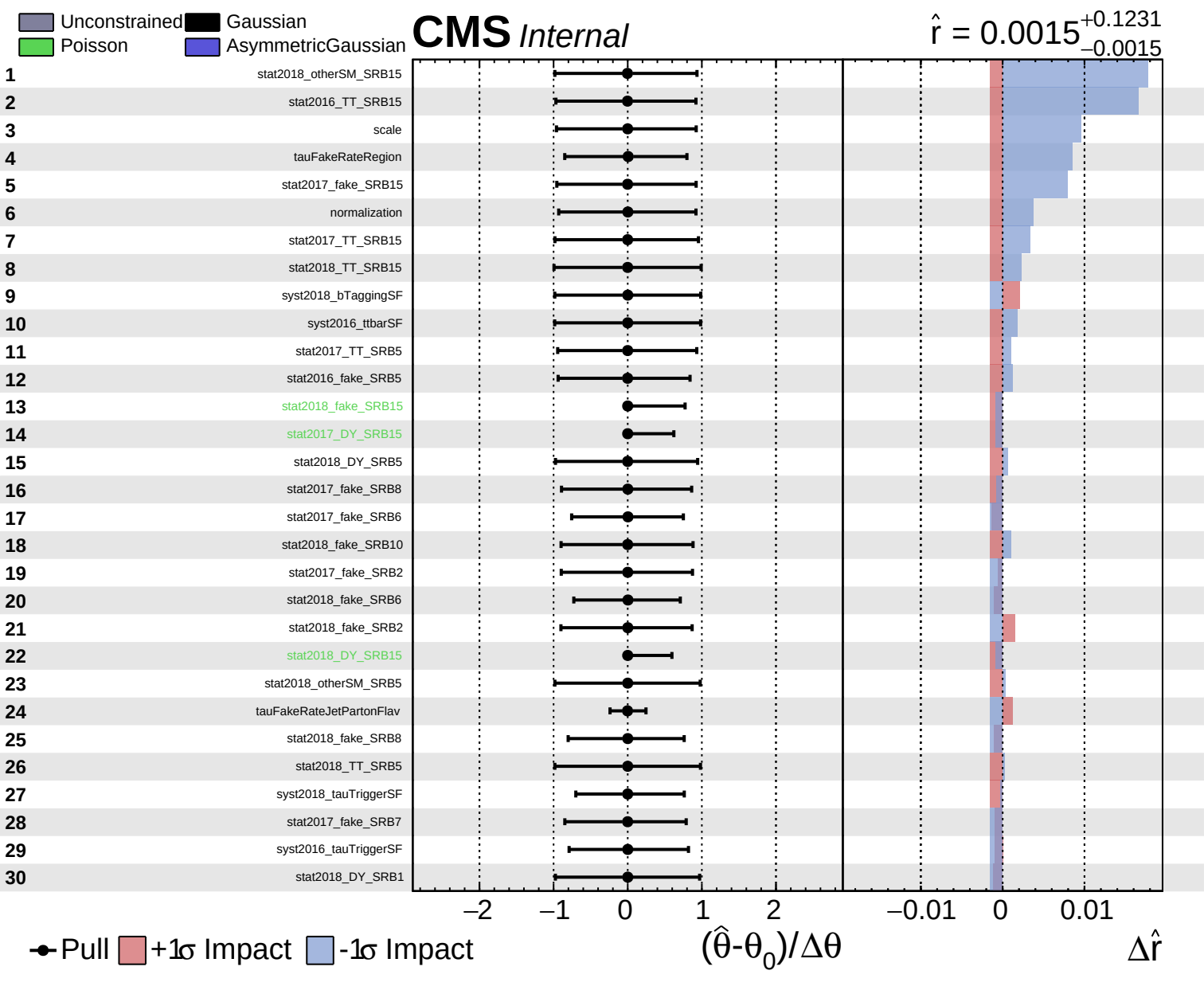
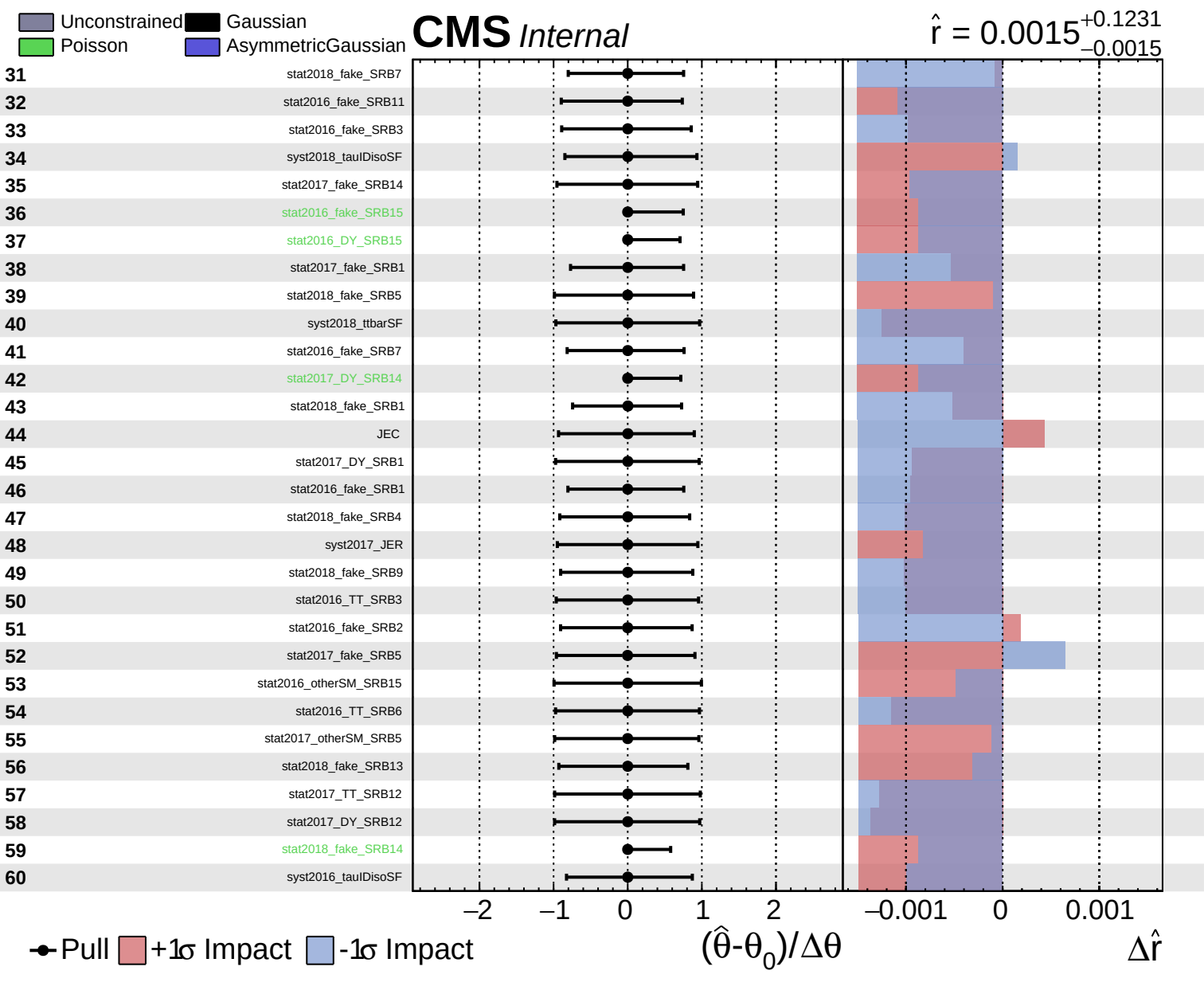

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.0015 +0.1231 −0.0015
1 stat2018_otherSM_SRB15
2 stat2016_TT_SRB15
3 scale
4 tauFakeRateRegion
5 stat2017_fake_SRB15
6 normalization
7 stat2017_TT_SRB15
8 stat2018_TT_SRB15
9 syst2018_bTaggingSF
10 syst2016_ttbarSF
11 stat2017_TT_SRB5
12 stat2016_fake_SRB5
13 stat2018_fake_SRB15
14 stat2017_DY_SRB15
15 stat2018_DY_SRB5
16 stat2017_fake_SRB8
17 stat2017_fake_SRB6
18 stat2018_fake_SRB10
19 stat2017_fake_SRB2
20 stat2018_fake_SRB6
21 stat2018_fake_SRB2
22 stat2018_DY_SRB15
23 stat2018_otherSM_SRB5
24 tauFakeRateJetPartonFlav
25 stat2018_fake_SRB8
26 stat2018_TT_SRB5
27 syst2018_tauTriggerSF
28 stat2017_fake_SRB7
29 syst2016_tauTriggerSF
30 stat2018_DY_SRB1
−2 −1 0 1 2
−0.01 0 0.01
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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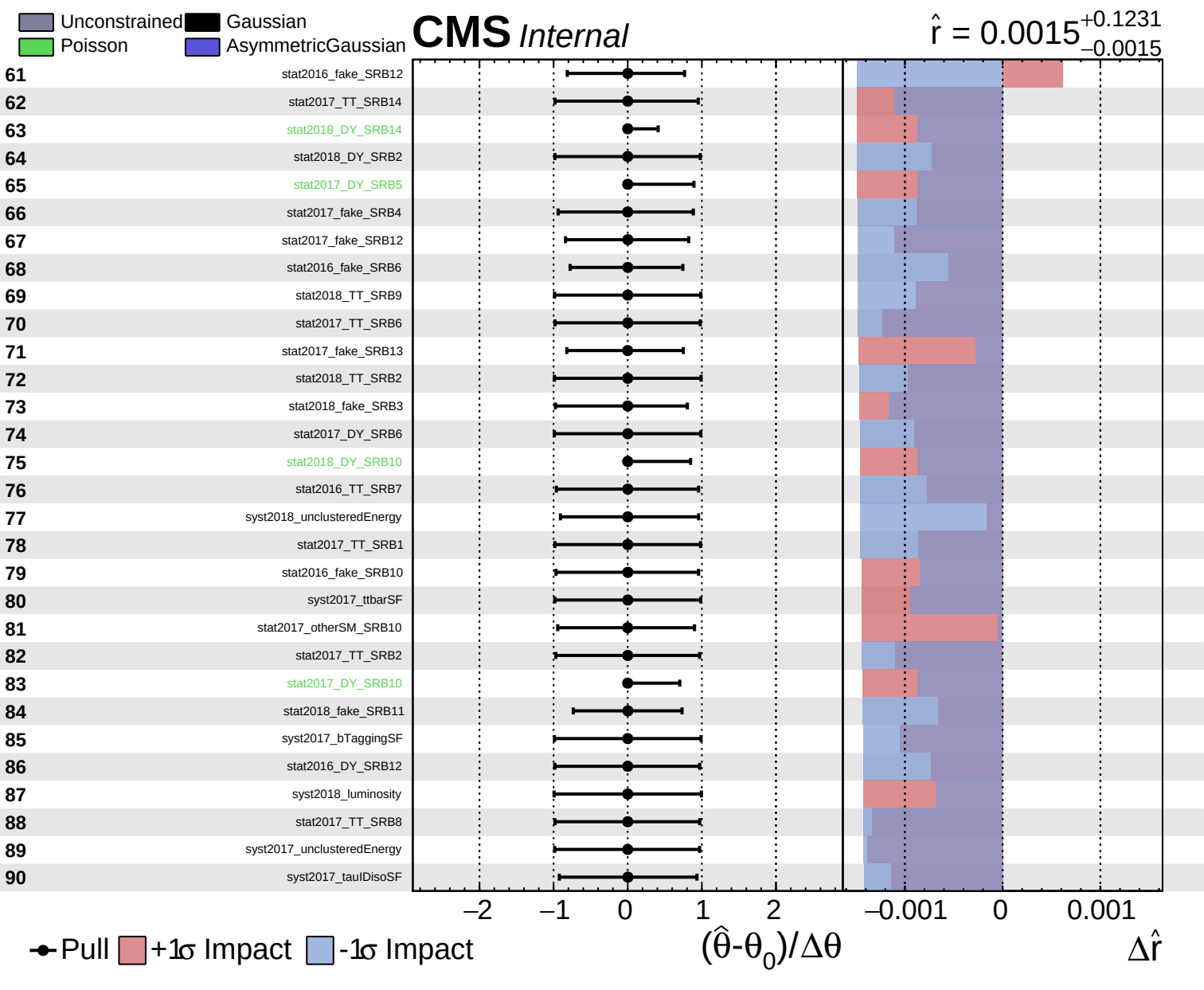
