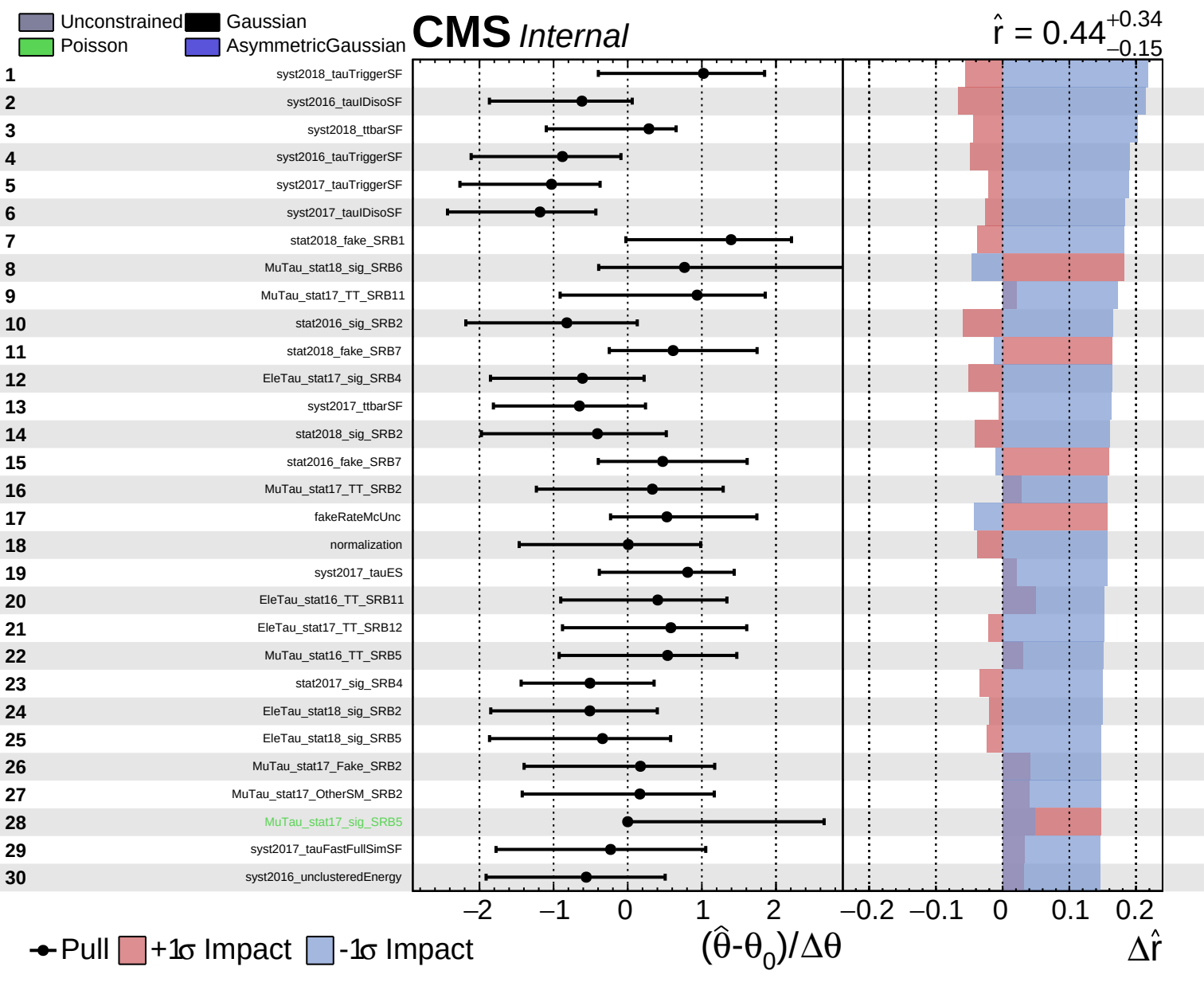
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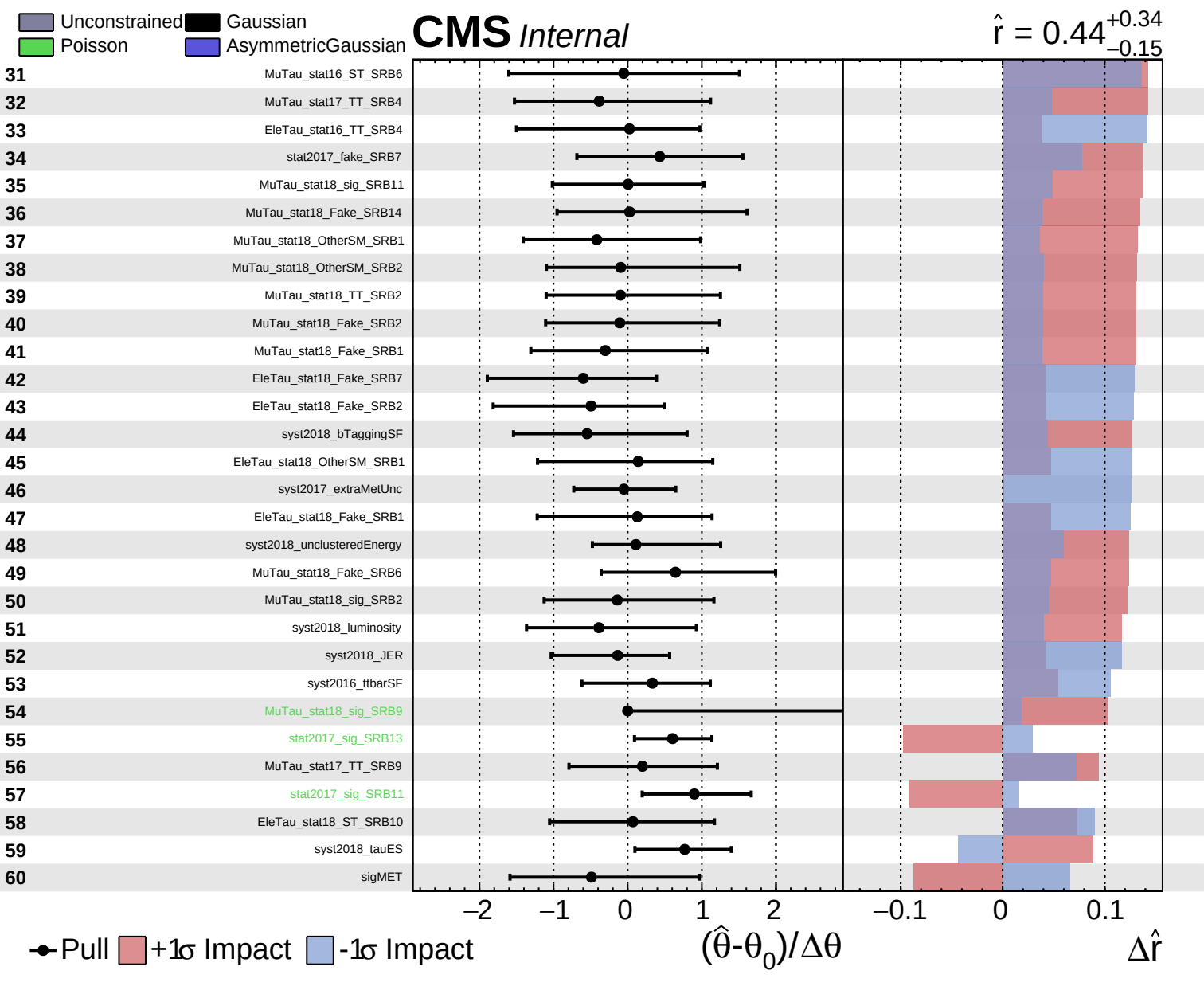
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
1 syst2018_tauTriggerSF
2 syst2016_tauIDisoSF
3 syst2018_ttbarSF
4 syst2016_tauTriggerSF
5 syst2017_tauTriggerSF
6 syst2017_tauIDisoSF
7 stat2018_fake_SRB1
8 MuTau_stat18_sig_SRB6
9 MuTau_stat17_TT_SRB11
10 stat2016_sig_SRB2
11 stat2018_fake_SRB7
12 EleTau_stat17_sig_SRB4
13 syst2017_ttbarSF
14 stat2018_sig_SRB2
15 stat2016_fake_SRB7
16 MuTau_stat17_TT_SRB2
17 fakeRateMcUnc
18 normalization
19 syst2017_tauES
20 EleTau_stat16_TT_SRB11
21 EleTau_stat17_TT_SRB12
22 MuTau_stat16_TT_SRB5
23 stat2017_sig_SRB4
24 EleTau_stat18_sig_SRB2
25 EleTau_stat18_sig_SRB5
26 MuTau_stat17_Fake_SRB2
27 MuTau_stat17_OtherSM_SRB2
28 MuTau_stat17_sig_SRB5
29 syst2017_tauFastFullSimSF
30 syst2016_unclusteredEnergy
−2 −1 0 1 2
−0.2 −0.1 0 0.1 0.2
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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Gaussian
Poisson
AsymmetricGaussian
CMS Internal
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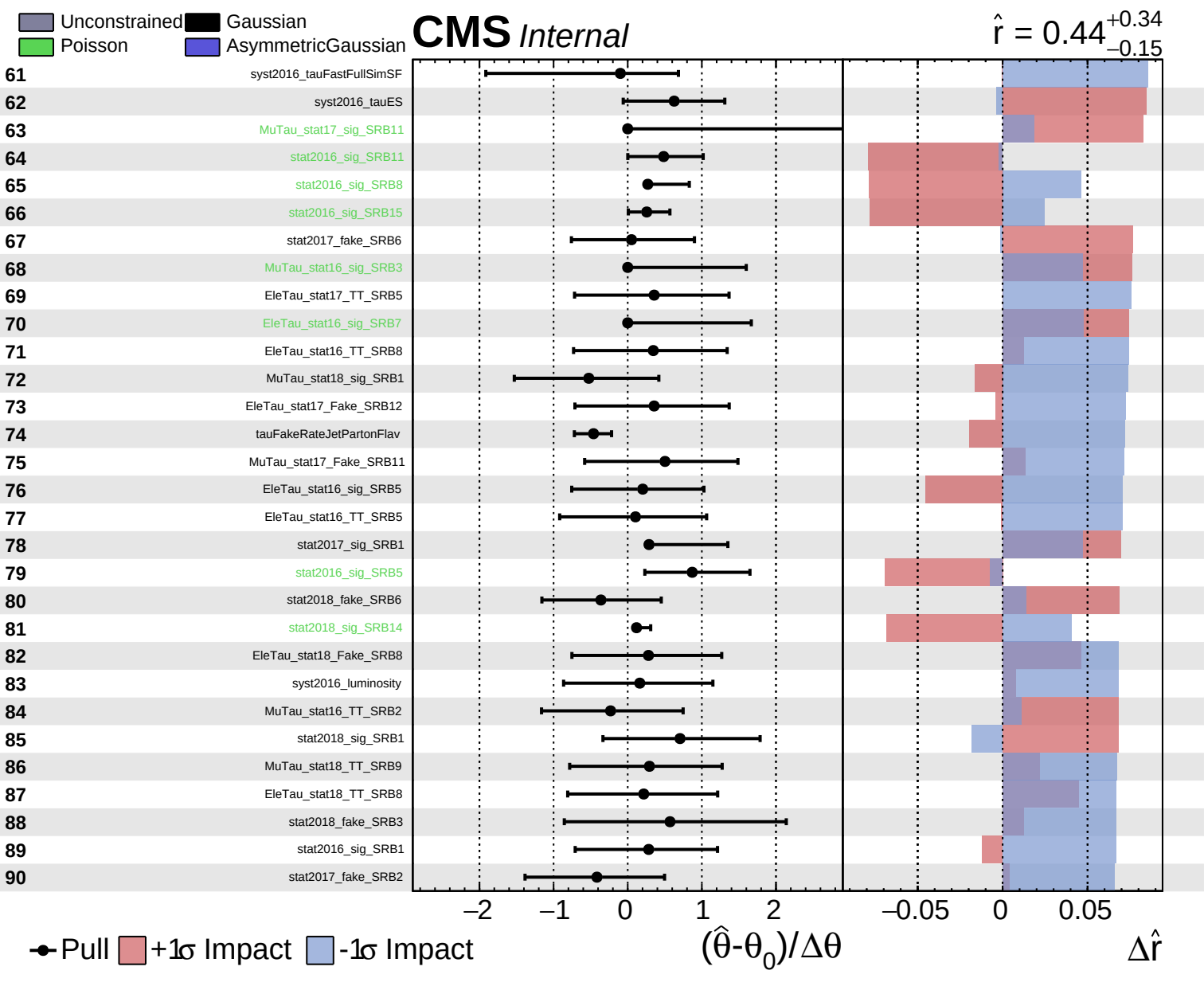
32 MuTau_stat17_TT_SRB4
33 EleTau_stat16_TT_SRB4
34 stat2017_fake_SRB7
35 MuTau_stat18_sig_SRB11
36 MuTau_stat18_Fake_SRB14
37 MuTau_stat18_OtherSM_SRB1
38 MuTau_stat18_OtherSM_SRB2
39 MuTau_stat18_TT_SRB2
40 MuTau_stat18_Fake_SRB2
41 MuTau_stat18_Fake_SRB1
42 EleTau_stat18_Fake_SRB7
43 EleTau_stat18_Fake_SRB2
44 syst2018_bTaggingSF
45 EleTau_stat18_OtherSM_SRB1
46 syst2017_extraMetUnc
47 EleTau_stat18_Fake_SRB1
48 syst2018_unclusteredEnergy
49 MuTau_stat18_Fake_SRB6
50 MuTau_stat18_sig_SRB2
51 syst2018_luminosity
52 syst2018_JER
53 syst2016_ttbarSF
54 MuTau_stat18_sig_SRB9
55 stat2017_sig_SRB13
56 MuTau_stat17_TT_SRB9
57 stat2017_sig_SRB11
58 EleTau_stat18_ST_SRB10
59 syst2018_tauES
60 sigMET
−2 −1 0 1 2
−0.1 0 0.1
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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AsymmetricGaussian
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r̂ = 0.44 +0.34 −0.15
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62 syst2016_tauES
63 MuTau_stat17_sig_SRB11
64 stat2016_sig_SRB11
65 stat2016_sig_SRB8
66 stat2016_sig_SRB15
67 stat2017_fake_SRB6
68 MuTau_stat16_sig_SRB3
69 EleTau_stat17_TT_SRB5
70 EleTau_stat16_sig_SRB7
71 EleTau_stat16_TT_SRB8
72 MuTau_stat18_sig_SRB1
73 EleTau_stat17_Fake_SRB12
74 tauFakeRateJetPartonFlav
75 MuTau_stat17_Fake_SRB11
