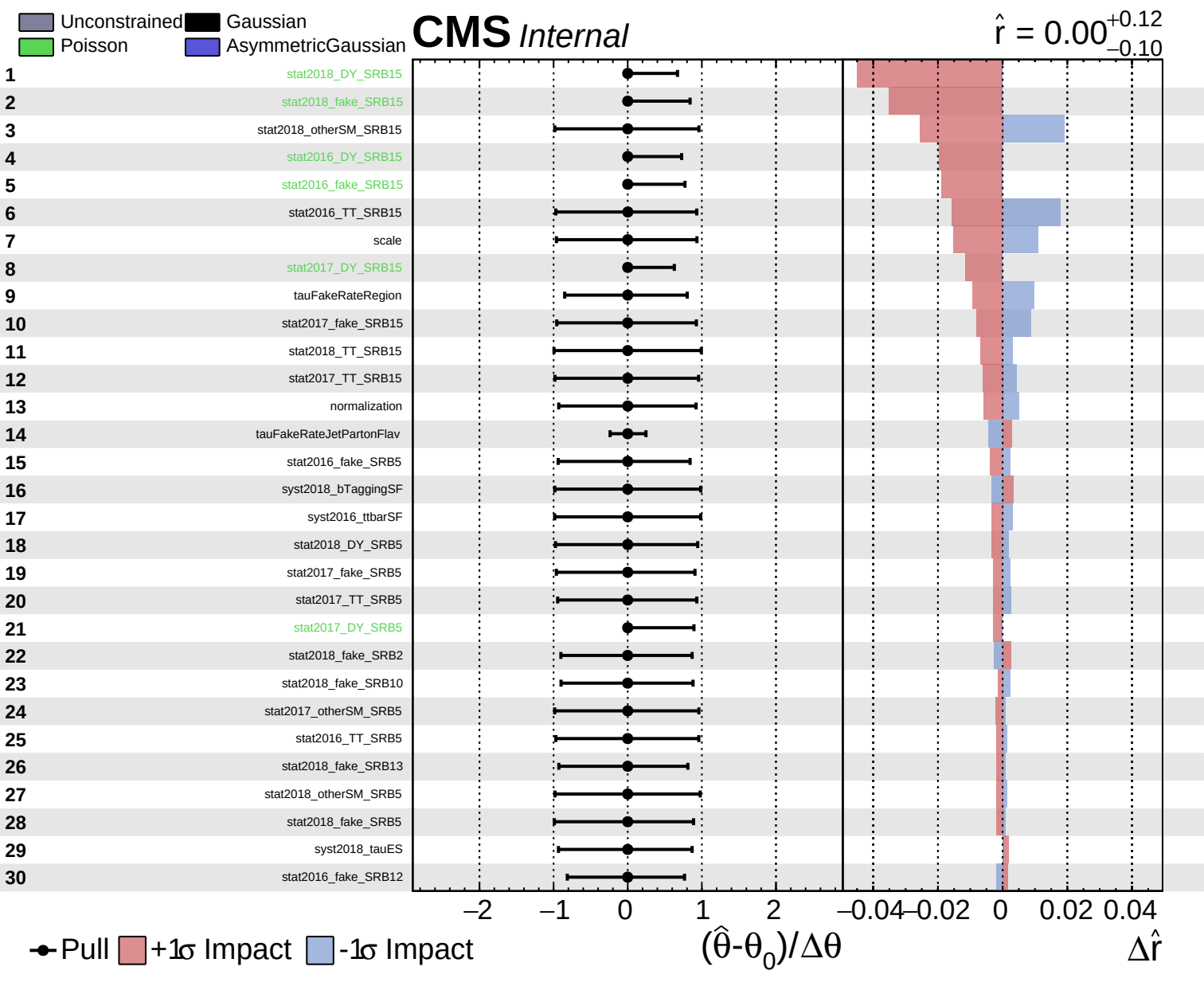
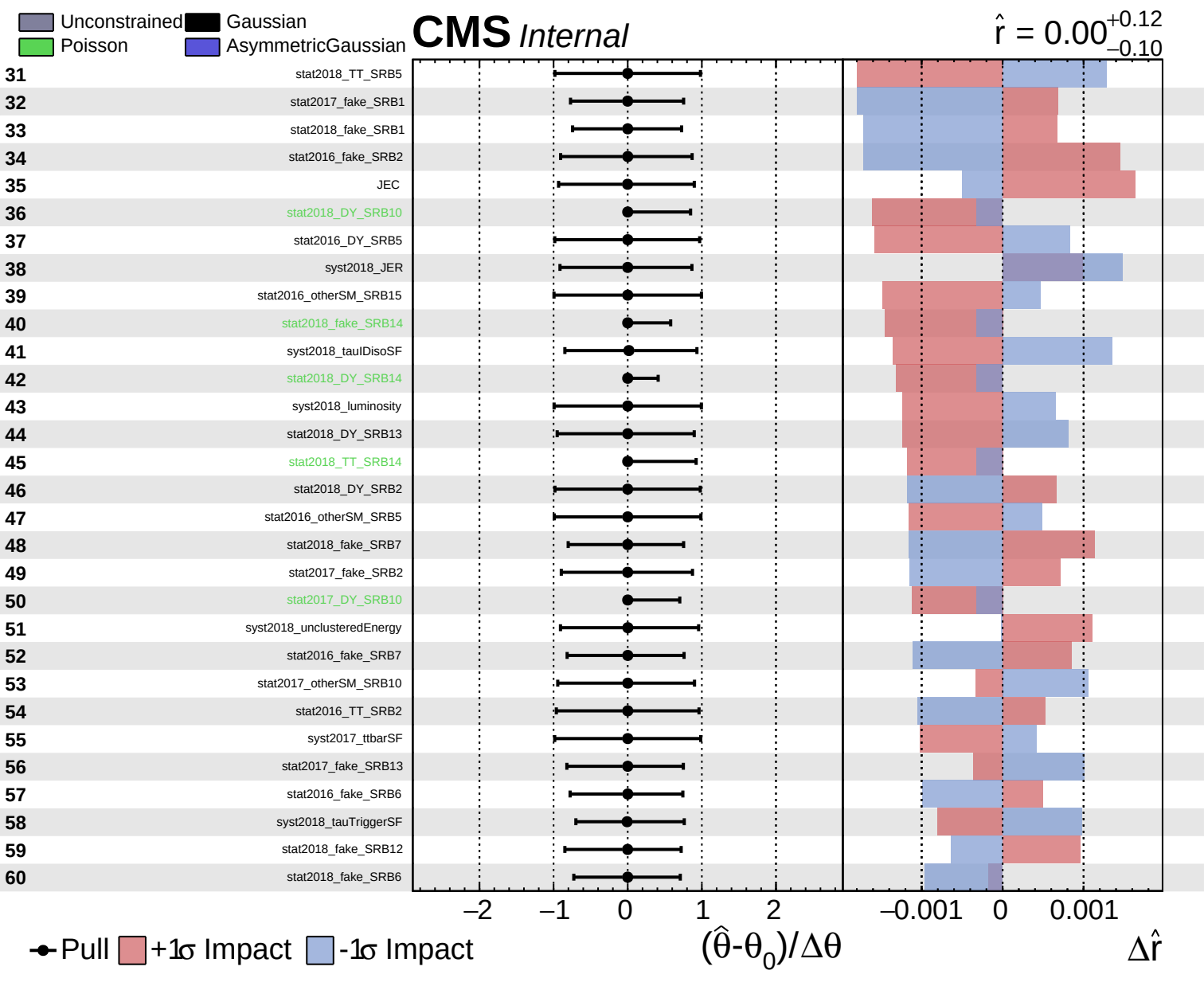
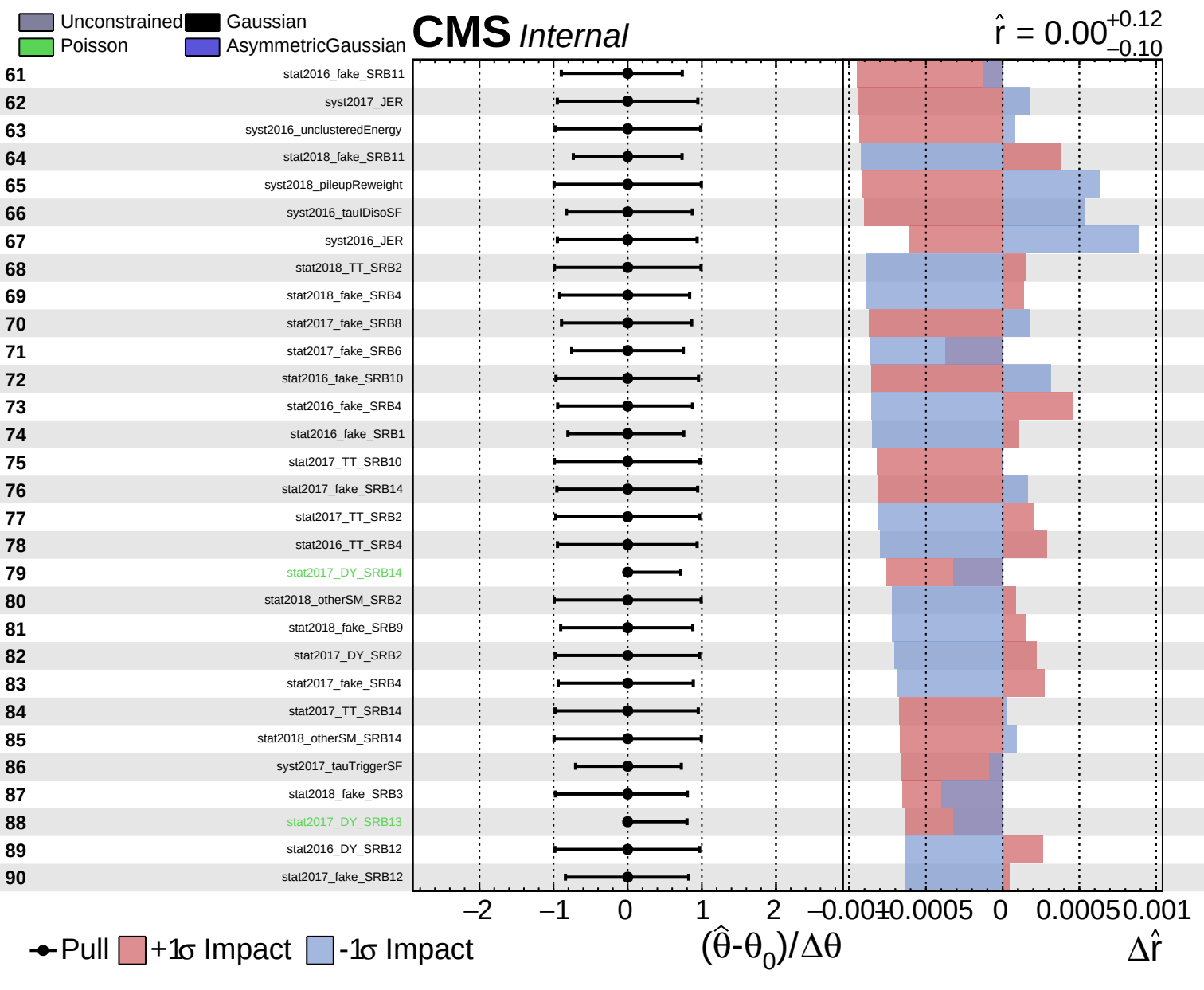
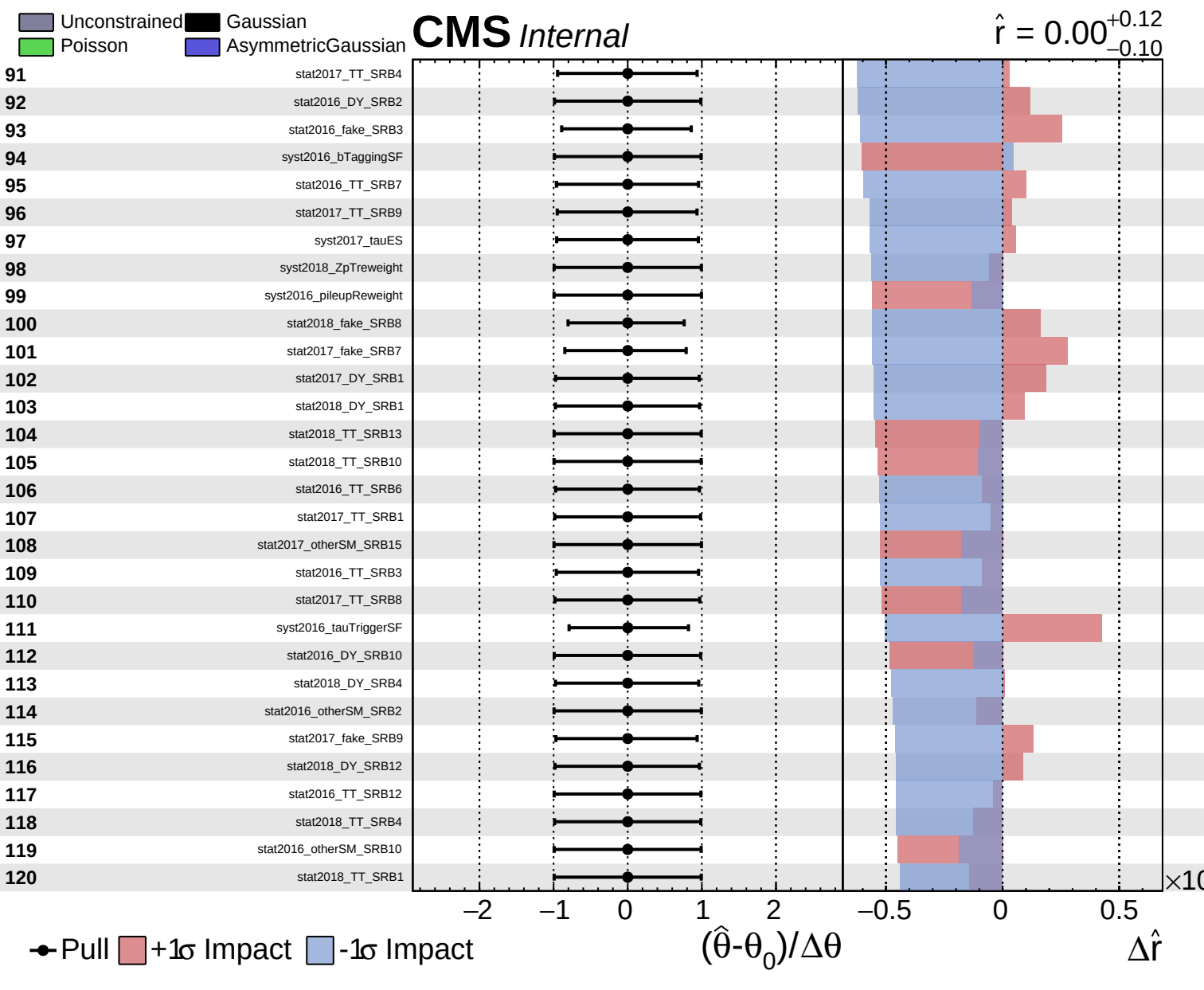
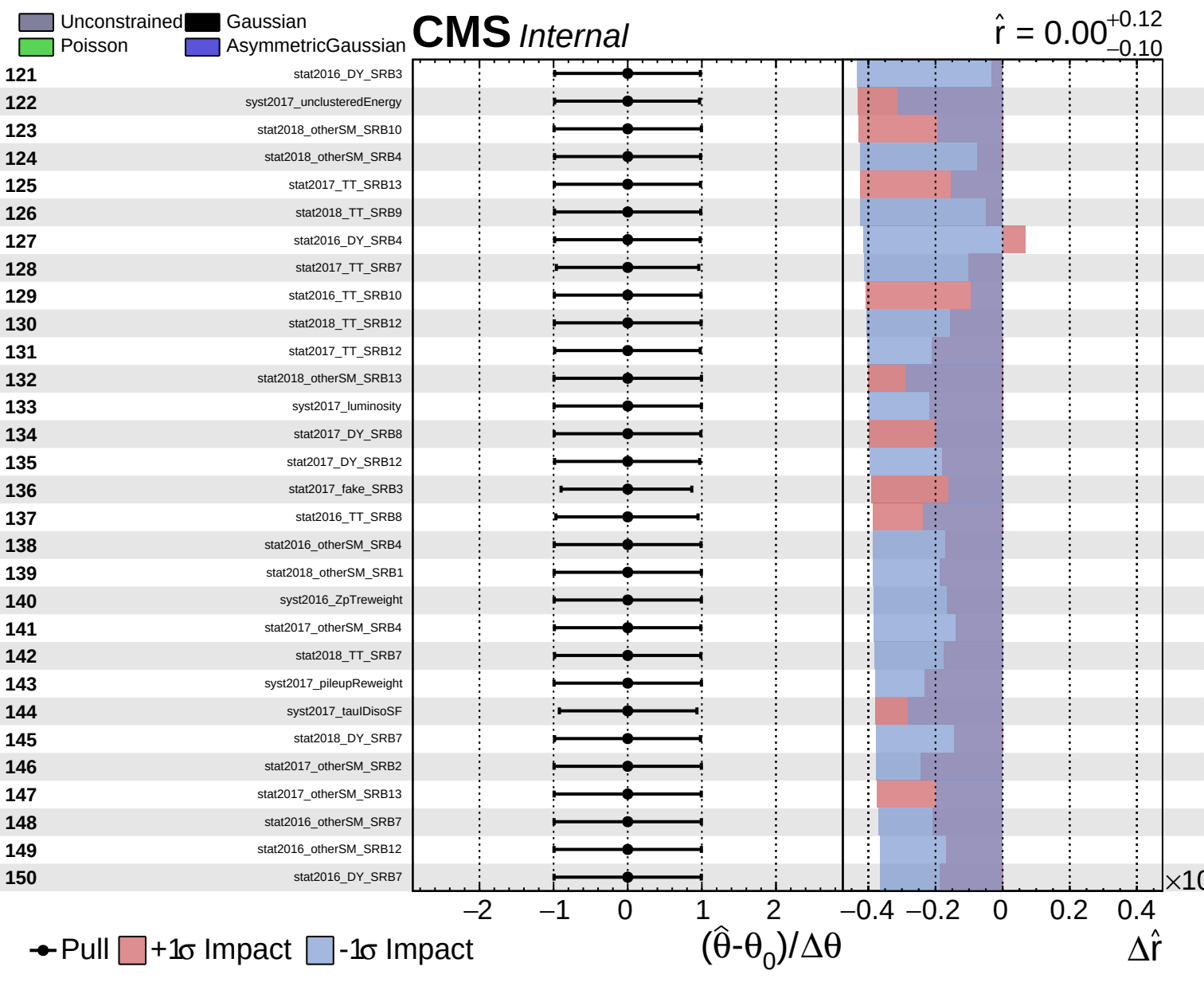
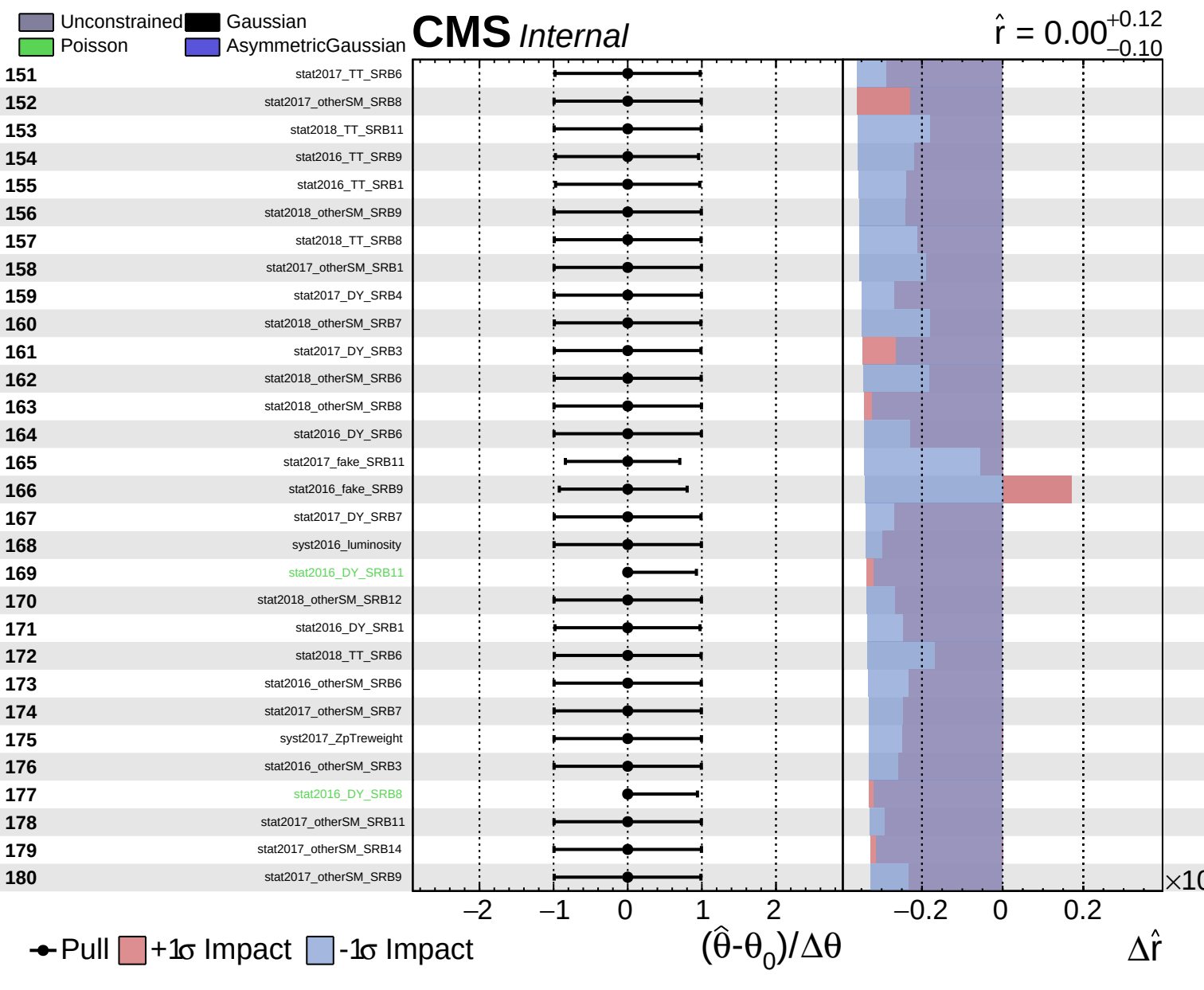

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.00 +0.12 −0.10
1 stat2018_DY_SRB15
2 stat2018_fake_SRB15
3 stat2018_otherSM_SRB15
4 stat2016_DY_SRB15
5 stat2016_fake_SRB15
6 stat2016_TT_SRB15
7 scale
8 stat2017_DY_SRB15
9 tauFakeRateRegion
10 stat2017_fake_SRB15
11 stat2018_TT_SRB15
12 stat2017_TT_SRB15
13 normalization
14 tauFakeRateJetPartonFlav
15 stat2016_fake_SRB5
16 syst2018_bTaggingSF
17 syst2016_ttbarSF
18 stat2018_DY_SRB5
19 stat2017_fake_SRB5
20 stat2017_TT_SRB5
21 stat2017_DY_SRB5
22 stat2018_fake_SRB2
23 stat2018_fake_SRB10
24 stat2017_otherSM_SRB5
25 stat2016_TT_SRB5
26 stat2018_fake_SRB13
27 stat2018_otherSM_SRB5
28 stat2018_fake_SRB5
