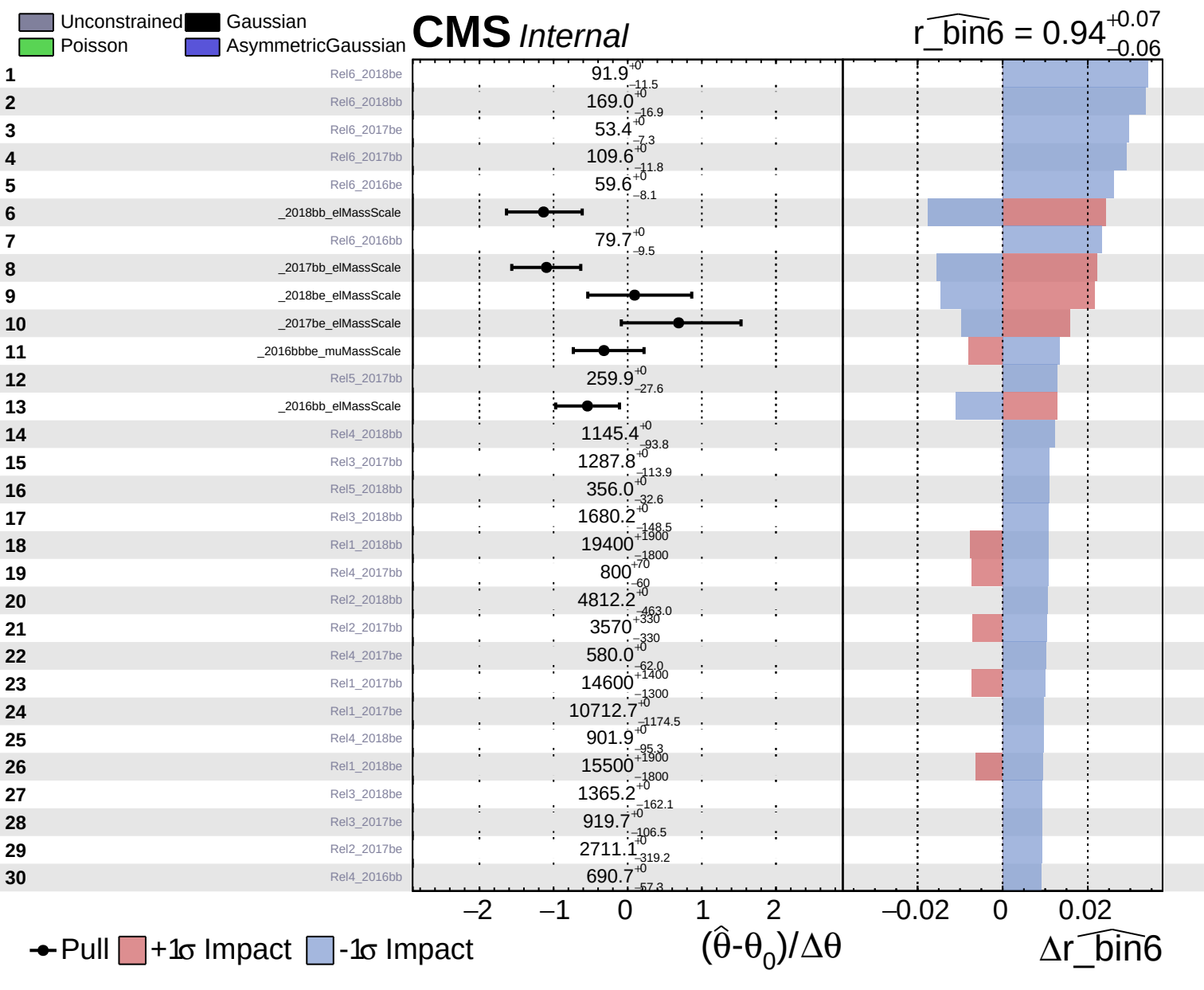
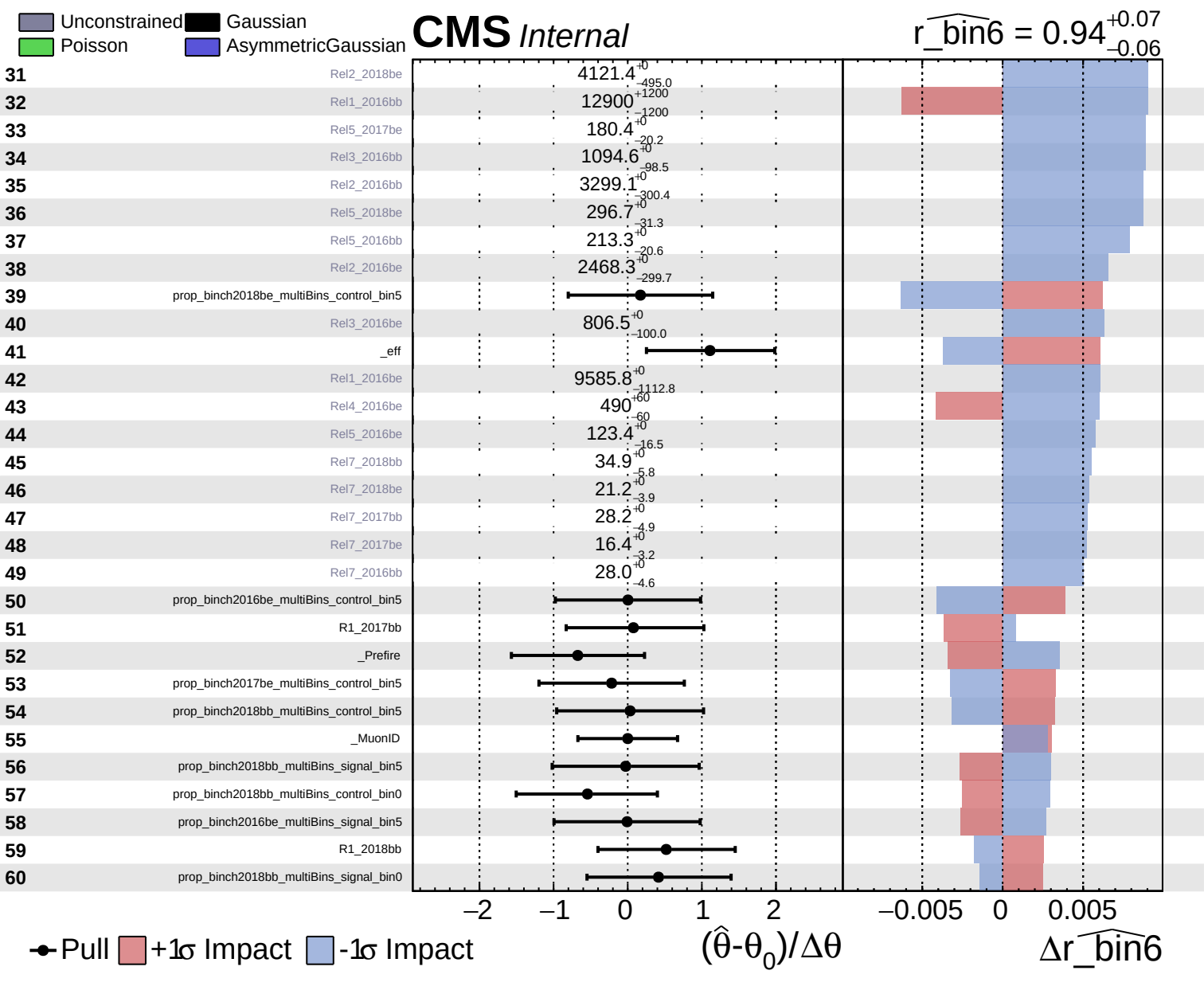
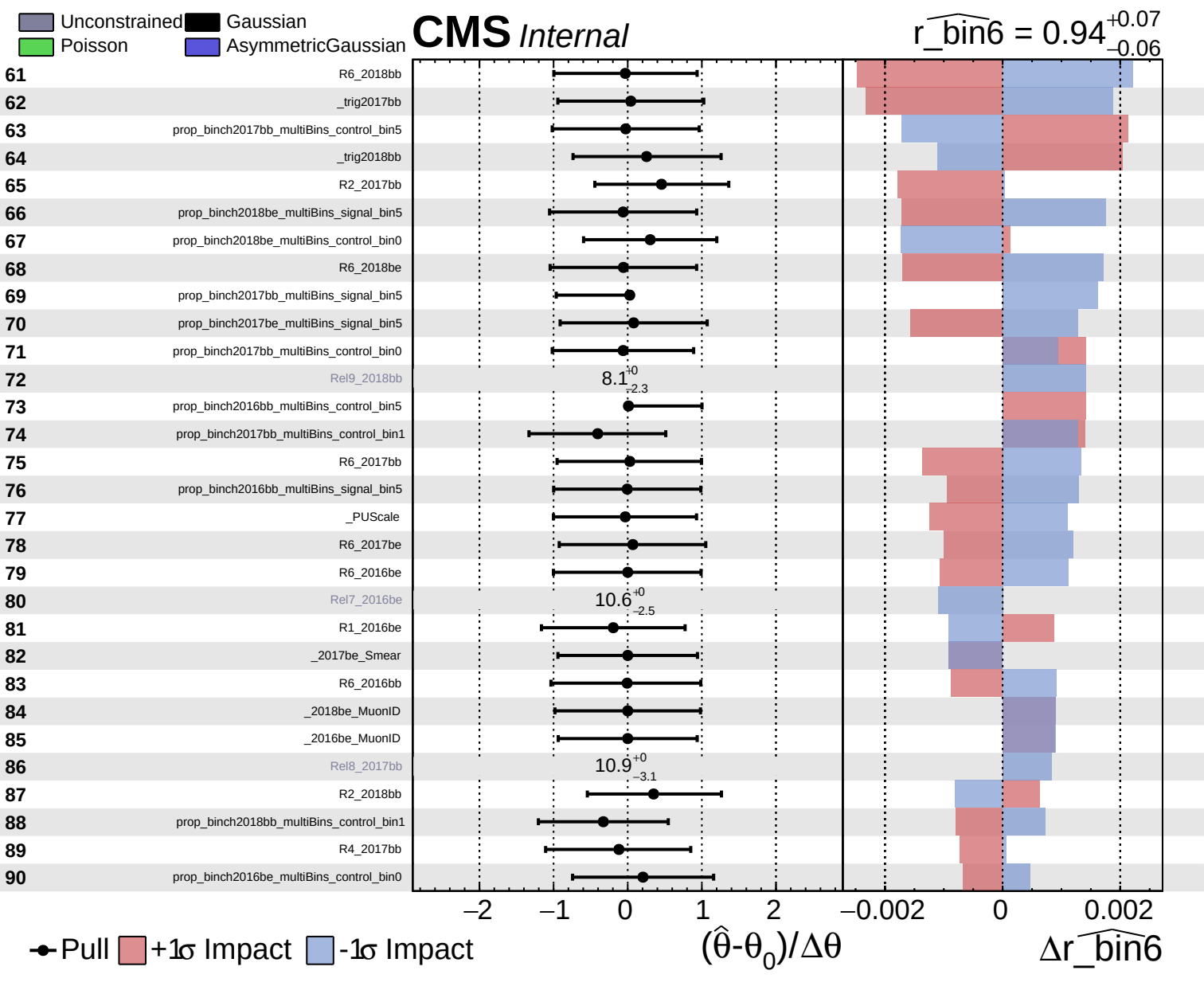
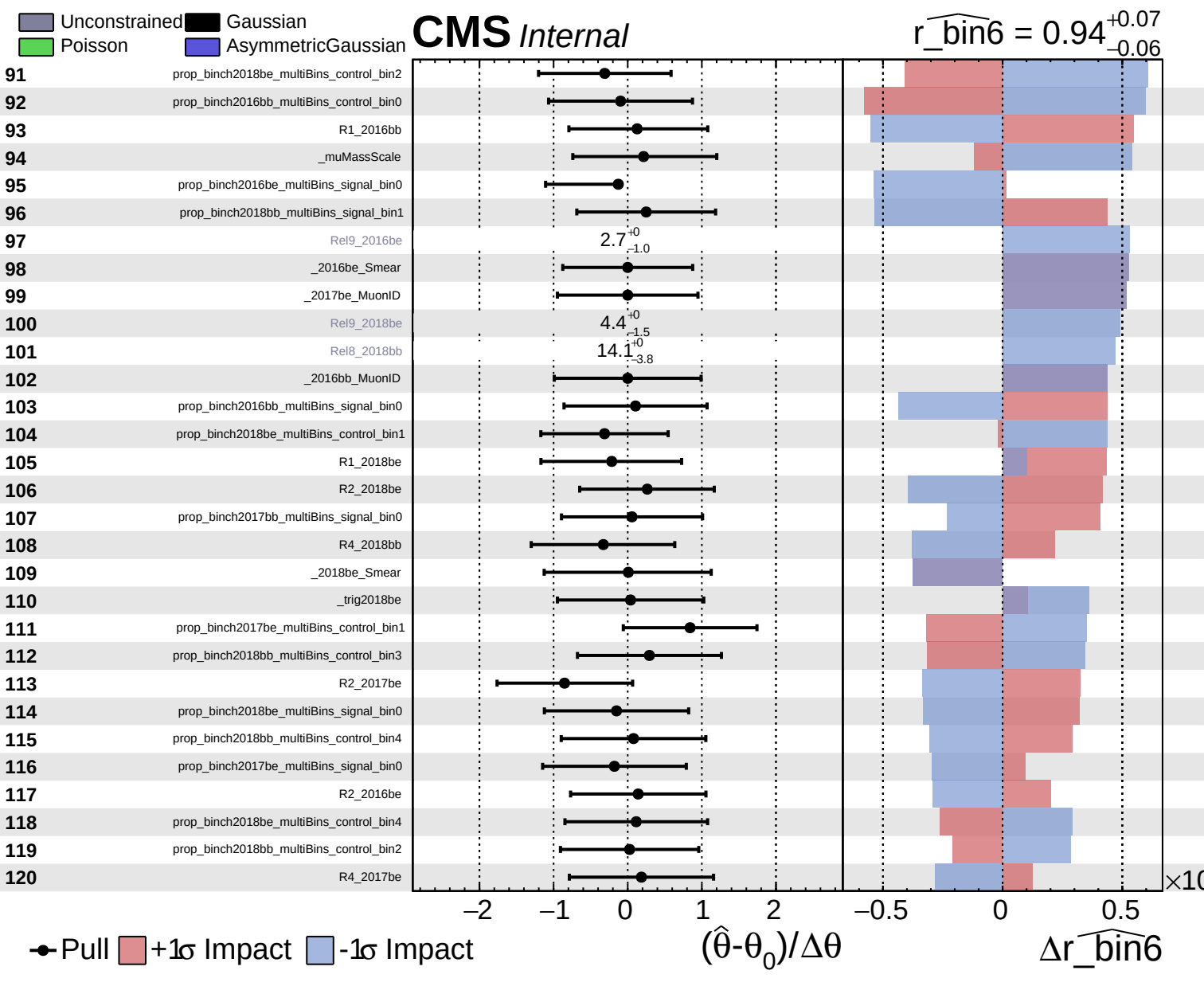
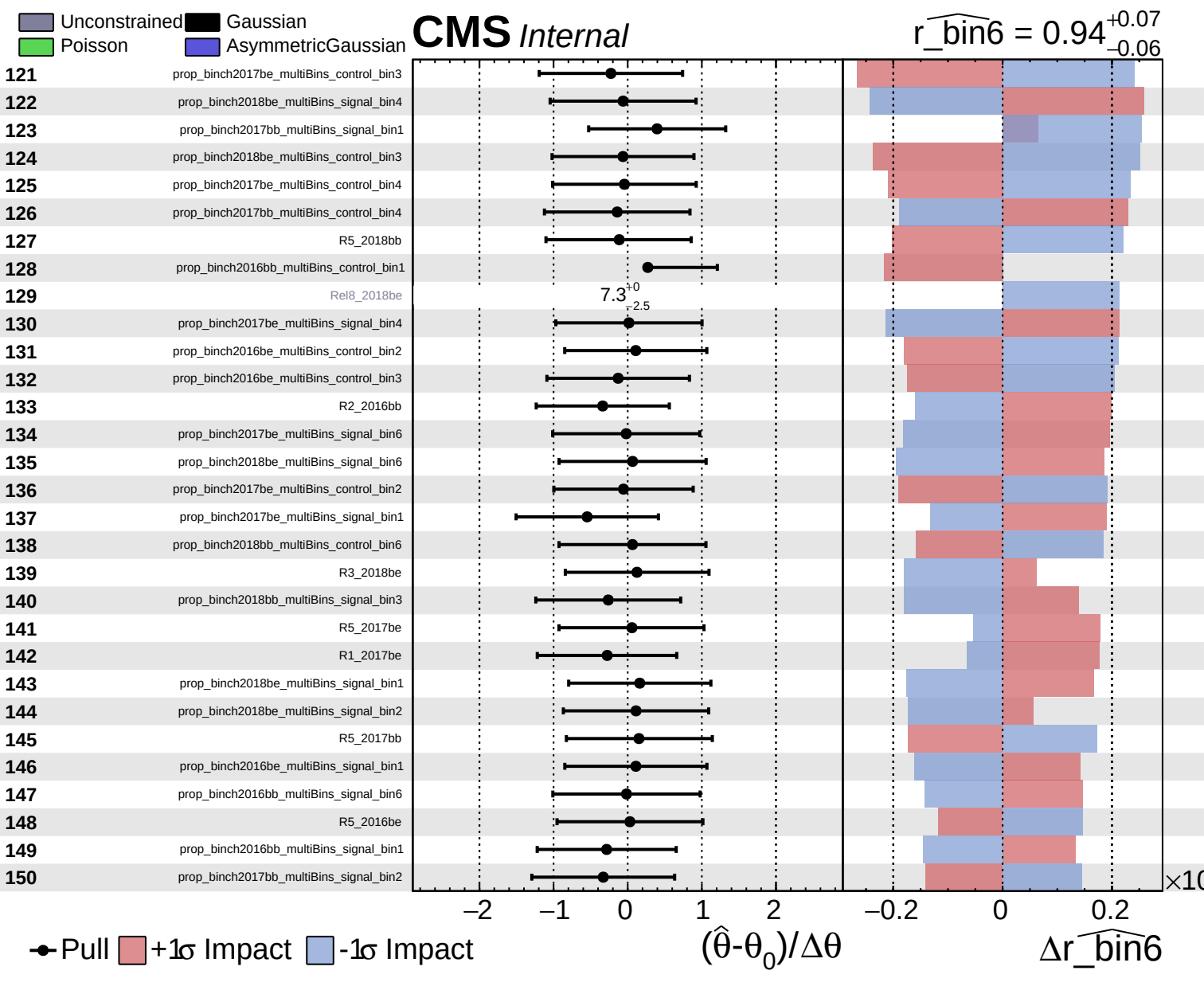
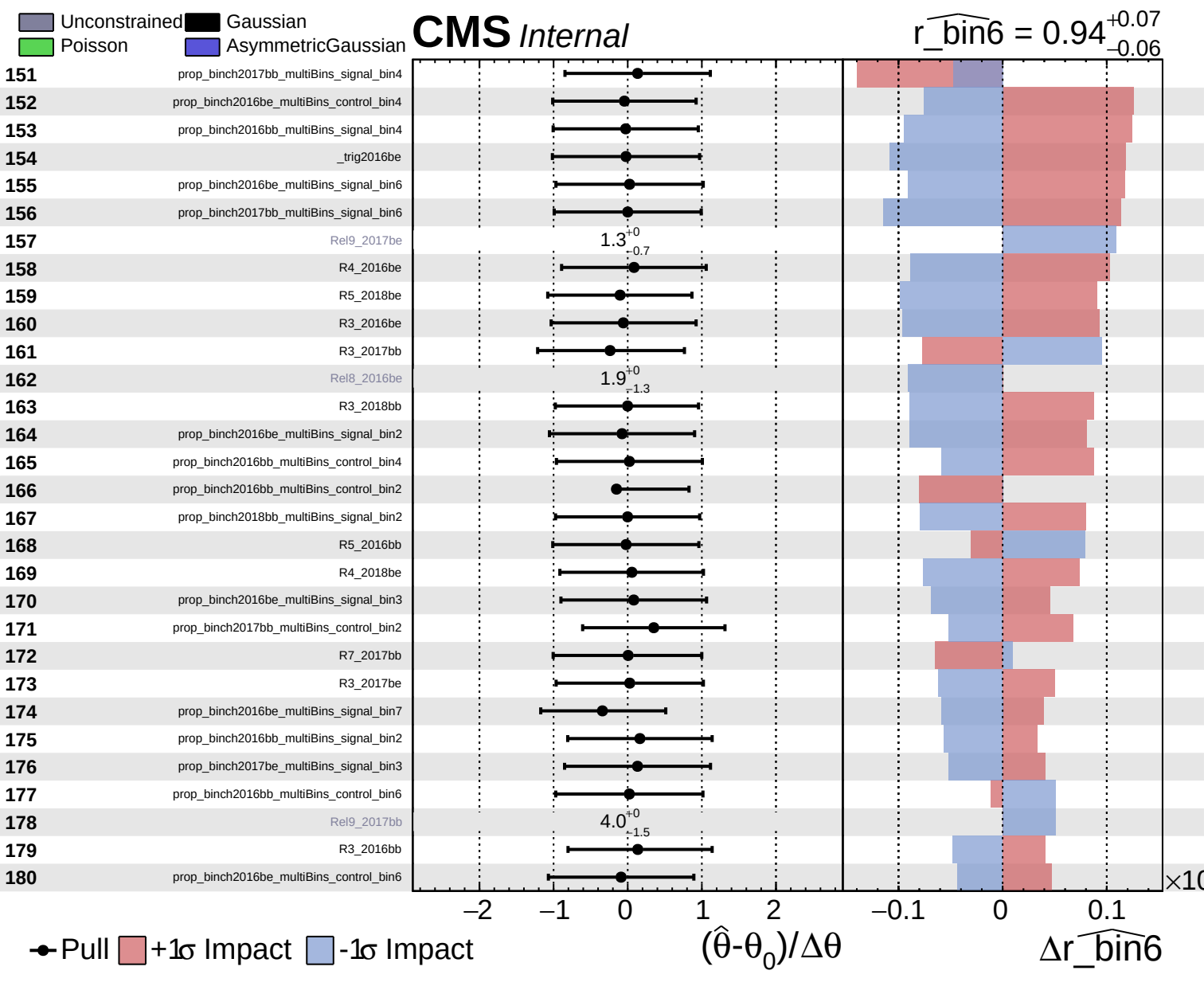

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
1 Rel6_2018be 91.9 +0 −11.5
2 Rel6_2018bb 169.0 +0 −16.9
3 Rel6_2017be 53.4 +0 −7.3
4 Rel6_2017bb 109.6 +0 −11.8
5 Rel6_2016be 59.6 +0 −8.1
6 _2018bb_elMassScale
7 Rel6_2016bb 79.7 +0 −9.5
8 _2017bb_elMassScale
9 _2018be_elMassScale
10 _2017be_elMassScale
11 _2016bbbe_muMassScale
12 Rel5_2017bb 259.9 +0 −27.6
13 _2016bb_elMassScale
14 Rel4_2018bb 1145.4 +0 −93.8
15 Rel3_2017bb 1287.8 +0 −113.9
16 Rel5_2018bb 356.0 +0 −32.6
17 Rel3_2018bb 1680.2 +0 −148.5
18 Rel1_2018bb 19400 +1900 −1800
19 Rel4_2017bb 800 +70 −60
20 Rel2_2018bb 4812.2 +0 −463.0
21 Rel2_2017bb 3570 +330 −330
22 Rel4_2017be 580.0 +0 −62.0
23 Rel1_2017bb 14600 +1400 −1300
24 Rel1_2017be 10712.7 +0 −1174.5
25 Rel4_2018be 901.9 +0 −95.3
26 Rel1_2018be 15500 +1900 −1800
27 Rel3_2018be 1365.2 +0 −162.1
