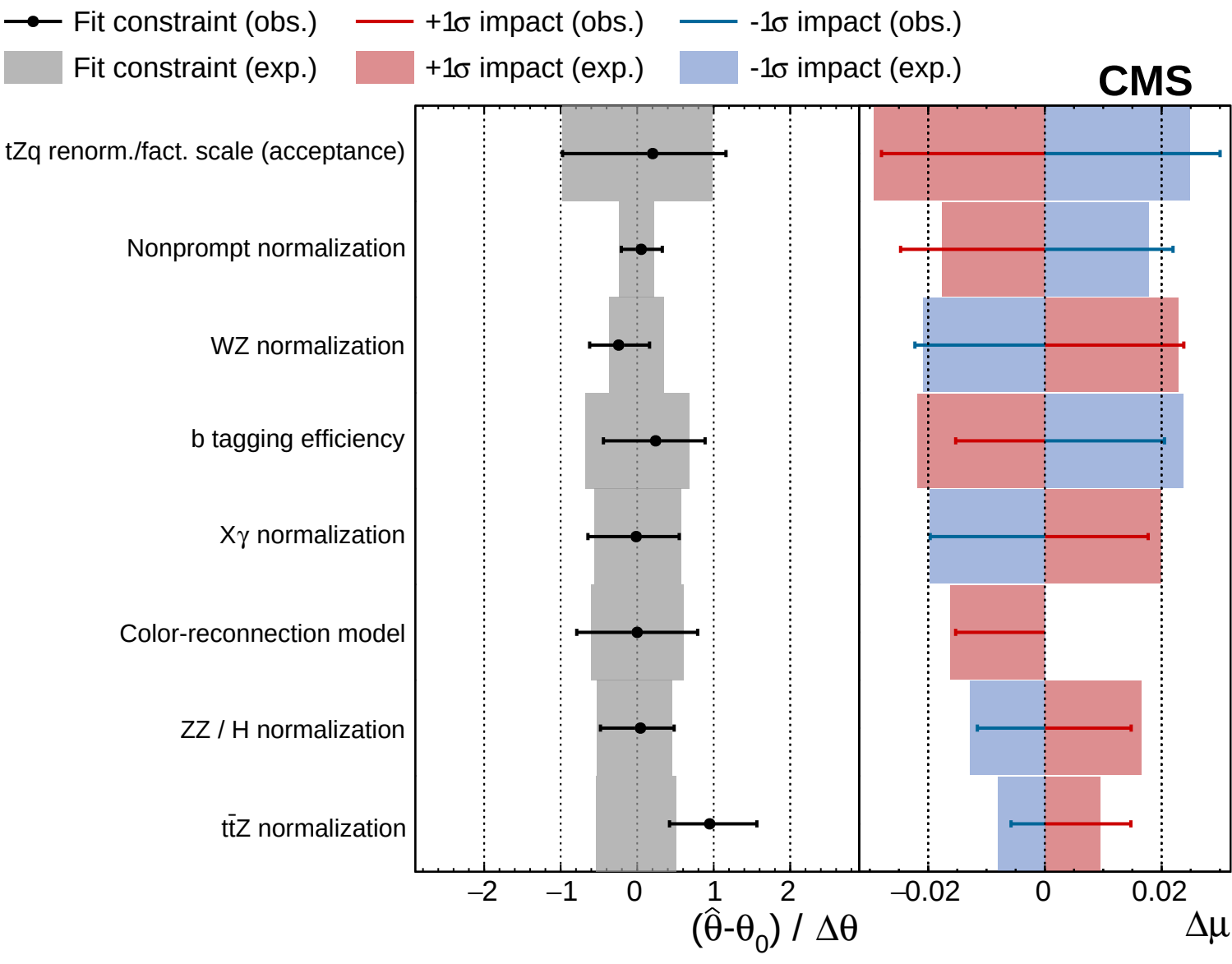
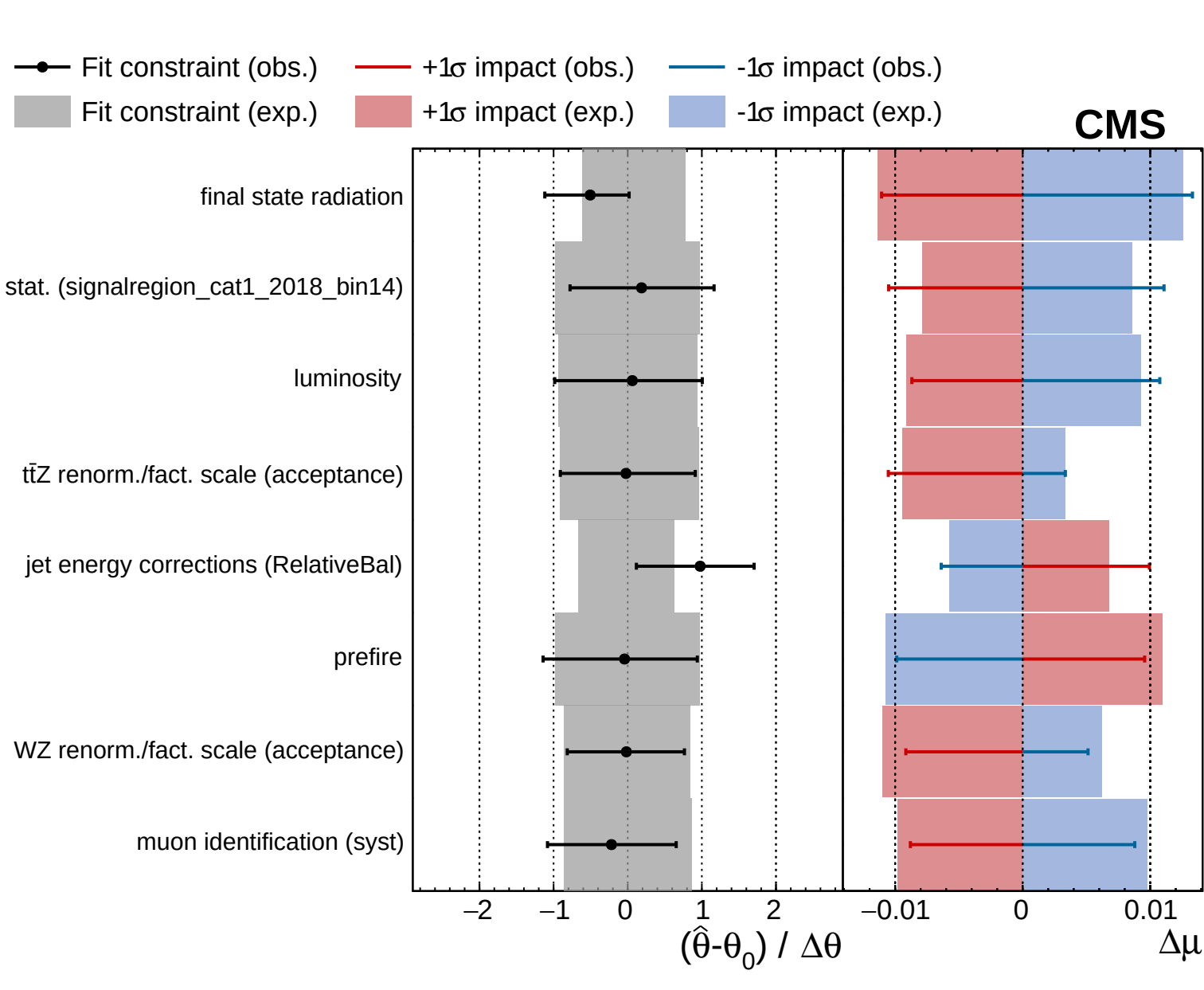
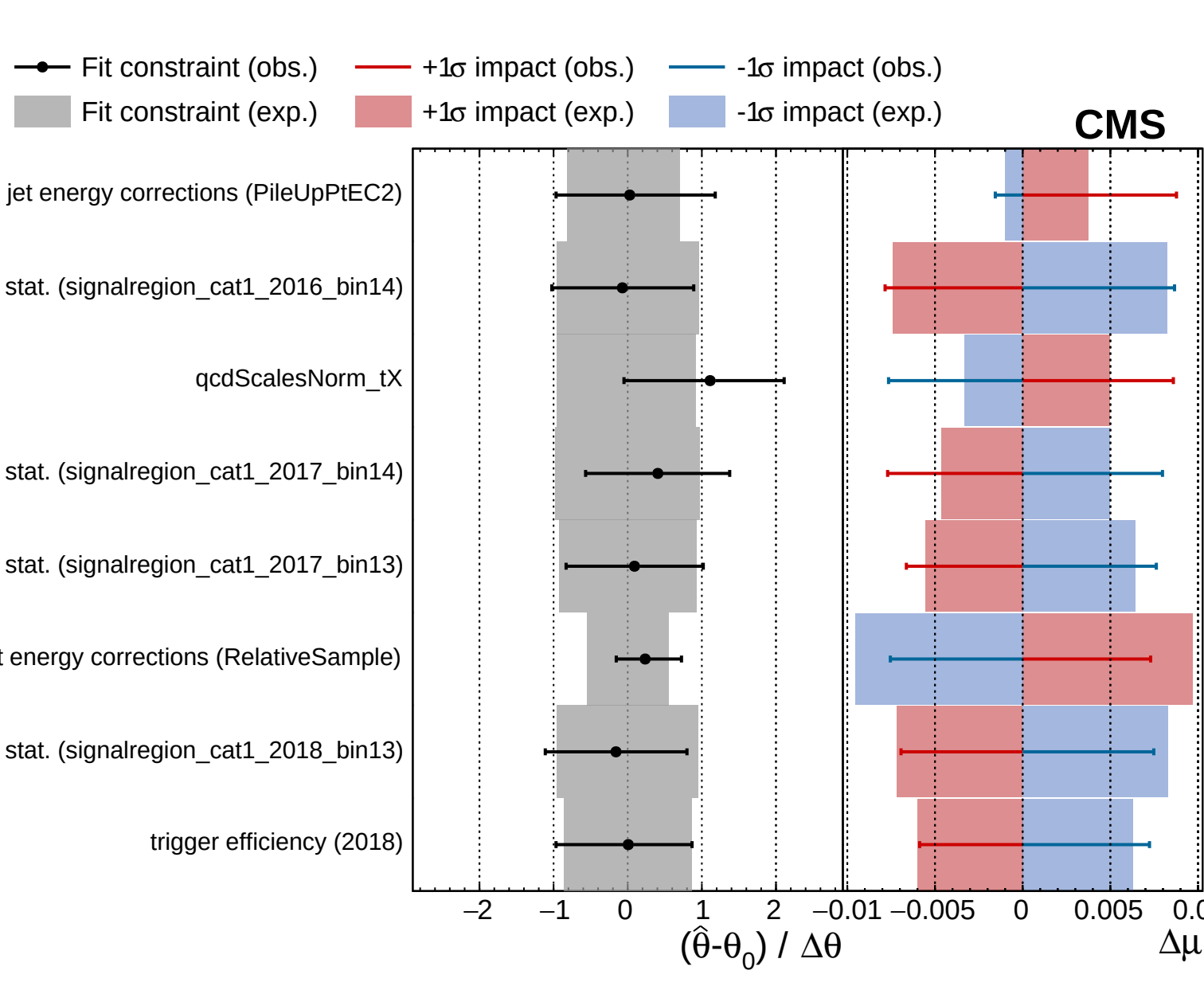
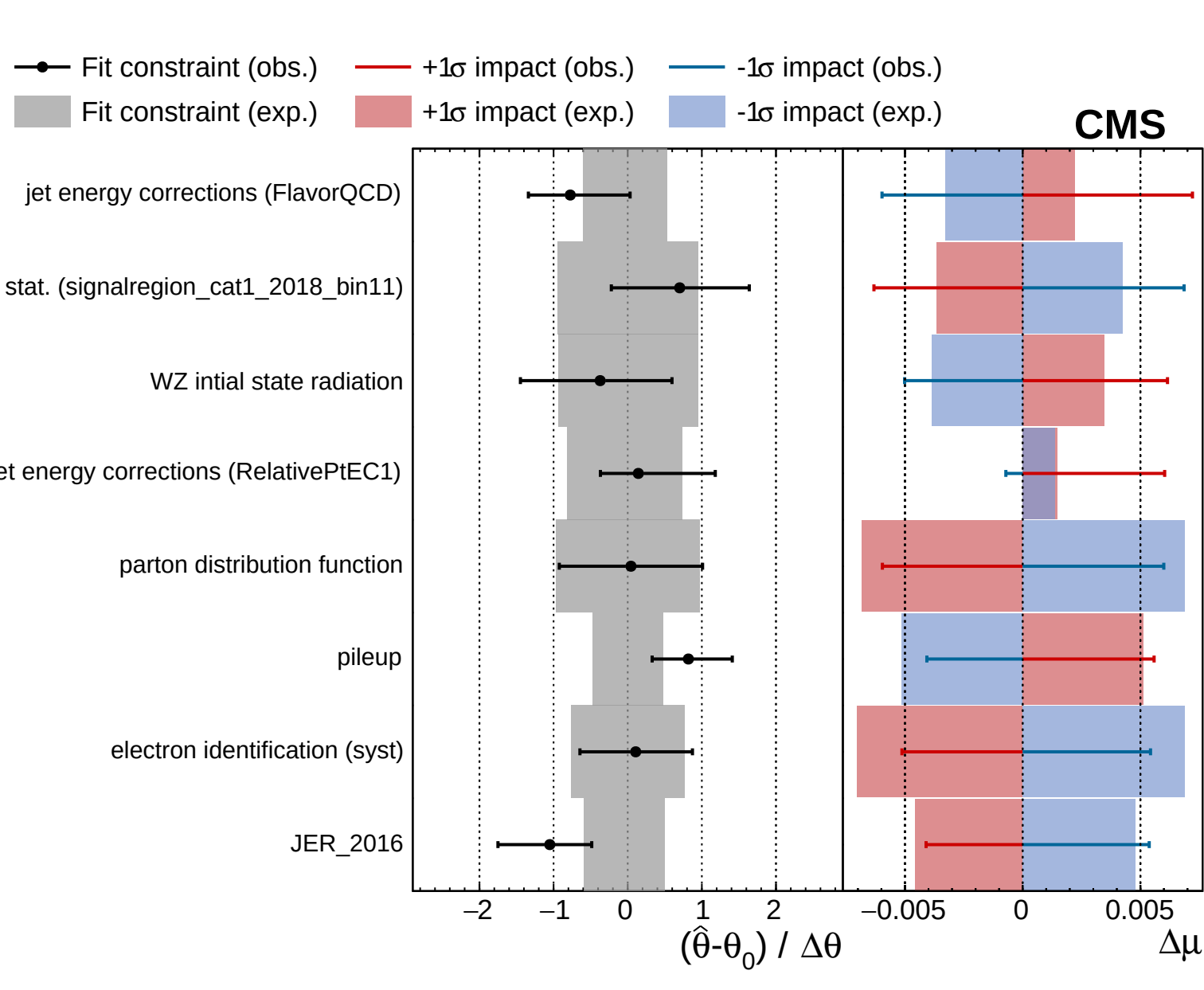
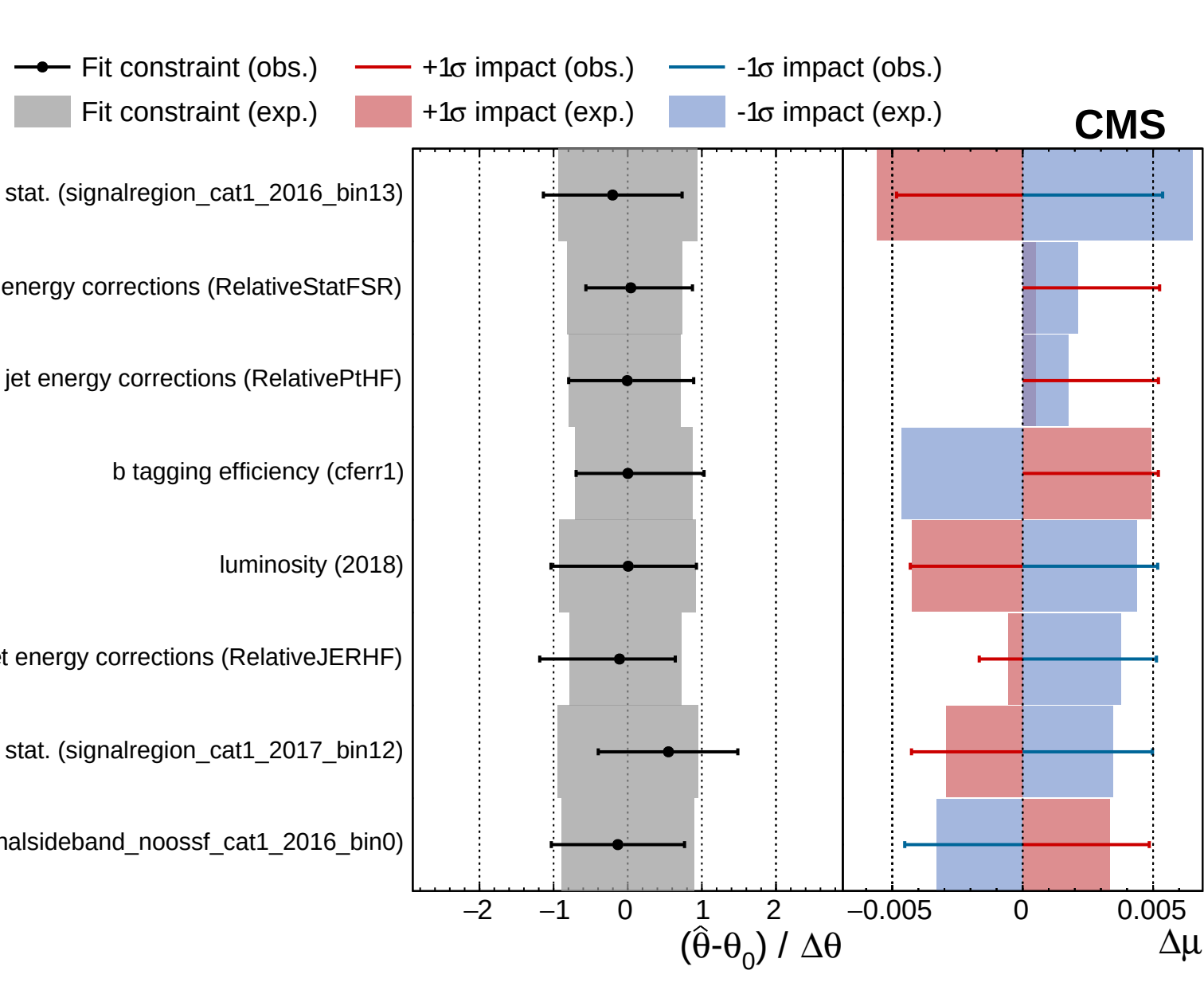
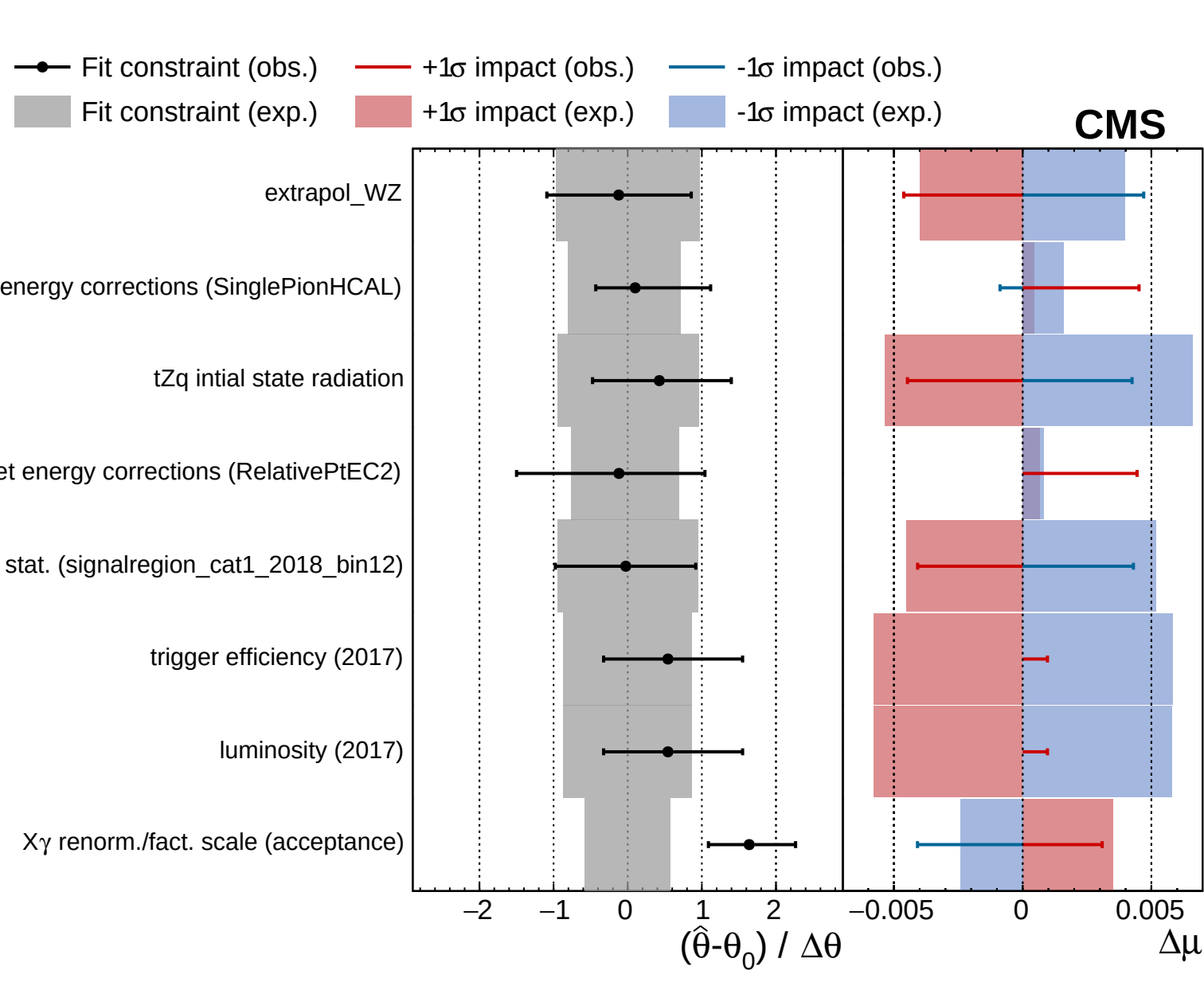

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
tZq renorm./fact. scale (acceptance)
Nonprompt normalization
WZ normalization
b tagging efficiency
Xγ normalization
Color-reconnection model
ZZ / H normalization
ttZ normalization
–2
–1
0
1
2
(θ̂-θ0) / Δθ
–0.02
0
0.02
Δμ