76 EleTau_stat16_sig_SRB5
77 EleTau_stat16_TT_SRB5
78 stat2017_sig_SRB1
79 stat2016_sig_SRB5
80 stat2018_fake_SRB6
81 stat2018_sig_SRB14
82 EleTau_stat18_Fake_SRB8
83 syst2016_luminosity
84 MuTau_stat16_TT_SRB2
85 stat2018_sig_SRB1
86 MuTau_stat18_TT_SRB9
87 EleTau_stat18_TT_SRB8
88 stat2018_fake_SRB3
89 stat2016_sig_SRB1
90 stat2017_fake_SRB2
−2 −1 0 1 2
−0.05 0 0.05
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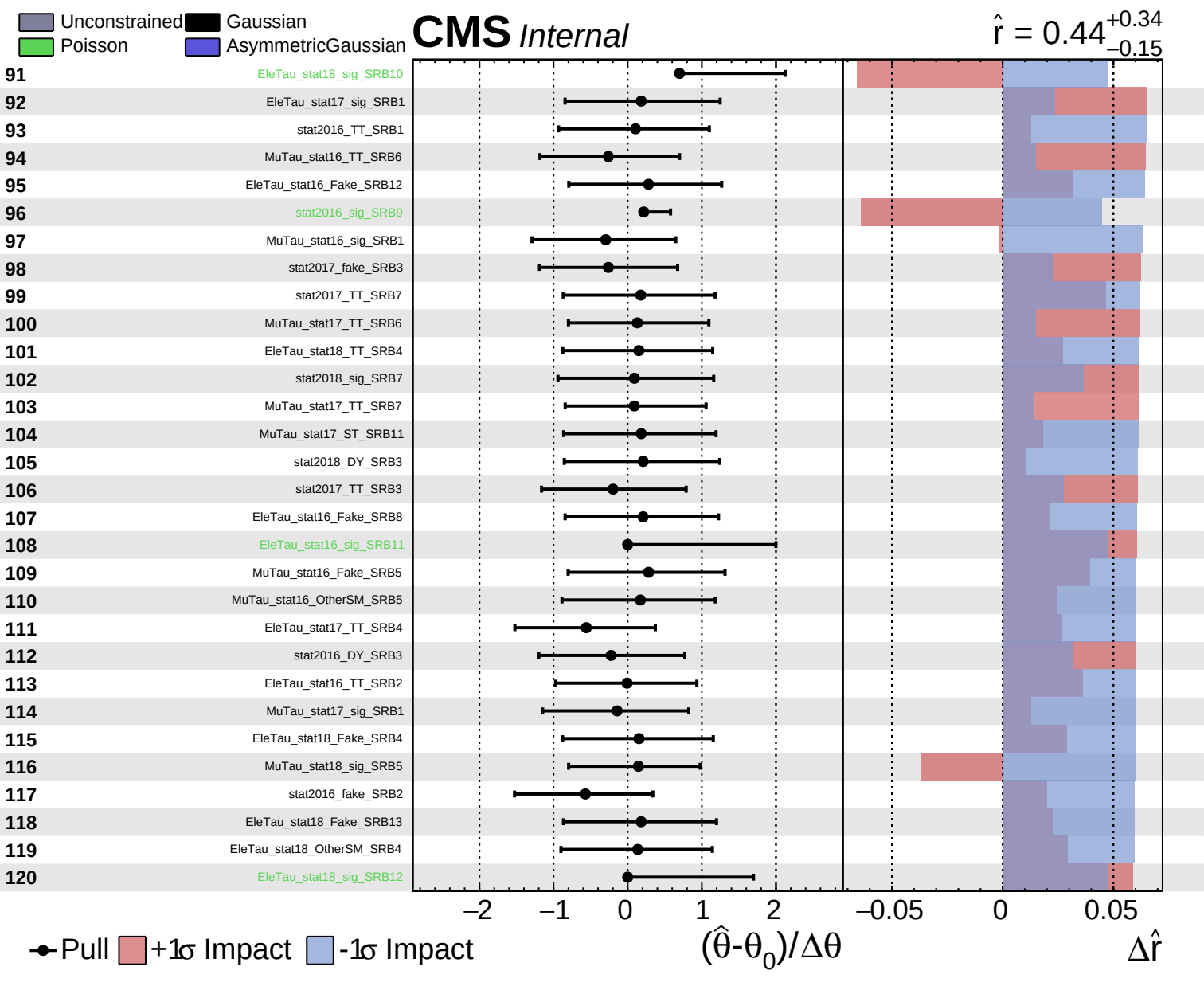
(θ̂-θ0)/Δθ
Δr̂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Poisson
AsymmetricGaussian
CMS Internal
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92 EleTau_stat17_sig_SRB1
93 stat2016_TT_SRB1
94 MuTau_stat16_TT_SRB6
95 EleTau_stat16_Fake_SRB12
96 stat2016_sig_SRB9
97 MuTau_stat16_sig_SRB1
98 stat2017_fake_SRB3
99 stat2017_TT_SRB7
100 MuTau_stat17_TT_SRB6
101 EleTau_stat18_TT_SRB4
102 stat2018_sig_SRB7
103 MuTau_stat17_TT_SRB7
104 MuTau_stat17_ST_SRB11
105 stat2018_DY_SRB3
106 stat2017_TT_SRB3
107 EleTau_stat16_Fake_SRB8
108 EleTau_stat16_sig_SRB11
109 MuTau_stat16_Fake_SRB5
110 MuTau_stat16_OtherSM_SRB5
111 EleTau_stat17_TT_SRB4
112 stat2016_DY_SRB3
113 EleTau_stat16_TT_SRB2
114 MuTau_stat17_sig_SRB1
115 EleTau_stat18_Fake_SRB4
116 MuTau_stat18_sig_SRB5
117 stat2016_fake_SRB2
118 EleTau_stat18_Fake_SRB13
119 EleTau_stat18_OtherSM_SRB4
120 EleTau_stat18_sig_SRB12
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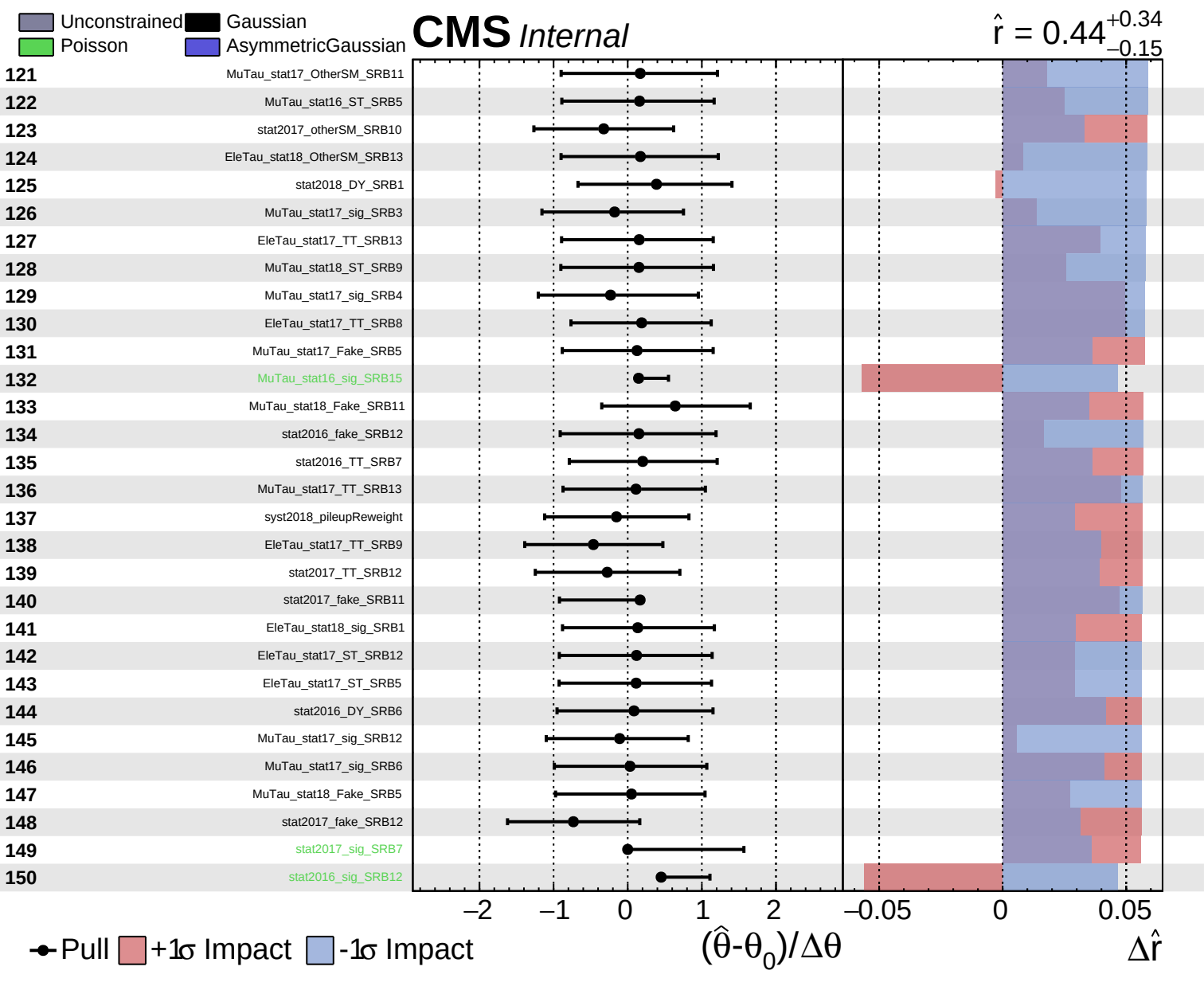
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
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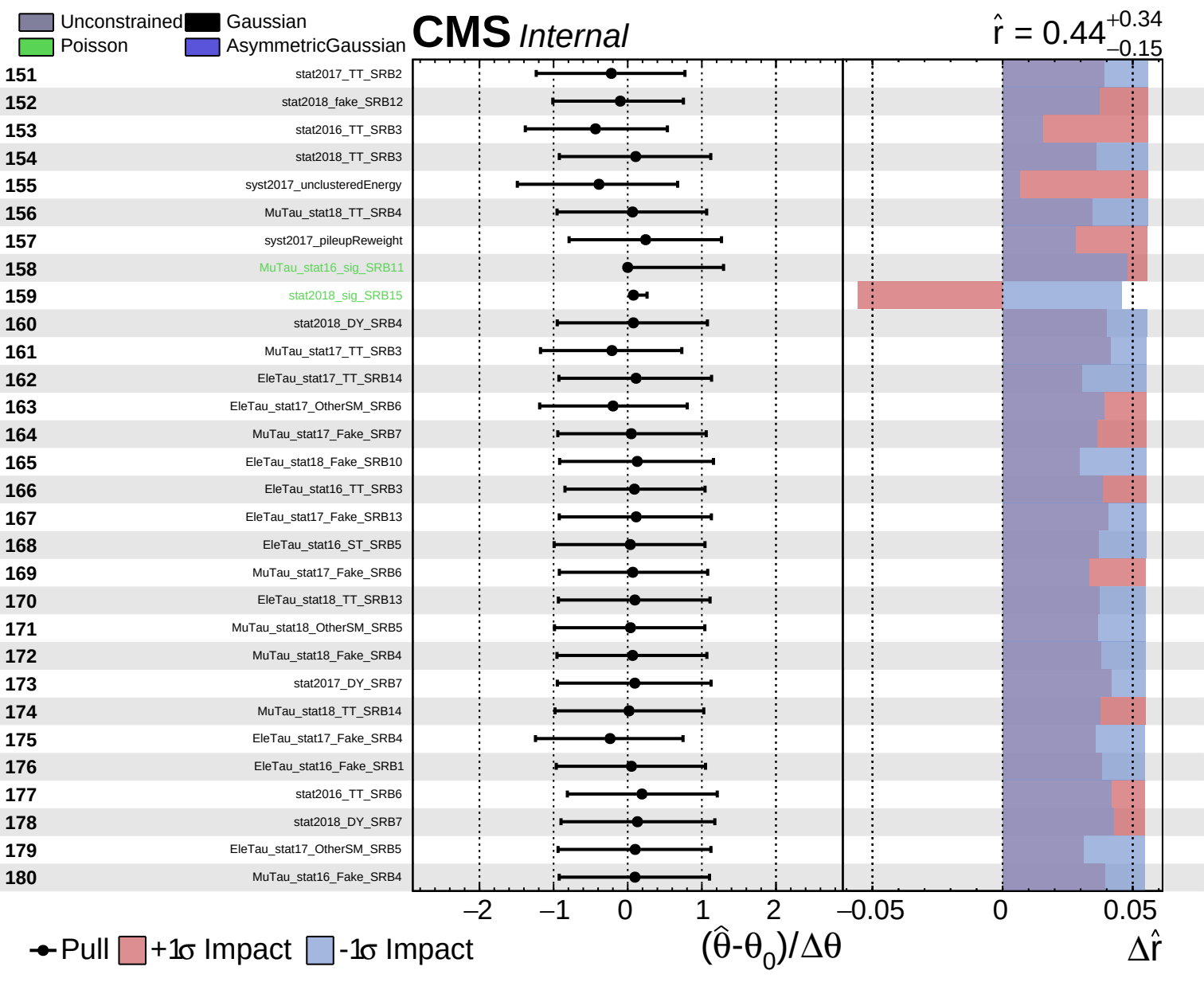
122 MuTau_stat16_ST_SRB5
123 stat2017_otherSM_SRB10
124 EleTau_stat18_OtherSM_SRB13
125 stat2018_DY_SRB1
126 MuTau_stat17_sig_SRB3
127 EleTau_stat17_TT_SRB13
128 MuTau_stat18_ST_SRB9
129 MuTau_stat17_sig_SRB4
130 EleTau_stat17_TT_SRB8
131 MuTau_stat17_Fake_SRB5
132 MuTau_stat16_sig_SRB15
133 MuTau_stat18_Fake_SRB11
134 stat2016_fake_SRB12
135 stat2016_TT_SRB7
136 MuTau_stat17_TT_SRB13
137 syst2018_pileupReweight
138 EleTau_stat17_TT_SRB9
139 stat2017_TT_SRB12
140 stat2017_fake_SRB11
141 EleTau_stat18_sig_SRB1
142 EleTau_stat17_ST_SRB12
143 EleTau_stat17_ST_SRB5
144 stat2016_DY_SRB6
145 MuTau_stat17_sig_SRB12
146 MuTau_stat17_sig_SRB6
147 MuTau_stat18_Fake_SRB5
148 stat2017_fake_SRB12
149 stat2017_sig_SRB7
150 stat2016_sig_SRB12
−2 −1 0 1 2
−0.05 0 0.05
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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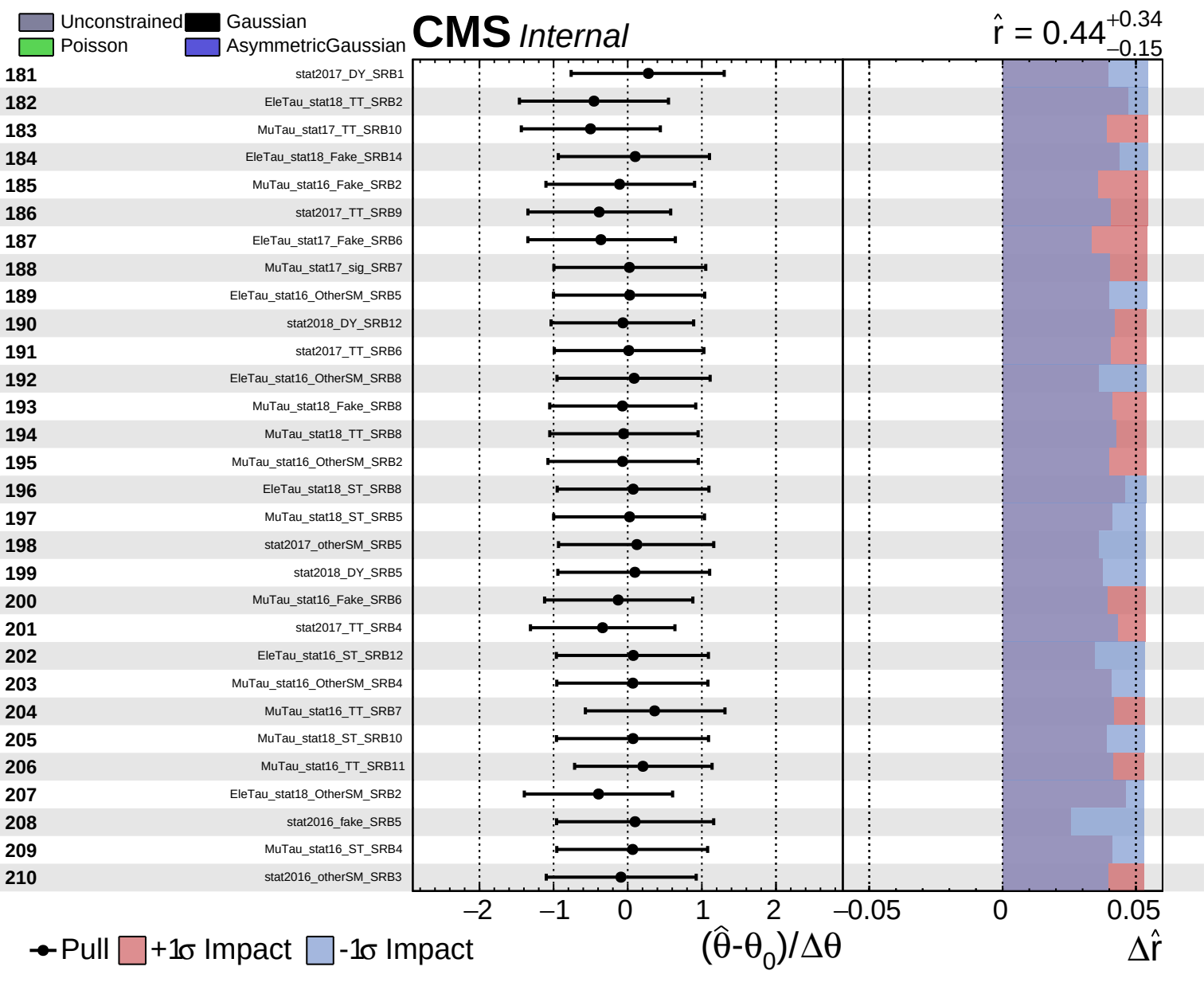