28 Rel3_2017be 919.7 +0 −106.5
29 Rel2_2017be 2711.1 +0 −319.2
30 Rel4_2016bb 690.7 +0 −57.3
−2 −1 0 1 2
−0.02 0 0.02
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr_bin6

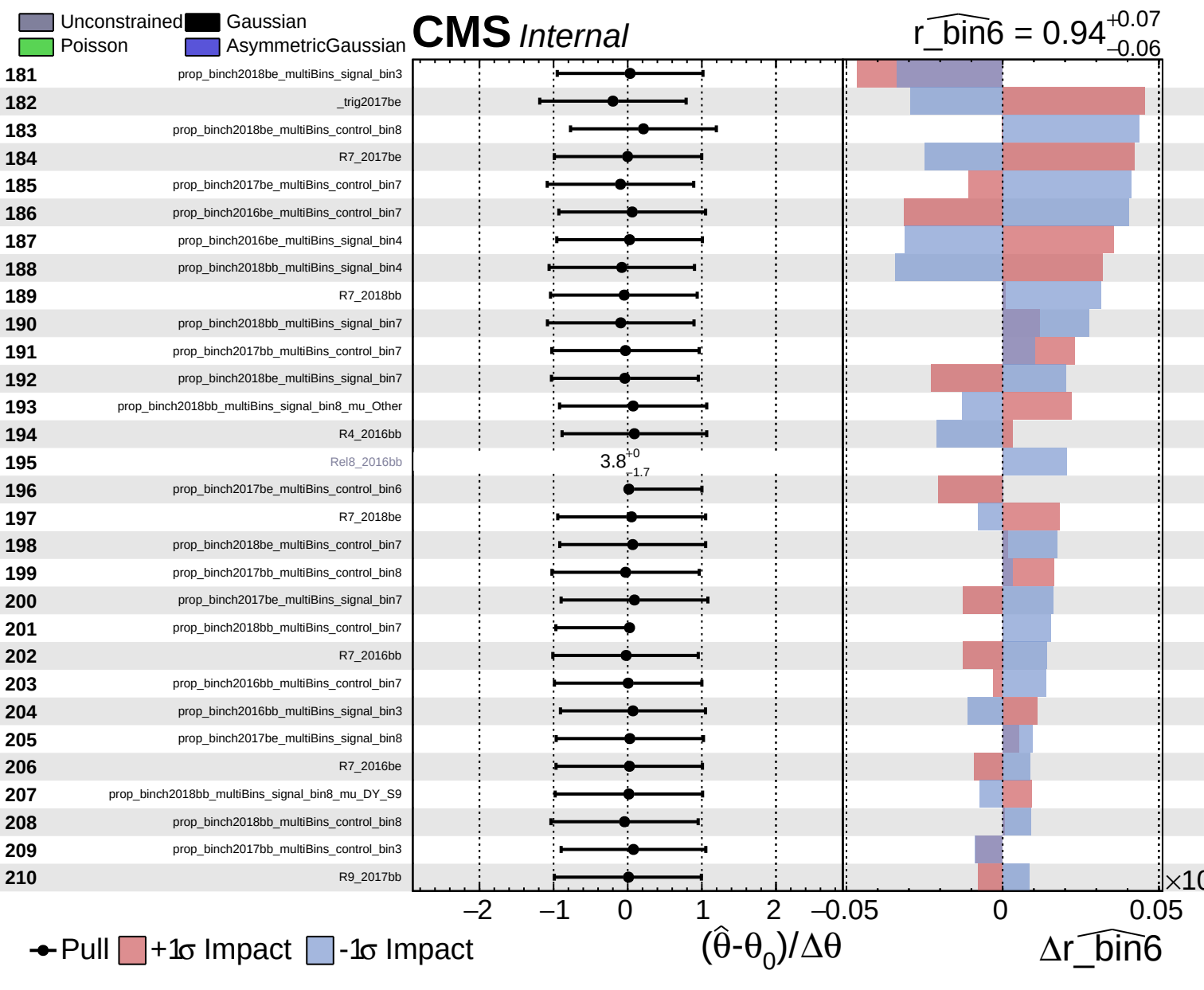

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
31 Rel2_2018be 4121.4 +0 −495.0
32 Rel1_2016bb 12900 +1200 −1200
33 Rel5_2017be 180.4 +0 −20.2
34 Rel3_2016bb 1094.6 +0 −98.5
35 Rel2_2016bb 3299.1 +0 −300.4
36 Rel5_2018be 296.7 +0 −31.3
37 Rel5_2016bb 213.3 +0 −20.6
38 Rel2_2016be 2468.3 +0 −299.7
39 prop_binch2018be_multiBins_control_bin5
40 Rel3_2016be 806.5 +0 −100.0
41 _eff
42 Rel1_2016be 9585.8 +0 −1112.8
43 Rel4_2016be 490 +60 −60
44 Rel5_2016be 123.4 +0 −16.5
45 Rel7_2018bb 34.9 +0 −5.8
46 Rel7_2018be 21.2 +0 −3.9
47 Rel7_2017bb 28.2 +0 −4.9
48 Rel7_2017be 16.4 +0 −3.2
49 Rel7_2016bb 28.0 +0 −4.6
50 prop_binch2016be_multiBins_control_bin5
51 R1_2017bb
52 _Prefire
53 prop_binch2017be_multiBins_control_bin5
54 prop_binch2018bb_multiBins_control_bin5
55 _MuonID
56 prop_binch2018bb_multiBins_signal_bin5