29 syst2018_tauES
30 stat2016_fake_SRB12
−2 −1 0 1 2
−0.04 −0.02 0 0.02 0.04
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂

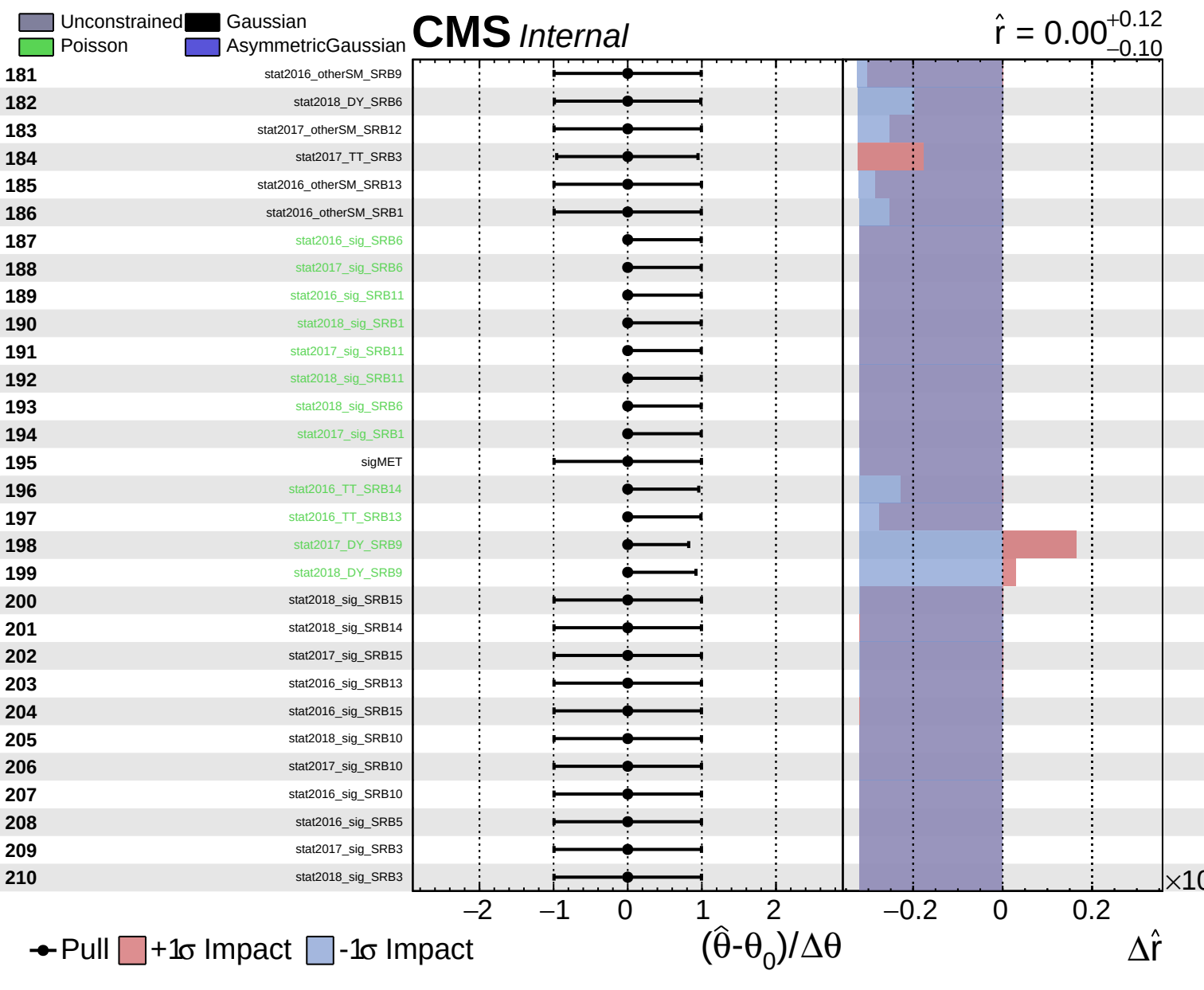

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.00 +0.12 −0.10
31 stat2018_TT_SRB5
32 stat2017_fake_SRB1
33 stat2018_fake_SRB1
34 stat2016_fake_SRB2
35 JEC
36 stat2018_DY_SRB10
37 stat2016_DY_SRB5
38 syst2018_JER
39 stat2016_otherSM_SRB15
40 stat2018_fake_SRB14
41 syst2018_tauIDisoSF
42 stat2018_DY_SRB14
43 syst2018_luminosity
44 stat2018_DY_SRB13
45 stat2018_TT_SRB14
46 stat2018_DY_SRB2
47 stat2016_otherSM_SRB5
48 stat2018_fake_SRB7
49 stat2017_fake_SRB2
50 stat2017_DY_SRB10
51 syst2018_unclusteredEnergy
52 stat2016_fake_SRB7
53 stat2017_otherSM_SRB10
54 stat2016_TT_SRB2
55 syst2017_ttbarSF
56 stat2017_fake_SRB13
57 stat2016_fake_SRB6
58 syst2018_tauTriggerSF
59 stat2018_fake_SRB12
60 stat2018_fake_SRB6
−2 −1 0 1 2
−0.001 0 0.001