152 stat2018_fake_SRB12
153 stat2016_TT_SRB3
154 stat2018_TT_SRB3
155 syst2017_unclusteredEnergy
156 MuTau_stat18_TT_SRB4
157 syst2017_pileupReweight
158 MuTau_stat16_sig_SRB11
159 stat2018_sig_SRB15
160 stat2018_DY_SRB4
161 MuTau_stat17_TT_SRB3
162 EleTau_stat17_TT_SRB14
163 EleTau_stat17_OtherSM_SRB6
164 MuTau_stat17_Fake_SRB7
165 EleTau_stat18_Fake_SRB10
166 EleTau_stat16_TT_SRB3
167 EleTau_stat17_Fake_SRB13
168 EleTau_stat16_ST_SRB5
169 MuTau_stat17_Fake_SRB6
170 EleTau_stat18_TT_SRB13
171 MuTau_stat18_OtherSM_SRB5
172 MuTau_stat18_Fake_SRB4
173 stat2017_DY_SRB7
174 MuTau_stat18_TT_SRB14
175 EleTau_stat17_Fake_SRB4
176 EleTau_stat16_Fake_SRB1
177 stat2016_TT_SRB6
178 stat2018_DY_SRB7
179 EleTau_stat17_OtherSM_SRB5
180 MuTau_stat16_Fake_SRB4
−2 −1 0 1 2
−0.05 0 0.05
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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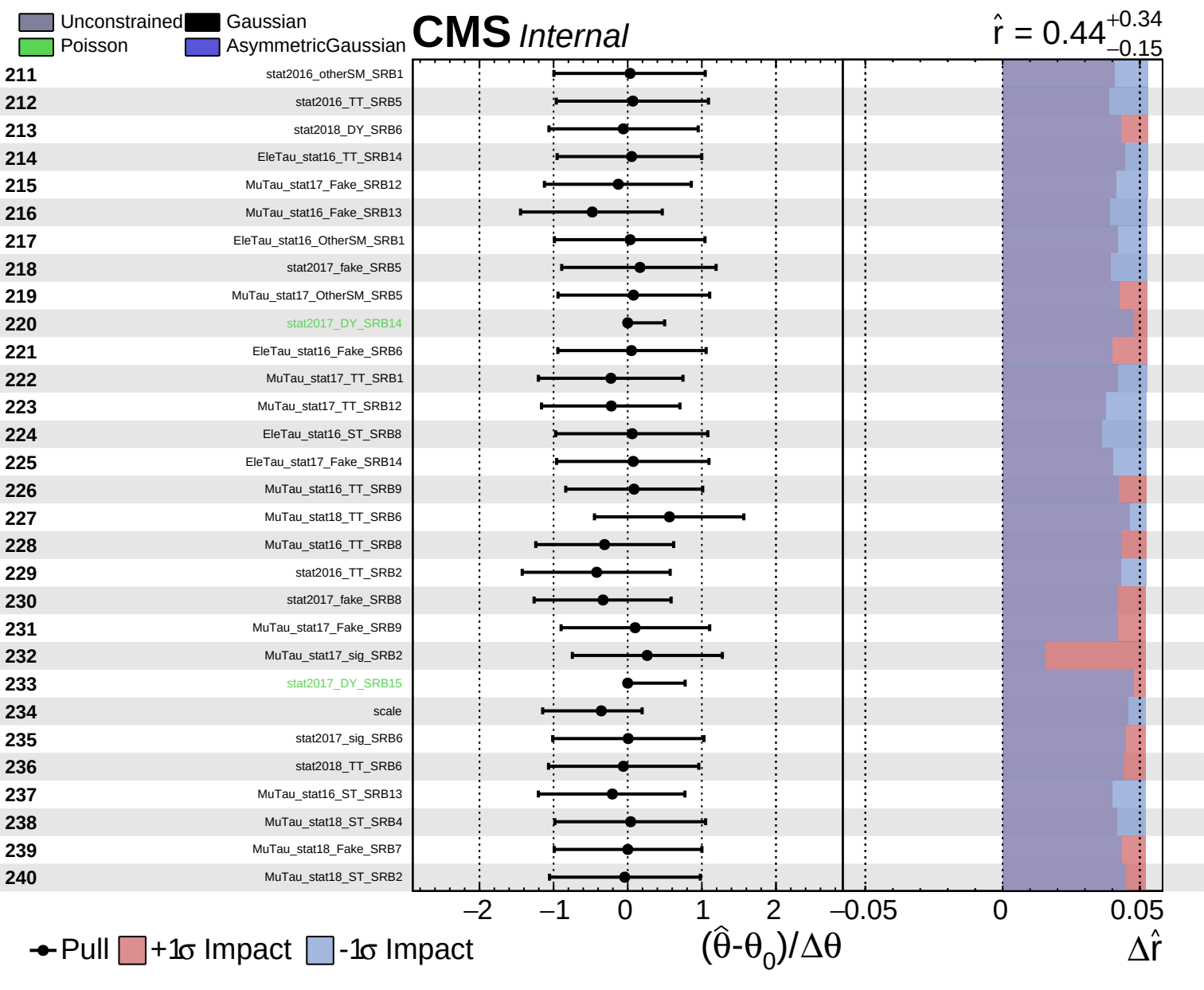
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
181 stat2017_DY_SRB1
182 EleTau_stat18_TT_SRB2
183 MuTau_stat17_TT_SRB10
184 EleTau_stat18_Fake_SRB14
185 MuTau_stat16_Fake_SRB2
186 stat2017_TT_SRB9
187 EleTau_stat17_Fake_SRB6
188 MuTau_stat17_sig_SRB7
189 EleTau_stat16_OtherSM_SRB5
190 stat2018_DY_SRB12
191 stat2017_TT_SRB6
192 EleTau_stat16_OtherSM_SRB8
193 MuTau_stat18_Fake_SRB8
194 MuTau_stat18_TT_SRB8
195 MuTau_stat16_OtherSM_SRB2
196 EleTau_stat18_ST_SRB8
197 MuTau_stat18_ST_SRB5
198 stat2017_otherSM_SRB5
199 stat2018_DY_SRB5
200 MuTau_stat16_Fake_SRB6
201 stat2017_TT_SRB4
202 EleTau_stat16_ST_SRB12
203 MuTau_stat16_OtherSM_SRB4
204 MuTau_stat16_TT_SRB7
205 MuTau_stat18_ST_SRB10
206 MuTau_stat16_TT_SRB11
207 EleTau_stat18_OtherSM_SRB2
208 stat2016_fake_SRB5
209 MuTau_stat16_ST_SRB4
210 stat2016_otherSM_SRB3
−2 −1 0 1 2
−0.05 0 0.05
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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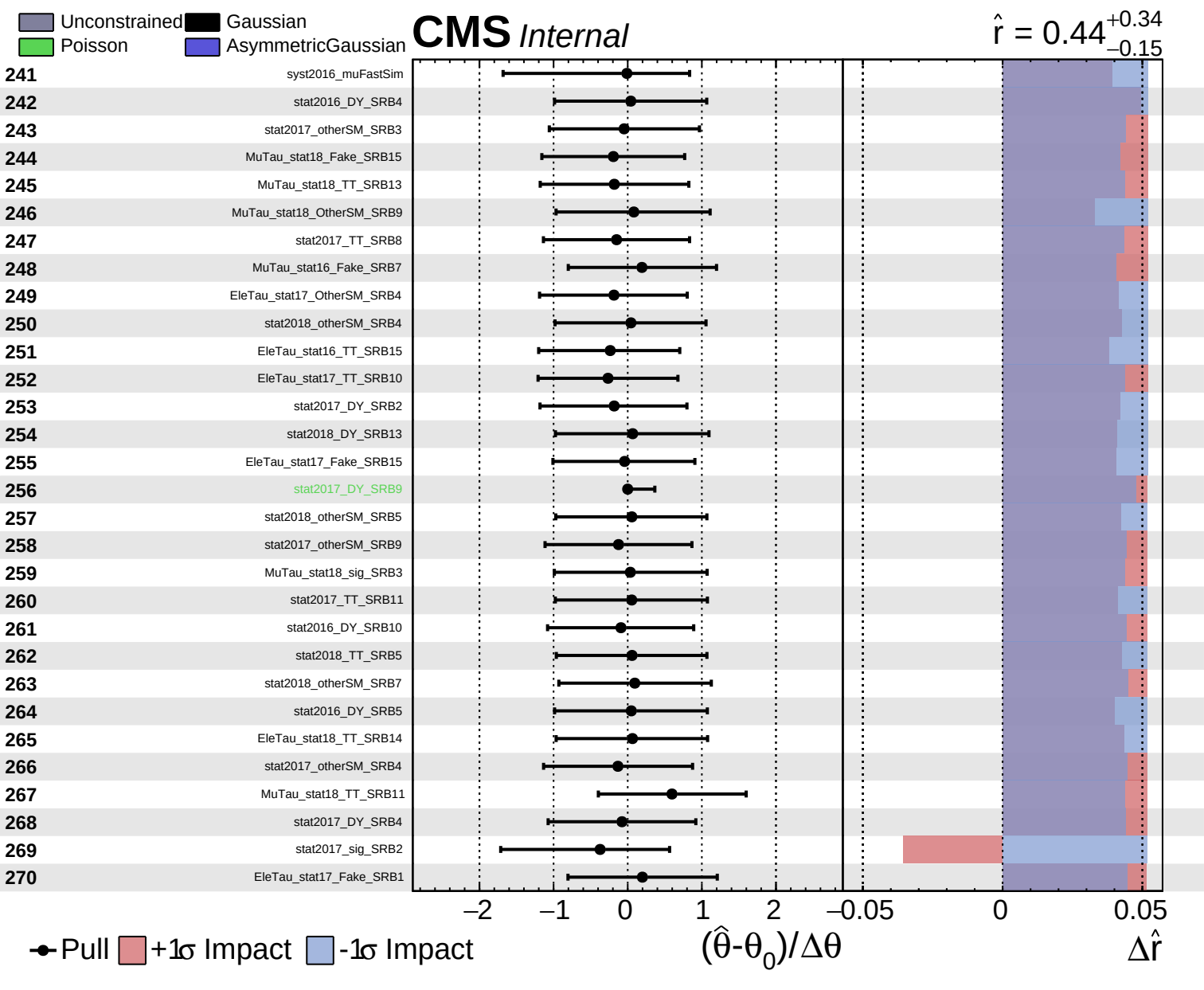
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
211 stat2016_otherSM_SRB1
212 stat2016_TT_SRB5
213 stat2018_DY_SRB6
214 EleTau_stat16_TT_SRB14
215 MuTau_stat17_Fake_SRB12
216 MuTau_stat16_Fake_SRB13
217 EleTau_stat16_OtherSM_SRB1
218 stat2017_fake_SRB5
219 MuTau_stat17_OtherSM_SRB5
220 stat2017_DY_SRB14
221 EleTau_stat16_Fake_SRB6
222 MuTau_stat17_TT_SRB1
223 MuTau_stat17_TT_SRB12
224 EleTau_stat16_ST_SRB8
225 EleTau_stat17_Fake_SRB14
226 MuTau_stat16_TT_SRB9
227 MuTau_stat18_TT_SRB6
228 MuTau_stat16_TT_SRB8