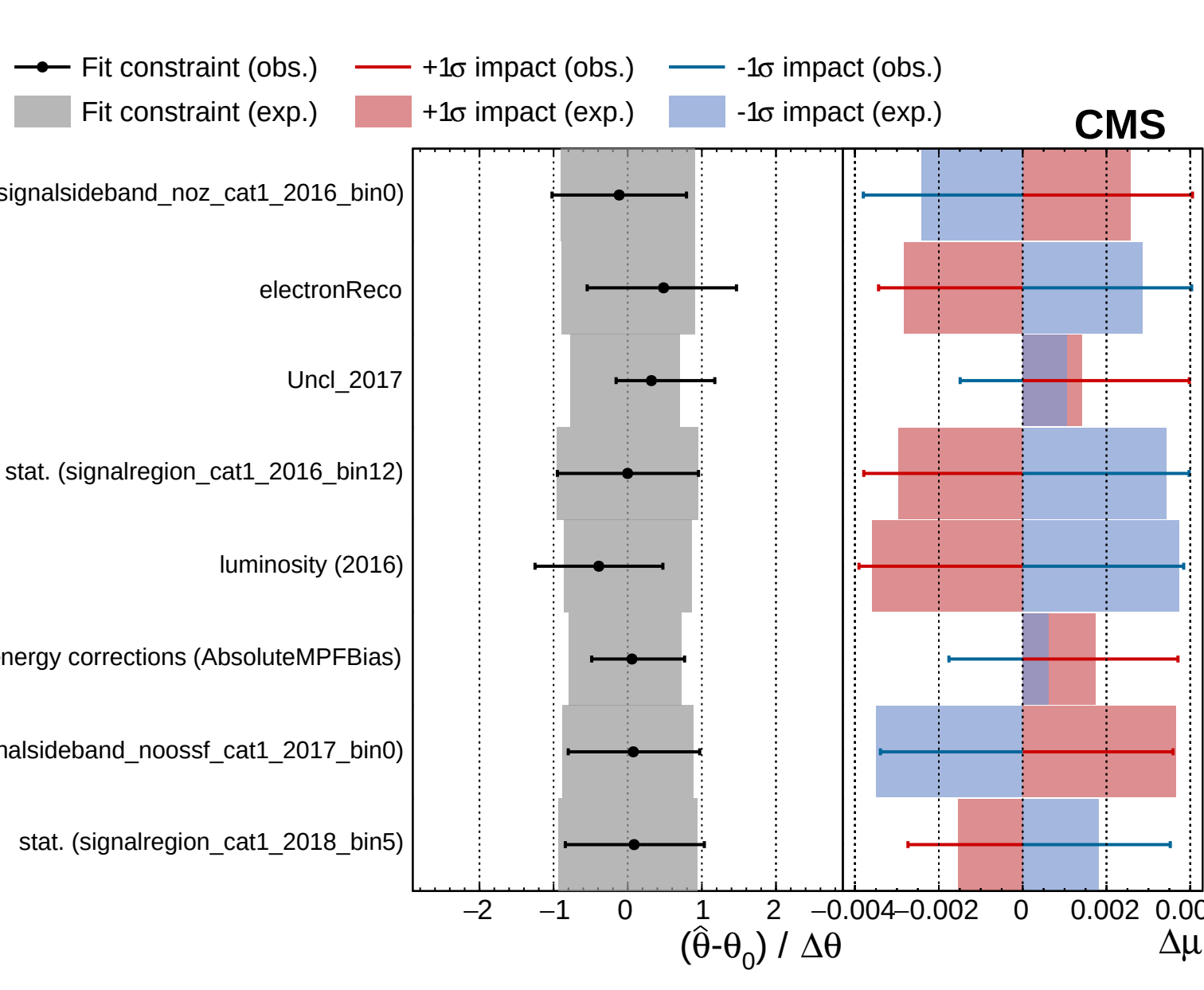

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
final state radiation
stat. (signalregion_cat1_2018_bin14)
luminosity
tt̄Z renorm./fact. scale (acceptance)
jet energy corrections (RelativeBal)
prefire
WZ renorm./fact. scale (acceptance)
muon identification (syst)
–2
–1
0
1
2
(θ̂-θ0) / Δθ
–0.01
0
0.01
Δμ

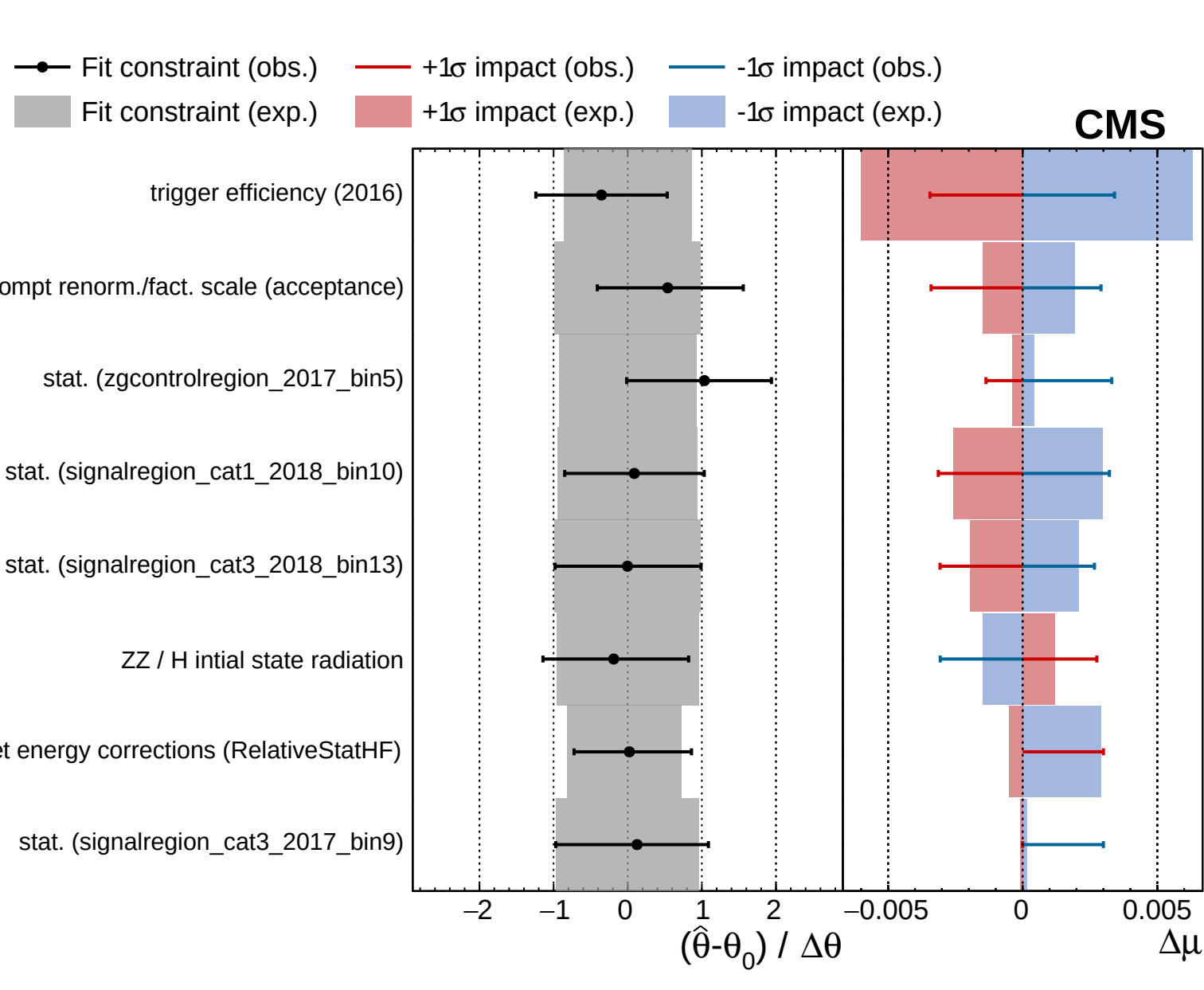

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
jet energy corrections (PileUpPtEC2)
stat. (signalregion_cat1_2016_bin14)
qcdScalesNorm_tX
stat. (signalregion_cat1_2017_bin14)
stat. (signalregion_cat1_2017_bin13)
t energy corrections (RelativeSample)
stat. (signalregion_cat1_2018_bin13)
trigger efficiency (2018)
–2
–1
0
1
2
–0.01
–0.005
0
0.005
0.0
(θ̂-θ0) / Δθ
Δμ

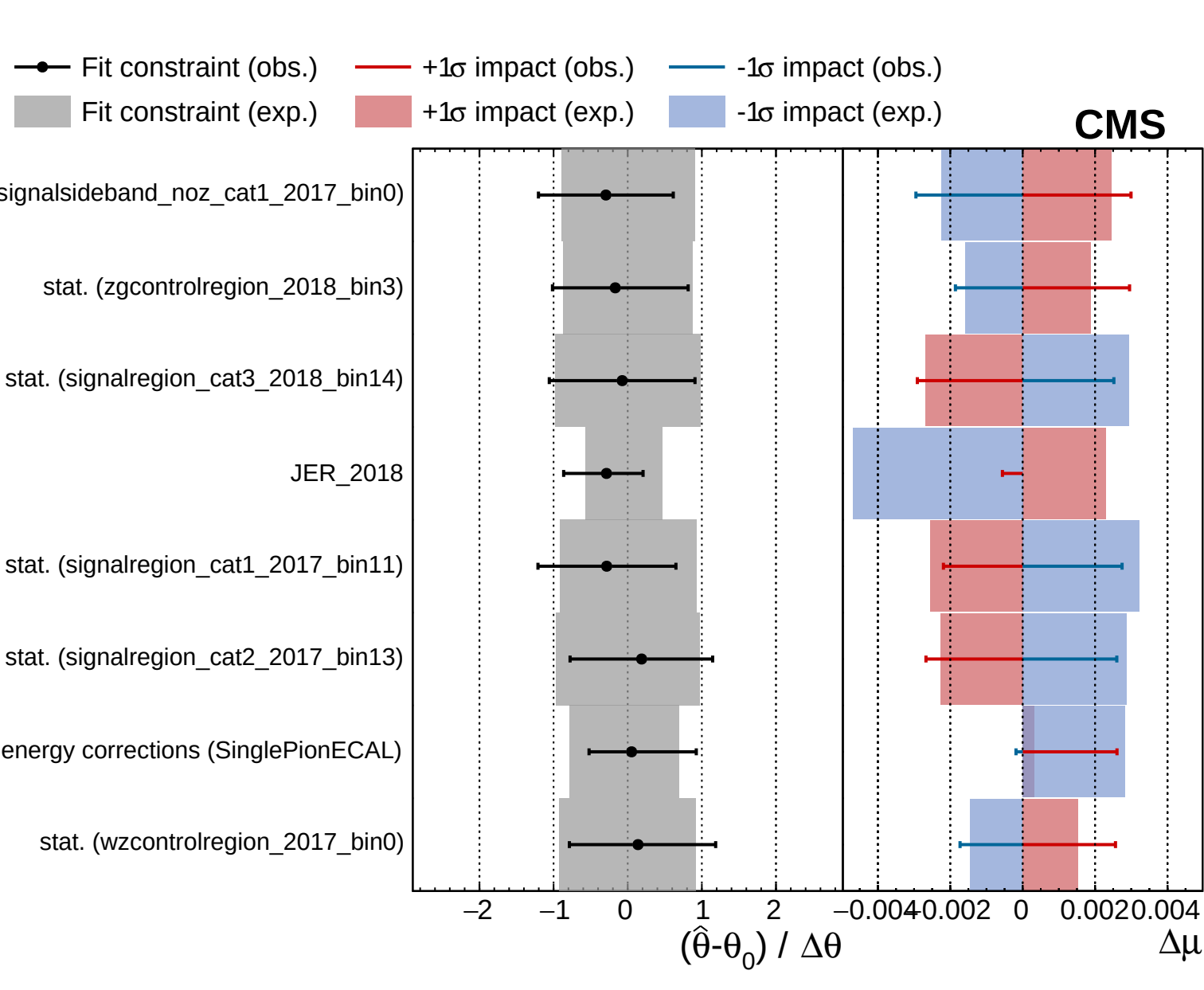

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
jet energy corrections (FlavorQCD)
stat. (signalregion_cat1_2018_bin11)
WZ intial state radiation
et energy corrections (RelativePtEC1)
parton distribution function
pileup
electron identification (syst)
JER_2016
–2
–1
0
1
2
(θ̂-θ0) / Δθ
–0.005
0
0.005
Δμ

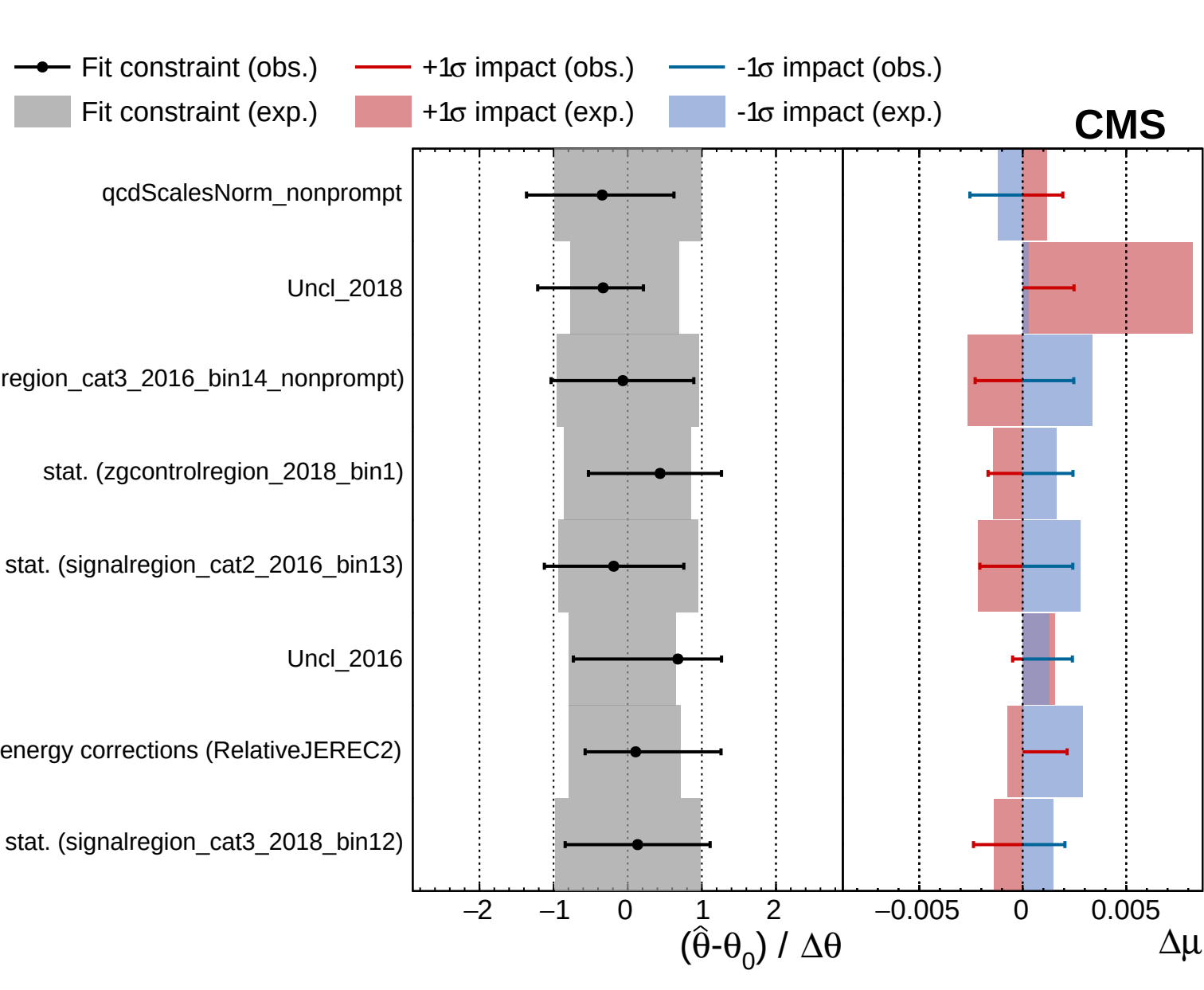

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat1_2016_bin13)
energy corrections (RelativeStatFSR)
jet energy corrections (RelativePtHF)
b tagging efficiency (cferr1)
luminosity (2018)
t energy corrections (RelativeJERHF)
stat. (signalregion_cat1_2017_bin12)
nalsideband_noossf_cat1_2016_bin0)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.005
0
0.005
Δμ

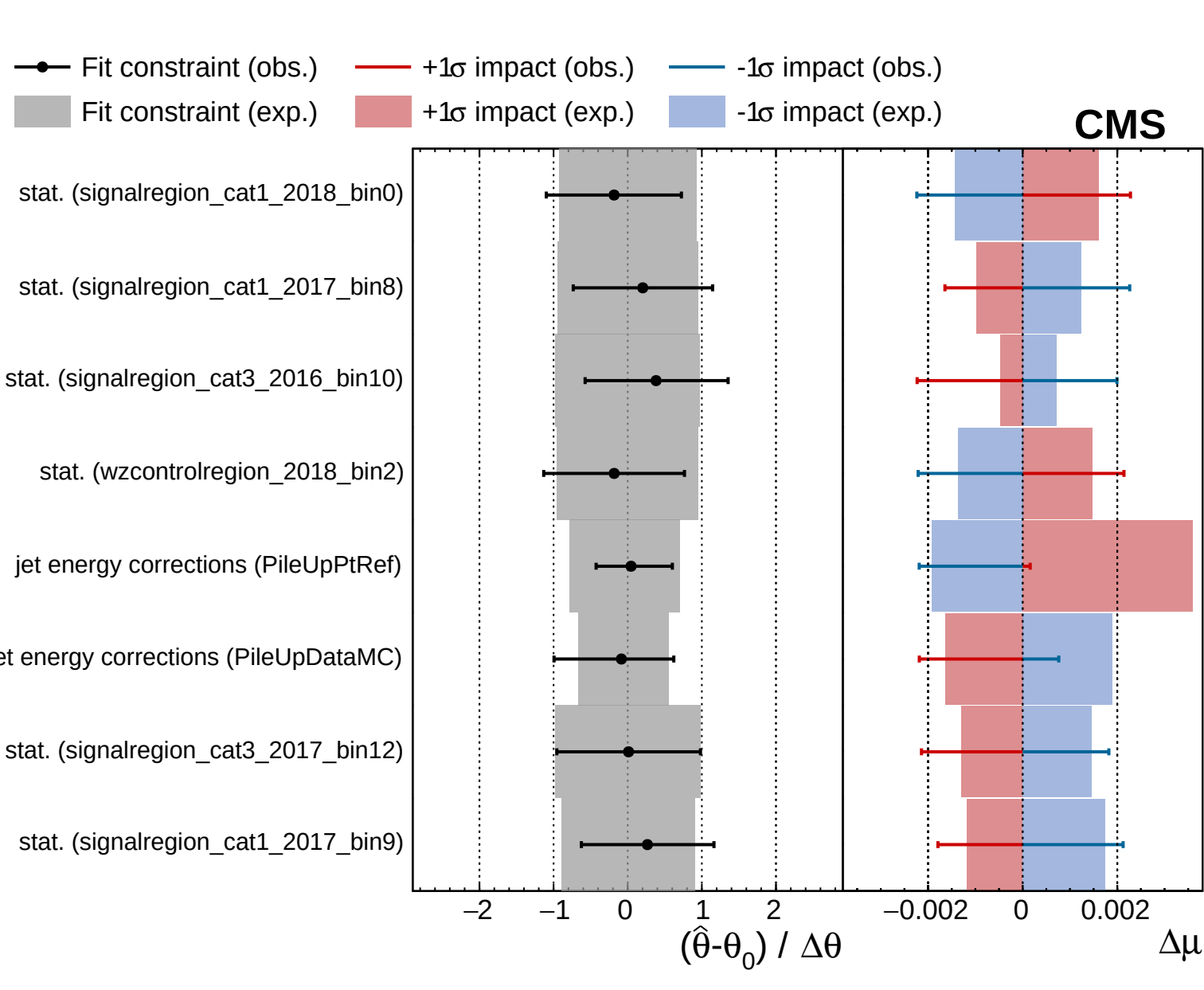

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
extrapol_WZ
energy corrections (SinglePionHCAL)
tZq intial state radiation
et energy corrections (RelativePtEC2)
stat. (signalregion_cat1_2018_bin12)
trigger efficiency (2017)
luminosity (2017)
Xγ renorm./fact. scale (acceptance)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.005
0
0.005
Δμ

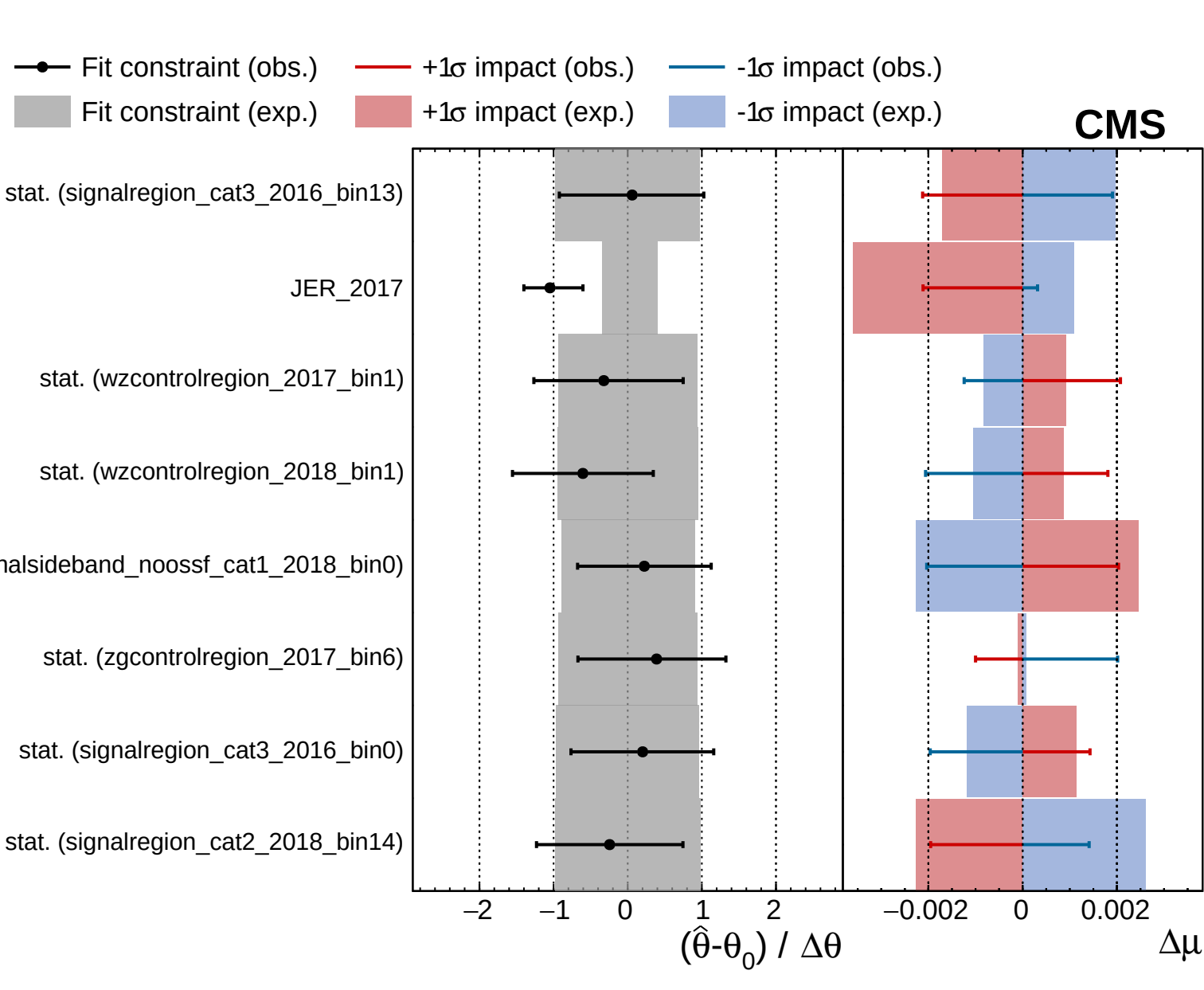

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
signalsideband_noz_cat1_2016_bin0)
electronReco
Uncl_2017
stat. (signalregion_cat1_2016_bin12)
luminosity (2016)
nergy corrections (AbsoluteMPFBias)
nalsideband_noossf_cat1_2017_bin0)
stat. (signalregion_cat1_2018_bin5)
–2
–1
0
1
2
(θ̂-θ0) / Δθ
–0.004
–0.002
0
0.002
0.00
Δμ