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.0015 +0.1231 −0.0015
31 stat2018_fake_SRB7
32 stat2016_fake_SRB11
33 stat2016_fake_SRB3
34 syst2018_tauIDisoSF
35 stat2017_fake_SRB14
36 stat2016_fake_SRB15
37 stat2016_DY_SRB15
38 stat2017_fake_SRB1
39 stat2018_fake_SRB5
40 syst2018_ttbarSF
41 stat2016_fake_SRB7
42 stat2017_DY_SRB14
43 stat2018_fake_SRB1
44 JEC
45 stat2017_DY_SRB1
46 stat2016_fake_SRB1
47 stat2018_fake_SRB4
48 syst2017_JER
49 stat2018_fake_SRB9
50 stat2016_TT_SRB3
51 stat2016_fake_SRB2
52 stat2017_fake_SRB5
53 stat2016_otherSM_SRB15
54 stat2016_TT_SRB6
55 stat2017_otherSM_SRB5
56 stat2018_fake_SRB13
57 stat2017_TT_SRB12
58 stat2017_DY_SRB12
59 stat2018_fake_SRB14
60 syst2016_tauIDisoSF
−2 −1 0 1 2
−0.001 0 0.001
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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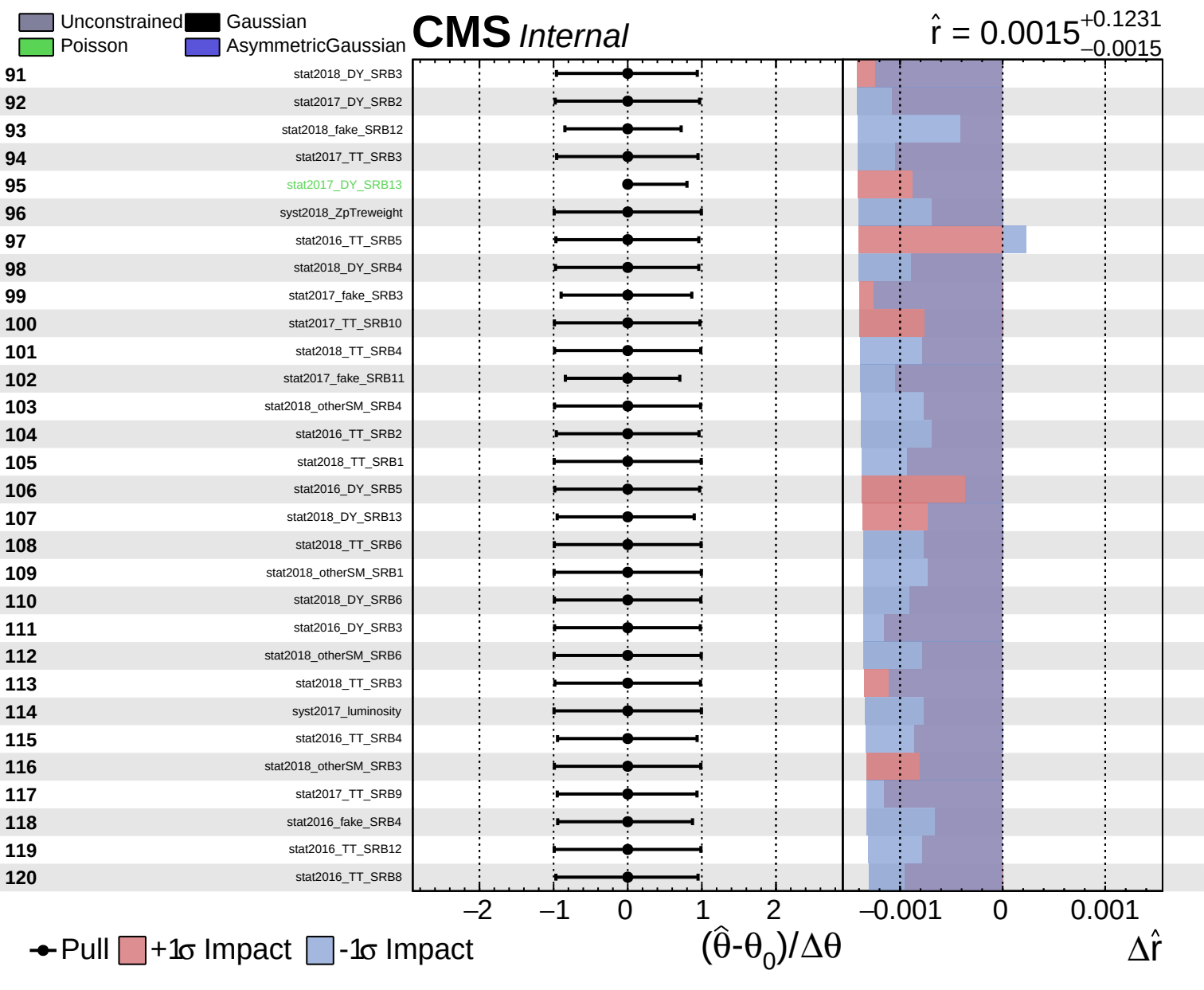
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.0015 +0.1231 −0.0015
61 stat2016_fake_SRB12
62 stat2017_TT_SRB14