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂

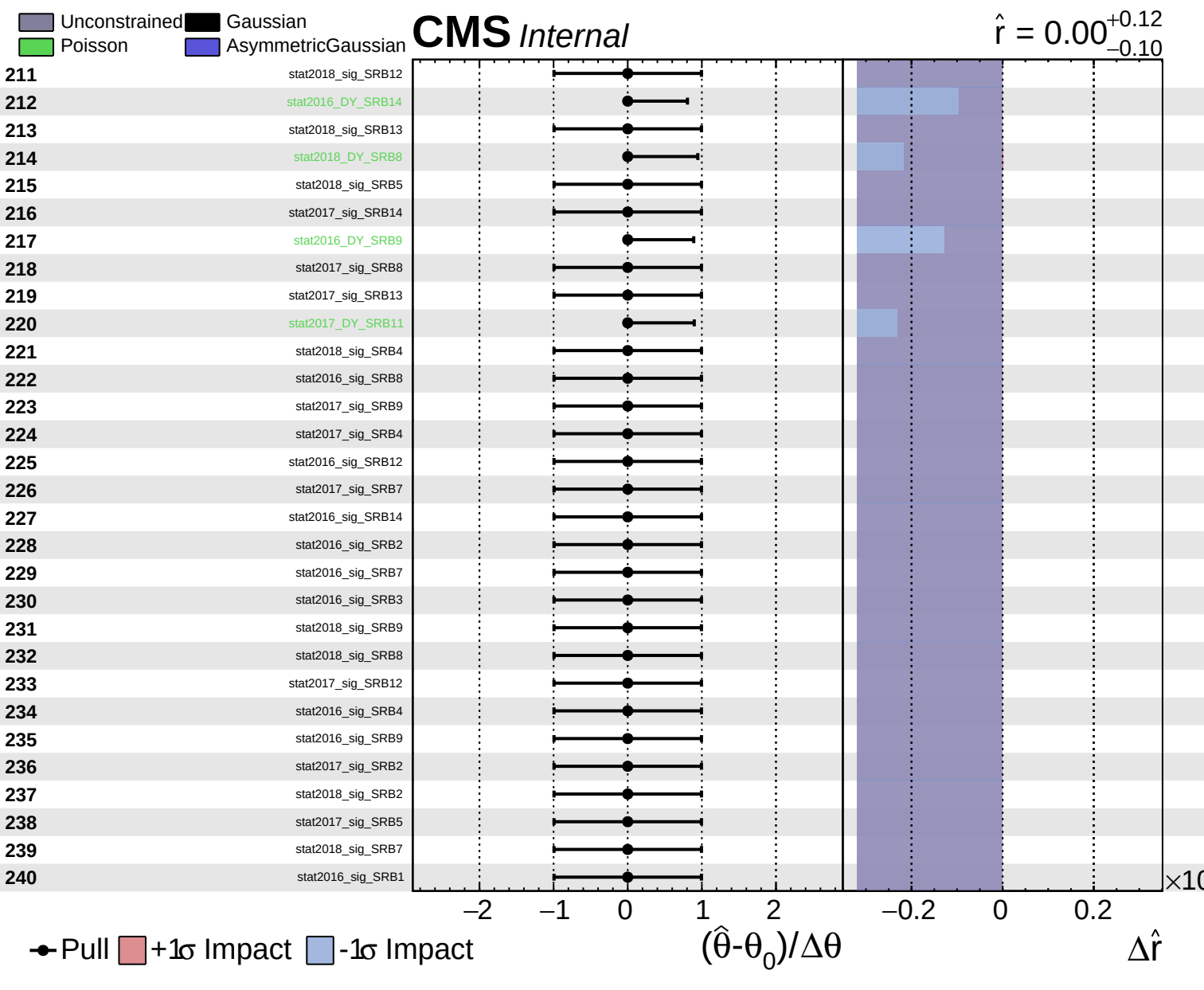

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.00 +0.12 −0.10
61 stat2016_fake_SRB11
62 syst2017_JER
63 syst2016_unclusteredEnergy
64 stat2018_fake_SRB11
65 syst2018_pileupReweight
66 syst2016_tauIDisoSF
67 syst2016_JER
68 stat2018_TT_SRB2
69 stat2018_fake_SRB4
70 stat2017_fake_SRB8
71 stat2017_fake_SRB6
72 stat2016_fake_SRB10
73 stat2016_fake_SRB4
74 stat2016_fake_SRB1
75 stat2017_TT_SRB10
76 stat2017_fake_SRB14
77 stat2017_TT_SRB2
78 stat2016_TT_SRB4
79 stat2017_DY_SRB14
80 stat2018_otherSM_SRB2
81 stat2018_fake_SRB9
82 stat2017_DY_SRB2
83 stat2017_fake_SRB4
84 stat2017_TT_SRB14
85 stat2018_otherSM_SRB14
86 syst2017_tauTriggerSF
87 stat2018_fake_SRB3
88 stat2017_DY_SRB13
89 stat2016_DY_SRB12
90 stat2017_fake_SRB12
−2 −1 0 1 2
−0.001 −0.0005 0 0.0005 0.001
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂

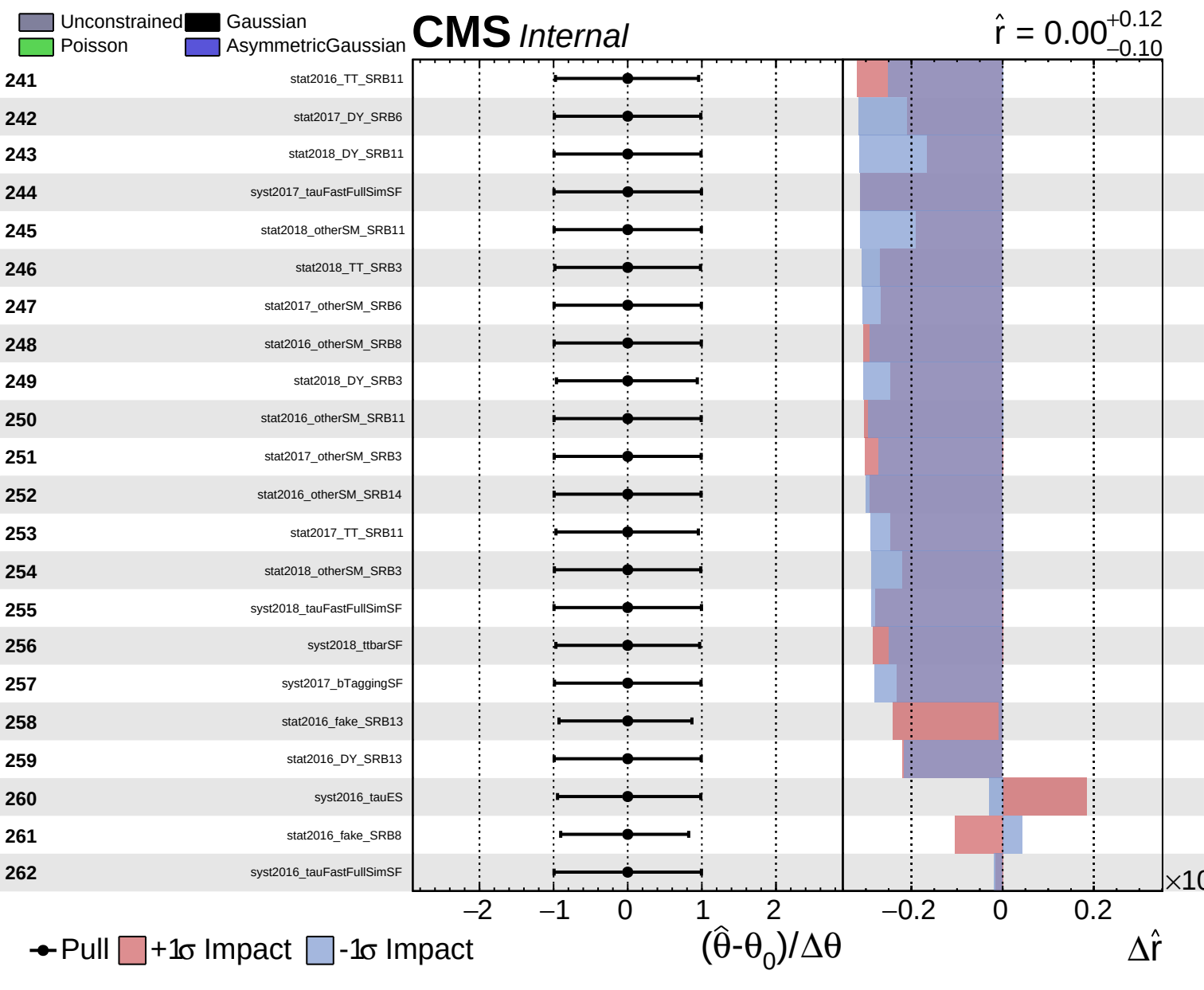

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.00 +0.12 −0.10
91 stat2017_TT_SRB4
92 stat2016_DY_SRB2
93 stat2016_fake_SRB3
94 syst2016_bTaggingSF
95 stat2016_TT_SRB7
96 stat2017_TT_SRB9
97 syst2017_tauES
98 syst2018_ZpTreweight
99 syst2016_pileupReweight
100 stat2018_fake_SRB8
101 stat2017_fake_SRB7
102 stat2017_DY_SRB1
103 stat2018_DY_SRB1
104 stat2018_TT_SRB13
105 stat2018_TT_SRB10
106 stat2016_TT_SRB6
107 stat2017_TT_SRB1
108 stat2017_otherSM_SRB15
109 stat2016_TT_SRB3
110 stat2017_TT_SRB8
111 syst2016_tauTriggerSF
112 stat2016_DY_SRB10
113 stat2018_DY_SRB4
114 stat2016_otherSM_SRB2
115 stat2017_fake_SRB9
116 stat2018_DY_SRB12
117 stat2016_TT_SRB12
118 stat2018_TT_SRB4
119 stat2016_otherSM_SRB10
120 stat2018_TT_SRB1
×10
−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 = 0.00 +0.12 −0.10
121 stat2016_DY_SRB3
122 syst2017_unclusteredEnergy