57 prop_binch2018bb_multiBins_control_bin0
58 prop_binch2016be_multiBins_signal_bin5
59 R1_2018bb
60 prop_binch2018bb_multiBins_signal_bin0
−2 −1 0 1 2
−0.005 0 0.005
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr_bin6

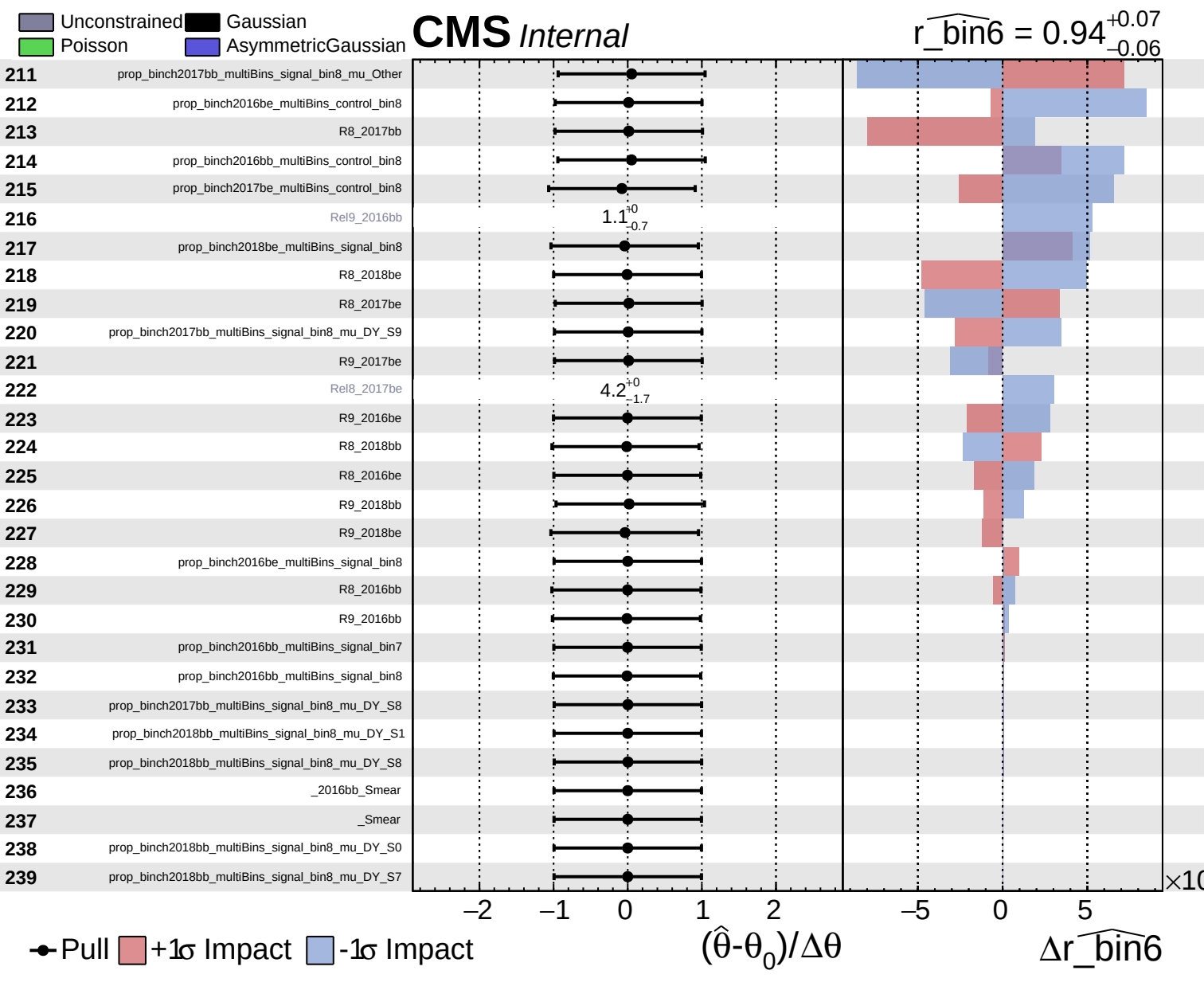

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
61 R6_2018bb
62 _trig2017bb
63 prop_binch2017bb_multiBins_control_bin5
64 _trig2018bb
65 R2_2017bb
66 prop_binch2018be_multiBins_signal_bin5
67 prop_binch2018be_multiBins_control_bin0
68 R6_2018be
69 prop_binch2017bb_multiBins_signal_bin5
70 prop_binch2017be_multiBins_signal_bin5
71 prop_binch2017bb_multiBins_control_bin0
72 Rel9_2018bb
8.1 +0 −2.3
73 prop_binch2016bb_multiBins_control_bin5
74 prop_binch2017bb_multiBins_control_bin1
75 R6_2017bb
76 prop_binch2016bb_multiBins_signal_bin5
77 _PUScale
78 R6_2017be
79 R6_2016be
80 Rel7_2016be
10.6 +0 −2.5
81 R1_2016be
82 _2017be_Smear
83 R6_2016bb
84 _2018be_MuonID
85 _2016be_MuonID
86 Rel8_2017bb
10.9 +0 −3.1
87 R2_2018bb
88 prop_binch2018bb_multiBins_control_bin1
89 R4_2017bb
90 prop_binch2016be_multiBins_control_bin0