63 stat2018_DY_SRB14
64 stat2018_DY_SRB2
65 stat2017_DY_SRB5
66 stat2017_fake_SRB4
67 stat2017_fake_SRB12
68 stat2016_fake_SRB6
69 stat2018_TT_SRB9
70 stat2017_TT_SRB6
71 stat2017_fake_SRB13
72 stat2018_TT_SRB2
73 stat2018_fake_SRB3
74 stat2017_DY_SRB6
75 stat2018_DY_SRB10
76 stat2016_TT_SRB7
77 syst2018_unclusteredEnergy
78 stat2017_TT_SRB1
79 stat2016_fake_SRB10
80 syst2017_ttbarSF
81 stat2017_otherSM_SRB10
82 stat2017_TT_SRB2
83 stat2017_DY_SRB10
84 stat2018_fake_SRB11
85 syst2017_bTaggingSF
86 stat2016_DY_SRB12
87 syst2018_luminosity
88 stat2017_TT_SRB8
89 syst2017_unclusteredEnergy
90 syst2017_tauIDisoSF
−2 −1 0 1 2
−0.001 0 0.001
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂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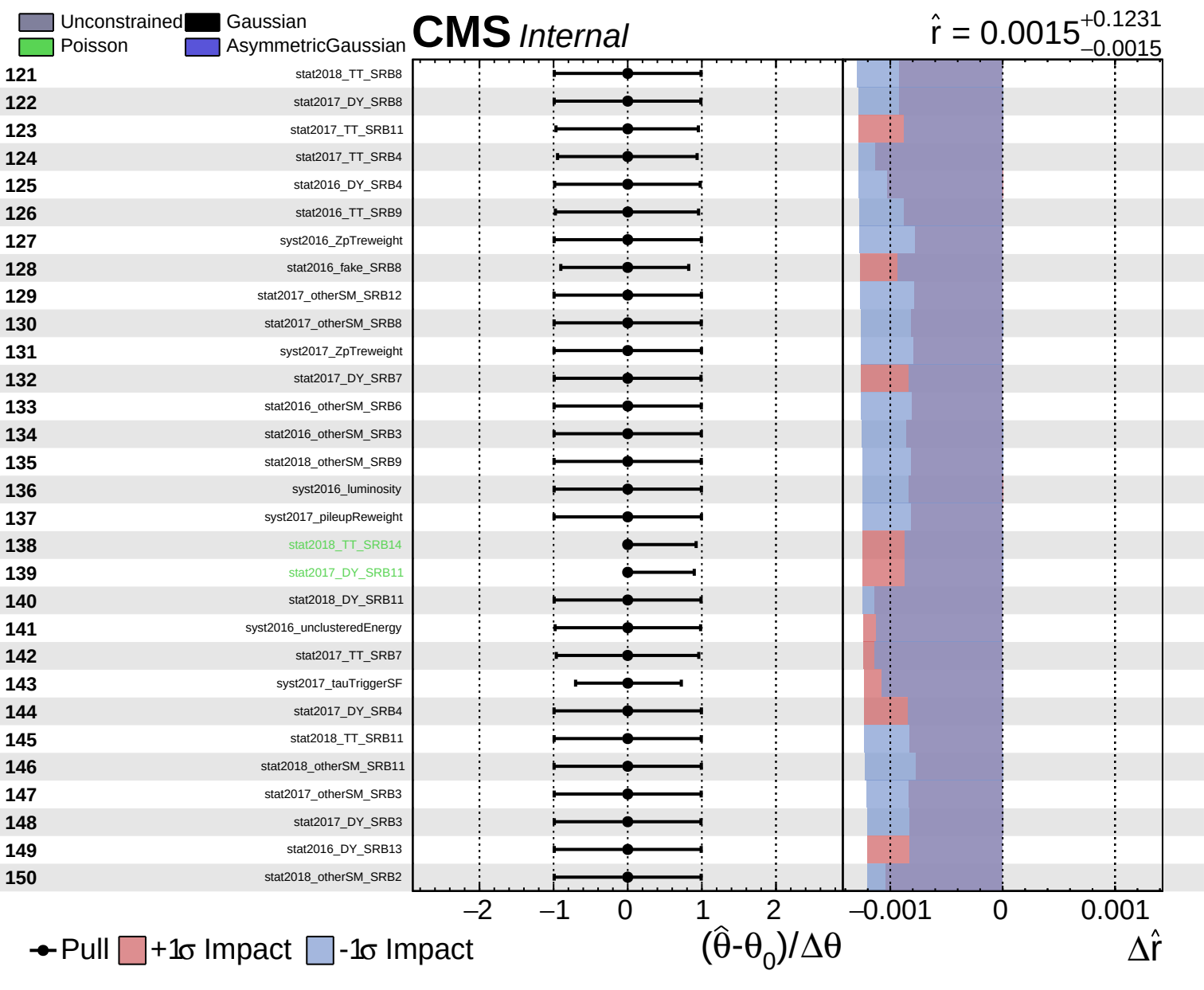
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.0015 +0.1231 −0.0015
91 stat2018_DY_SRB3
92 stat2017_DY_SRB2
93 stat2018_fake_SRB12
94 stat2017_TT_SRB3
95 stat2017_DY_SRB13
96 syst2018_ZpTreweight