229 stat2016_TT_SRB2
230 stat2017_fake_SRB8
231 MuTau_stat17_Fake_SRB9
232 MuTau_stat17_sig_SRB2
233 stat2017_DY_SRB15
234 scale
235 stat2017_sig_SRB6
236 stat2018_TT_SRB6
237 MuTau_stat16_ST_SRB13
238 MuTau_stat18_ST_SRB4
239 MuTau_stat18_Fake_SRB7
240 MuTau_stat18_ST_SRB2
−2 −1 0 1 2
−0.05 0 0.05
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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AsymmetricGaussian
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r̂ = 0.44 +0.34 −0.15
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242 stat2016_DY_SRB4
243 stat2017_otherSM_SRB3
244 MuTau_stat18_Fake_SRB15
245 MuTau_stat18_TT_SRB13
246 MuTau_stat18_OtherSM_SRB9
247 stat2017_TT_SRB8
248 MuTau_stat16_Fake_SRB7
249 EleTau_stat17_OtherSM_SRB4
250 stat2018_otherSM_SRB4
251 EleTau_stat16_TT_SRB15
252 EleTau_stat17_TT_SRB10
253 stat2017_DY_SRB2
254 stat2018_DY_SRB13
255 EleTau_stat17_Fake_SRB15
256 stat2017_DY_SRB9
257 stat2018_otherSM_SRB5
258 stat2017_otherSM_SRB9
259 MuTau_stat18_sig_SRB3
260 stat2017_TT_SRB11
261 stat2016_DY_SRB10
262 stat2018_TT_SRB5
263 stat2018_otherSM_SRB7
264 stat2016_DY_SRB5
265 EleTau_stat18_TT_SRB14
266 stat2017_otherSM_SRB4
267 MuTau_stat18_TT_SRB11
268 stat2017_DY_SRB4
269 stat2017_sig_SRB2
270 EleTau_stat17_Fake_SRB1
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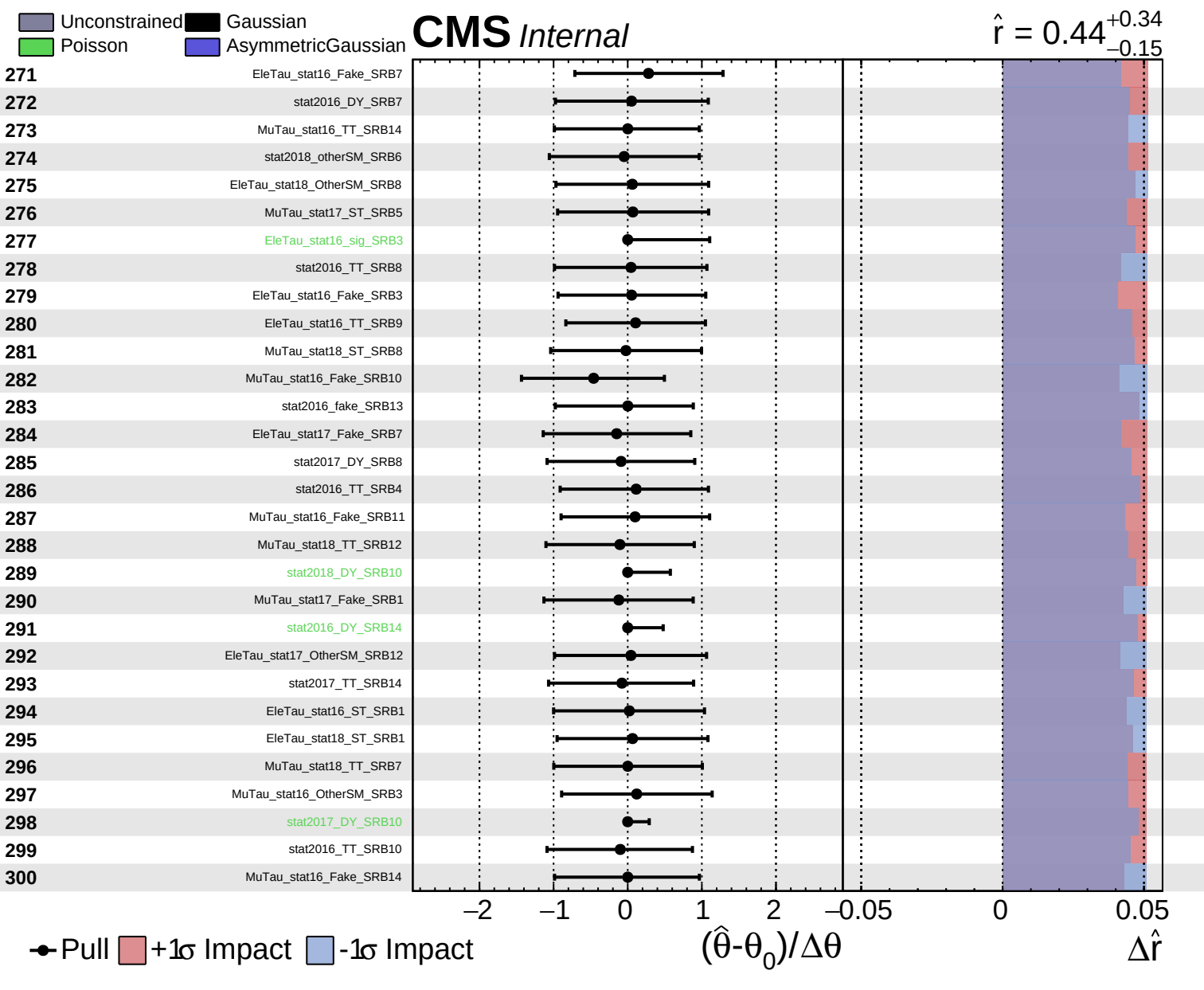
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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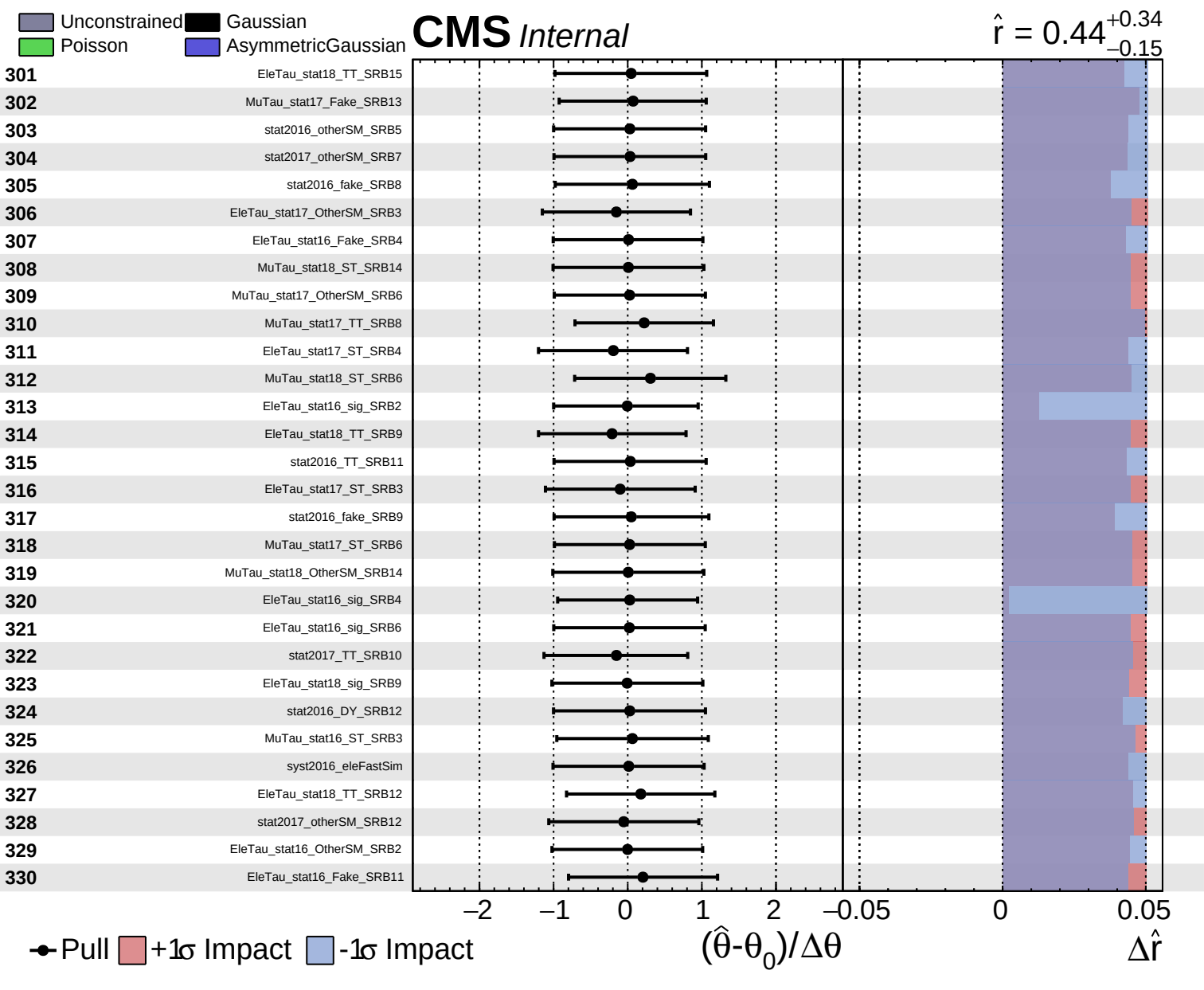
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
271 EleTau_stat16_Fake_SRB7
272 stat2016_DY_SRB7
273 MuTau_stat16_TT_SRB14
274 stat2018_otherSM_SRB6
275 EleTau_stat18_OtherSM_SRB8
276 MuTau_stat17_ST_SRB5
277 EleTau_stat16_sig_SRB3
278 stat2016_TT_SRB8
279 EleTau_stat16_Fake_SRB3
280 EleTau_stat16_TT_SRB9
281 MuTau_stat18_ST_SRB8
282 MuTau_stat16_Fake_SRB10
283 stat2016_fake_SRB13
284 EleTau_stat17_Fake_SRB7
285 stat2017_DY_SRB8
286 stat2016_TT_SRB4
287 MuTau_stat16_Fake_SRB11
288 MuTau_stat18_TT_SRB12
289 stat2018_DY_SRB10
290 MuTau_stat17_Fake_SRB1
291 stat2016_DY_SRB14
292 EleTau_stat17_OtherSM_SRB12
293 stat2017_TT_SRB14
294 EleTau_stat16_ST_SRB1
295 EleTau_stat18_ST_SRB1
296 MuTau_stat18_TT_SRB7
297 MuTau_stat16_OtherSM_SRB3
298 stat2017_DY_SRB10
299 stat2016_TT_SRB10
300 MuTau_stat16_Fake_SRB14
−2 −1 0 1 2
−0.05 0 0.05
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
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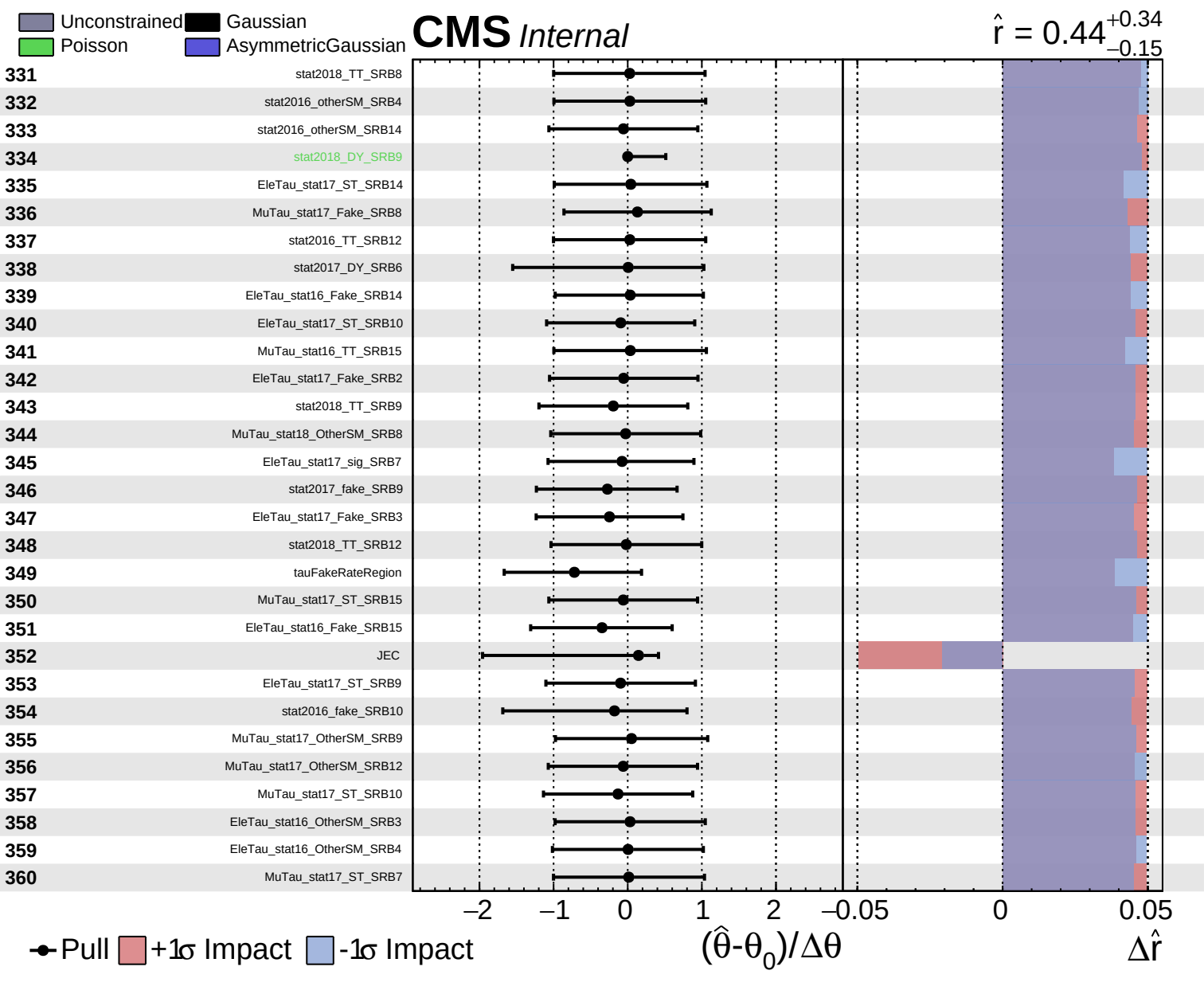