−2 −1 0 1 2
−0.002 0 0.002
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr_bin6


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r_bin6 = 0.94 +0.07 −0.06
91 prop_binch2018be_multiBins_control_bin2
92 prop_binch2016bb_multiBins_control_bin0
93 R1_2016bb
94 _muMassScale
95 prop_binch2016be_multiBins_signal_bin0
96 prop_binch2018bb_multiBins_signal_bin1
97 Rel9_2016be
2.7 +0 −1.0
98 _2016be_Smear
99 _2017be_MuonID
100 Rel9_2018be
4.4 +0 −1.5
101 Rel8_2018bb
14.1 +0 −3.8
102 _2016bb_MuonID
103 prop_binch2016bb_multiBins_signal_bin0
104 prop_binch2018be_multiBins_control_bin1
105 R1_2018be
106 R2_2018be
107 prop_binch2017bb_multiBins_signal_bin0
108 R4_2018bb
109 _2018be_Smear
110 _trig2018be
111 prop_binch2017be_multiBins_control_bin1
112 prop_binch2018bb_multiBins_control_bin3
113 R2_2017be
114 prop_binch2018be_multiBins_signal_bin0
115 prop_binch2018bb_multiBins_control_bin4
116 prop_binch2017be_multiBins_signal_bin0
117 R2_2016be
118 prop_binch2018be_multiBins_control_bin4
119 prop_binch2018bb_multiBins_control_bin2