97 stat2016_TT_SRB5
98 stat2018_DY_SRB4
99 stat2017_fake_SRB3
100 stat2017_TT_SRB10
101 stat2018_TT_SRB4
102 stat2017_fake_SRB11
103 stat2018_otherSM_SRB4
104 stat2016_TT_SRB2
105 stat2018_TT_SRB1
106 stat2016_DY_SRB5
107 stat2018_DY_SRB13
108 stat2018_TT_SRB6
109 stat2018_otherSM_SRB1
110 stat2018_DY_SRB6
111 stat2016_DY_SRB3
112 stat2018_otherSM_SRB6
113 stat2018_TT_SRB3
114 syst2017_luminosity
115 stat2016_TT_SRB4
116 stat2018_otherSM_SRB3
117 stat2017_TT_SRB9
118 stat2016_fake_SRB4
119 stat2016_TT_SRB12
120 stat2016_TT_SRB8
−2 −1 0 1 2
−0.001 0 0.001
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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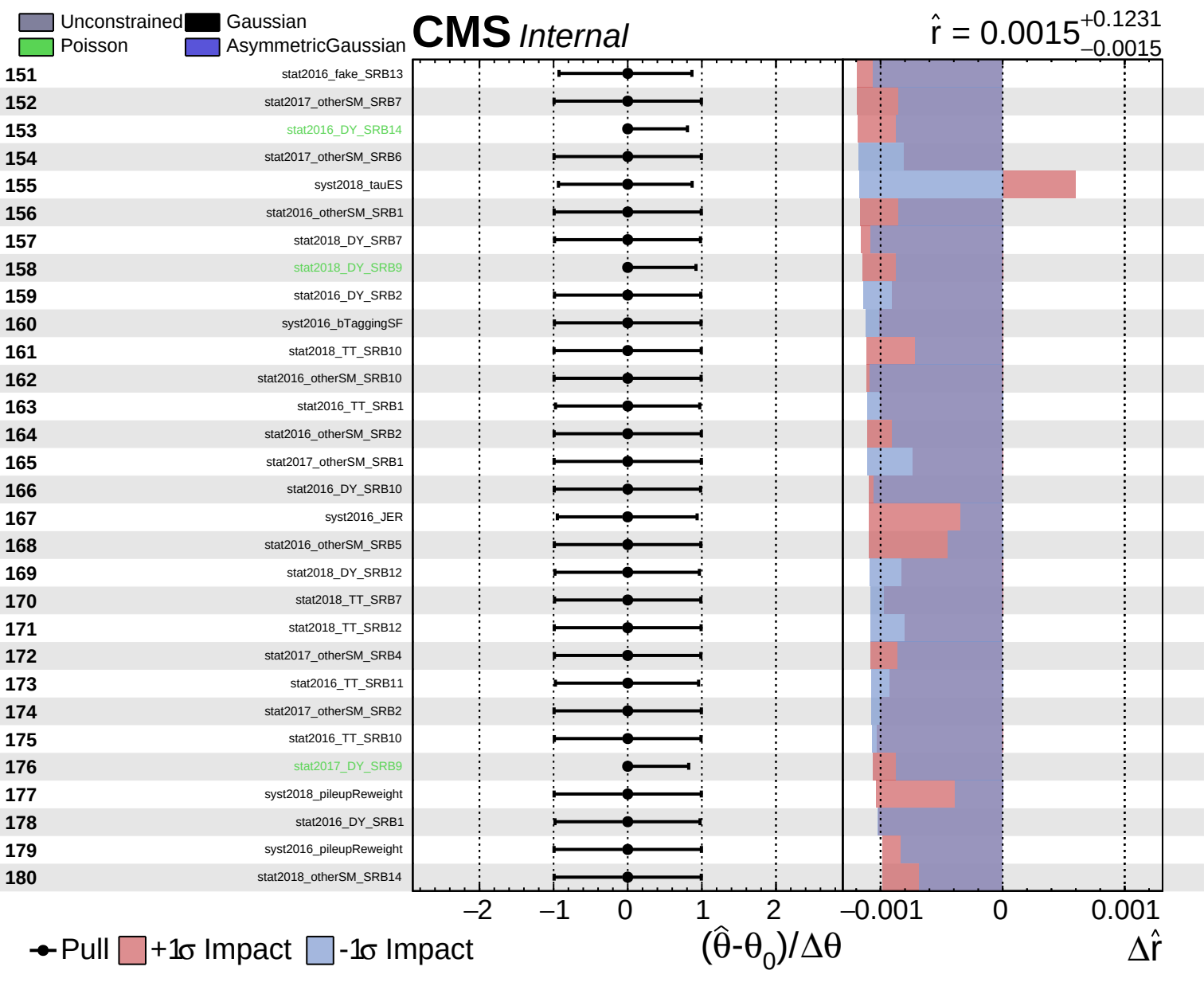
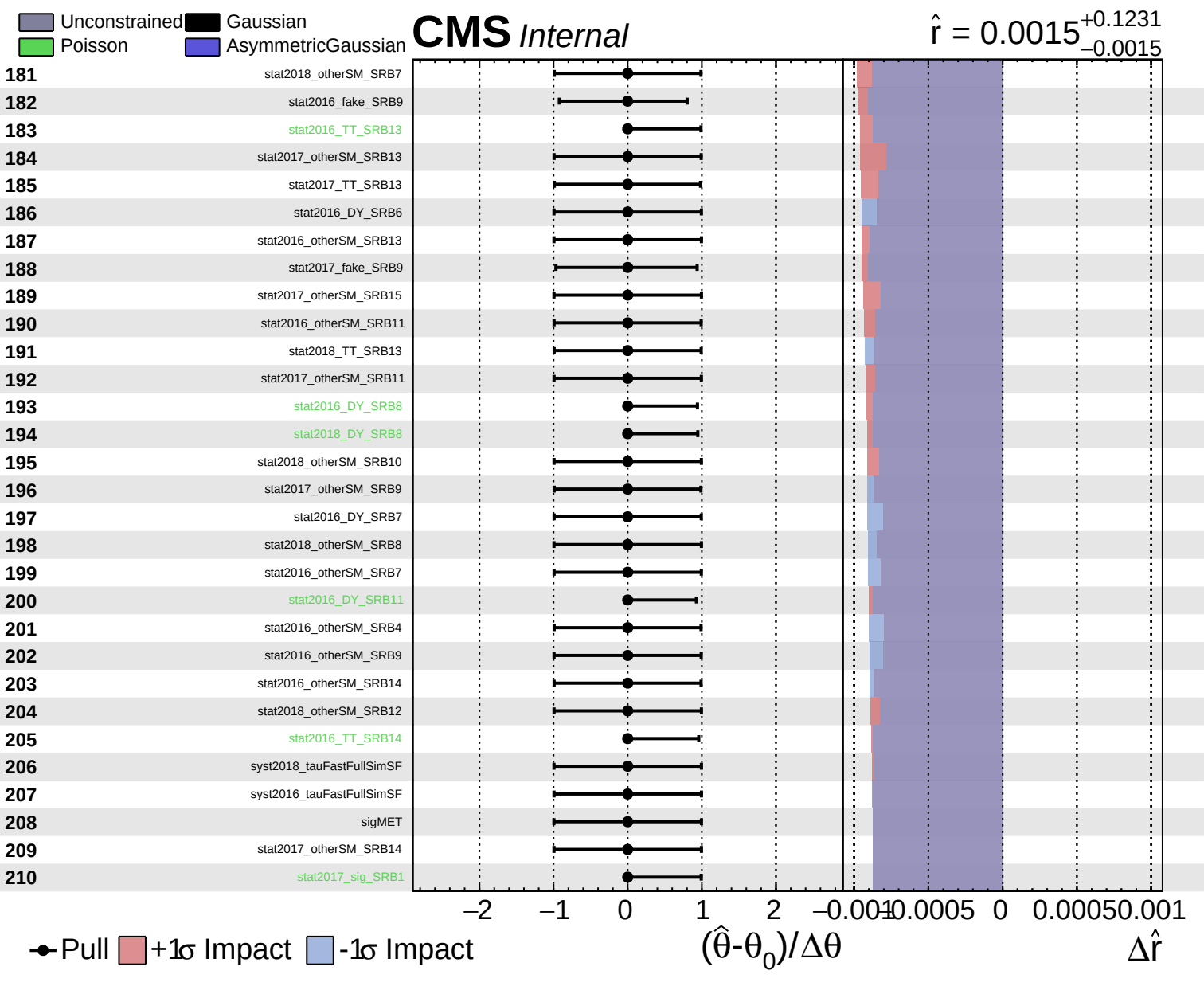
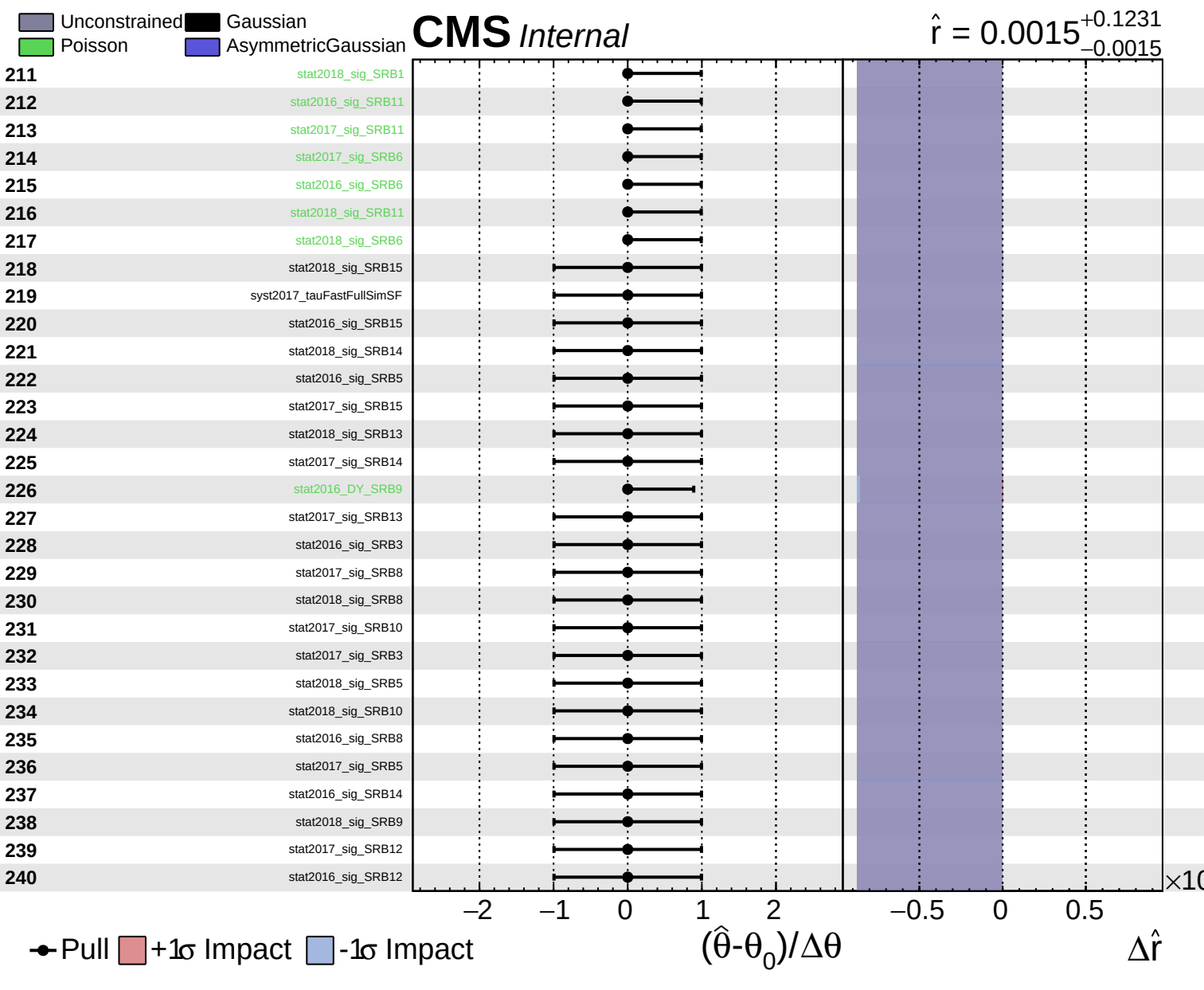
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.0015 +0.1231 −0.0015
121 stat2018_TT_SRB8
122 stat2017_DY_SRB8
123 stat2017_TT_SRB11
124 stat2017_TT_SRB4
125 stat2016_DY_SRB4