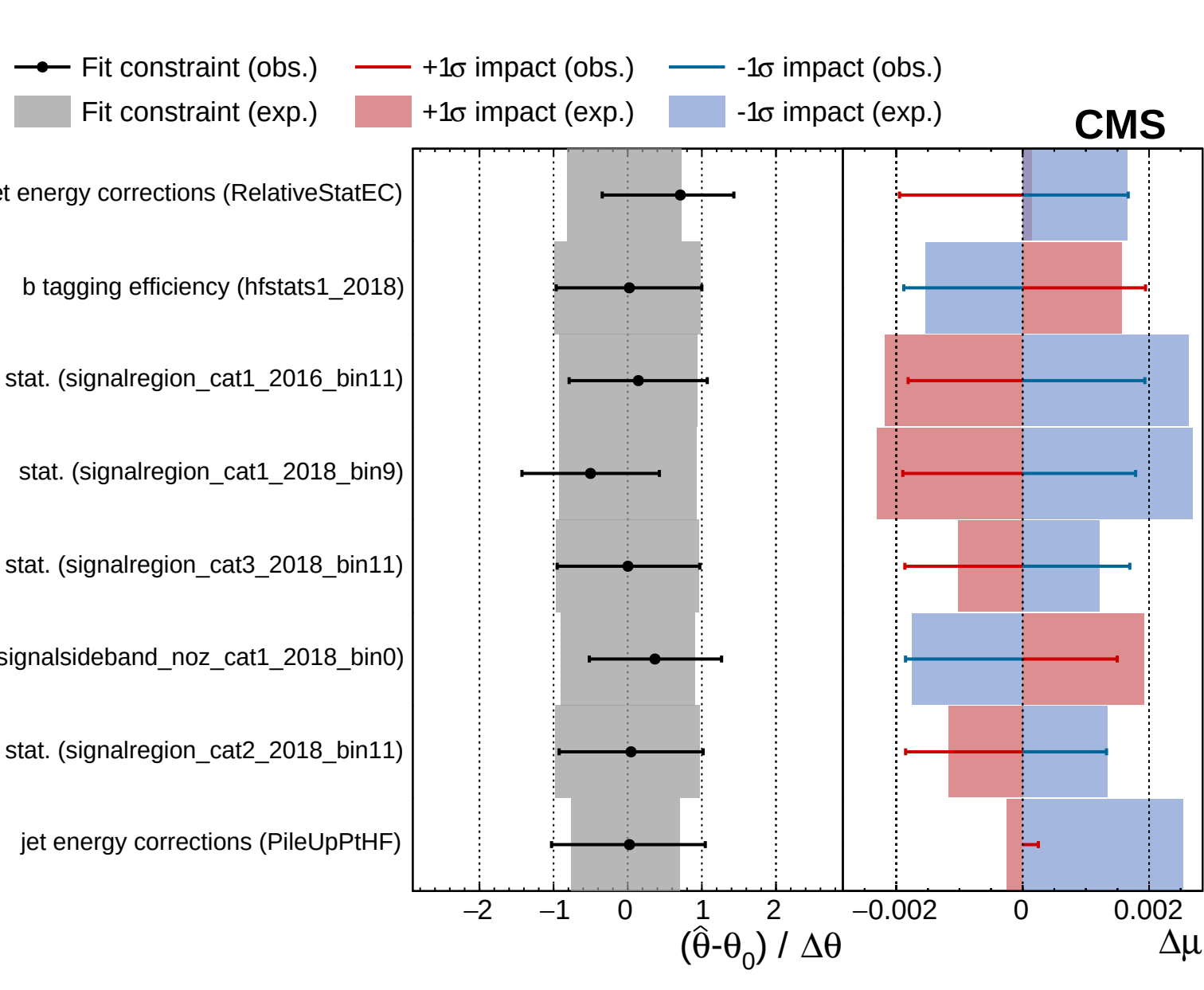

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
trigger efficiency (2016)
ompt renorm./fact. scale (acceptance)
stat. (zgcontrolregion_2017_bin5)
stat. (signalregion_cat1_2018_bin10)
stat. (signalregion_cat3_2018_bin13)
ZZ / H intial state radiation
et energy corrections (RelativeStatHF)
stat. (signalregion_cat3_2017_bin9)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.005
0
0.005
Δμ

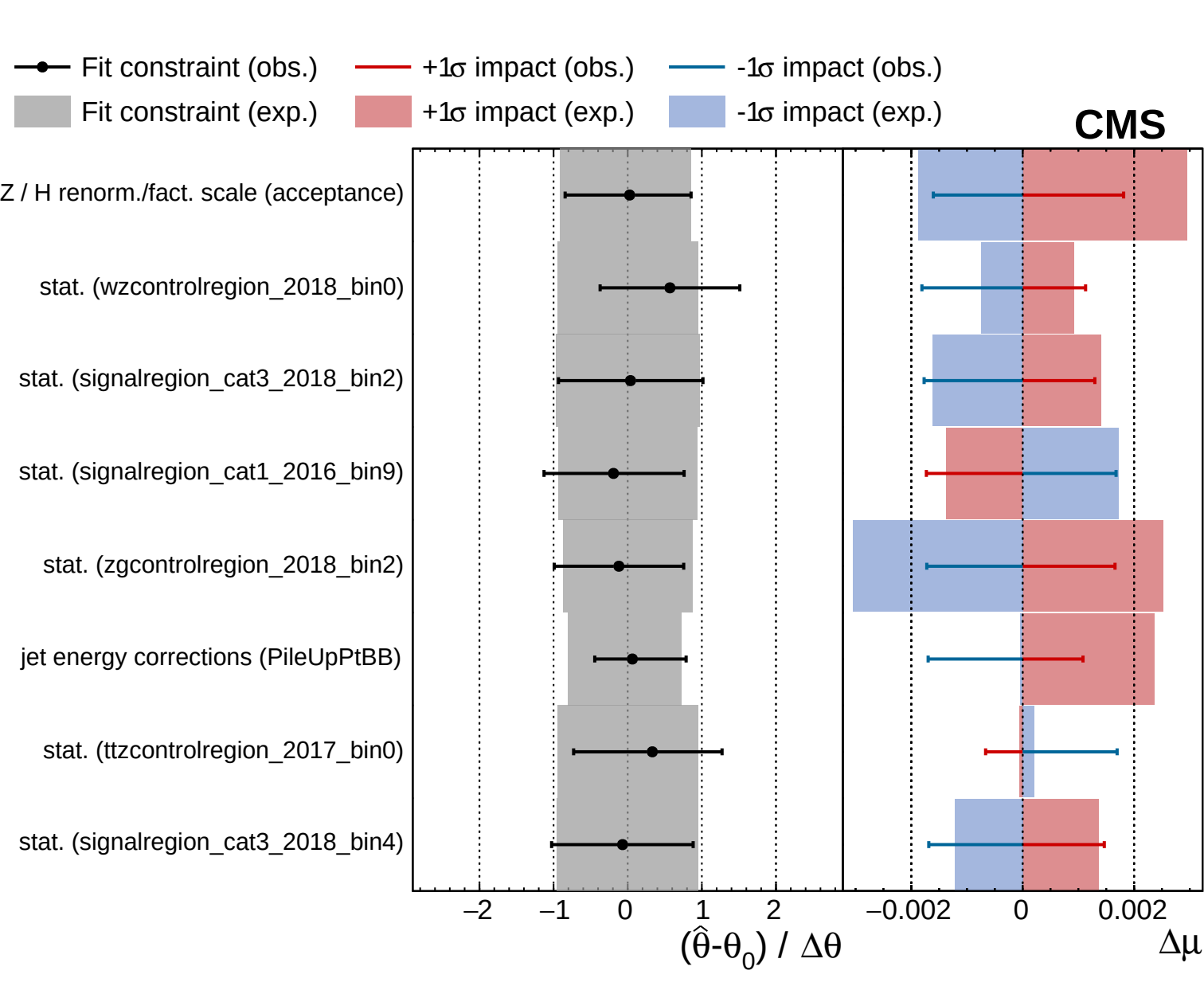

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
signalsideband_noz_cat1_2017_bin0)
stat. (zgcontrolregion_2018_bin3)
stat. (signalregion_cat3_2018_bin14)
JER_2018
stat. (signalregion_cat1_2017_bin11)
stat. (signalregion_cat2_2017_bin13)
energy corrections (SinglePionECAL)
stat. (wzcontrolregion_2017_bin0)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.004
−0.002
0
0.002
0.004
Δμ

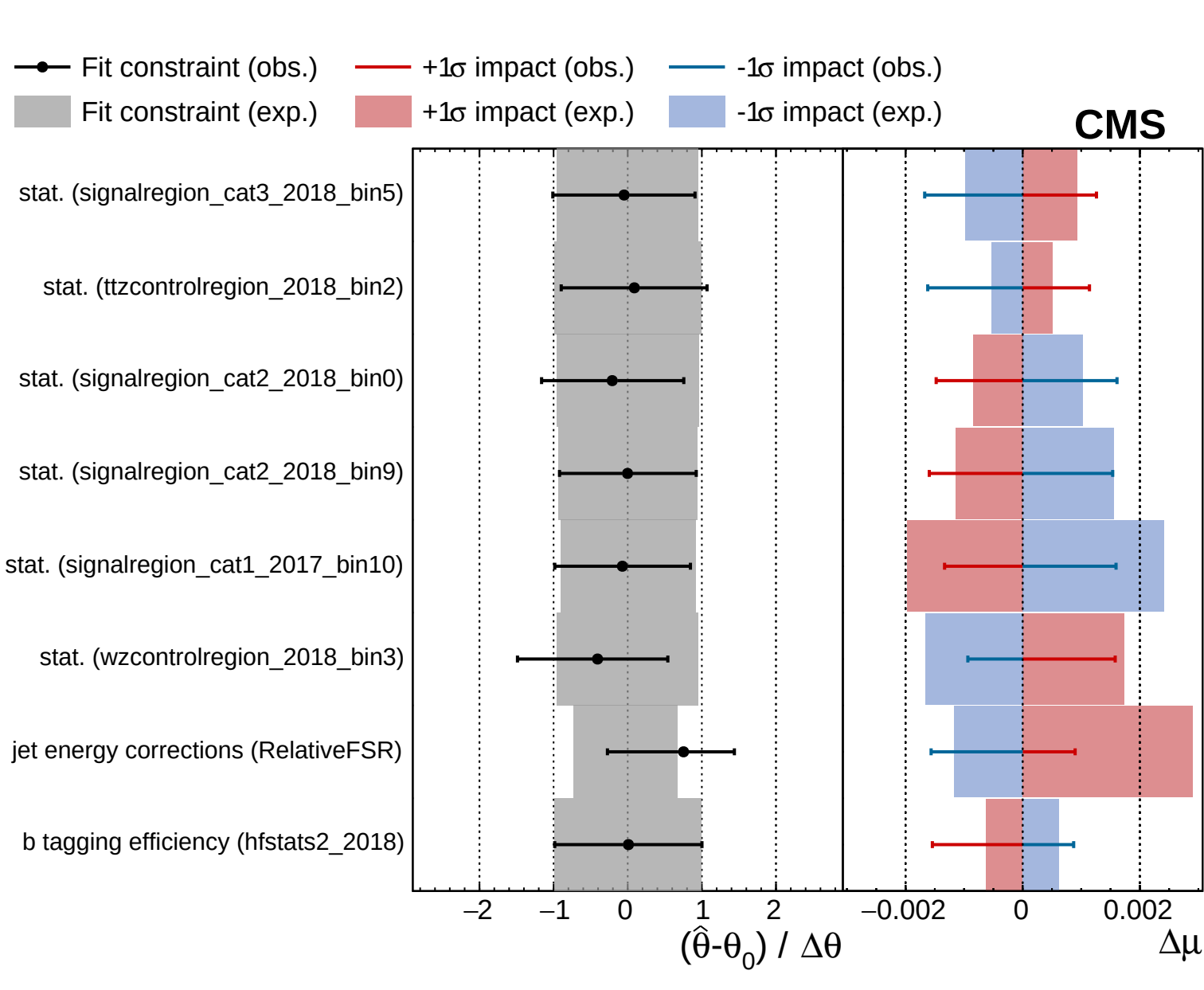

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
qcdScalesNorm_nonprompt
Uncl_2018
region_cat3_2016_bin14_nonprompt)
stat. (zgcontrolregion_2018_bin1)
stat. (signalregion_cat2_2016_bin13)
Uncl_2016
energy corrections (RelativeJEREC2)
stat. (signalregion_cat3_2018_bin12)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.005
0
0.005
Δμ

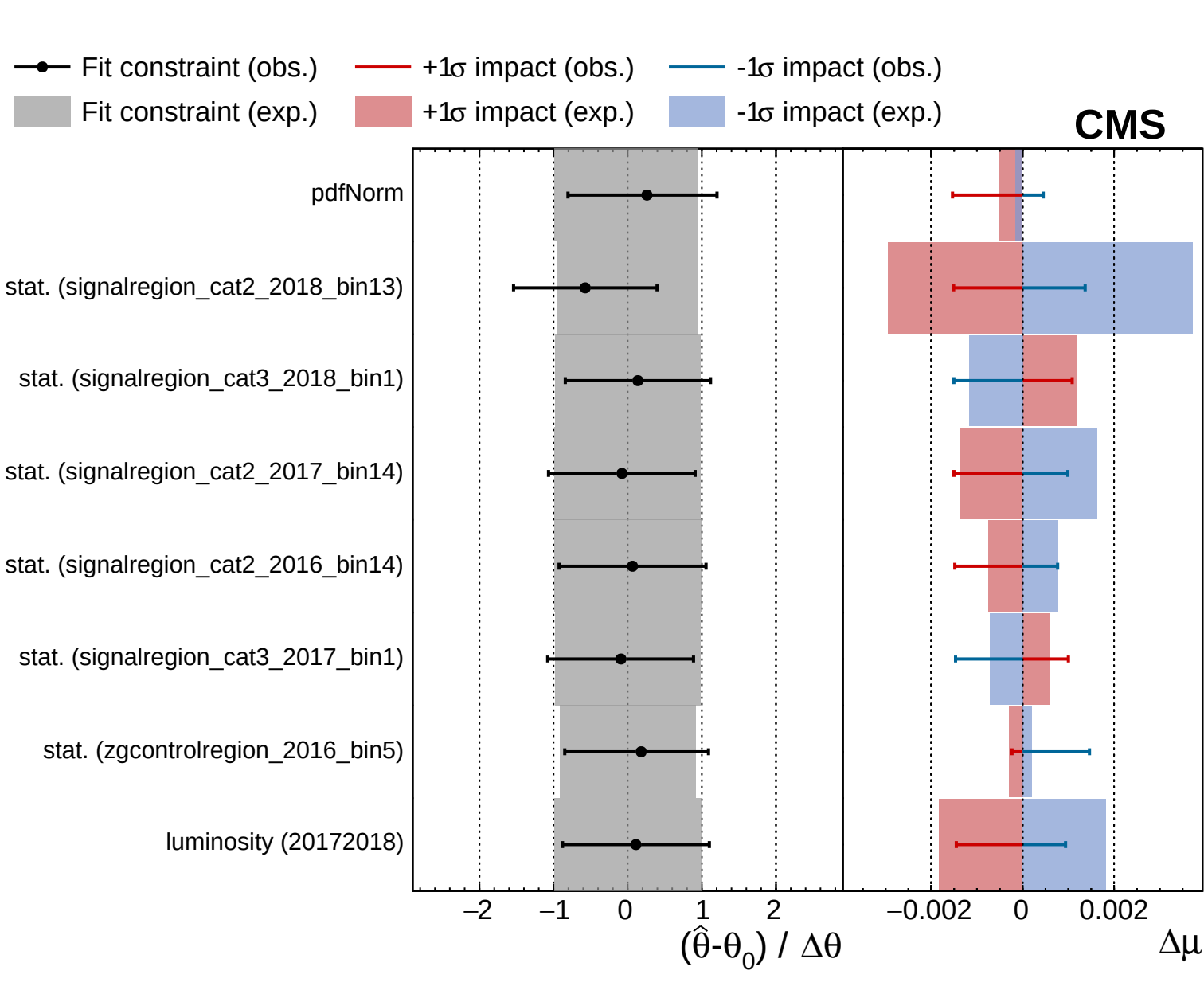

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat1_2018_bin0)
stat. (signalregion_cat1_2017_bin8)
stat. (signalregion_cat3_2016_bin10)
stat. (wzcontrolregion_2018_bin2)
jet energy corrections (PileUpPtRef)
et energy corrections (PileUpDataMC)
stat. (signalregion_cat3_2017_bin12)
stat. (signalregion_cat1_2017_bin9)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.002
0
0.002
Δμ

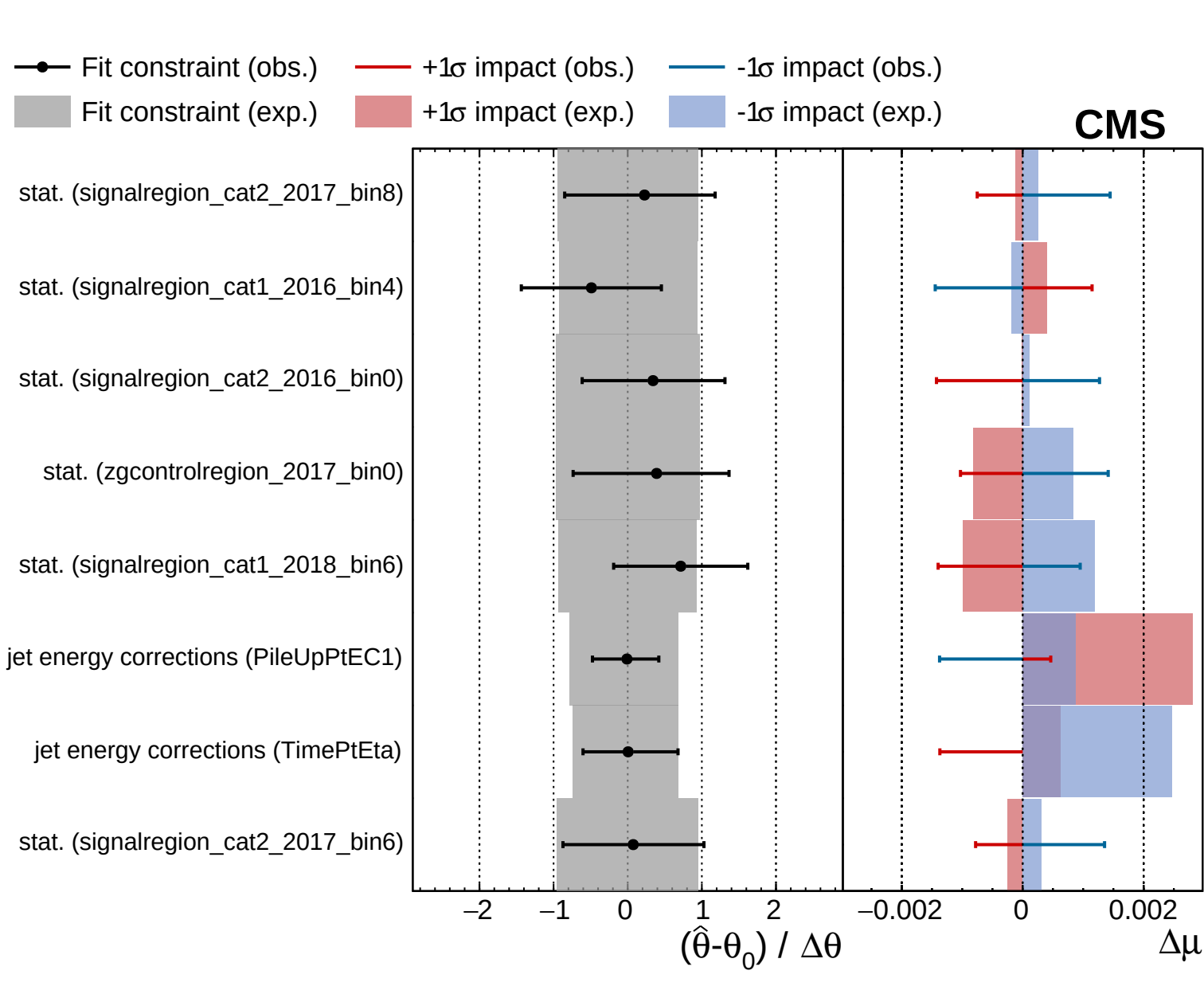

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat3_2016_bin13)
JER_2017
stat. (wzcontrolregion_2017_bin1)
stat. (wzcontrolregion_2018_bin1)
nalsideband_noossf_cat1_2018_bin0)
stat. (zgcontrolregion_2017_bin6)
stat. (signalregion_cat3_2016_bin0)
stat. (signalregion_cat2_2018_bin14)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.002
0
0.002
Δμ

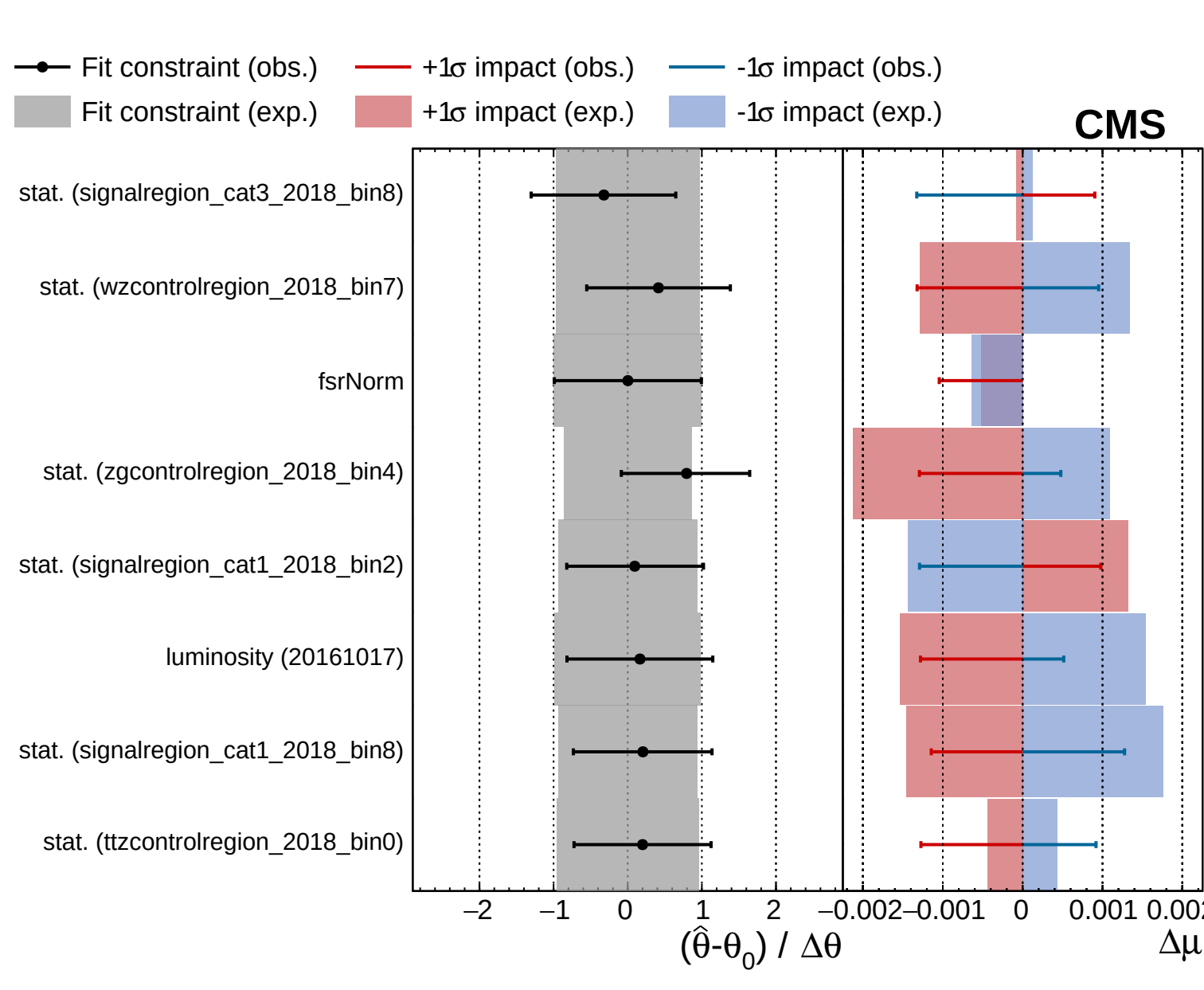

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
et energy corrections (RelativeStatEC)
b tagging efficiency (hfstats1_2018)
stat. (signalregion_cat1_2016_bin11)
stat. (signalregion_cat1_2018_bin9)
stat. (signalregion_cat3_2018_bin11)
signalsideband_noz_cat1_2018_bin0)
stat. (signalregion_cat2_2018_bin11)
jet energy corrections (PileUpPtHF)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.002
0
0.002
Δμ