120 R4_2017be
−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_binch2017be_multiBins_control_bin3
122 prop_binch2018be_multiBins_signal_bin4
123 prop_binch2017bb_multiBins_signal_bin1
124 prop_binch2018be_multiBins_control_bin3
125 prop_binch2017be_multiBins_control_bin4
126 prop_binch2017bb_multiBins_control_bin4
127 R5_2018bb
128 prop_binch2016bb_multiBins_control_bin1
129 Rel8_2018be
7.3 +0 −2.5
130 prop_binch2017be_multiBins_signal_bin4
131 prop_binch2016be_multiBins_control_bin2
132 prop_binch2016be_multiBins_control_bin3
133 R2_2016bb
134 prop_binch2017be_multiBins_signal_bin6
135 prop_binch2018be_multiBins_signal_bin6
136 prop_binch2017be_multiBins_control_bin2
137 prop_binch2017be_multiBins_signal_bin1
138 prop_binch2018bb_multiBins_control_bin6
139 R3_2018be
140 prop_binch2018bb_multiBins_signal_bin3
141 R5_2017be
142 R1_2017be
143 prop_binch2018be_multiBins_signal_bin1
144 prop_binch2018be_multiBins_signal_bin2
145 R5_2017bb
146 prop_binch2016be_multiBins_signal_bin1
147 prop_binch2016bb_multiBins_signal_bin6
148 R5_2016be