123 stat2018_otherSM_SRB10
124 stat2018_otherSM_SRB4
125 stat2017_TT_SRB13
126 stat2018_TT_SRB9
127 stat2016_DY_SRB4
128 stat2017_TT_SRB7
129 stat2016_TT_SRB10
130 stat2018_TT_SRB12
131 stat2017_TT_SRB12
132 stat2018_otherSM_SRB13
133 syst2017_luminosity
134 stat2017_DY_SRB8
135 stat2017_DY_SRB12
136 stat2017_fake_SRB3
137 stat2016_TT_SRB8
138 stat2016_otherSM_SRB4
139 stat2018_otherSM_SRB1
140 syst2016_ZpTreweight
141 stat2017_otherSM_SRB4
142 stat2018_TT_SRB7
143 syst2017_pileupReweight
144 syst2017_tauIDisoSF
145 stat2018_DY_SRB7
146 stat2017_otherSM_SRB2
147 stat2017_otherSM_SRB13
148 stat2016_otherSM_SRB7
149 stat2016_otherSM_SRB12
150 stat2016_DY_SRB7
−2 −1 0 1 2
−0.4 −0.2 0 0.2 0.4
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.00 +0.12 −0.10
151 stat2017_TT_SRB6
152 stat2017_otherSM_SRB8
153 stat2018_TT_SRB11
154 stat2016_TT_SRB9
155 stat2016_TT_SRB1
156 stat2018_otherSM_SRB9
157 stat2018_TT_SRB8