302 MuTau_stat17_Fake_SRB13
303 stat2016_otherSM_SRB5
304 stat2017_otherSM_SRB7
305 stat2016_fake_SRB8
306 EleTau_stat17_OtherSM_SRB3
307 EleTau_stat16_Fake_SRB4
308 MuTau_stat18_ST_SRB14
309 MuTau_stat17_OtherSM_SRB6
310 MuTau_stat17_TT_SRB8
311 EleTau_stat17_ST_SRB4
312 MuTau_stat18_ST_SRB6
313 EleTau_stat16_sig_SRB2
314 EleTau_stat18_TT_SRB9
315 stat2016_TT_SRB11
316 EleTau_stat17_ST_SRB3
317 stat2016_fake_SRB9
318 MuTau_stat17_ST_SRB6
319 MuTau_stat18_OtherSM_SRB14
320 EleTau_stat16_sig_SRB4
321 EleTau_stat16_sig_SRB6
322 stat2017_TT_SRB10
323 EleTau_stat18_sig_SRB9
324 stat2016_DY_SRB12
325 MuTau_stat16_ST_SRB3
326 syst2016_eleFastSim
327 EleTau_stat18_TT_SRB12
328 stat2017_otherSM_SRB12
329 EleTau_stat16_OtherSM_SRB2
330 EleTau_stat16_Fake_SRB11
−2 −1 0 1 2
−0.05 0 0.05
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
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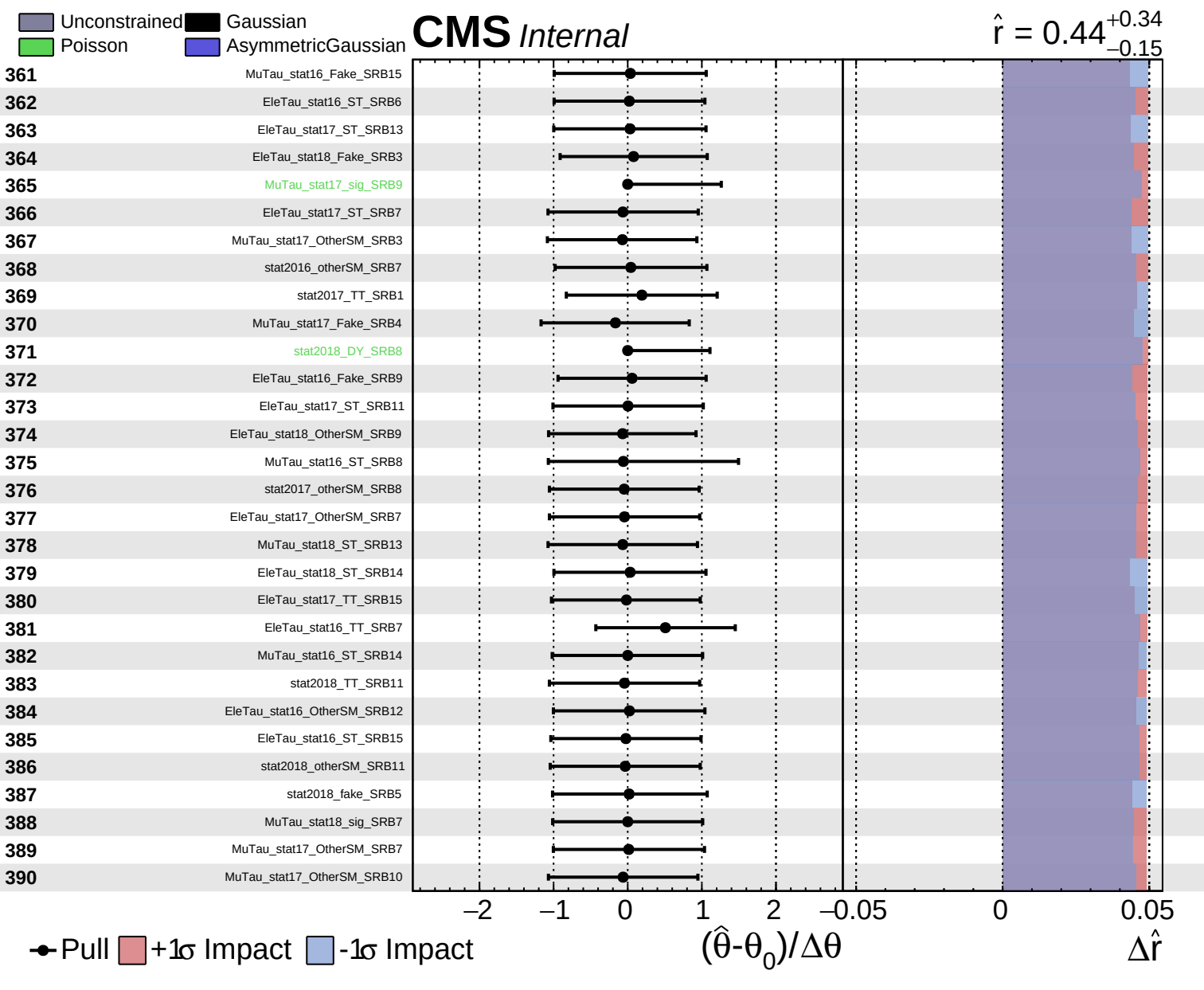
332 stat2016_otherSM_SRB4
333 stat2016_otherSM_SRB14
334 stat2018_DY_SRB9
335 EleTau_stat17_ST_SRB14
336 MuTau_stat17_Fake_SRB8
337 stat2016_TT_SRB12
338 stat2017_DY_SRB6
339 EleTau_stat16_Fake_SRB14
340 EleTau_stat17_ST_SRB10
341 MuTau_stat16_TT_SRB15
342 EleTau_stat17_Fake_SRB2
343 stat2018_TT_SRB9
344 MuTau_stat18_OtherSM_SRB8
345 EleTau_stat17_sig_SRB7
346 stat2017_fake_SRB9
347 EleTau_stat17_Fake_SRB3
348 stat2018_TT_SRB12
349 tauFakeRateRegion
350 MuTau_stat17_ST_SRB15
351 EleTau_stat16_Fake_SRB15
352 JEC
353 EleTau_stat17_ST_SRB9
354 stat2016_fake_SRB10
355 MuTau_stat17_OtherSM_SRB9
356 MuTau_stat17_OtherSM_SRB12
357 MuTau_stat17_ST_SRB10
358 EleTau_stat16_OtherSM_SRB3
359 EleTau_stat16_OtherSM_SRB4
360 MuTau_stat17_ST_SRB7
−2 −1 0 1 2
−0.05 0 0.05
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
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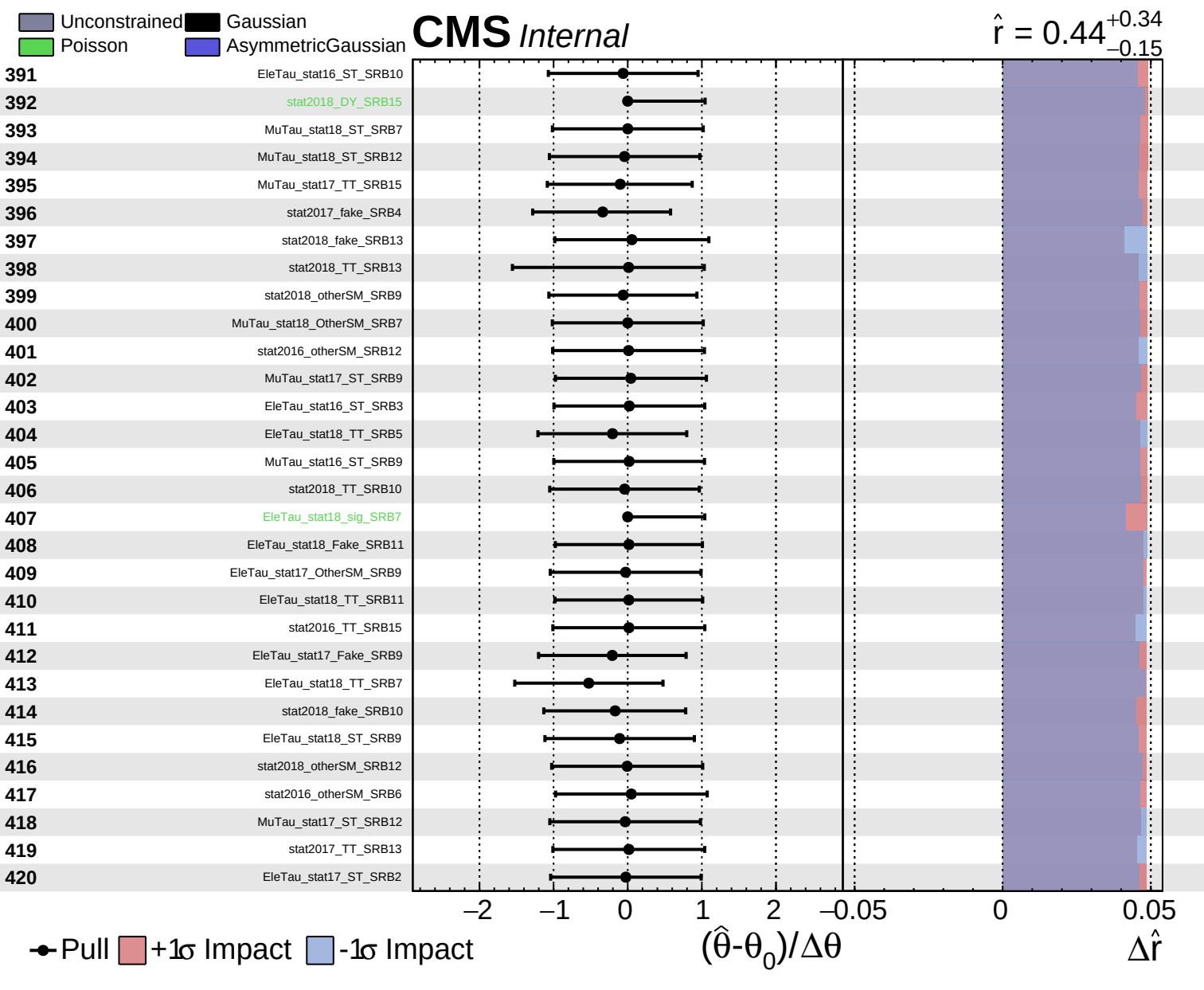
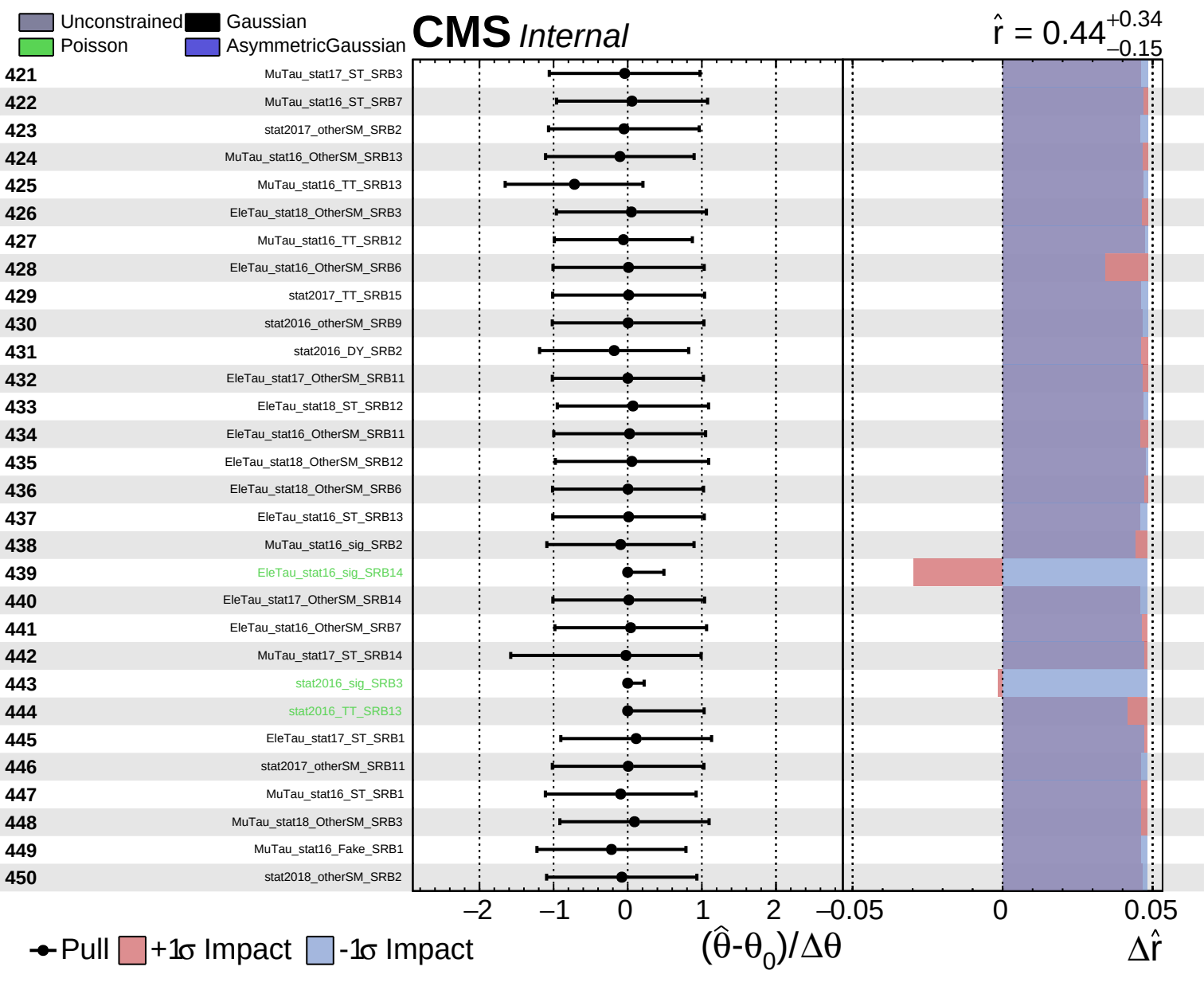
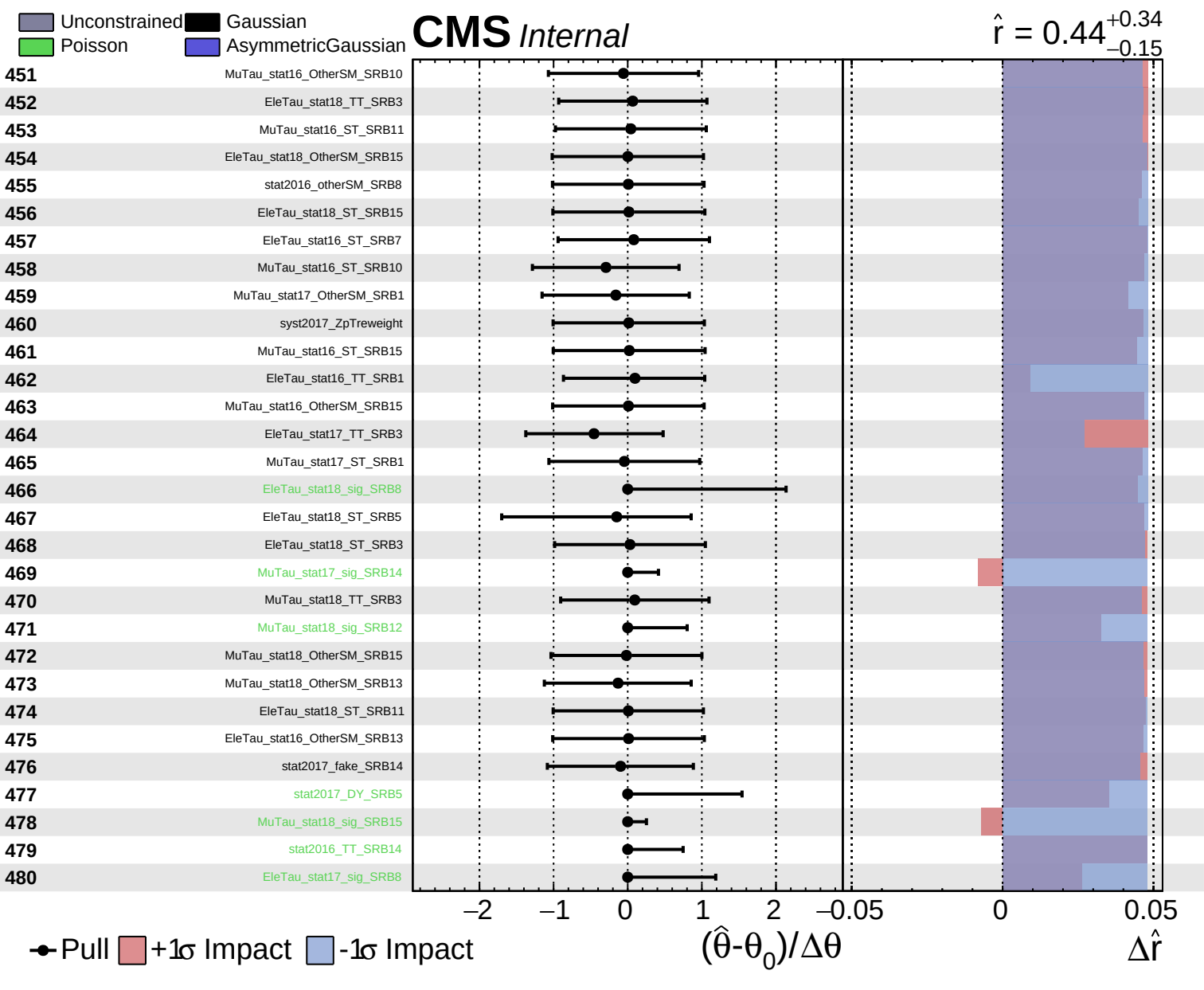
362 EleTau_stat16_ST_SRB6
363 EleTau_stat17_ST_SRB13
364 EleTau_stat18_Fake_SRB3
365 MuTau_stat17_sig_SRB9
366 EleTau_stat17_ST_SRB7
367 MuTau_stat17_OtherSM_SRB3
368 stat2016_otherSM_SRB7
369 stat2017_TT_SRB1
370 MuTau_stat17_Fake_SRB4
371 stat2018_DY_SRB8
372 EleTau_stat16_Fake_SRB9
373 EleTau_stat17_ST_SRB11
374 EleTau_stat18_OtherSM_SRB9
375 MuTau_stat16_ST_SRB8
376 stat2017_otherSM_SRB8
377 EleTau_stat17_OtherSM_SRB7
378 MuTau_stat18_ST_SRB13
379 EleTau_stat18_ST_SRB14
380 EleTau_stat17_TT_SRB15
381 EleTau_stat16_TT_SRB7