149 prop_binch2016bb_multiBins_signal_bin1
150 prop_binch2017bb_multiBins_signal_bin2
−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_binch2017bb_multiBins_signal_bin4
152 prop_binch2016be_multiBins_control_bin4
153 prop_binch2016bb_multiBins_signal_bin4
154 _trig2016be
155 prop_binch2016be_multiBins_signal_bin6
156 prop_binch2017bb_multiBins_signal_bin6
157 Rel9_2017be
158 R4_2016be
159 R5_2018be
160 R3_2016be
161 R3_2017bb
162 Rel8_2016be
163 R3_2018bb
164 prop_binch2016be_multiBins_signal_bin2
165 prop_binch2016bb_multiBins_control_bin4
166 prop_binch2016bb_multiBins_control_bin2
167 prop_binch2018bb_multiBins_signal_bin2
168 R5_2016bb
169 R4_2018be
170 prop_binch2016be_multiBins_signal_bin3
171 prop_binch2017bb_multiBins_control_bin2
172 R7_2017bb
173 R3_2017be
174 prop_binch2016be_multiBins_signal_bin7
175 prop_binch2016bb_multiBins_signal_bin2
176 prop_binch2017be_multiBins_signal_bin3
177 prop_binch2016bb_multiBins_control_bin6
178 Rel9_2017bb
179 R3_2016bb
180 prop_binch2016be_multiBins_control_bin6
1.3 +0 −0.7
1.9 +0 −1.3
4.0 +0 −1.5