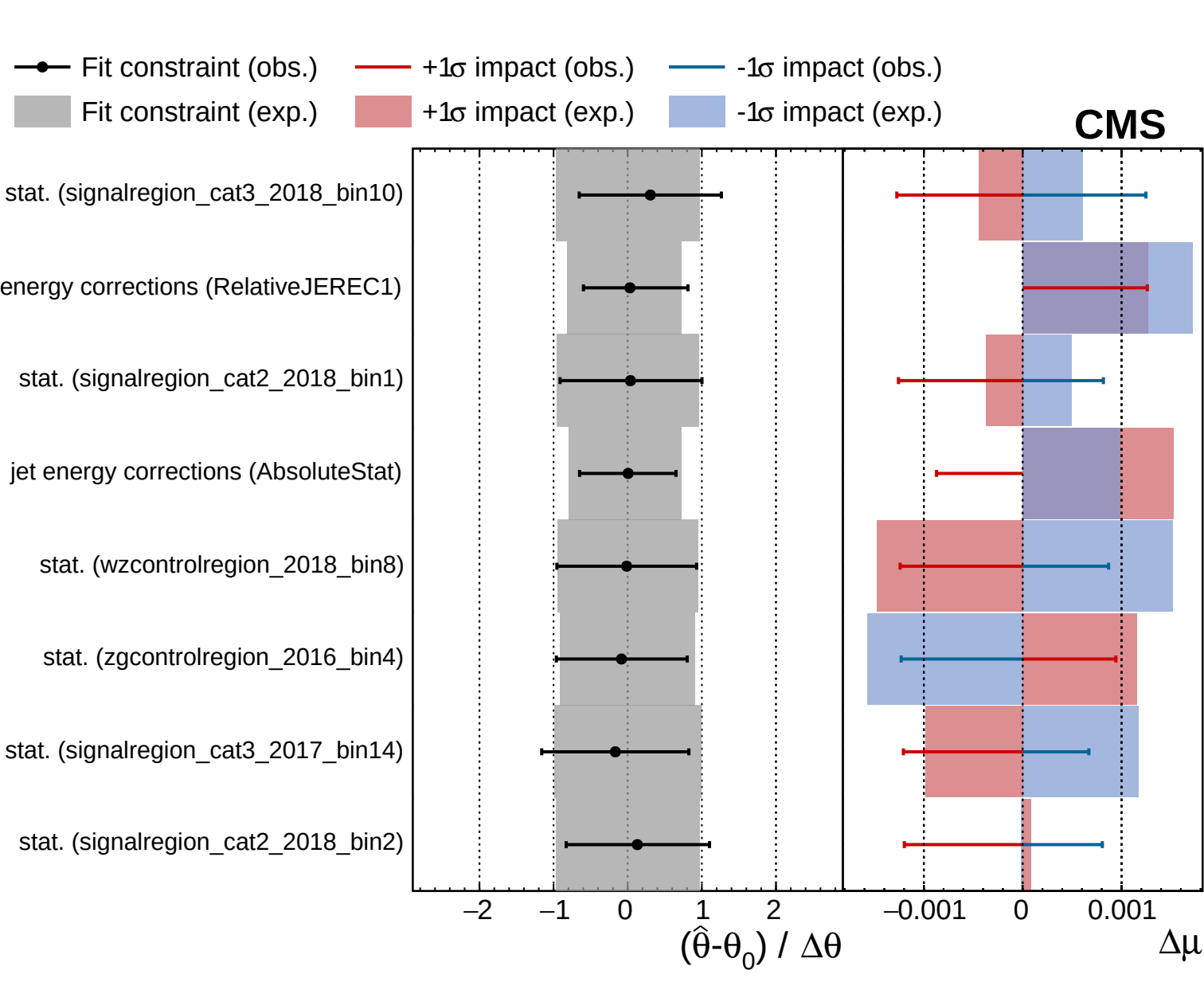

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
Z / H renorm./fact. scale (acceptance)
stat. (wzcontrolregion_2018_bin0)
stat. (signalregion_cat3_2018_bin2)
stat. (signalregion_cat1_2016_bin9)
stat. (zgcontrolregion_2018_bin2)
jet energy corrections (PileUpPtBB)
stat. (ttzcontrolregion_2017_bin0)
stat. (signalregion_cat3_2018_bin4)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.002
0
0.002
Δμ

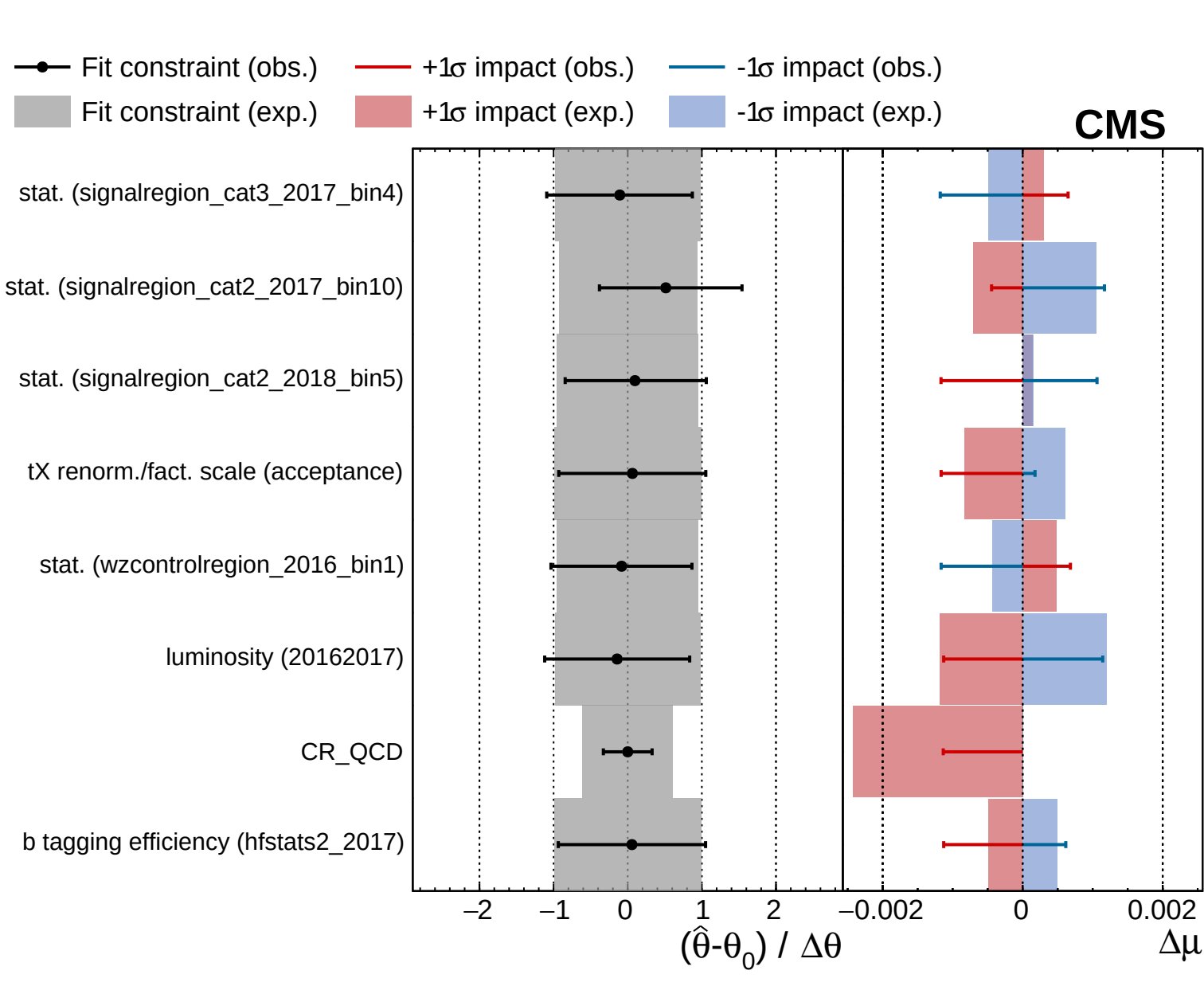

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat3_2018_bin5)
stat. (ttzcontrolregion_2018_bin2)
stat. (signalregion_cat2_2018_bin0)
stat. (signalregion_cat2_2018_bin9)
stat. (signalregion_cat1_2017_bin10)
stat. (wzcontrolregion_2018_bin3)
jet energy corrections (RelativeFSR)
b tagging efficiency (hfstats2_2018)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.002
0
0.002
Δμ

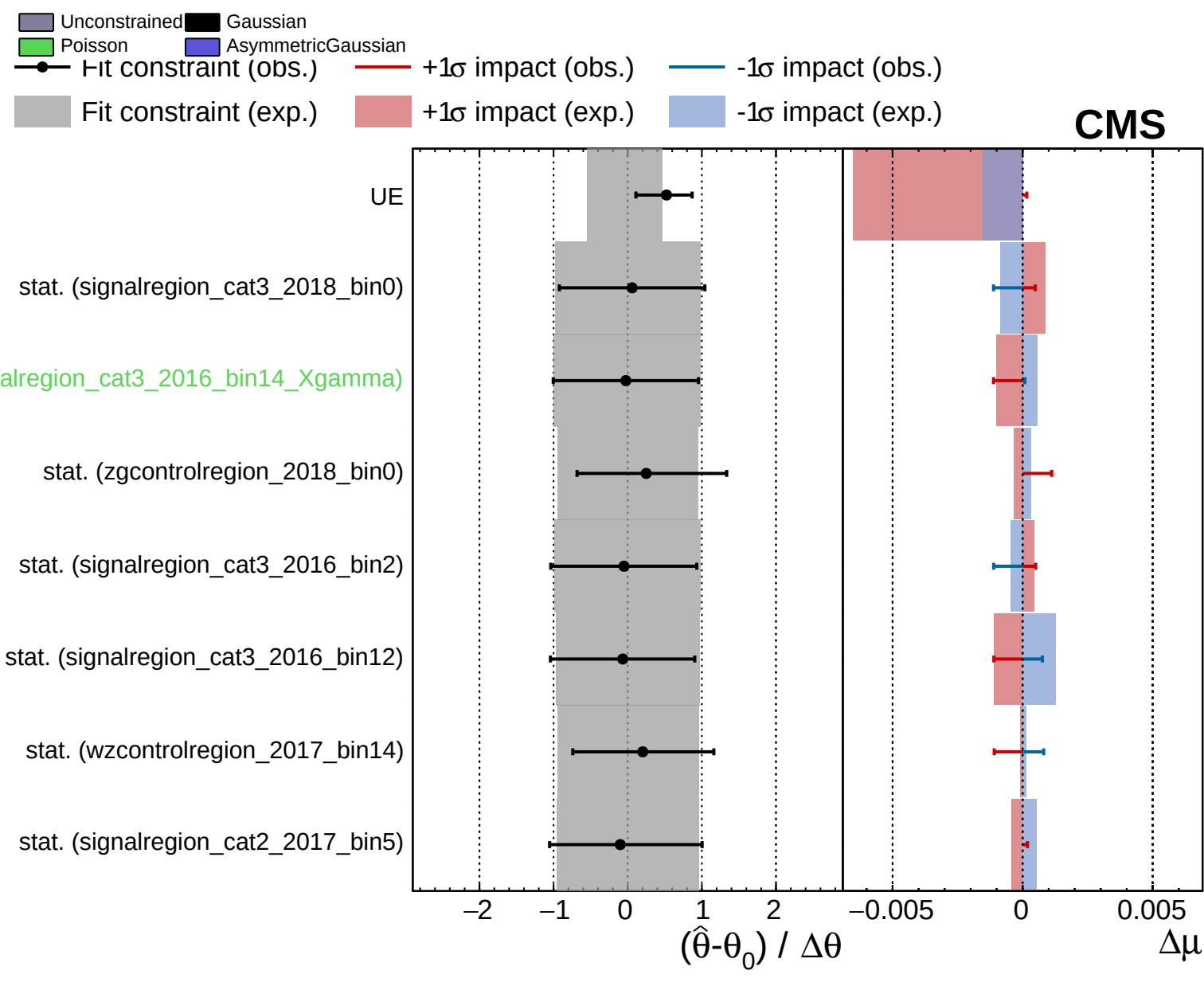

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
pdfNorm
stat. (signalregion_cat2_2018_bin13)
stat. (signalregion_cat3_2018_bin1)
stat. (signalregion_cat2_2017_bin14)
stat. (signalregion_cat2_2016_bin14)
stat. (signalregion_cat3_2017_bin1)
stat. (zgcontrolregion_2016_bin5)
luminosity (20172018)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.002
0
0.002
Δμ

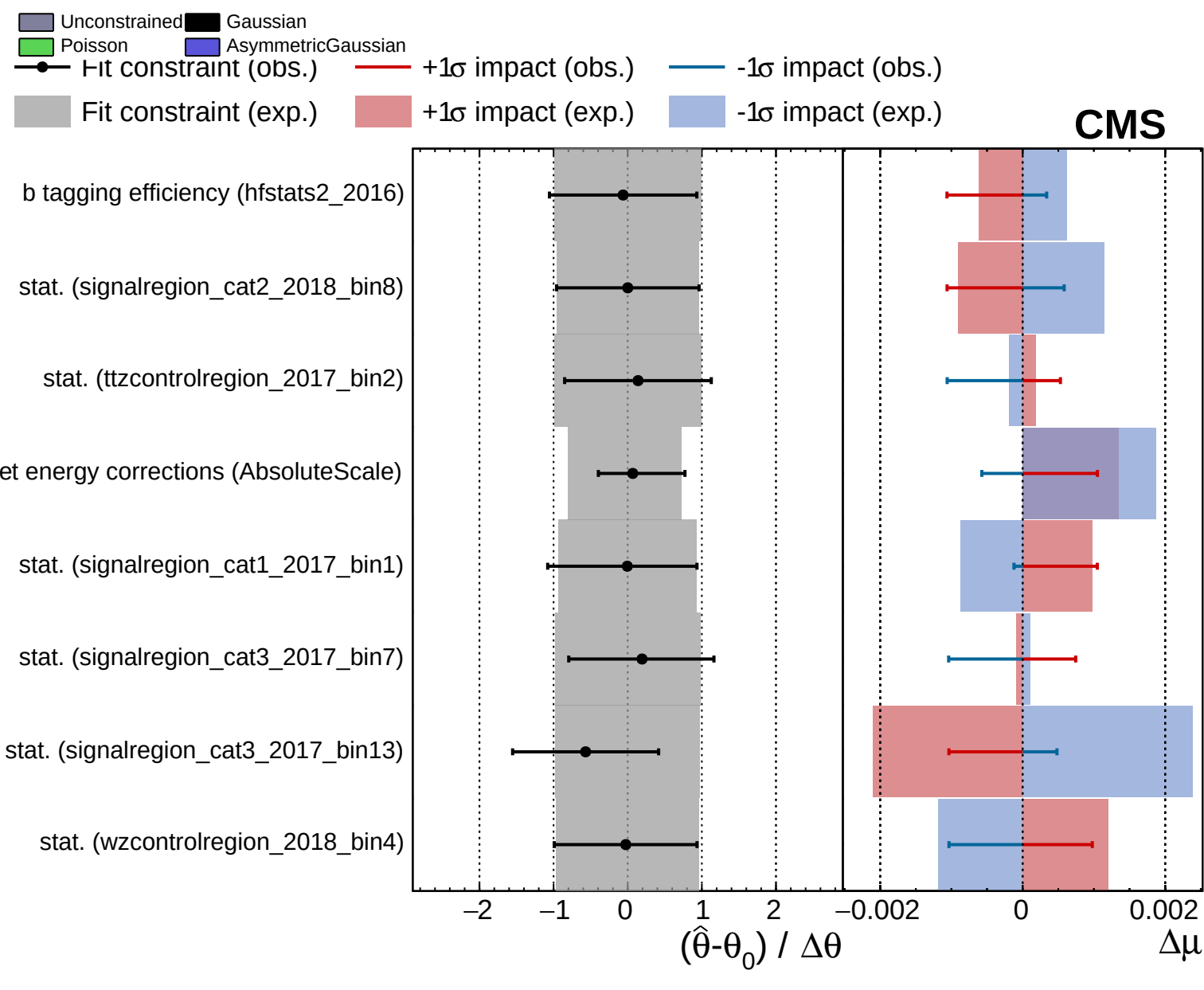

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat2_2017_bin8)
stat. (signalregion_cat1_2016_bin4)
stat. (signalregion_cat2_2016_bin0)
stat. (zgcontrolregion_2017_bin0)
stat. (signalregion_cat1_2018_bin6)
jet energy corrections (PileUpPtEC1)
jet energy corrections (TimePtEta)
stat. (signalregion_cat2_2017_bin6)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.002
0
0.002
Δμ

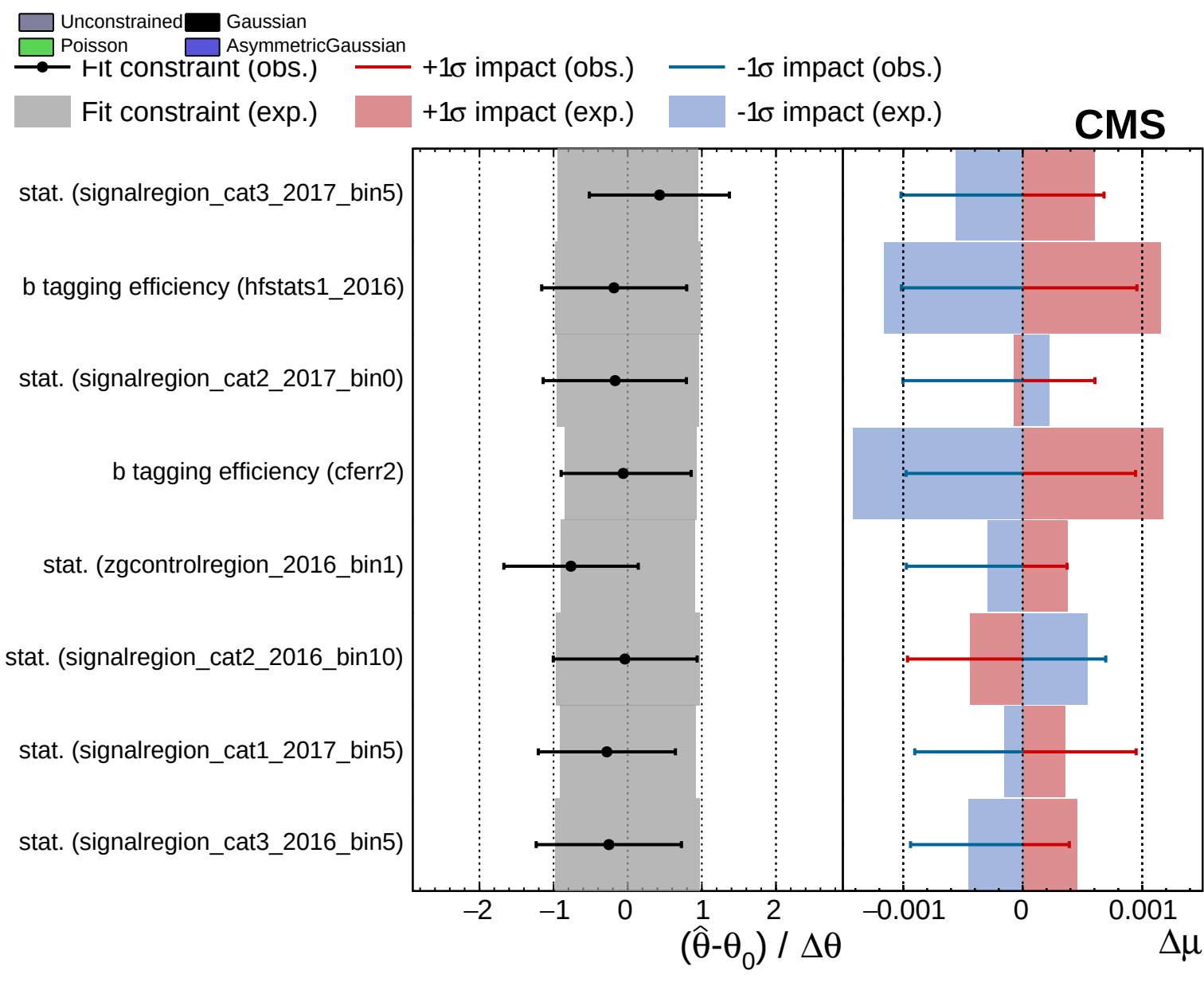

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat3_2018_bin8)
stat. (wzcontrolregion_2018_bin7)
fsrNorm
stat. (zgcontrolregion_2018_bin4)
stat. (signalregion_cat1_2018_bin2)
luminosity (20161017)
stat. (signalregion_cat1_2018_bin8)
stat. (ttzcontrolregion_2018_bin0)
–2
–1
0
1
2
–0.002
–0.001
0
0.001
0.002
(θ̂-θ0) / Δθ
Δμ

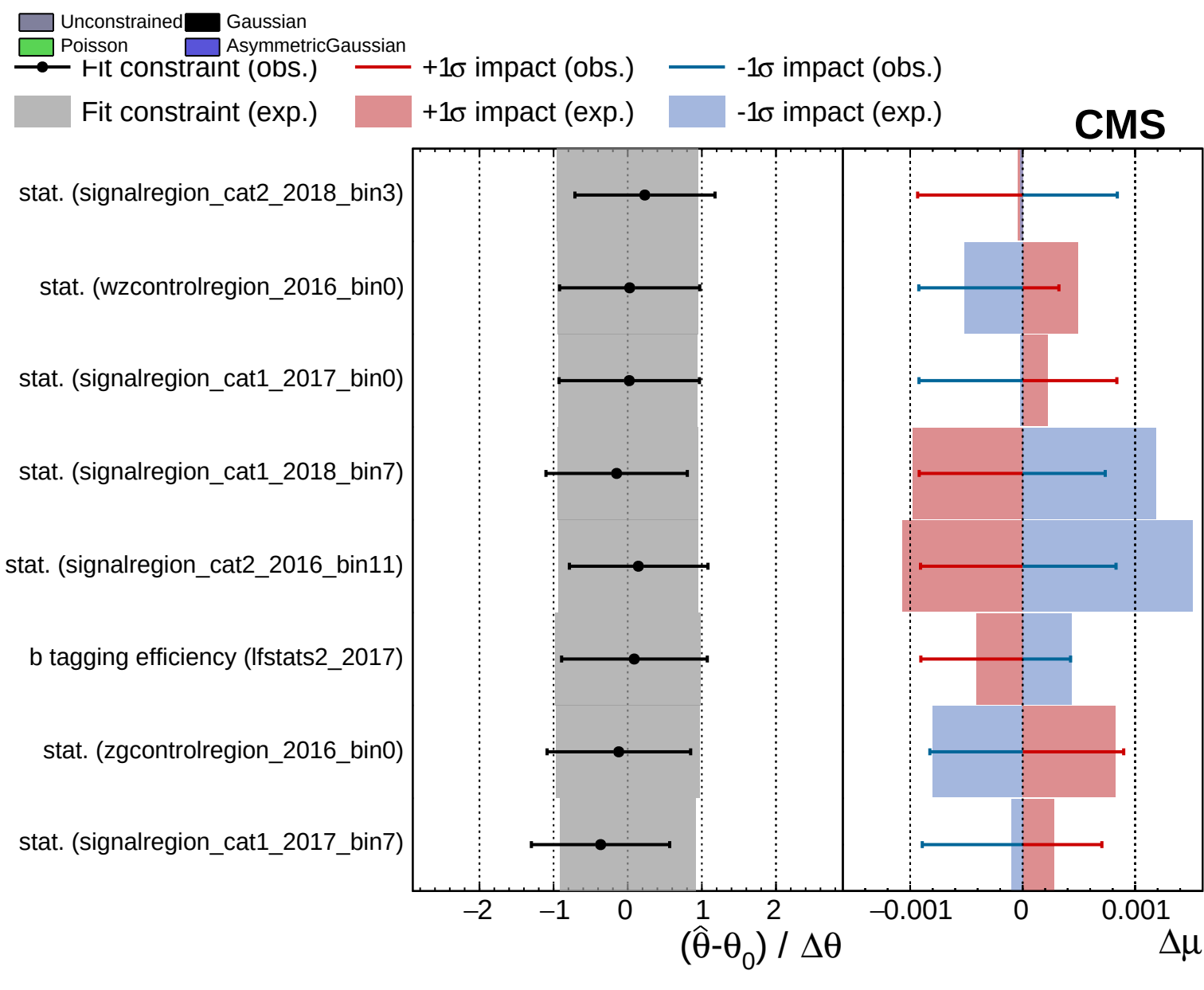

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat3_2018_bin10)
energy corrections (RelativeJEREC1)
stat. (signalregion_cat2_2018_bin1)
jet energy corrections (AbsoluteStat)
stat. (wzcontrolregion_2018_bin8)
stat. (zgcontrolregion_2016_bin4)
stat. (signalregion_cat3_2017_bin14)
stat. (signalregion_cat2_2018_bin2)
–2
–1
0
1
2
(θ̂-θ0) / Δθ
–0.001
0
0.001
Δμ