382 MuTau_stat16_ST_SRB14
383 stat2018_TT_SRB11
384 EleTau_stat16_OtherSM_SRB12
385 EleTau_stat16_ST_SRB15
386 stat2018_otherSM_SRB11
387 stat2018_fake_SRB5
388 MuTau_stat18_sig_SRB7
389 MuTau_stat17_OtherSM_SRB7
390 MuTau_stat17_OtherSM_SRB10
−2 −1 0 1 2
−0.05 0 0.05
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
391 EleTau_stat16_ST_SRB10
392 stat2018_DY_SRB15
393 MuTau_stat18_ST_SRB7
394 MuTau_stat18_ST_SRB12
395 MuTau_stat17_TT_SRB15
396 stat2017_fake_SRB4
397 stat2018_fake_SRB13
398 stat2018_TT_SRB13
399 stat2018_otherSM_SRB9
400 MuTau_stat18_OtherSM_SRB7
401 stat2016_otherSM_SRB12
402 MuTau_stat17_ST_SRB9
403 EleTau_stat16_ST_SRB3
404 EleTau_stat18_TT_SRB5
405 MuTau_stat16_ST_SRB9
406 stat2018_TT_SRB10
407 EleTau_stat18_sig_SRB7
408 EleTau_stat18_Fake_SRB11
409 EleTau_stat17_OtherSM_SRB9
410 EleTau_stat18_TT_SRB11
411 stat2016_TT_SRB15
412 EleTau_stat17_Fake_SRB9
413 EleTau_stat18_TT_SRB7
414 stat2018_fake_SRB10
415 EleTau_stat18_ST_SRB9
416 stat2018_otherSM_SRB12
417 stat2016_otherSM_SRB6
418 MuTau_stat17_ST_SRB12
419 stat2017_TT_SRB13
420 EleTau_stat17_ST_SRB2
−2 −1 0 1 2
−0.05 0 0.05
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
421 MuTau_stat17_ST_SRB3
422 MuTau_stat16_ST_SRB7
423 stat2017_otherSM_SRB2
424 MuTau_stat16_OtherSM_SRB13
425 MuTau_stat16_TT_SRB13
426 EleTau_stat18_OtherSM_SRB3
427 MuTau_stat16_TT_SRB12
428 EleTau_stat16_OtherSM_SRB6
429 stat2017_TT_SRB15
430 stat2016_otherSM_SRB9
431 stat2016_DY_SRB2
432 EleTau_stat17_OtherSM_SRB11
433 EleTau_stat18_ST_SRB12
434 EleTau_stat16_OtherSM_SRB11
435 EleTau_stat18_OtherSM_SRB12
436 EleTau_stat18_OtherSM_SRB6
437 EleTau_stat16_ST_SRB13
438 MuTau_stat16_sig_SRB2
439 EleTau_stat16_sig_SRB14
440 EleTau_stat17_OtherSM_SRB14
441 EleTau_stat16_OtherSM_SRB7
442 MuTau_stat17_ST_SRB14
443 stat2016_sig_SRB3
444 stat2016_TT_SRB13
445 EleTau_stat17_ST_SRB1
446 stat2017_otherSM_SRB11
447 MuTau_stat16_ST_SRB1
448 MuTau_stat18_OtherSM_SRB3
449 MuTau_stat16_Fake_SRB1
450 stat2018_otherSM_SRB2
−2 −1 0 1 2
−0.05 0 0.05
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂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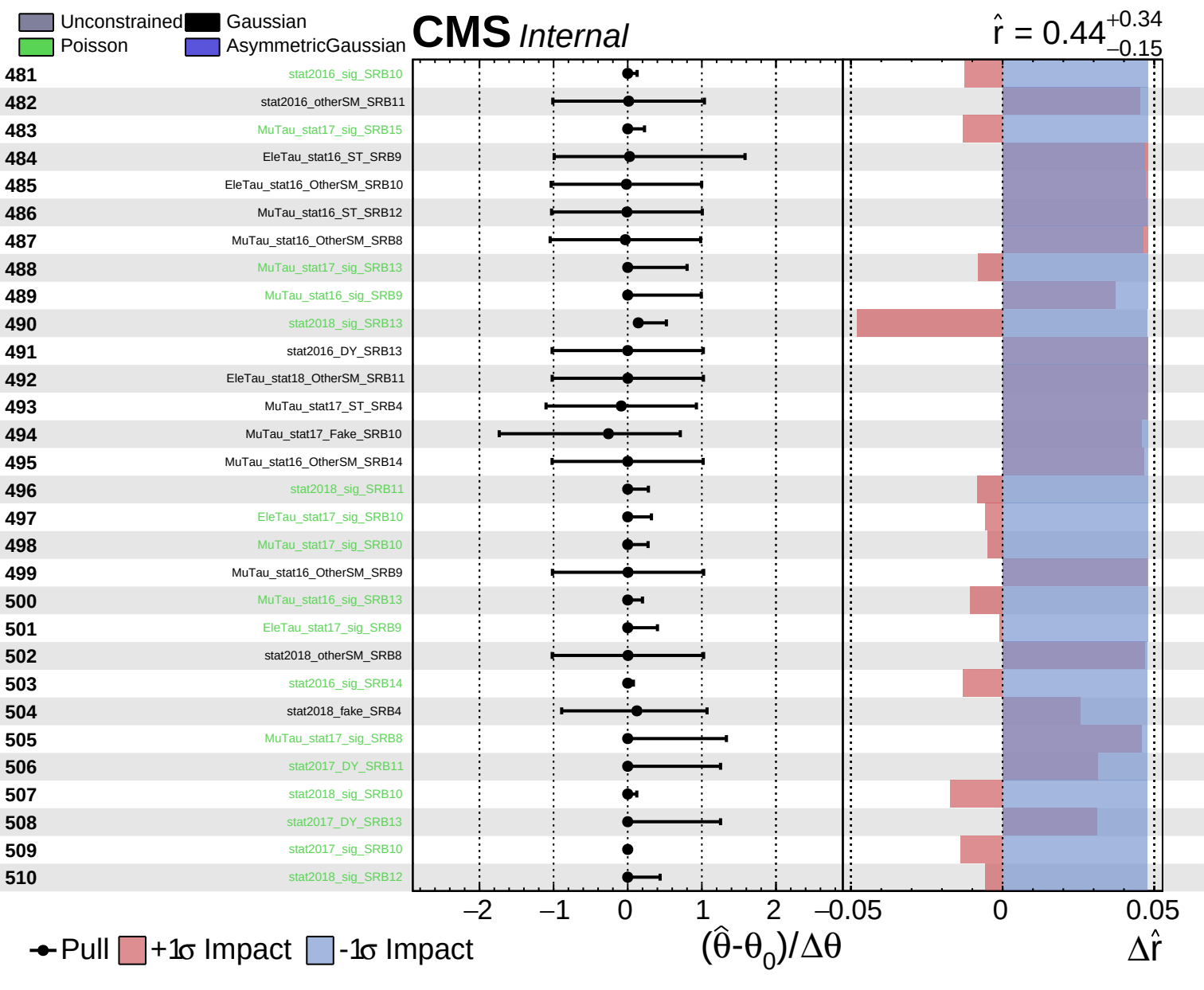
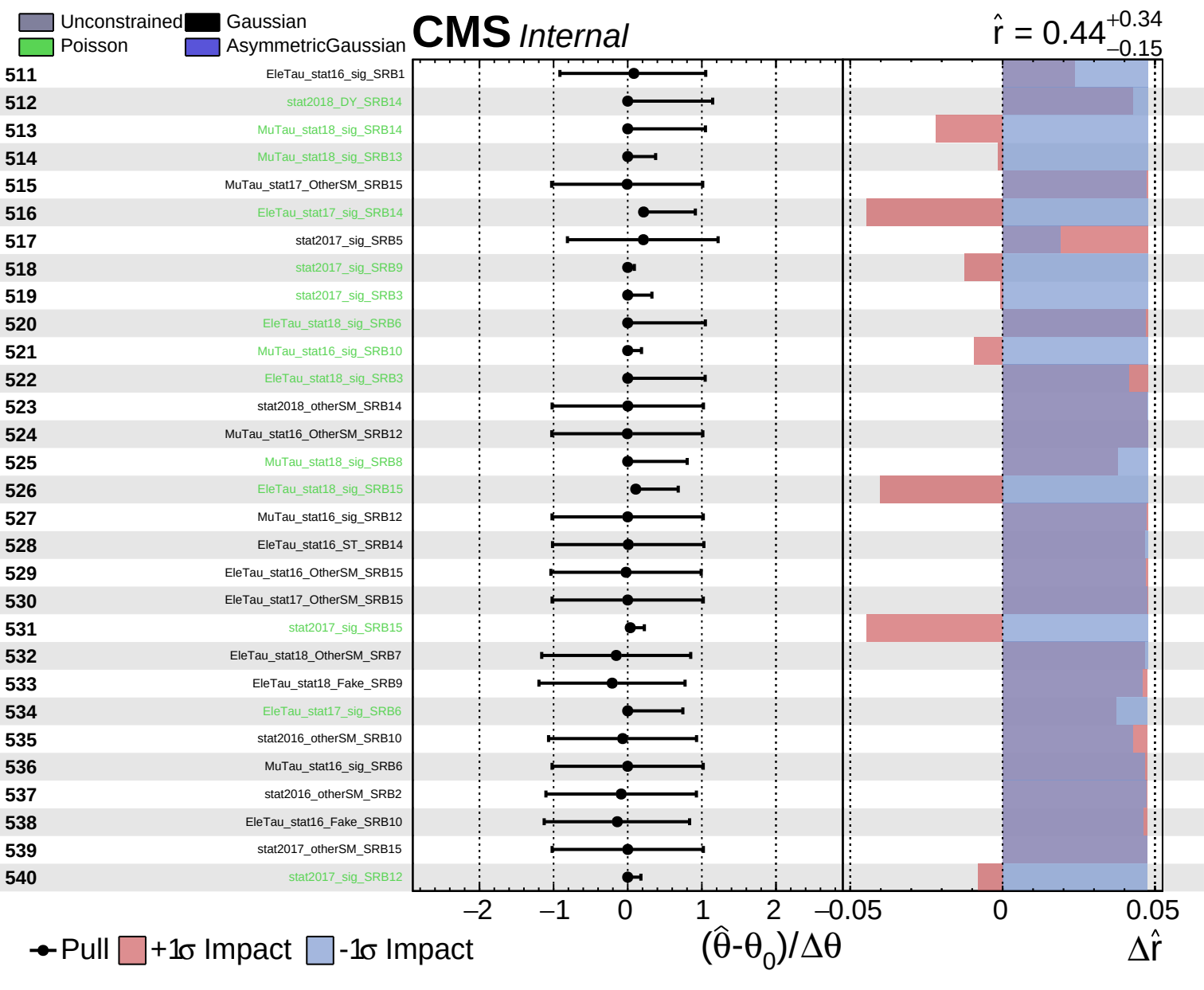
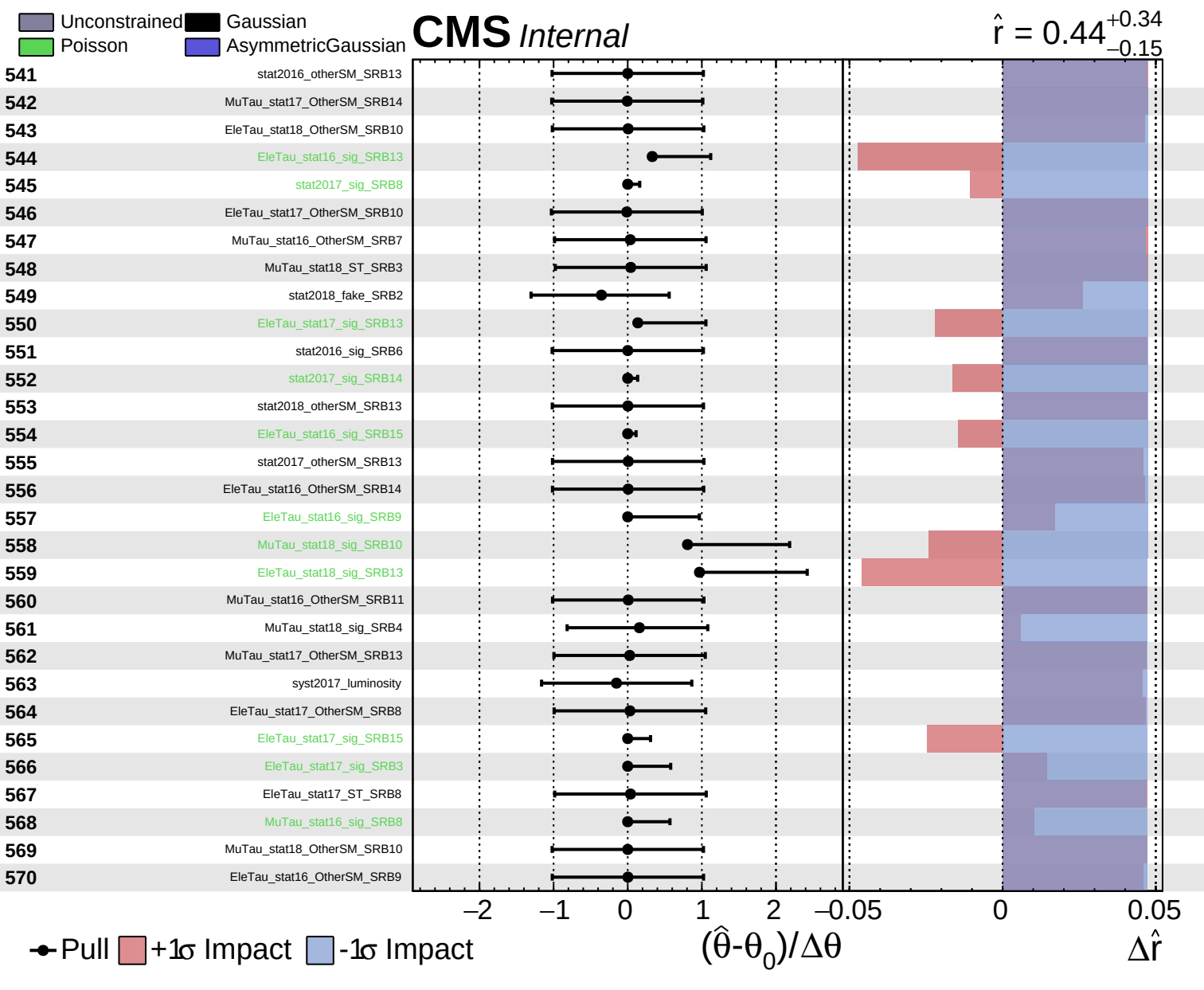
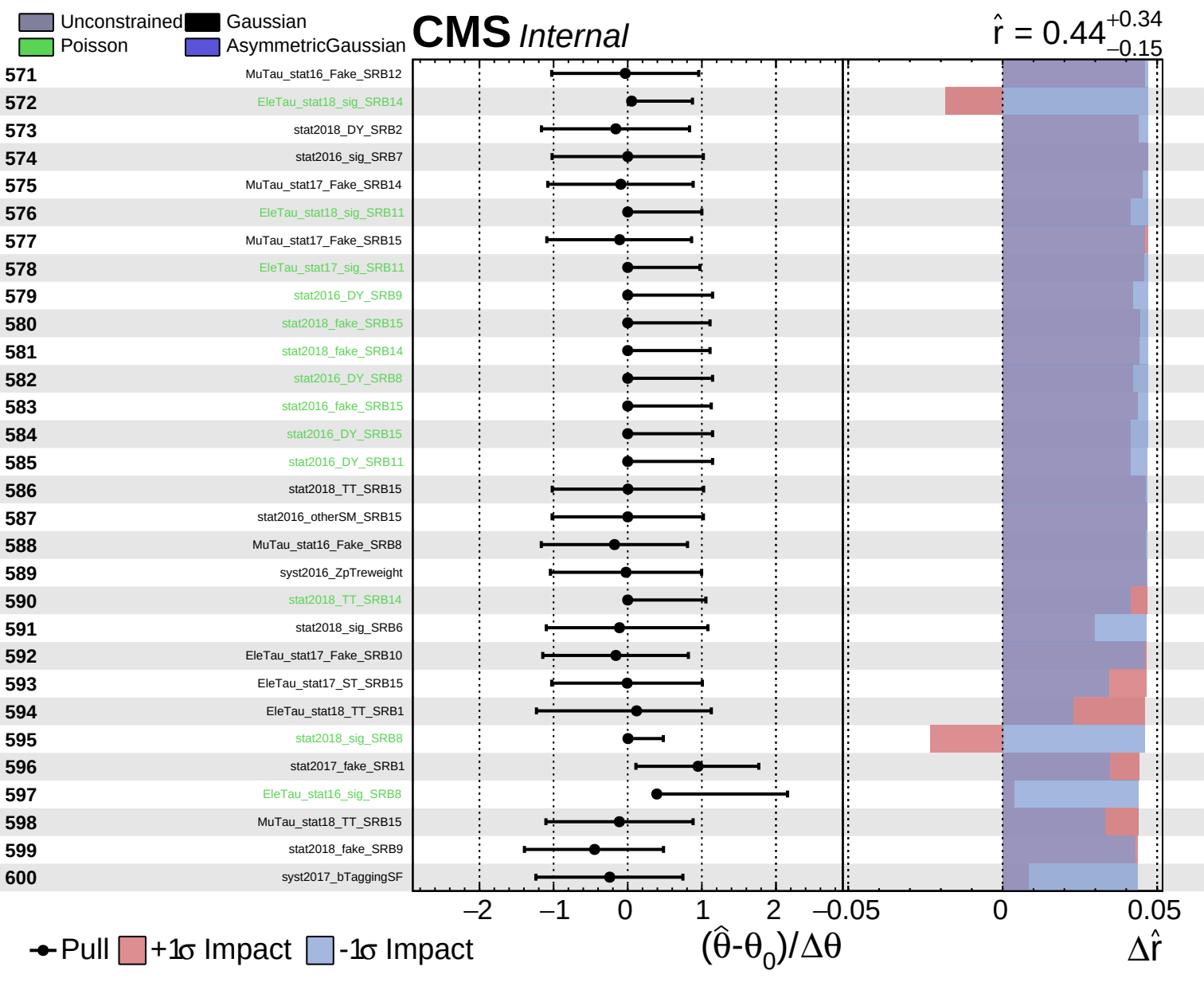
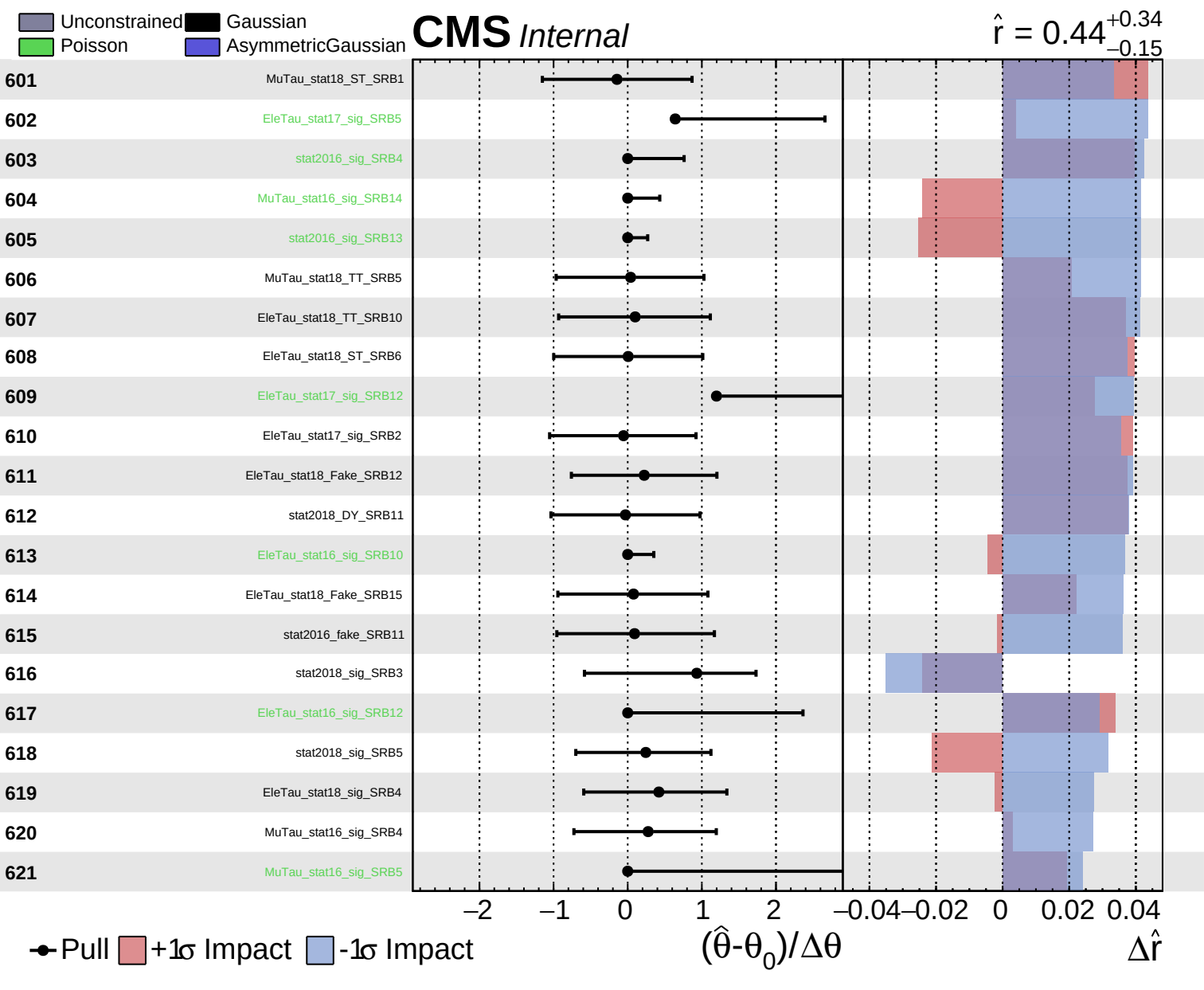
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
451 MuTau_stat16_OtherSM_SRB10
452 EleTau_stat18_TT_SRB3
453 MuTau_stat16_ST_SRB11
454 EleTau_stat18_OtherSM_SRB15