126 stat2016_TT_SRB9
127 syst2016_ZpTreweight
128 stat2016_fake_SRB8
129 stat2017_otherSM_SRB12
130 stat2017_otherSM_SRB8
131 syst2017_ZpTreweight
132 stat2017_DY_SRB7
133 stat2016_otherSM_SRB6
134 stat2016_otherSM_SRB3
135 stat2018_otherSM_SRB9
136 syst2016_luminosity
137 syst2017_pileupReweight
138 stat2018_TT_SRB14
139 stat2017_DY_SRB11
140 stat2018_DY_SRB11
141 syst2016_unclusteredEnergy
142 stat2017_TT_SRB7
143 syst2017_tauTriggerSF
144 stat2017_DY_SRB4
145 stat2018_TT_SRB11
146 stat2018_otherSM_SRB11
147 stat2017_otherSM_SRB3
148 stat2017_DY_SRB3
149 stat2016_DY_SRB13
150 stat2018_otherSM_SRB2
−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 = 0.0015 +0.1231 −0.0015
151 stat2016_fake_SRB13
152 stat2017_otherSM_SRB7
153 stat2016_DY_SRB14
154 stat2017_otherSM_SRB6
155 syst2018_tauES
156 stat2016_otherSM_SRB1
157 stat2018_DY_SRB7
158 stat2018_DY_SRB9
159 stat2016_DY_SRB2
160 syst2016_bTaggingSF
161 stat2018_TT_SRB10
162 stat2016_otherSM_SRB10
163 stat2016_TT_SRB1