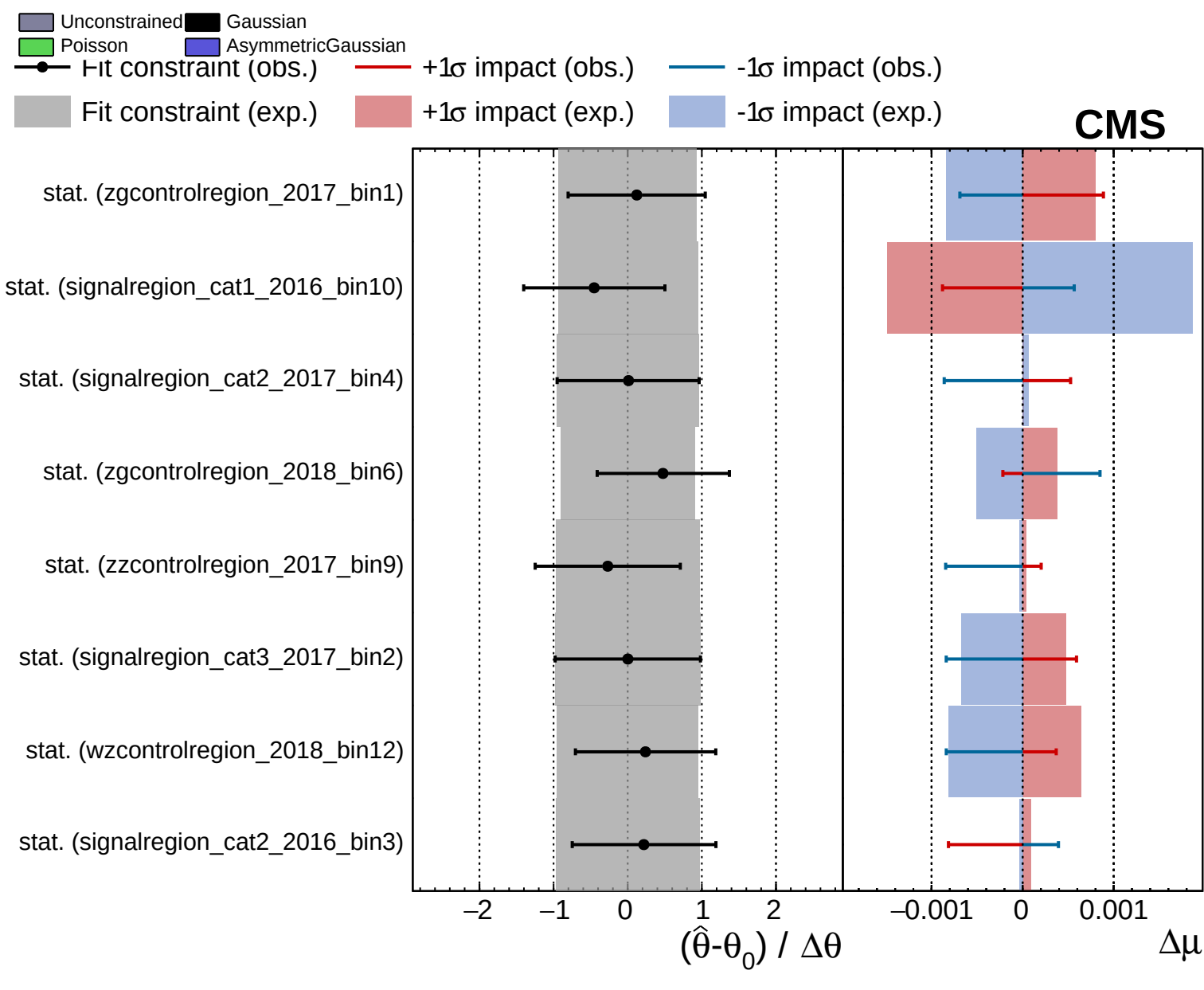

Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat3_2017_bin4)
stat. (signalregion_cat2_2017_bin10)
stat. (signalregion_cat2_2018_bin5)
tX renorm./fact. scale (acceptance)
stat. (wzcontrolregion_2016_bin1)
luminosity (20162017)
CR_QCD
b tagging efficiency (hfstats2_2017)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.002
0
0.002
Δμ

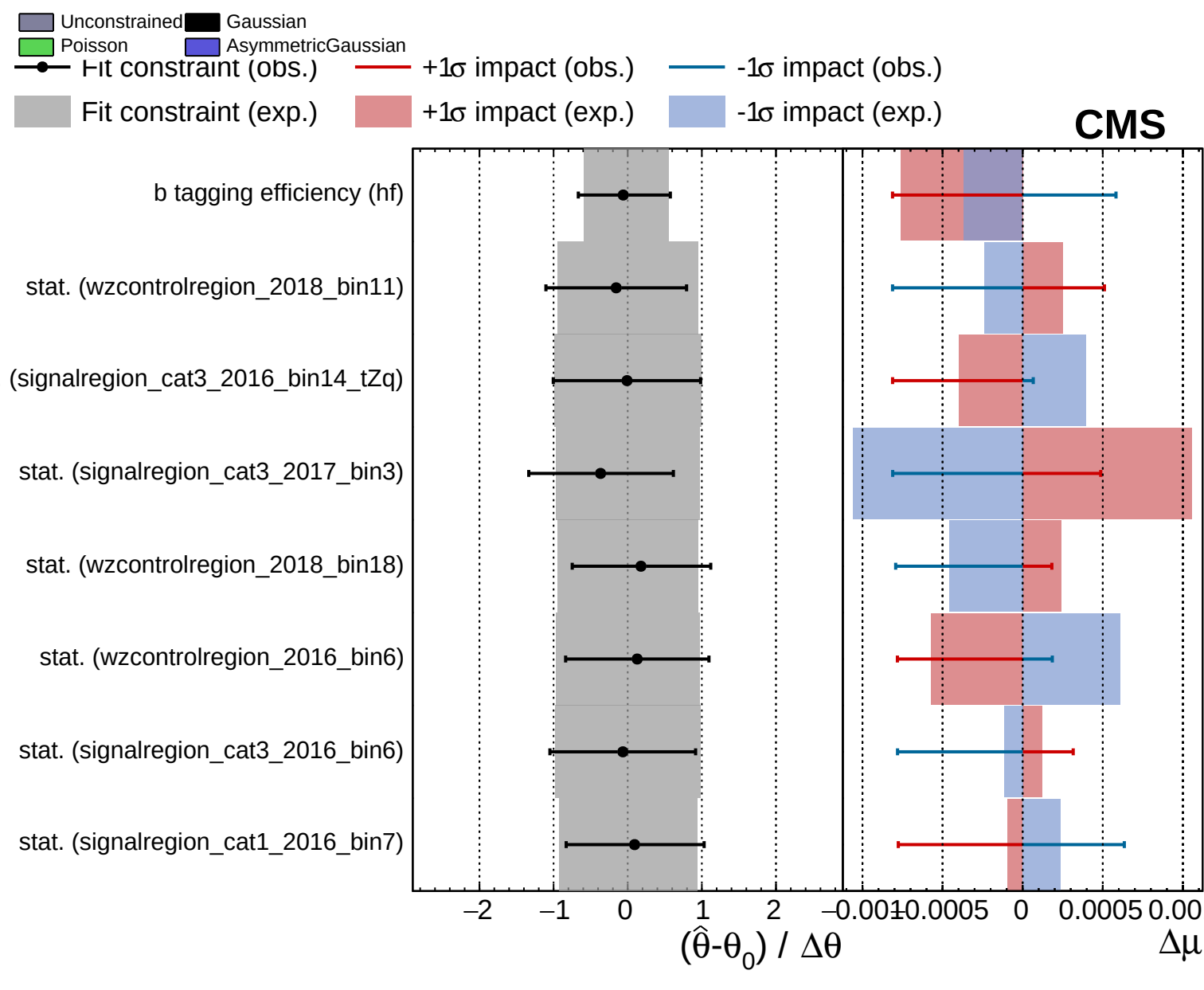

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
UE
stat. (signalregion_cat3_2018_bin0)
alregion_cat3_2016_bin14_Xgamma)
stat. (zgcontrolregion_2018_bin0)
stat. (signalregion_cat3_2016_bin2)
stat. (signalregion_cat3_2016_bin12)
stat. (wzcontrolregion_2017_bin14)
stat. (signalregion_cat2_2017_bin5)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.005
0
0.005
Δμ

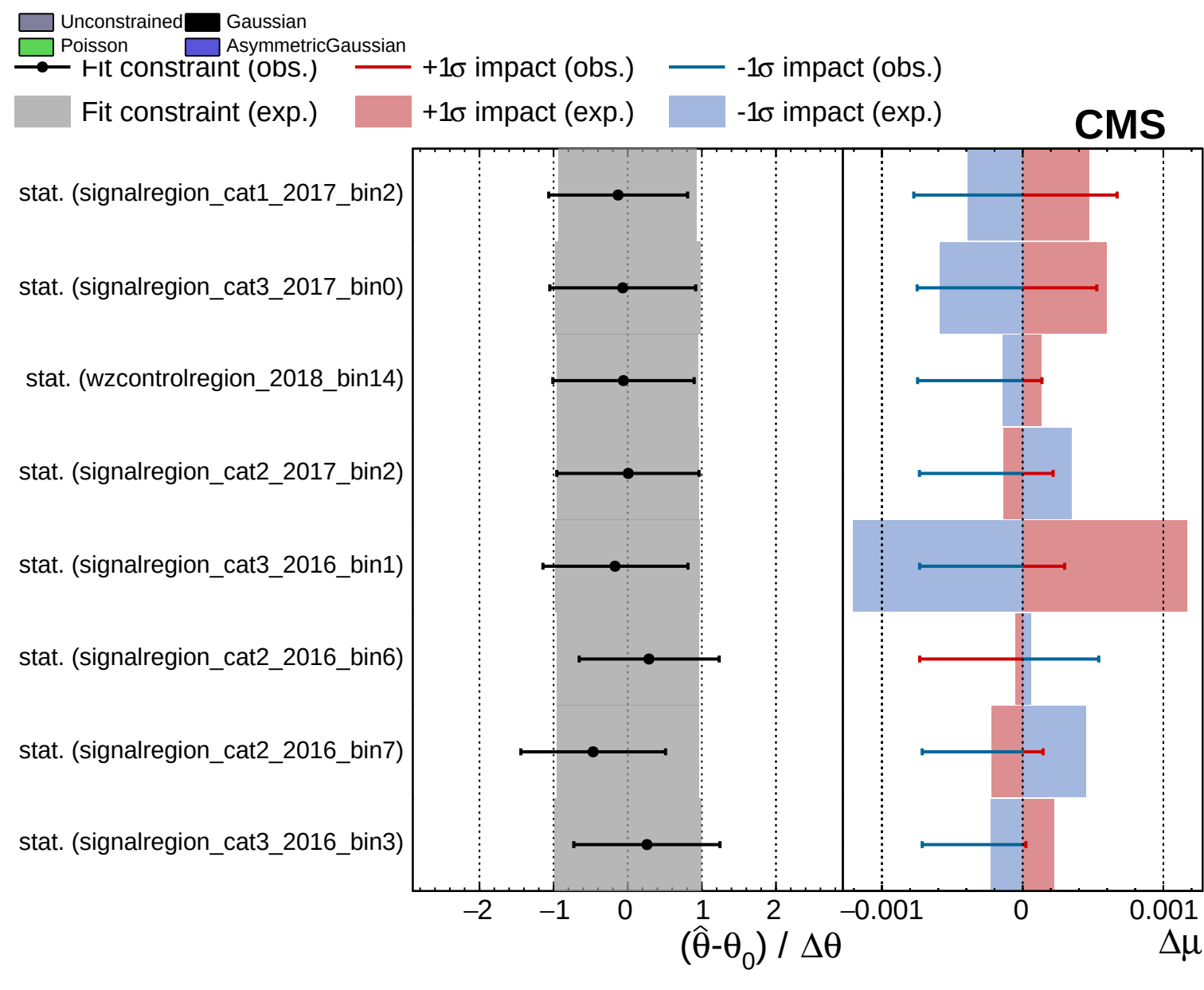

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
b tagging efficiency (hfstats2_2016)
stat. (signalregion_cat2_2018_bin8)
stat. (ttzcontrolregion_2017_bin2)
et energy corrections (AbsoluteScale)
stat. (signalregion_cat1_2017_bin1)
stat. (signalregion_cat3_2017_bin7)
stat. (signalregion_cat3_2017_bin13)
stat. (wzcontrolregion_2018_bin4)
−2
−1
0
1
2
$(\hat{\theta}-\theta_0) / \Delta\theta$
−0.002
0
0.002
$\Delta\mu$

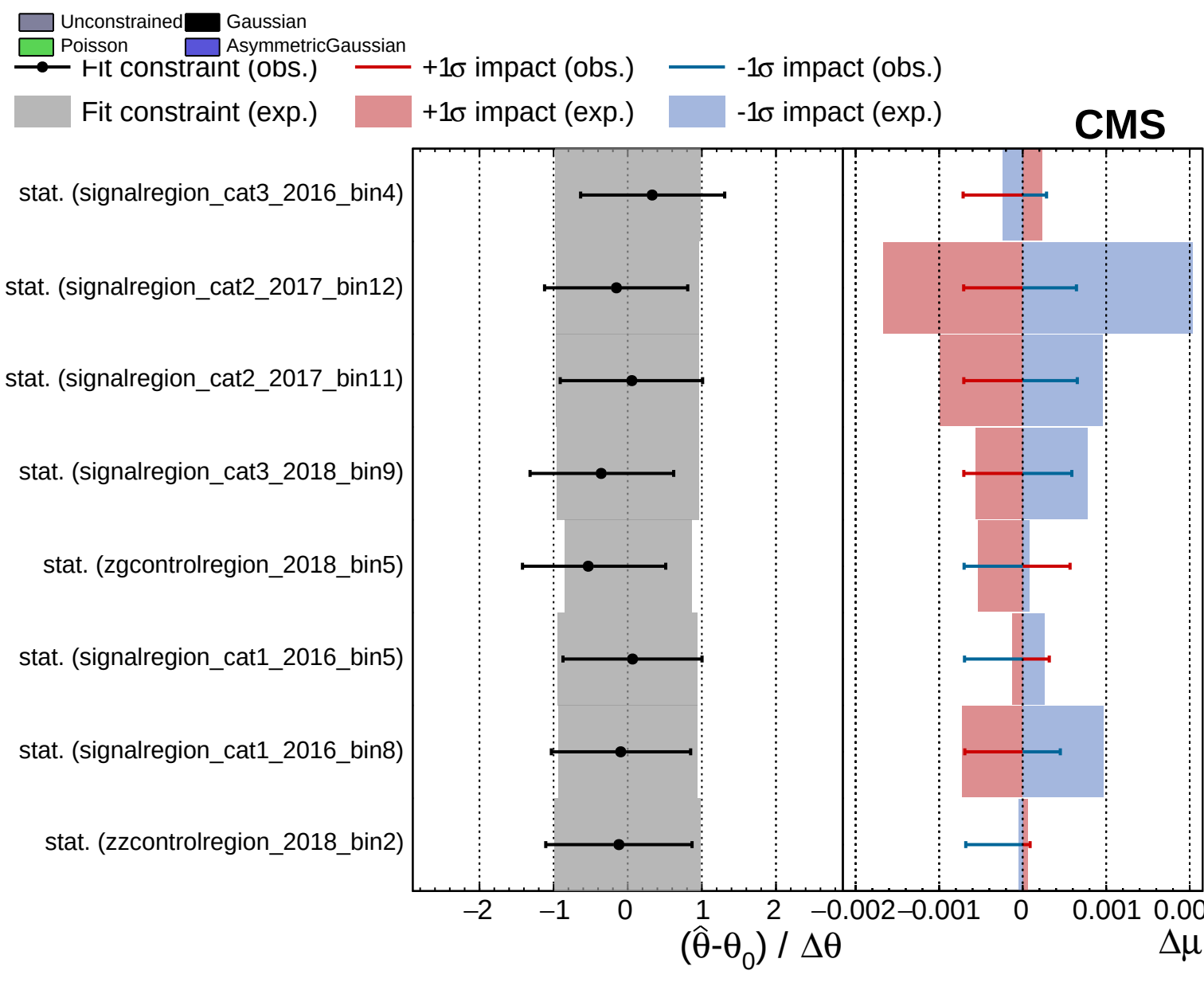

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat3_2017_bin5)
b tagging efficiency (hfstats1_2016)
stat. (signalregion_cat2_2017_bin0)
b tagging efficiency (cferr2)
stat. (zgcontrolregion_2016_bin1)
stat. (signalregion_cat2_2016_bin10)
stat. (signalregion_cat1_2017_bin5)
stat. (signalregion_cat3_2016_bin5)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.001
0
0.001
Δμ

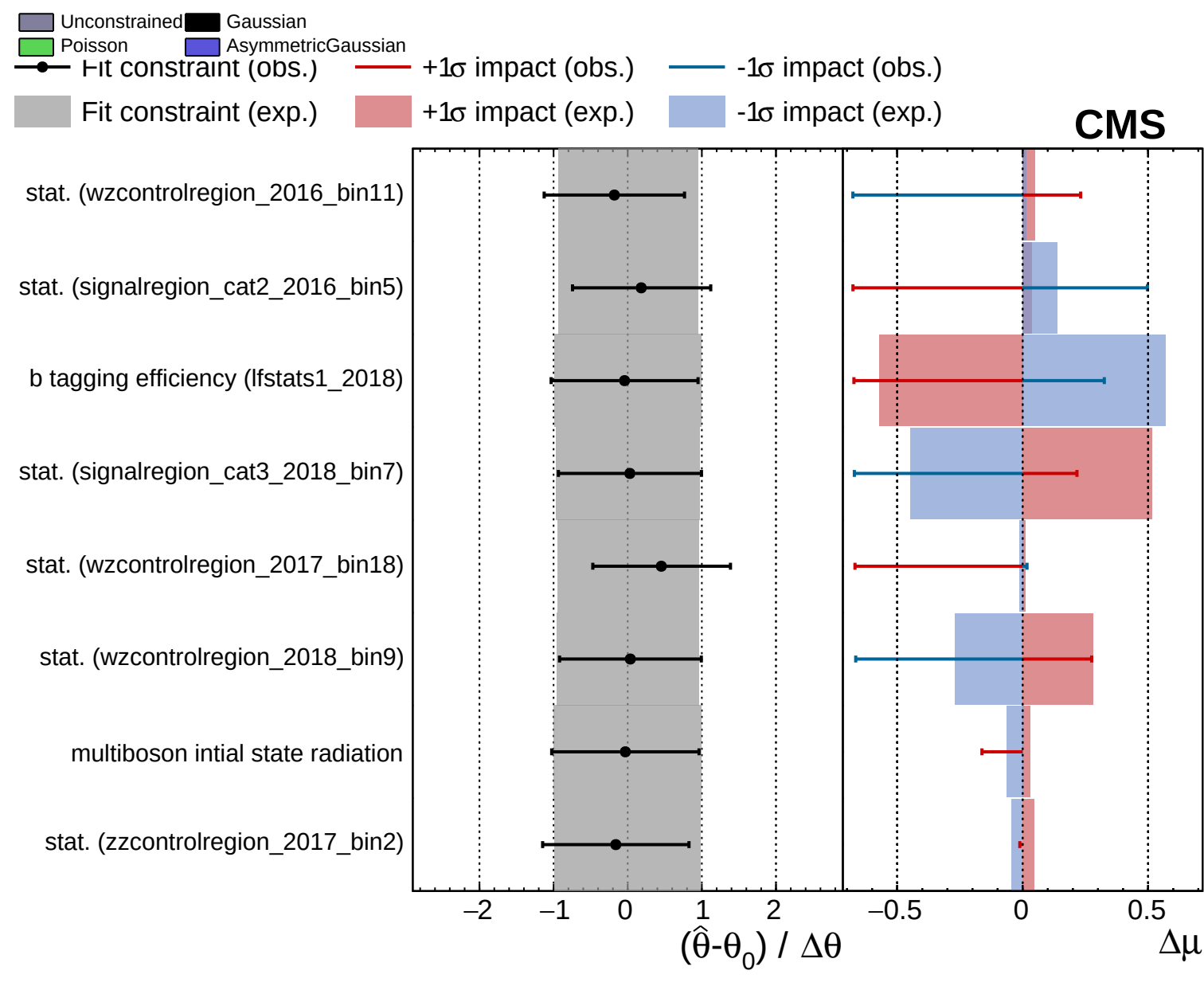

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat2_2018_bin3)
stat. (wzcontrolregion_2016_bin0)
stat. (signalregion_cat1_2017_bin0)
stat. (signalregion_cat1_2018_bin7)
stat. (signalregion_cat2_2016_bin11)
b tagging efficiency (lfstats2_2017)
stat. (zgcontrolregion_2016_bin0)
stat. (signalregion_cat1_2017_bin7)
–2
–1
0
1
2
(θ̂-θ0) / Δθ
–0.001
0
0.001
Δμ

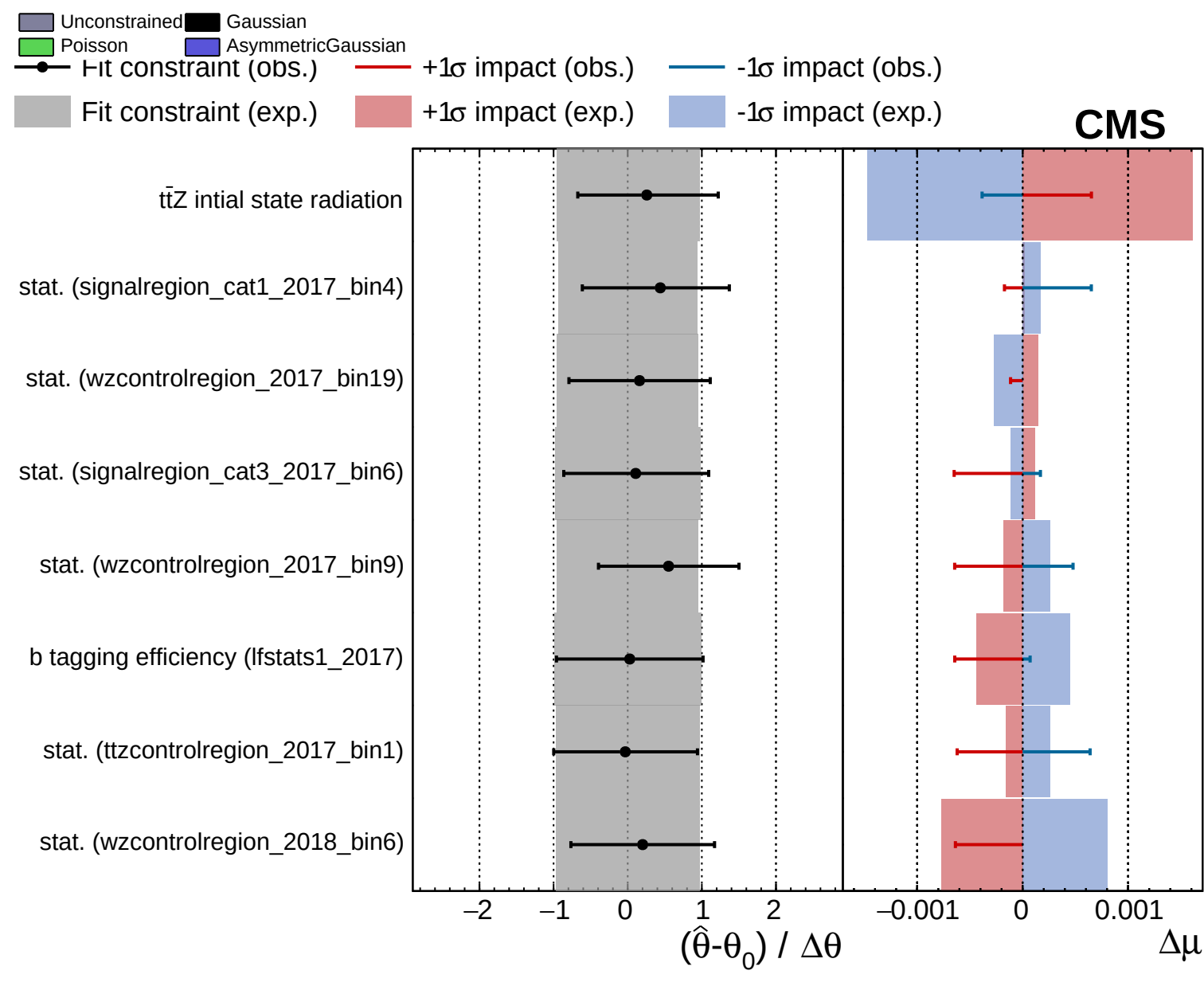

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (zgcontrolregion_2017_bin1)
stat. (signalregion_cat1_2016_bin10)
stat. (signalregion_cat2_2017_bin4)
stat. (zgcontrolregion_2018_bin6)
stat. (zzcontrolregion_2017_bin9)
stat. (signalregion_cat3_2017_bin2)
stat. (wzcontrolregion_2018_bin12)
stat. (signalregion_cat2_2016_bin3)
–2
–1
0
1
2
(θ̂-θ0) / Δθ
–0.001
0
0.001
Δμ