455 stat2016_otherSM_SRB8
456 EleTau_stat18_ST_SRB15
457 EleTau_stat16_ST_SRB7
458 MuTau_stat16_ST_SRB10
459 MuTau_stat17_OtherSM_SRB1
460 syst2017_ZpTreweight
461 MuTau_stat16_ST_SRB15
462 EleTau_stat16_TT_SRB1
463 MuTau_stat16_OtherSM_SRB15
464 EleTau_stat17_TT_SRB3
465 MuTau_stat17_ST_SRB1
466 EleTau_stat18_sig_SRB8
467 EleTau_stat18_ST_SRB5
468 EleTau_stat18_ST_SRB3
469 MuTau_stat17_sig_SRB14
470 MuTau_stat18_TT_SRB3
471 MuTau_stat18_sig_SRB12
472 MuTau_stat18_OtherSM_SRB15
473 MuTau_stat18_OtherSM_SRB13
474 EleTau_stat18_ST_SRB11
475 EleTau_stat16_OtherSM_SRB13
476 stat2017_fake_SRB14
477 stat2017_DY_SRB5
478 MuTau_stat18_sig_SRB15
479 stat2016_TT_SRB14
480 EleTau_stat17_sig_SRB8
−2 −1 0 1 2
−0.05 0 0.05
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
481 stat2016_sig_SRB10
482 stat2016_otherSM_SRB11
483 MuTau_stat17_sig_SRB15
484 EleTau_stat16_ST_SRB9
485 EleTau_stat16_OtherSM_SRB10
486 MuTau_stat16_ST_SRB12
487 MuTau_stat16_OtherSM_SRB8
488 MuTau_stat17_sig_SRB13
489 MuTau_stat16_sig_SRB9
490 stat2018_sig_SRB13
491 stat2016_DY_SRB13
492 EleTau_stat18_OtherSM_SRB11
493 MuTau_stat17_ST_SRB4
494 MuTau_stat17_Fake_SRB10
495 MuTau_stat16_OtherSM_SRB14
496 stat2018_sig_SRB11
497 EleTau_stat17_sig_SRB10
498 MuTau_stat17_sig_SRB10
499 MuTau_stat16_OtherSM_SRB9
500 MuTau_stat16_sig_SRB13
501 EleTau_stat17_sig_SRB9
502 stat2018_otherSM_SRB8
503 stat2016_sig_SRB14
504 stat2018_fake_SRB4
505 MuTau_stat17_sig_SRB8
506 stat2017_DY_SRB11
507 stat2018_sig_SRB10
508 stat2017_DY_SRB13
509 stat2017_sig_SRB10
510 stat2018_sig_SRB12
−2 −1 0 1 2
−0.05 0 0.05
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
511 EleTau_stat16_sig_SRB1
512 stat2018_DY_SRB14
513 MuTau_stat18_sig_SRB14
514 MuTau_stat18_sig_SRB13
515 MuTau_stat17_OtherSM_SRB15
516 EleTau_stat17_sig_SRB14
517 stat2017_sig_SRB5
518 stat2017_sig_SRB9
519 stat2017_sig_SRB3
520 EleTau_stat18_sig_SRB6
521 MuTau_stat16_sig_SRB10
522 EleTau_stat18_sig_SRB3
523 stat2018_otherSM_SRB14
524 MuTau_stat16_OtherSM_SRB12
525 MuTau_stat18_sig_SRB8
526 EleTau_stat18_sig_SRB15
527 MuTau_stat16_sig_SRB12
528 EleTau_stat16_ST_SRB14
529 EleTau_stat16_OtherSM_SRB15
530 EleTau_stat17_OtherSM_SRB15
531 stat2017_sig_SRB15
532 EleTau_stat18_OtherSM_SRB7
533 EleTau_stat18_Fake_SRB9
534 EleTau_stat17_sig_SRB6
535 stat2016_otherSM_SRB10
536 MuTau_stat16_sig_SRB6
537 stat2016_otherSM_SRB2
538 EleTau_stat16_Fake_SRB10
539 stat2017_otherSM_SRB15
540 stat2017_sig_SRB12
−2 −1 0 1 2
−0.05 0 0.05