164 stat2016_otherSM_SRB2
165 stat2017_otherSM_SRB1
166 stat2016_DY_SRB10
167 syst2016_JER
168 stat2016_otherSM_SRB5
169 stat2018_DY_SRB12
170 stat2018_TT_SRB7
171 stat2018_TT_SRB12
172 stat2017_otherSM_SRB4
173 stat2016_TT_SRB11
174 stat2017_otherSM_SRB2
175 stat2016_TT_SRB10
176 stat2017_DY_SRB9
177 syst2018_pileupReweight
178 stat2016_DY_SRB1
179 syst2016_pileupReweight
180 stat2018_otherSM_SRB14
−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 = 0.0015 +0.1231 −0.0015
181 stat2018_otherSM_SRB7
182 stat2016_fake_SRB9
183 stat2016_TT_SRB13
184 stat2017_otherSM_SRB13
185 stat2017_TT_SRB13
186 stat2016_DY_SRB6
187 stat2016_otherSM_SRB13
188 stat2017_fake_SRB9
189 stat2017_otherSM_SRB15
190 stat2016_otherSM_SRB11
191 stat2018_TT_SRB13
192 stat2017_otherSM_SRB11
193 stat2016_DY_SRB8
194 stat2018_DY_SRB8
195 stat2018_otherSM_SRB10
196 stat2017_otherSM_SRB9
197 stat2016_DY_SRB7
198 stat2018_otherSM_SRB8
199 stat2016_otherSM_SRB7
200 stat2016_DY_SRB11
201 stat2016_otherSM_SRB4