158 stat2017_otherSM_SRB1
159 stat2017_DY_SRB4
160 stat2018_otherSM_SRB7
161 stat2017_DY_SRB3
162 stat2018_otherSM_SRB6
163 stat2018_otherSM_SRB8
164 stat2016_DY_SRB6
165 stat2017_fake_SRB11
166 stat2016_fake_SRB9
167 stat2017_DY_SRB7
168 syst2016_luminosity
169 stat2016_DY_SRB11
170 stat2018_otherSM_SRB12
171 stat2016_DY_SRB1
172 stat2018_TT_SRB6
173 stat2016_otherSM_SRB6
174 stat2017_otherSM_SRB7
175 syst2017_ZpTreweight
176 stat2016_otherSM_SRB3
177 stat2016_DY_SRB8
178 stat2017_otherSM_SRB11
179 stat2017_otherSM_SRB14
180 stat2017_otherSM_SRB9
−2 −1 0 1 2
−0.2 0 0.2
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.00 +0.12 −0.10
181 stat2016_otherSM_SRB9
182 stat2018_DY_SRB6
183 stat2017_otherSM_SRB12
184 stat2017_TT_SRB3
185 stat2016_otherSM_SRB13
186 stat2016_otherSM_SRB1
187 stat2016_sig_SRB6
188 stat2017_sig_SRB6
189 stat2016_sig_SRB11
190 stat2018_sig_SRB1
191 stat2017_sig_SRB11