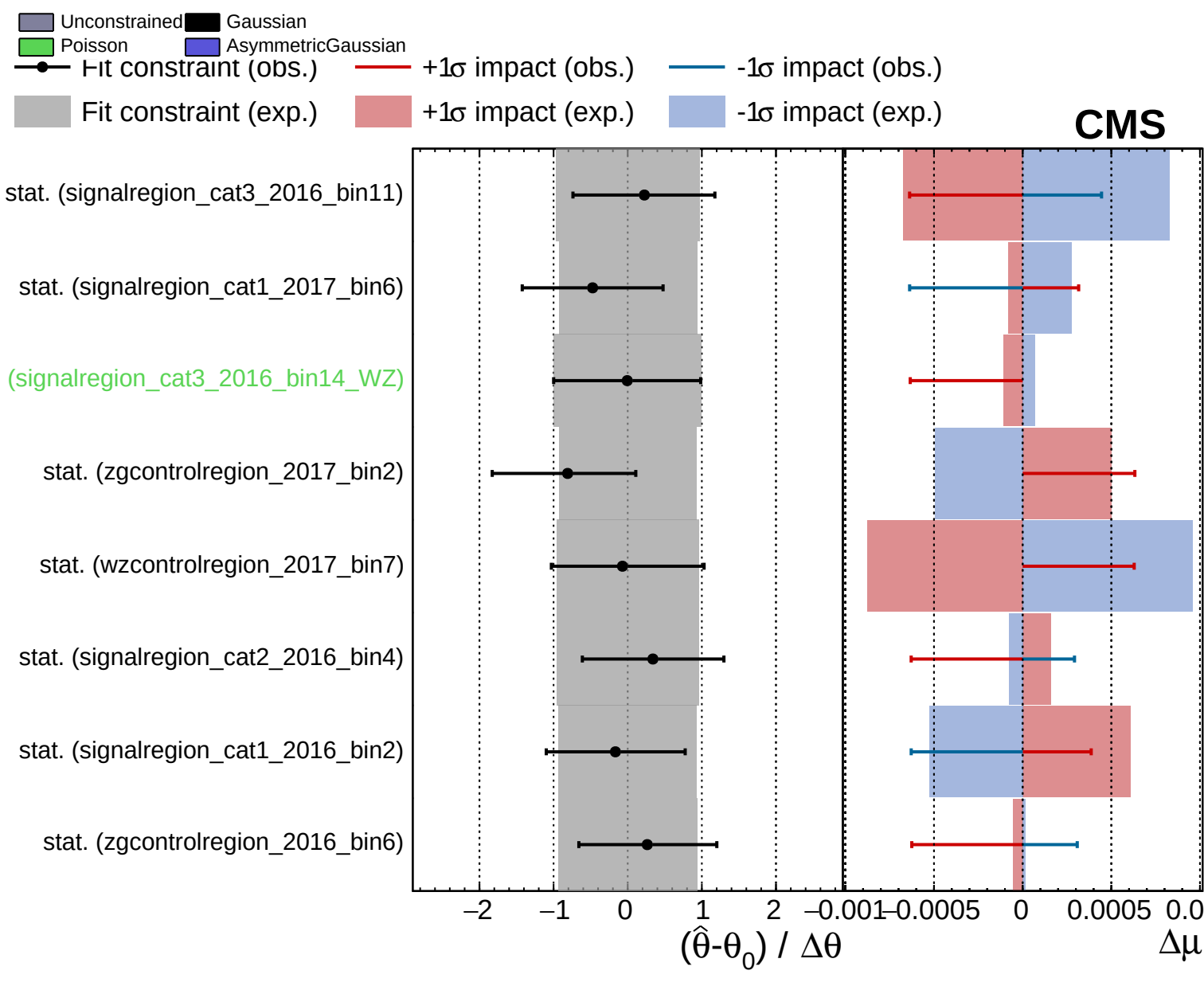

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
b tagging efficiency (hf)
stat. (wzcontrolregion_2018_bin11)
(signalregion_cat3_2016_bin14_tZq)
stat. (signalregion_cat3_2017_bin3)
stat. (wzcontrolregion_2018_bin18)
stat. (wzcontrolregion_2016_bin6)
stat. (signalregion_cat3_2016_bin6)
stat. (signalregion_cat1_2016_bin7)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.001
−0.0005
0
0.0005
0.00
Δμ

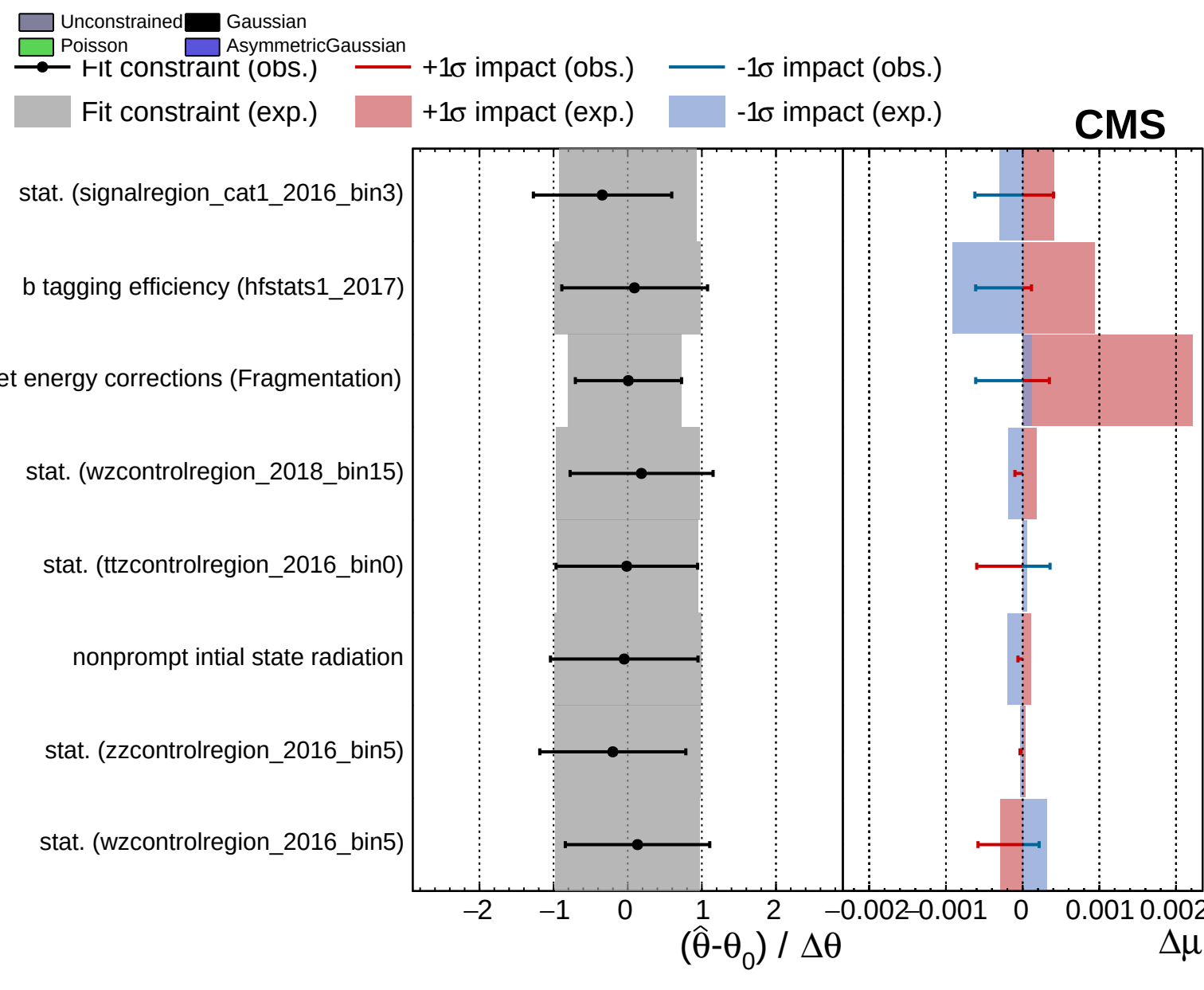

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat1_2017_bin2)
stat. (signalregion_cat3_2017_bin0)
stat. (wzcontrolregion_2018_bin14)
stat. (signalregion_cat2_2017_bin2)
stat. (signalregion_cat3_2016_bin1)
stat. (signalregion_cat2_2016_bin6)
stat. (signalregion_cat2_2016_bin7)
stat. (signalregion_cat3_2016_bin3)
–2
–1
0
1
2
(θ̂-θ0) / Δθ
–0.001
0
0.001
Δμ

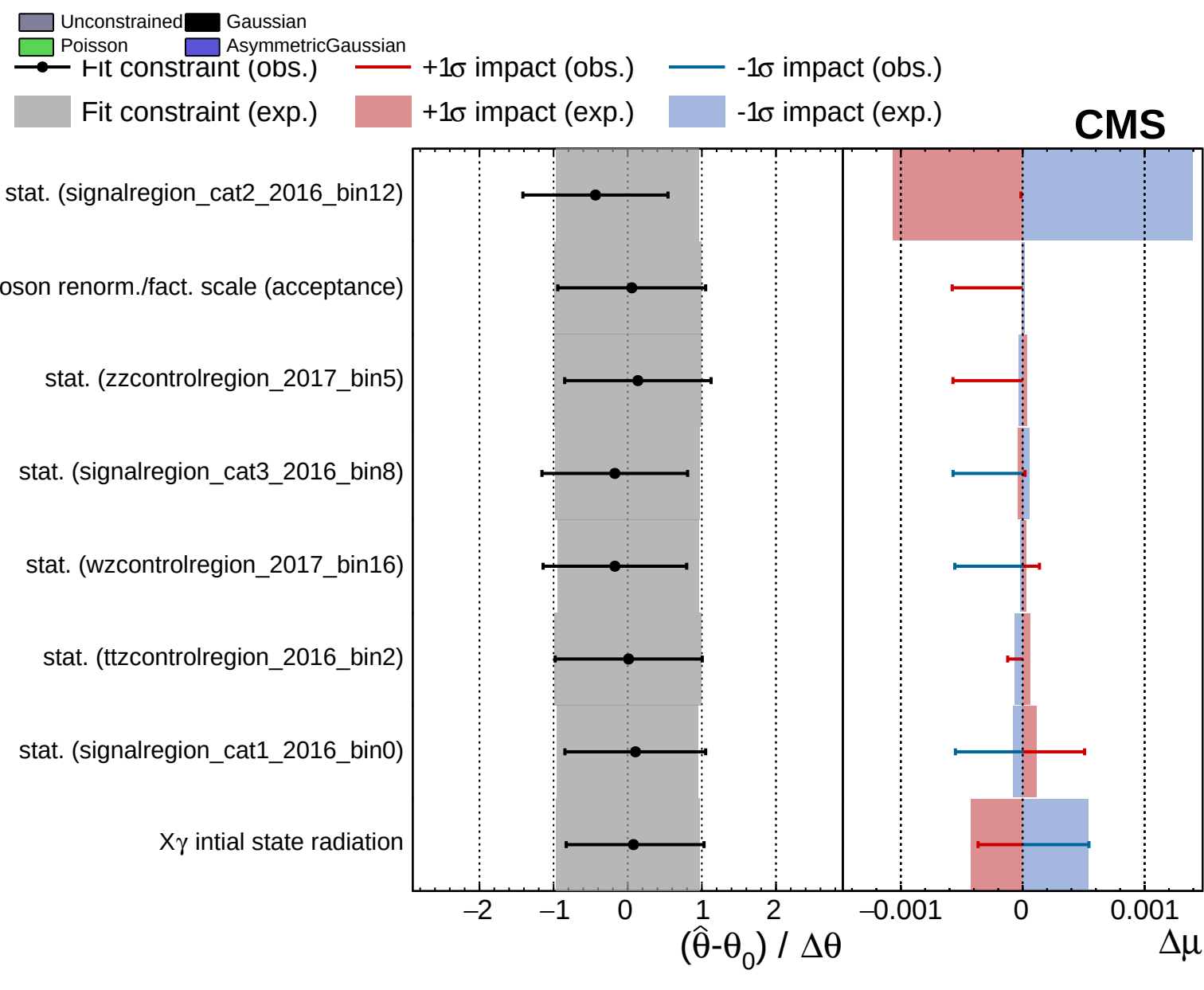

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat3_2016_bin4)
stat. (signalregion_cat2_2017_bin12)
stat. (signalregion_cat2_2017_bin11)
stat. (signalregion_cat3_2018_bin9)
stat. (zgcontrolregion_2018_bin5)
stat. (signalregion_cat1_2016_bin5)
stat. (signalregion_cat1_2016_bin8)
stat. (zzcontrolregion_2018_bin2)
−2
−1
0
1
2
−0.002
−0.001
0
0.001
0.00
(θ̂-θ0) / Δθ
Δμ

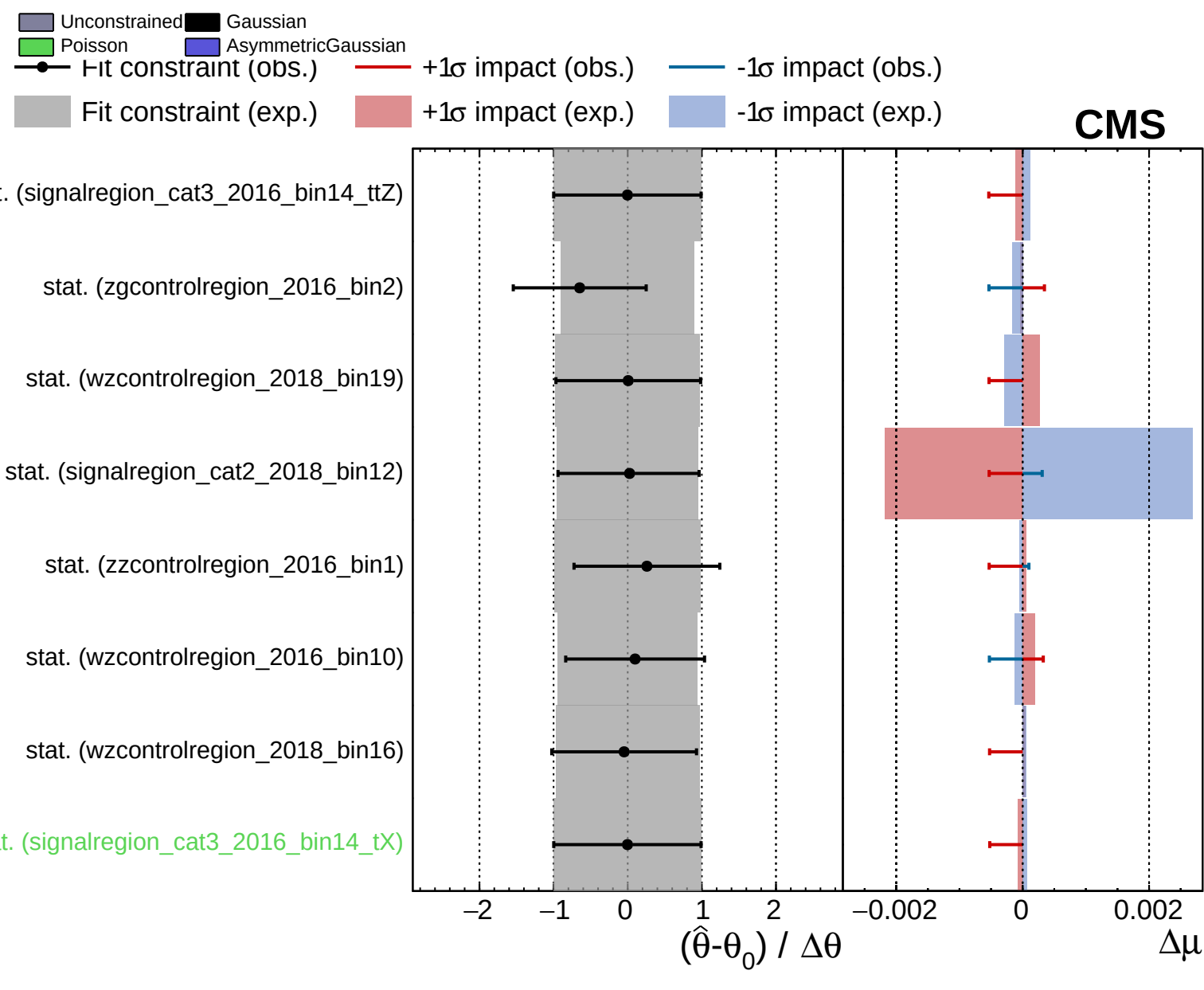

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (wzcontrolregion_2016_bin11)
stat. (signalregion_cat2_2016_bin5)
b tagging efficiency (lfstats1_2018)
stat. (signalregion_cat3_2018_bin7)
stat. (wzcontrolregion_2017_bin18)
stat. (wzcontrolregion_2018_bin9)
multiboson intial state radiation
stat. (zzcontrolregion_2017_bin2)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.5
0
0.5
Δμ

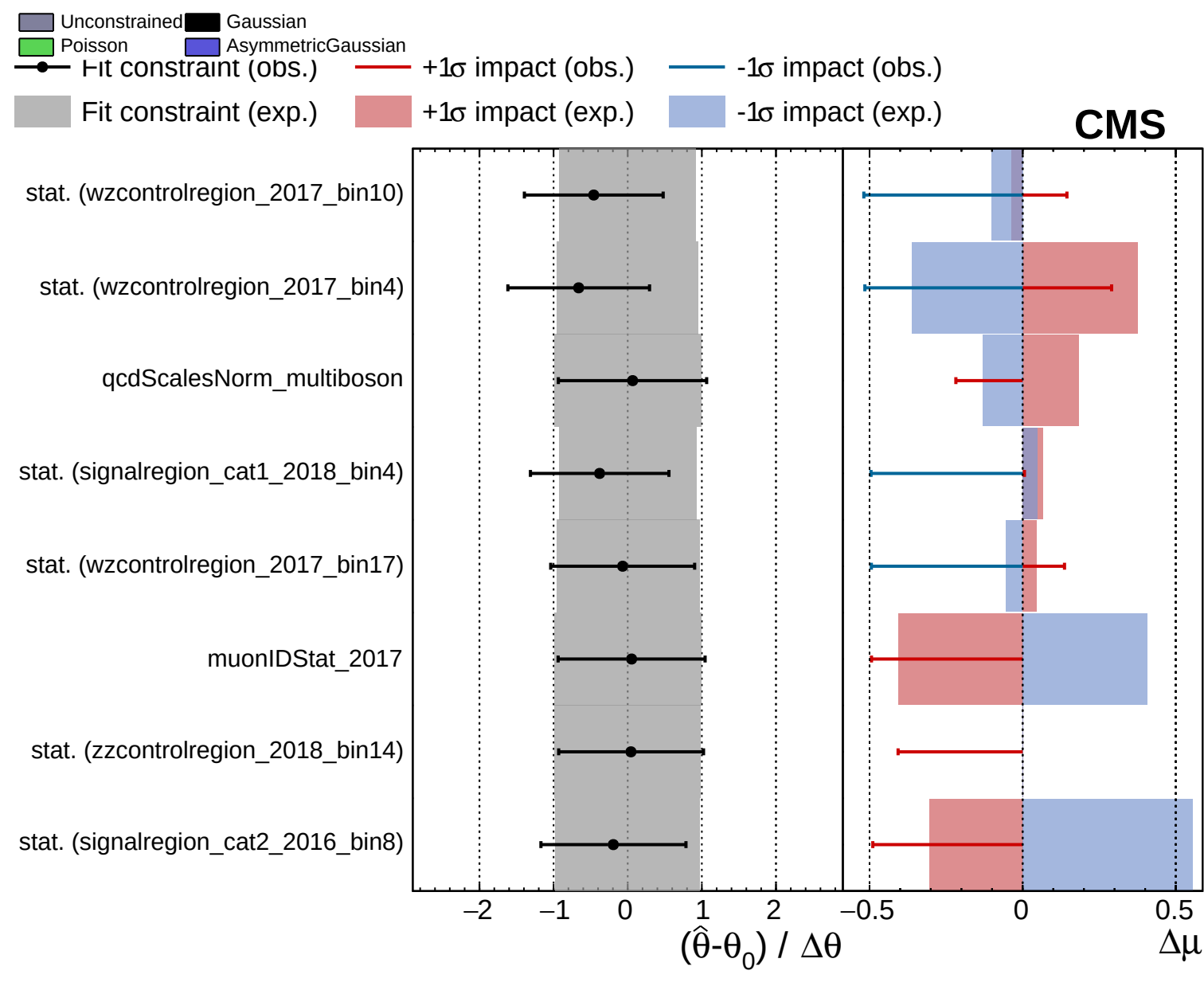

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
tt̄Z intial state radiation
stat. (signalregion_cat1_2017_bin4)
stat. (wzcontrolregion_2017_bin19)
stat. (signalregion_cat3_2017_bin6)
stat. (wzcontrolregion_2017_bin9)
b tagging efficiency (lfstats1_2017)
stat. (ttzcontrolregion_2017_bin1)
stat. (wzcontrolregion_2018_bin6)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.001
0
0.001
Δμ