202 stat2016_otherSM_SRB9
203 stat2016_otherSM_SRB14
204 stat2018_otherSM_SRB12
205 stat2016_TT_SRB14
206 syst2018_tauFastFullSimSF
207 syst2016_tauFastFullSimSF
208 sigMET
209 stat2017_otherSM_SRB14
210 stat2017_sig_SRB1
−2 −1 0 1 2
−0.001 −0.0005 0 0.0005 0.001
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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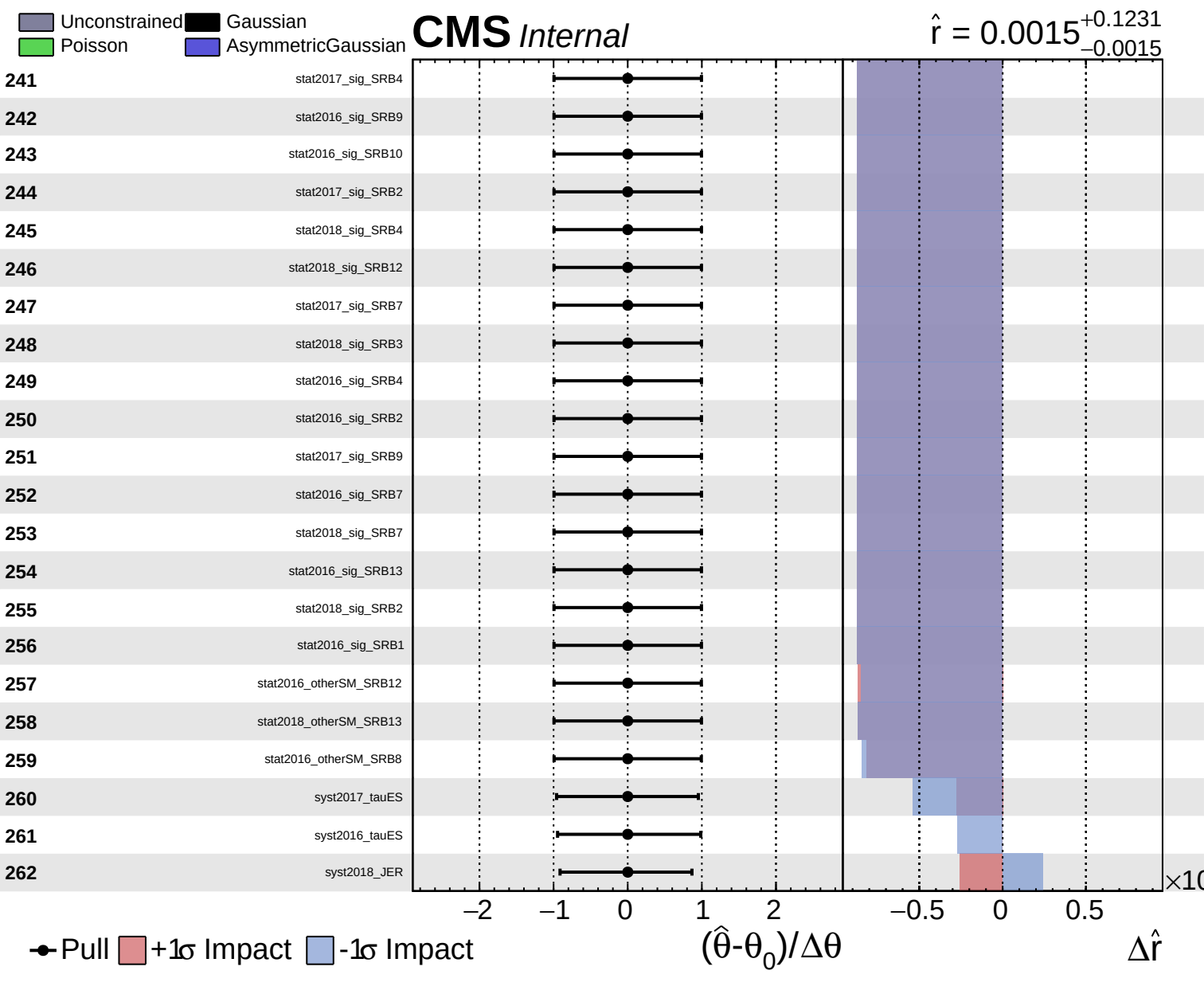
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.0015 +0.1231 −0.0015
211 stat2018_sig_SRB1
212 stat2016_sig_SRB11
213 stat2017_sig_SRB11
214 stat2017_sig_SRB6
215 stat2016_sig_SRB6
216 stat2018_sig_SRB11
217 stat2018_sig_SRB6
218 stat2018_sig_SRB15
219 syst2017_tauFastFullSimSF
220 stat2016_sig_SRB15
221 stat2018_sig_SRB14
222 stat2016_sig_SRB5
223 stat2017_sig_SRB15
224 stat2018_sig_SRB13
225 stat2017_sig_SRB14
226 stat2016_DY_SRB9
227 stat2017_sig_SRB13
228 stat2016_sig_SRB3
229 stat2017_sig_SRB8
230 stat2018_sig_SRB8
231 stat2017_sig_SRB10
232 stat2017_sig_SRB3
233 stat2018_sig_SRB5
234 stat2018_sig_SRB10
235 stat2016_sig_SRB8
236 stat2017_sig_SRB5
237 stat2016_sig_SRB14
238 stat2018_sig_SRB9
239 stat2017_sig_SRB12
240 stat2016_sig_SRB12
×10
−2
−1
0
1
2
−0.5
0
0.5
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
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Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.0015 +0.1231 −0.0015
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242 stat2016_sig_SRB9
243 stat2016_sig_SRB10
244 stat2017_sig_SRB2
245 stat2018_sig_SRB4
246 stat2018_sig_SRB12
247 stat2017_sig_SRB7
248 stat2018_sig_SRB3
249 stat2016_sig_SRB4
250 stat2016_sig_SRB2
251 stat2017_sig_SRB9
252 stat2016_sig_SRB7
253 stat2018_sig_SRB7
254 stat2016_sig_SRB13
255 stat2018_sig_SRB2
256 stat2016_sig_SRB1
257 stat2016_otherSM_SRB12
258 stat2018_otherSM_SRB13
259 stat2016_otherSM_SRB8
260 syst2017_tauES
261 syst2016_tauES
262 syst2018_JER
−2 −1 0 1 2
−0.5 0 0.5
×10
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