192 stat2018_sig_SRB11
193 stat2018_sig_SRB6
194 stat2017_sig_SRB1
195 sigMET
196 stat2016_TT_SRB14
197 stat2016_TT_SRB13
198 stat2017_DY_SRB9
199 stat2018_DY_SRB9
200 stat2018_sig_SRB15
201 stat2018_sig_SRB14
202 stat2017_sig_SRB15
203 stat2016_sig_SRB13
204 stat2016_sig_SRB15
205 stat2018_sig_SRB10
206 stat2017_sig_SRB10
207 stat2016_sig_SRB10
208 stat2016_sig_SRB5
209 stat2017_sig_SRB3
210 stat2018_sig_SRB3
×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 = 0.00 +0.12 −0.10
211 stat2018_sig_SRB12
212 stat2016_DY_SRB14
213 stat2018_sig_SRB13
214 stat2018_DY_SRB8
215 stat2018_sig_SRB5
216 stat2017_sig_SRB14
217 stat2016_DY_SRB9
218 stat2017_sig_SRB8
219 stat2017_sig_SRB13
220 stat2017_DY_SRB11
221 stat2018_sig_SRB4
222 stat2016_sig_SRB8
223 stat2017_sig_SRB9
224 stat2017_sig_SRB4
225 stat2016_sig_SRB12
226 stat2017_sig_SRB7
227 stat2016_sig_SRB14
228 stat2016_sig_SRB2
229 stat2016_sig_SRB7
230 stat2016_sig_SRB3