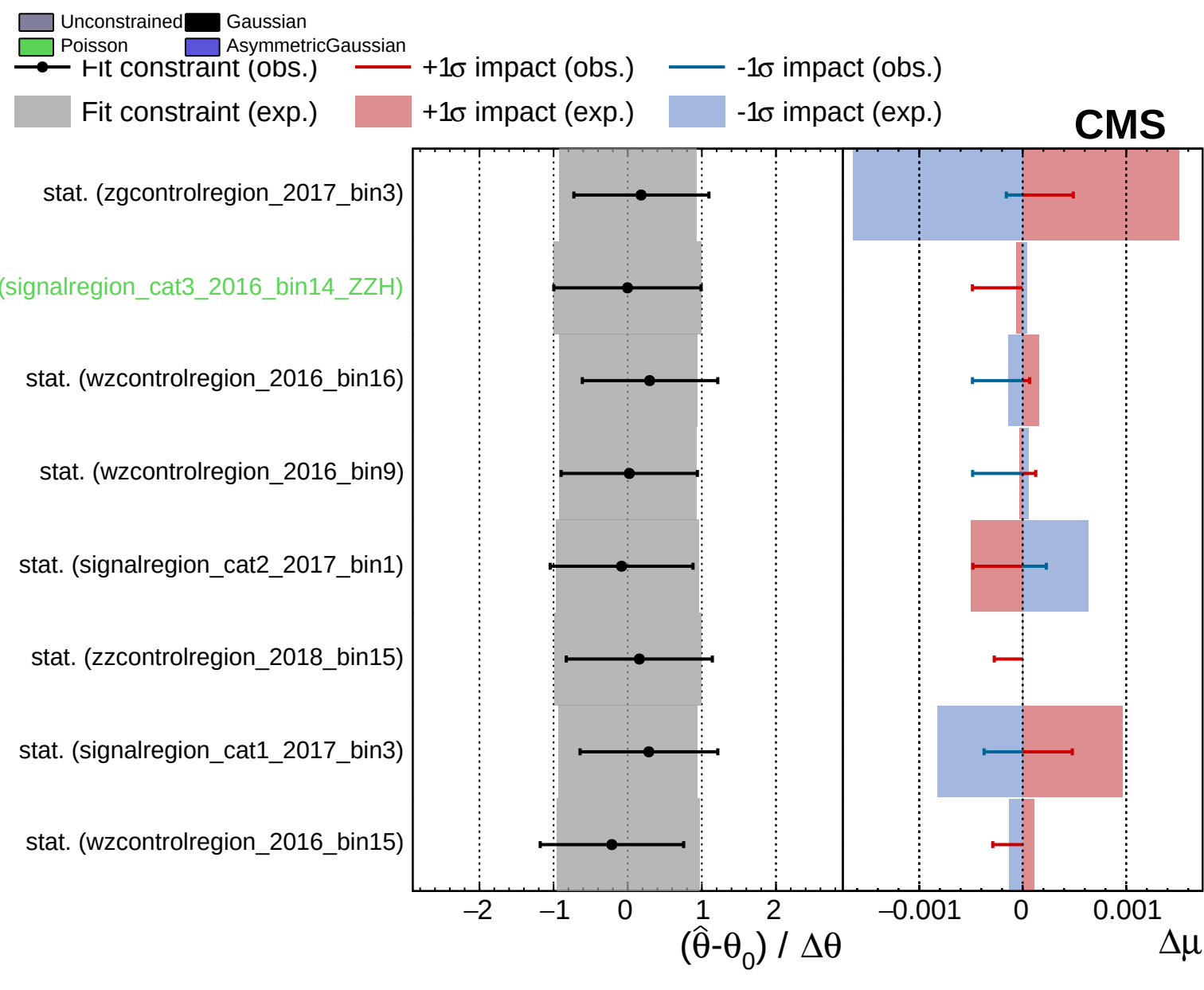

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat3_2016_bin11)
stat. (signalregion_cat1_2017_bin6)
(signalregion_cat3_2016_bin14_WZ)
stat. (zgcontrolregion_2017_bin2)
stat. (wzcontrolregion_2017_bin7)
stat. (signalregion_cat2_2016_bin4)
stat. (signalregion_cat1_2016_bin2)
stat. (zgcontrolregion_2016_bin6)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.001
−0.0005
0
0.0005
0.0
Δμ

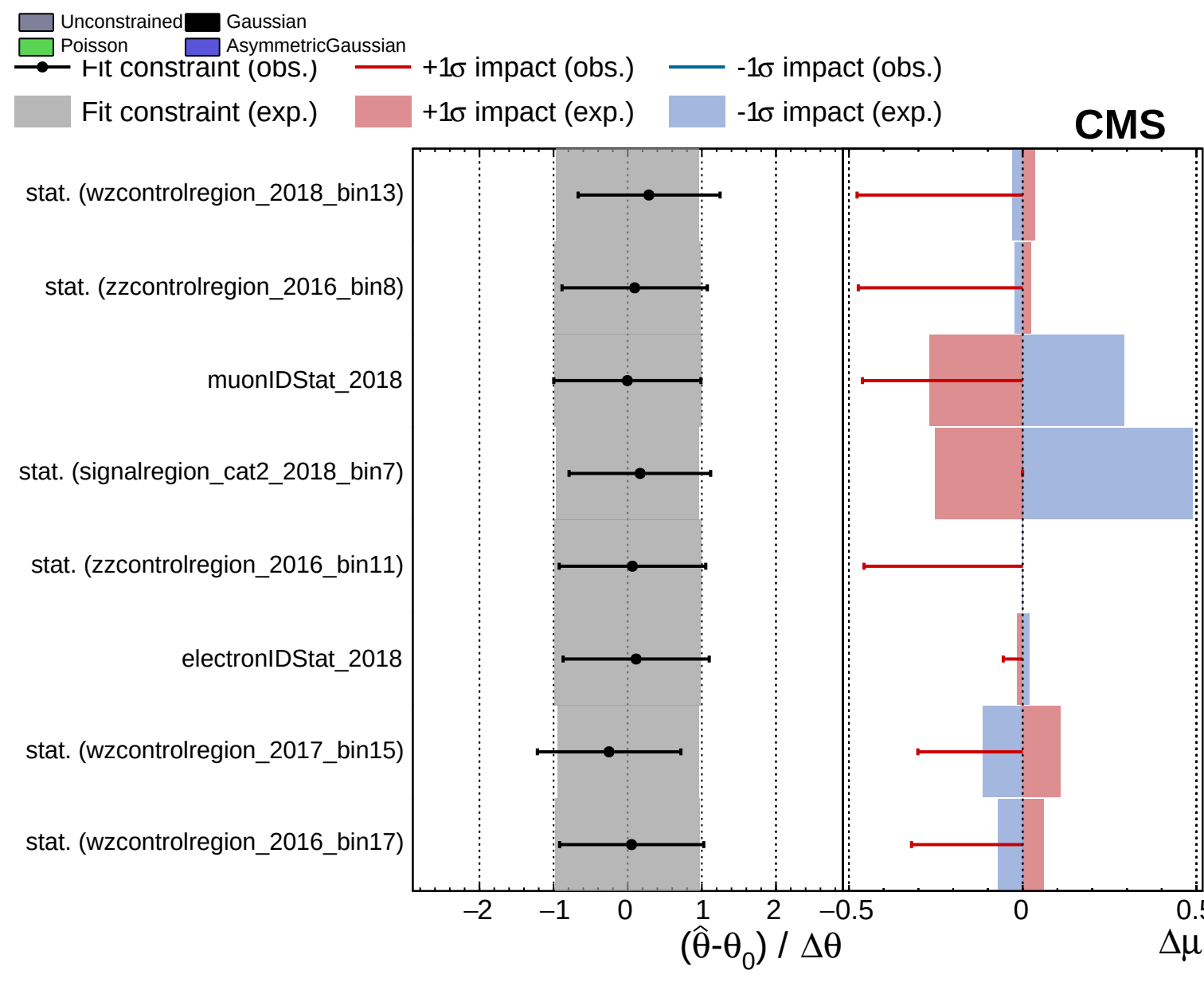

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat1_2016_bin3)
b tagging efficiency (hfstats1_2017)
et energy corrections (Fragmentation)
stat. (wzcontrolregion_2018_bin15)
stat. (ttzcontrolregion_2016_bin0)
nonprompt intial state radiation
stat. (zzcontrolregion_2016_bin5)
stat. (wzcontrolregion_2016_bin5)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.002
−0.001
0
0.001
0.002
Δμ

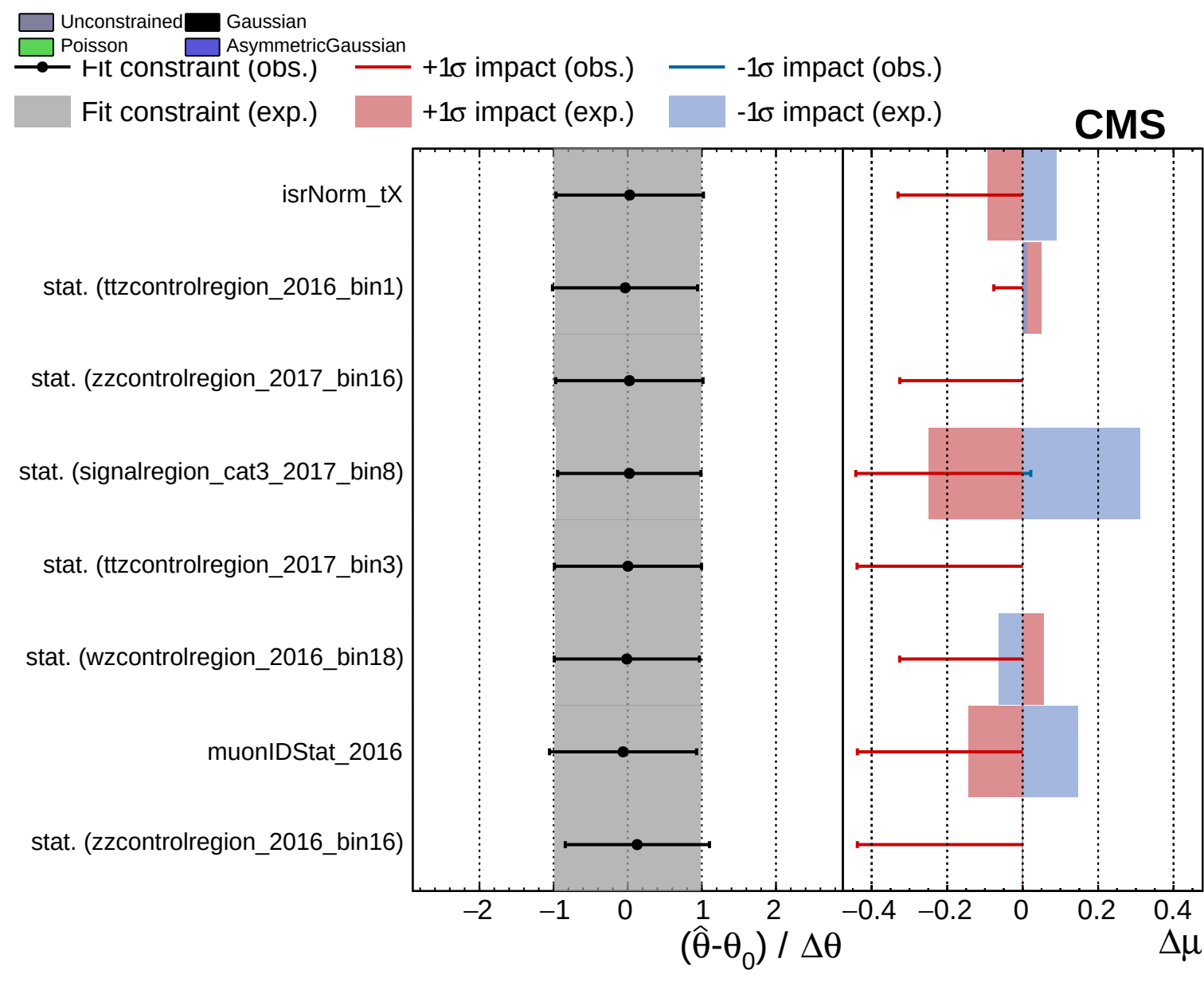

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat2_2016_bin12)
oson renorm./fact. scale (acceptance)
stat. (zzcontrolregion_2017_bin5)
stat. (signalregion_cat3_2016_bin8)
stat. (wzcontrolregion_2017_bin16)
stat. (ttzcontrolregion_2016_bin2)
stat. (signalregion_cat1_2016_bin0)
Xγ intial state radiation
–2
–1
0
1
2
(θ̂-θ0) / Δθ
–0.001
0
0.001
Δμ

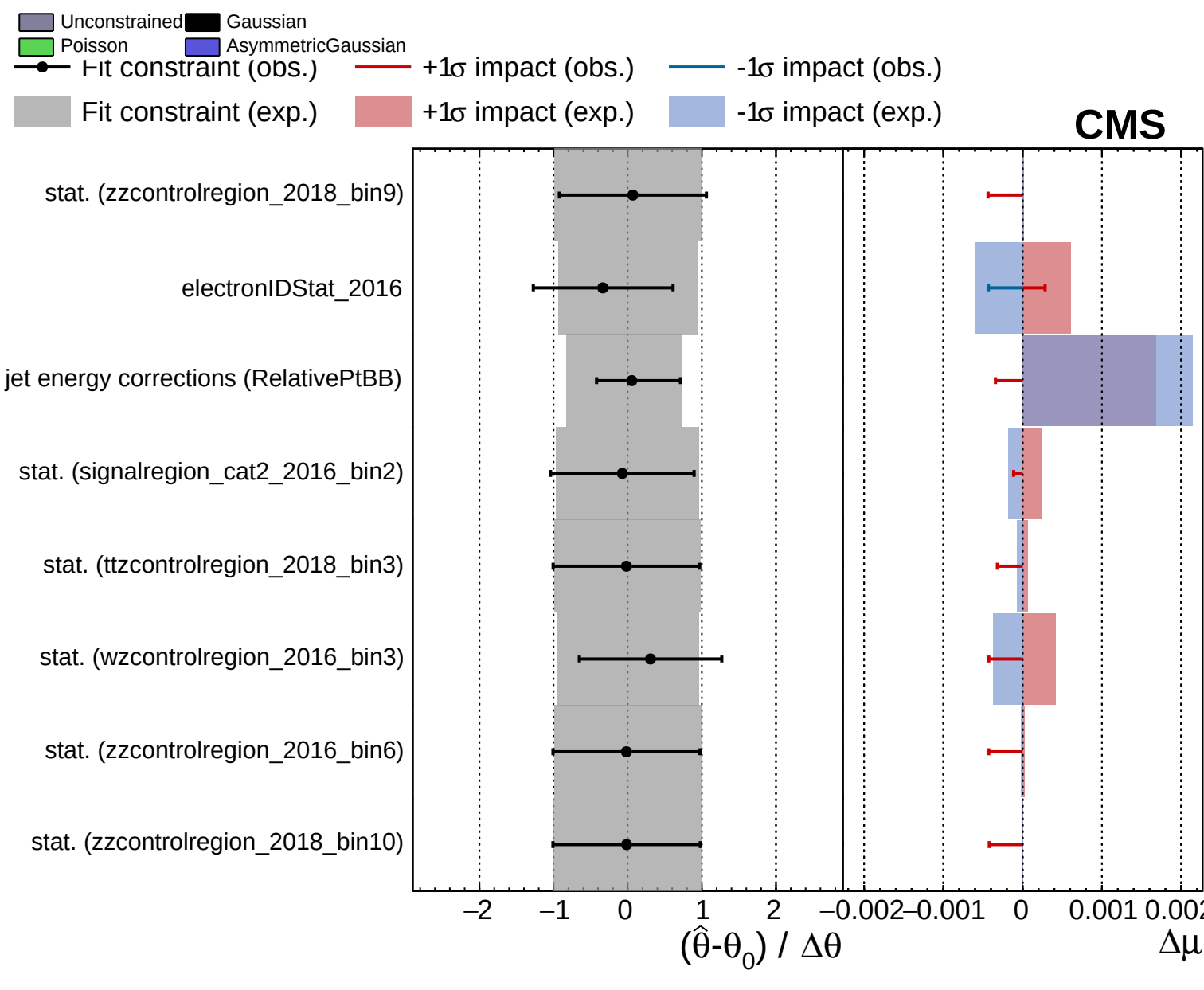

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
t. (signalregion_cat3_2016_bin14_ttZ)
stat. (zgcontrolregion_2016_bin2)
stat. (wzcontrolregion_2018_bin19)
stat. (signalregion_cat2_2018_bin12)
stat. (zzcontrolregion_2016_bin1)
stat. (wzcontrolregion_2016_bin10)
stat. (wzcontrolregion_2018_bin16)
t. (signalregion_cat3_2016_bin14_tX)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.002
0
0.002
Δμ

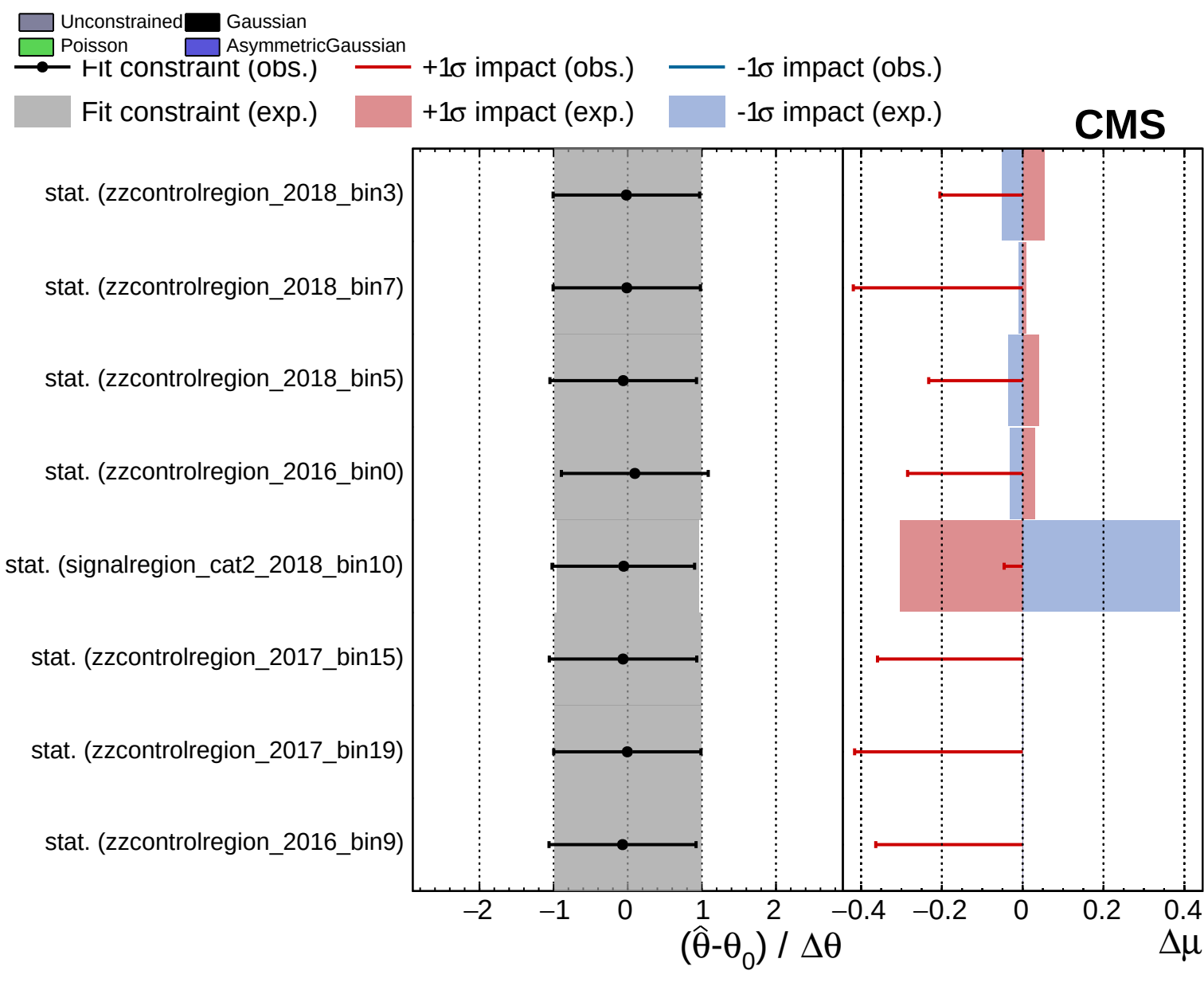

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (wzcontrolregion_2017_bin10)
stat. (wzcontrolregion_2017_bin4)
qcdScalesNorm_multiboson
stat. (signalregion_cat1_2018_bin4)
stat. (wzcontrolregion_2017_bin17)
muonIDStat_2017
stat. (zzcontrolregion_2018_bin14)
stat. (signalregion_cat2_2016_bin8)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.5
0
0.5
Δμ

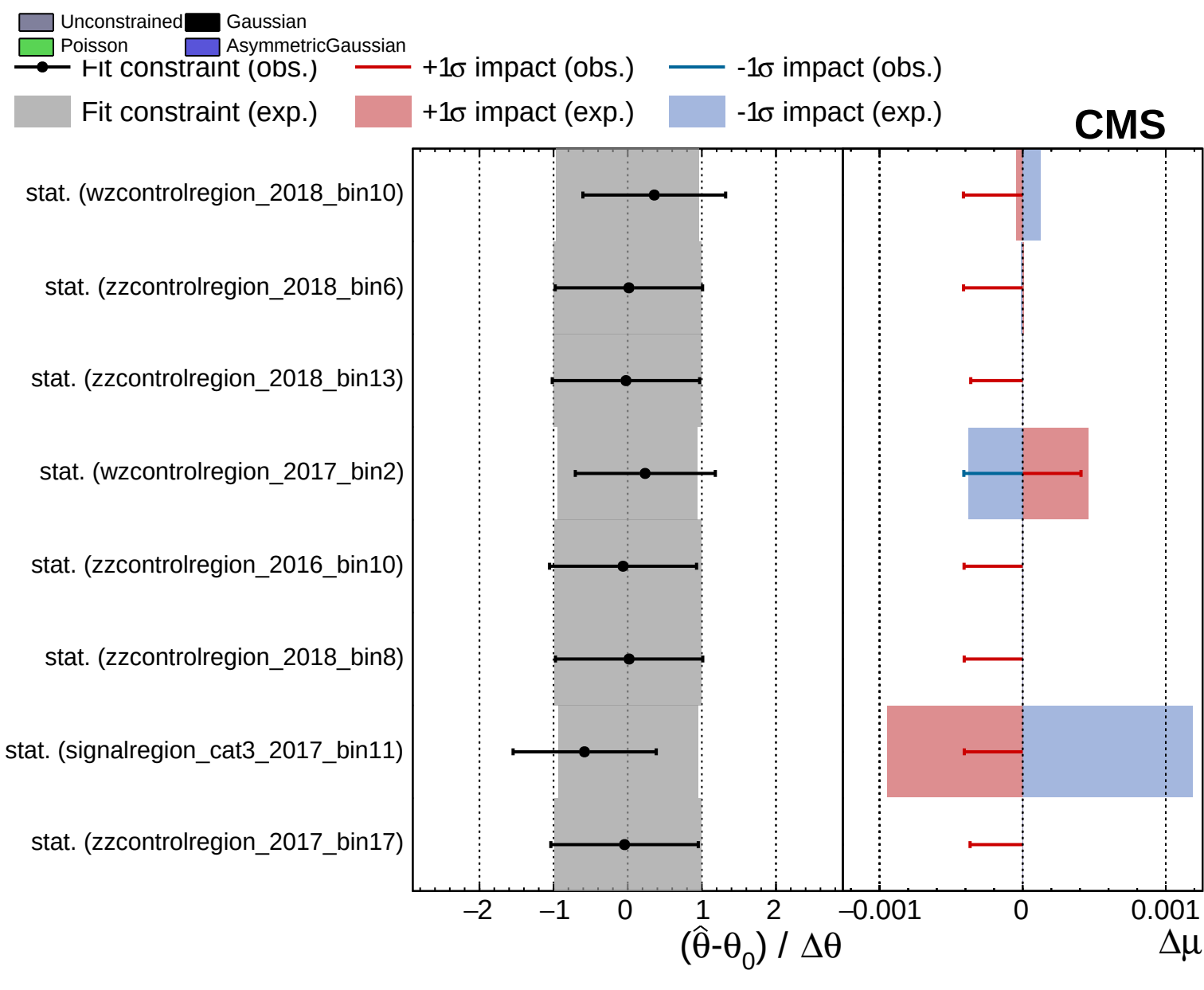

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (zgcontrolregion_2017_bin3)
(signalregion_cat3_2016_bin14_ZZH)
stat. (wzcontrolregion_2016_bin16)
stat. (wzcontrolregion_2016_bin9)
stat. (signalregion_cat2_2017_bin1)
stat. (zzcontrolregion_2018_bin15)
stat. (signalregion_cat1_2017_bin3)
stat. (wzcontrolregion_2016_bin15)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.001
0
0.001
Δμ