−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_binch2018be_multiBins_signal_bin3
182 _trig2017be
183 prop_binch2018be_multiBins_control_bin8
184 R7_2017be
185 prop_binch2017be_multiBins_control_bin7
186 prop_binch2016be_multiBins_control_bin7
187 prop_binch2016be_multiBins_signal_bin4
188 prop_binch2018bb_multiBins_signal_bin4
189 R7_2018bb
190 prop_binch2018bb_multiBins_signal_bin7
191 prop_binch2017bb_multiBins_control_bin7
192 prop_binch2018be_multiBins_signal_bin7
193 prop_binch2018bb_multiBins_signal_bin8_mu_Other
194 R4_2016bb
195 Rel8_2016bb
3.8 +0 −1.7
196 prop_binch2017be_multiBins_control_bin6
197 R7_2018be
198 prop_binch2018be_multiBins_control_bin7
199 prop_binch2017bb_multiBins_control_bin8
200 prop_binch2017be_multiBins_signal_bin7
201 prop_binch2018bb_multiBins_control_bin7
202 R7_2016bb
203 prop_binch2016bb_multiBins_control_bin7
204 prop_binch2016bb_multiBins_signal_bin3
205 prop_binch2017be_multiBins_signal_bin8
206 R7_2016be
207 prop_binch2018bb_multiBins_signal_bin8_mu_DY_S9
208 prop_binch2018bb_multiBins_control_bin8
209 prop_binch2017bb_multiBins_control_bin3