231 stat2018_sig_SRB9
232 stat2018_sig_SRB8
233 stat2017_sig_SRB12
234 stat2016_sig_SRB4
235 stat2016_sig_SRB9
236 stat2017_sig_SRB2
237 stat2018_sig_SRB2
238 stat2017_sig_SRB5
239 stat2018_sig_SRB7
240 stat2016_sig_SRB1
×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 = 0.00 +0.12 −0.10
241 stat2016_TT_SRB11
242 stat2017_DY_SRB6
243 stat2018_DY_SRB11
244 syst2017_tauFastFullSimSF
245 stat2018_otherSM_SRB11
246 stat2018_TT_SRB3
247 stat2017_otherSM_SRB6
248 stat2016_otherSM_SRB8
249 stat2018_DY_SRB3
250 stat2016_otherSM_SRB11
251 stat2017_otherSM_SRB3
252 stat2016_otherSM_SRB14
253 stat2017_TT_SRB11
254 stat2018_otherSM_SRB3
255 syst2018_tauFastFullSimSF
256 syst2018_ttbarSF
257 syst2017_bTaggingSF
258 stat2016_fake_SRB13
259 stat2016_DY_SRB13
260 syst2016_tauES
261 stat2016_fake_SRB8
262 syst2016_tauFastFullSimSF
×10
−2 −1 0 1 2
−0.2 0 0.2
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