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
541 stat2016_otherSM_SRB13
542 MuTau_stat17_OtherSM_SRB14
543 EleTau_stat18_OtherSM_SRB10
544 EleTau_stat16_sig_SRB13
545 stat2017_sig_SRB8
546 EleTau_stat17_OtherSM_SRB10
547 MuTau_stat16_OtherSM_SRB7
548 MuTau_stat18_ST_SRB3
549 stat2018_fake_SRB2
550 EleTau_stat17_sig_SRB13
551 stat2016_sig_SRB6
552 stat2017_sig_SRB14
553 stat2018_otherSM_SRB13
554 EleTau_stat16_sig_SRB15
555 stat2017_otherSM_SRB13
556 EleTau_stat16_OtherSM_SRB14
557 EleTau_stat16_sig_SRB9
558 MuTau_stat18_sig_SRB10
559 EleTau_stat18_sig_SRB13
560 MuTau_stat16_OtherSM_SRB11
561 MuTau_stat18_sig_SRB4
562 MuTau_stat17_OtherSM_SRB13
563 syst2017_luminosity
564 EleTau_stat17_OtherSM_SRB8
565 EleTau_stat17_sig_SRB15
566 EleTau_stat17_sig_SRB3
567 EleTau_stat17_ST_SRB8
568 MuTau_stat16_sig_SRB8
569 MuTau_stat18_OtherSM_SRB10
570 EleTau_stat16_OtherSM_SRB9
−2 −1 0 1 2
−0.05 0 0.05
Pull +1σ Impact -1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
571 MuTau_stat16_Fake_SRB12
572 EleTau_stat18_sig_SRB14
573 stat2018_DY_SRB2
574 stat2016_sig_SRB7
575 MuTau_stat17_Fake_SRB14
576 EleTau_stat18_sig_SRB11
577 MuTau_stat17_Fake_SRB15
578 EleTau_stat17_sig_SRB11
579 stat2016_DY_SRB9
580 stat2018_fake_SRB15
581 stat2018_fake_SRB14
582 stat2016_DY_SRB8
583 stat2016_fake_SRB15
584 stat2016_DY_SRB15
585 stat2016_DY_SRB11
586 stat2018_TT_SRB15
587 stat2016_otherSM_SRB15
588 MuTau_stat16_Fake_SRB8
589 syst2016_ZpTreweight
590 stat2018_TT_SRB14
591 stat2018_sig_SRB6
592 EleTau_stat17_Fake_SRB10
593 EleTau_stat17_ST_SRB15
594 EleTau_stat18_TT_SRB1
595 stat2018_sig_SRB8
596 stat2017_fake_SRB1
597 EleTau_stat16_sig_SRB8
598 MuTau_stat18_TT_SRB15
599 stat2018_fake_SRB9
600 syst2017_bTaggingSF
−2 −1 0 1 2
−0.05 0 0.05
Pull
+1σ Impact
-1σ Impact
(θ̂-θ0)/Δθ
Δr̂


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
CMS Internal
r̂ = 0.44 +0.34 −0.15
601 MuTau_stat18_ST_SRB1
602 EleTau_stat17_sig_SRB5
603 stat2016_sig_SRB4
604 MuTau_stat16_sig_SRB14
605 stat2016_sig_SRB13
606 MuTau_stat18_TT_SRB5
607 EleTau_stat18_TT_SRB10
608 EleTau_stat18_ST_SRB6
609 EleTau_stat17_sig_SRB12
610 EleTau_stat17_sig_SRB2
611 EleTau_stat18_Fake_SRB12
612 stat2018_DY_SRB11
613 EleTau_stat16_sig_SRB10
614 EleTau_stat18_Fake_SRB15
615 stat2016_fake_SRB11
616 stat2018_sig_SRB3
617 EleTau_stat16_sig_SRB12
618 stat2018_sig_SRB5
619 EleTau_stat18_sig_SRB4
620 MuTau_stat16_sig_SRB4
621 MuTau_stat16_sig_SRB5
−2 −1 0 1 2
(θ̂-θ0)/Δθ
−0.04 −0.02 0 0.02 0.04
Δr̂
Pull
+1σ Impact
-1σ Impact