210 R9_2017bb
−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 prop_binch2017bb_multiBins_signal_bin8_mu_Other
212 prop_binch2016be_multiBins_control_bin8
213 R8_2017bb
214 prop_binch2016bb_multiBins_control_bin8
215 prop_binch2017be_multiBins_control_bin8
216 Rel9_2016bb
1.1 +0 −0.7
217 prop_binch2018be_multiBins_signal_bin8
218 R8_2018be
219 R8_2017be
220 prop_binch2017bb_multiBins_signal_bin8_mu_DY_S9
221 R9_2017be
222 Rel8_2017be
4.2 +0 −1.7
223 R9_2016be
224 R8_2018bb
225 R8_2016be
226 R9_2018bb
227 R9_2018be
228 prop_binch2016be_multiBins_signal_bin8
229 R8_2016bb
230 R9_2016bb
231 prop_binch2016bb_multiBins_signal_bin7
232 prop_binch2016bb_multiBins_signal_bin8
233 prop_binch2017bb_multiBins_signal_bin8_mu_DY_S8
234 prop_binch2018bb_multiBins_signal_bin8_mu_DY_S1
235 prop_binch2018bb_multiBins_signal_bin8_mu_DY_S8
236 _2016bb_Smear
237 _Smear
238 prop_binch2018bb_multiBins_signal_bin8_mu_DY_S0
239 prop_binch2018bb_multiBins_signal_bin8_mu_DY_S7
−2 −1 0 1 2
−5 0 5
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr_bin6