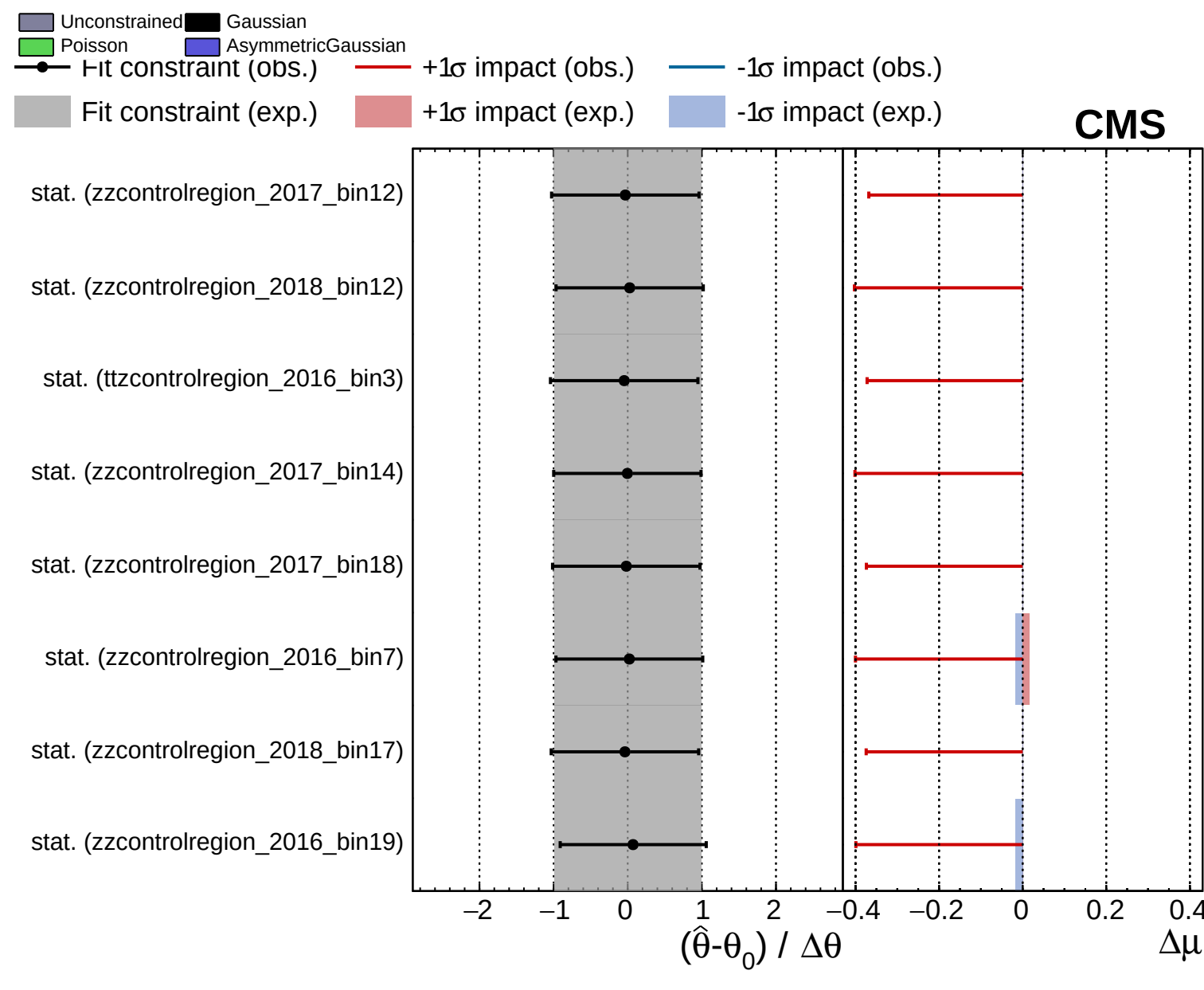

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (wzcontrolregion_2018_bin13)
stat. (zzcontrolregion_2016_bin8)
muonIDStat_2018
stat. (signalregion_cat2_2018_bin7)
stat. (zzcontrolregion_2016_bin11)
electronIDStat_2018
stat. (wzcontrolregion_2017_bin15)
stat. (wzcontrolregion_2016_bin17)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.5
0
Δμ

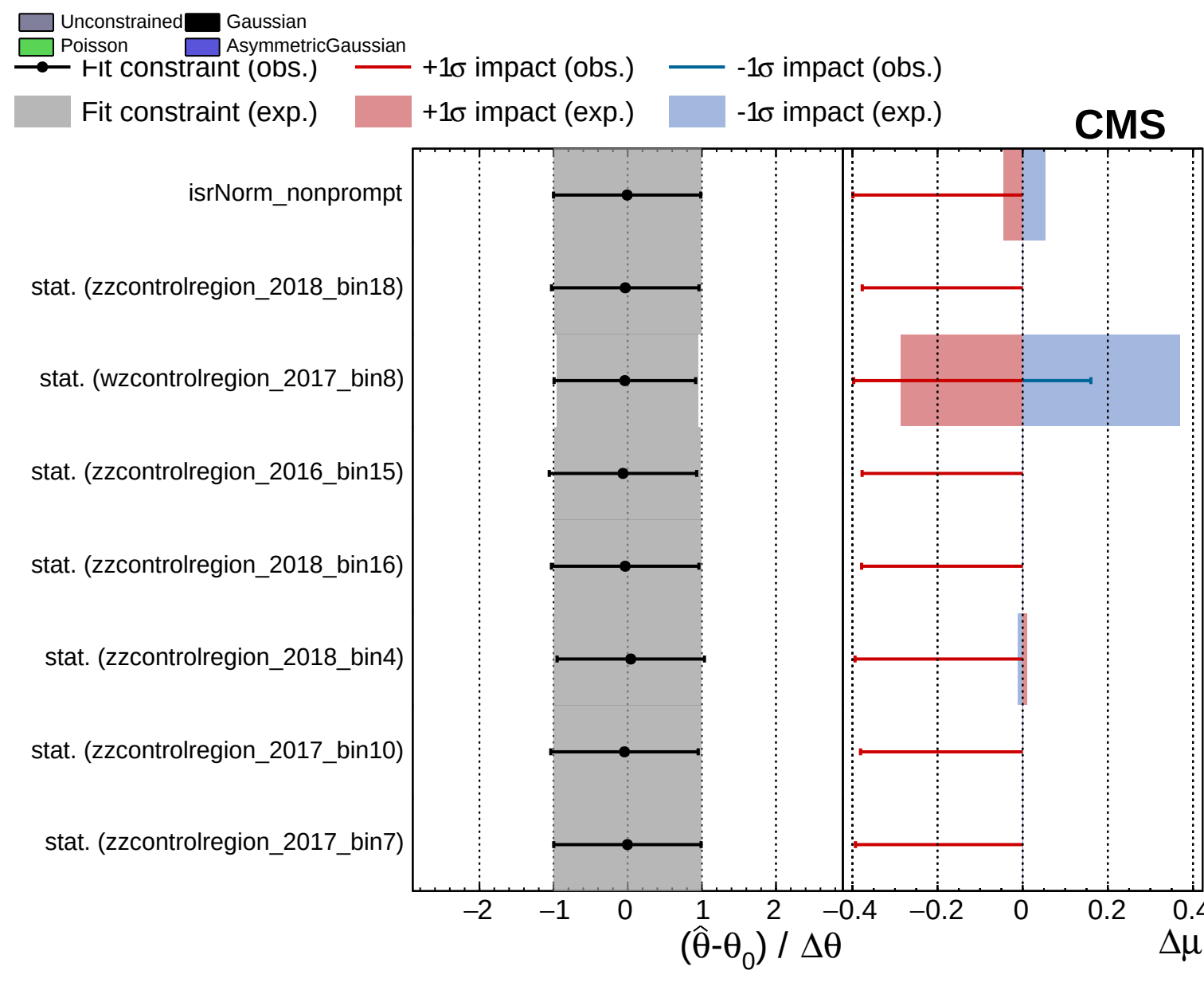

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
isrNorm_tX
stat. (ttzcontrolregion_2016_bin1)
stat. (zzcontrolregion_2017_bin16)
stat. (signalregion_cat3_2017_bin8)
stat. (ttzcontrolregion_2017_bin3)
stat. (wzcontrolregion_2016_bin18)
muonIDStat_2016
stat. (zzcontrolregion_2016_bin16)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.4
−0.2
0
0.2
0.4
Δμ

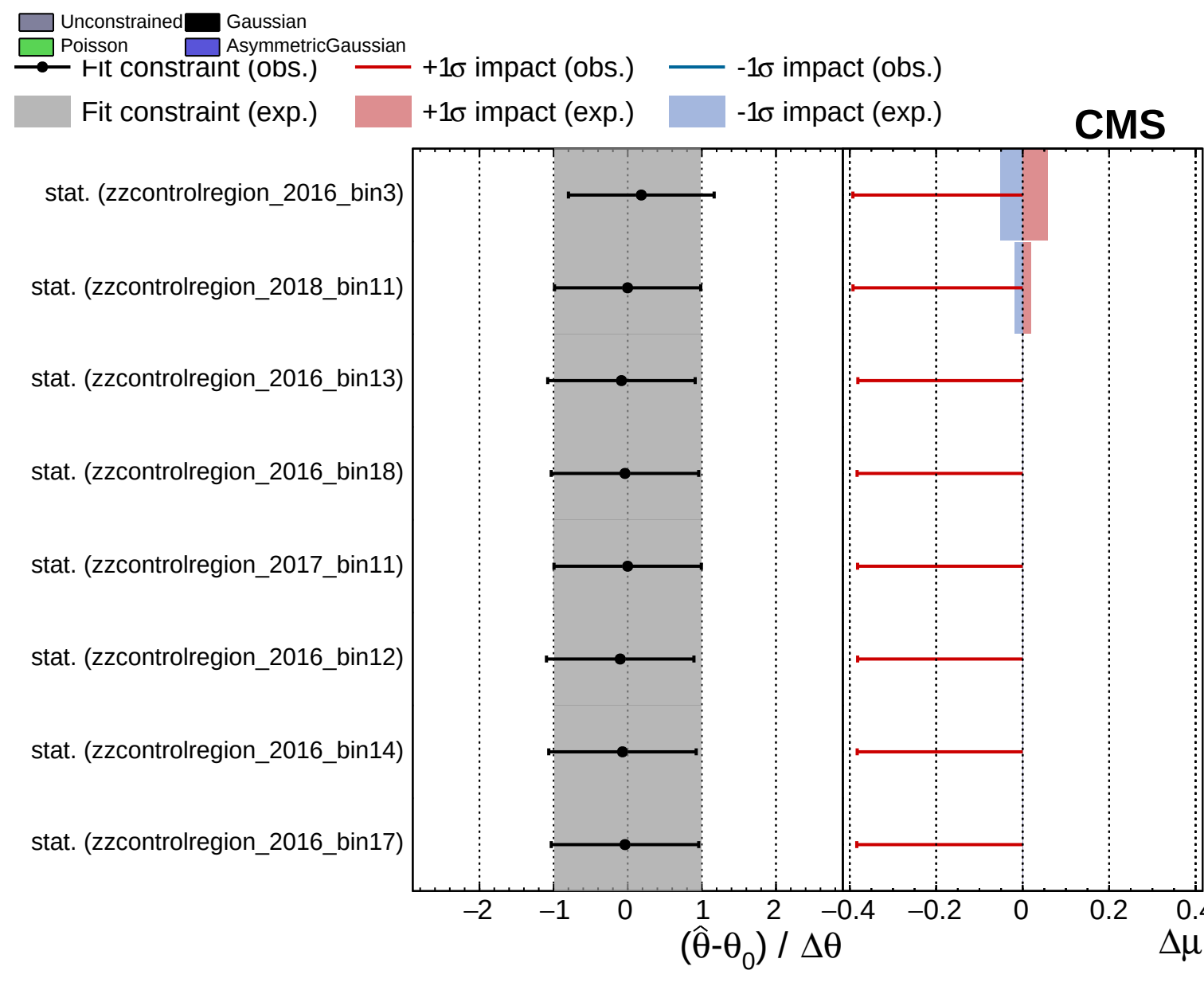

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (zzcontrolregion_2018_bin9)
electronIDStat_2016
jet energy corrections (RelativePtBB)
stat. (signalregion_cat2_2016_bin2)
stat. (ttzcontrolregion_2018_bin3)
stat. (wzcontrolregion_2016_bin3)
stat. (zzcontrolregion_2016_bin6)
stat. (zzcontrolregion_2018_bin10)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.002
−0.001
0
0.001
0.002
Δμ

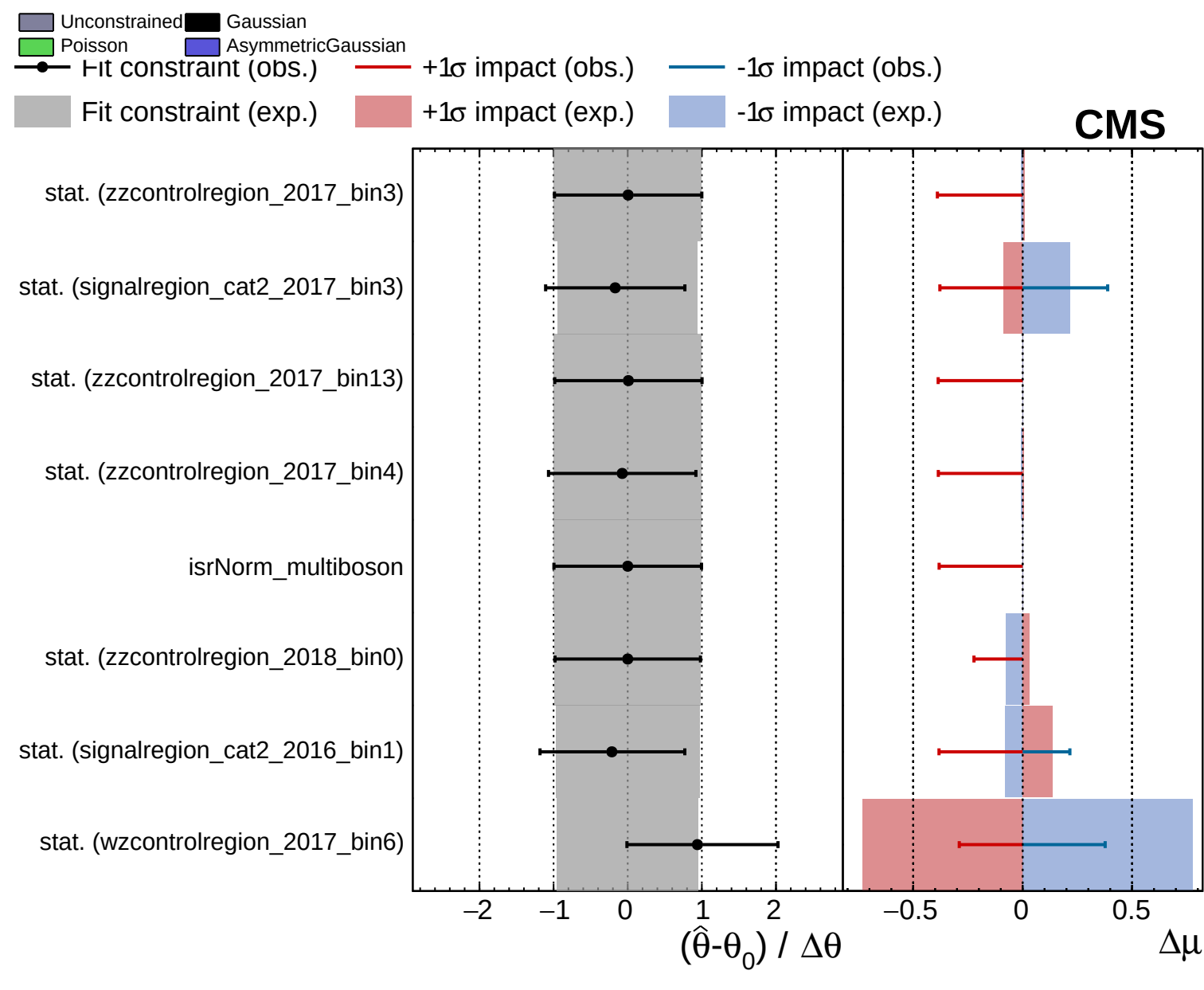

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (zzcontrolregion_2018_bin3)
stat. (zzcontrolregion_2018_bin7)
stat. (zzcontrolregion_2018_bin5)
stat. (zzcontrolregion_2016_bin0)
stat. (signalregion_cat2_2018_bin10)
stat. (zzcontrolregion_2017_bin15)
stat. (zzcontrolregion_2017_bin19)
stat. (zzcontrolregion_2016_bin9)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.4
−0.2
0
0.2
0.4
Δμ

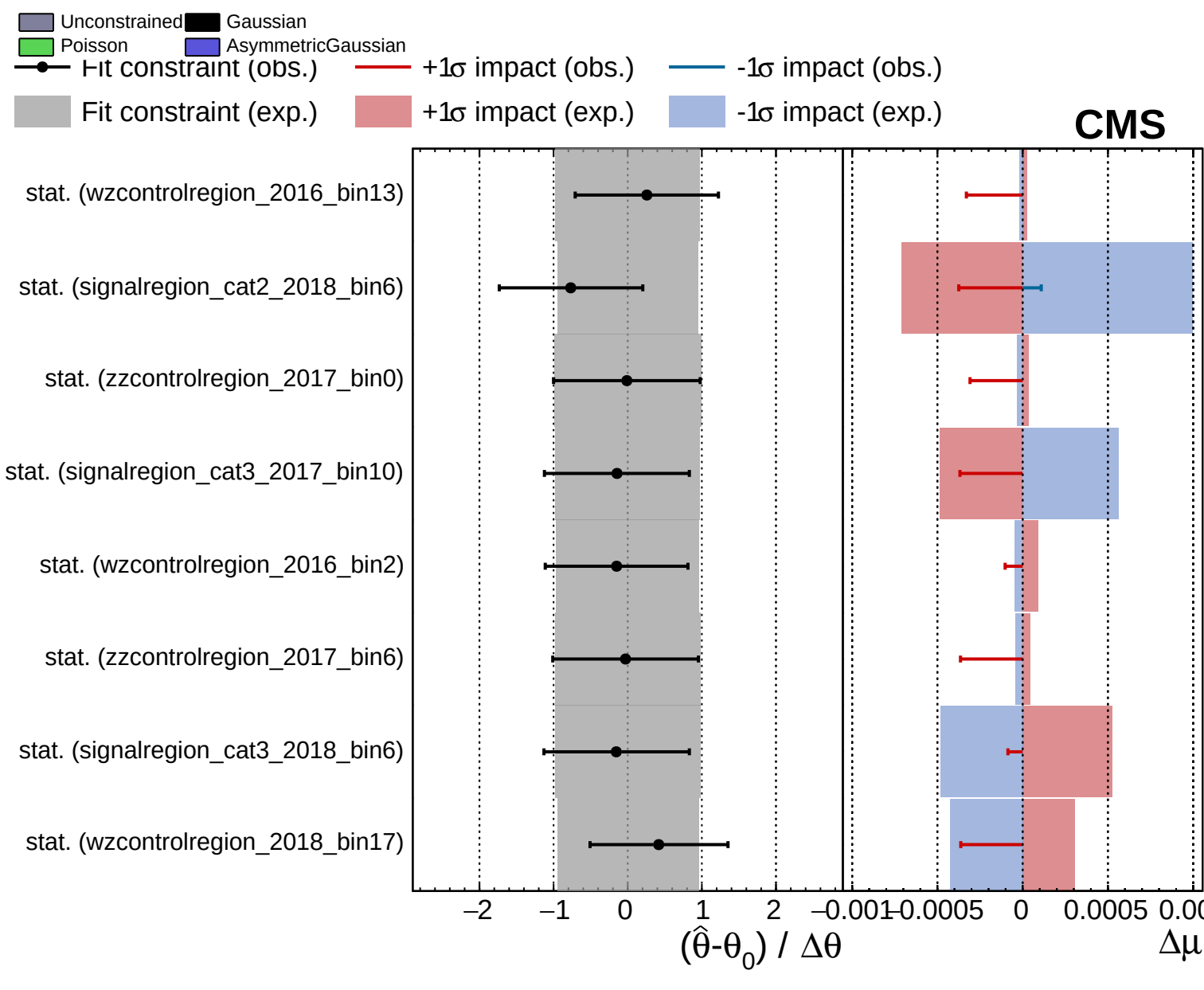

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (wzcontrolregion_2018_bin10)
stat. (zzcontrolregion_2018_bin6)
stat. (zzcontrolregion_2018_bin13)
stat. (wzcontrolregion_2017_bin2)
stat. (zzcontrolregion_2016_bin10)
stat. (zzcontrolregion_2018_bin8)
stat. (signalregion_cat3_2017_bin11)
stat. (zzcontrolregion_2017_bin17)
–2
–1
0
1
2
(θ̂-θ0) / Δθ
–0.001
0
0.001
Δμ

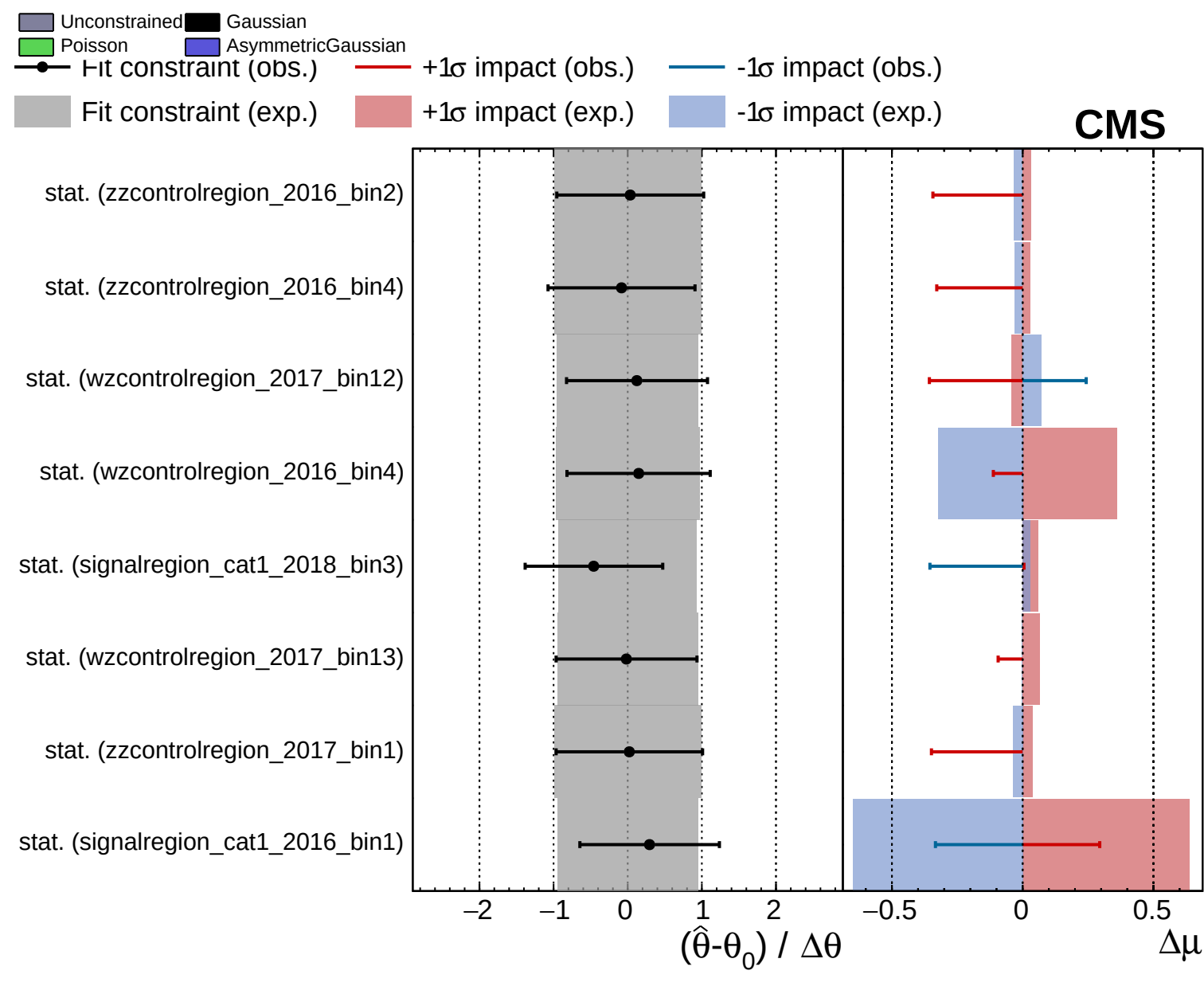

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (zzcontrolregion_2017_bin12)
stat. (zzcontrolregion_2018_bin12)
stat. (ttzcontrolregion_2016_bin3)
stat. (zzcontrolregion_2017_bin14)
stat. (zzcontrolregion_2017_bin18)
stat. (zzcontrolregion_2016_bin7)
stat. (zzcontrolregion_2018_bin17)
stat. (zzcontrolregion_2016_bin19)
−2
−1
0
1
2
−0.4
−0.2
0
0.2
0.4
(θ̂-θ0) / Δθ
Δμ

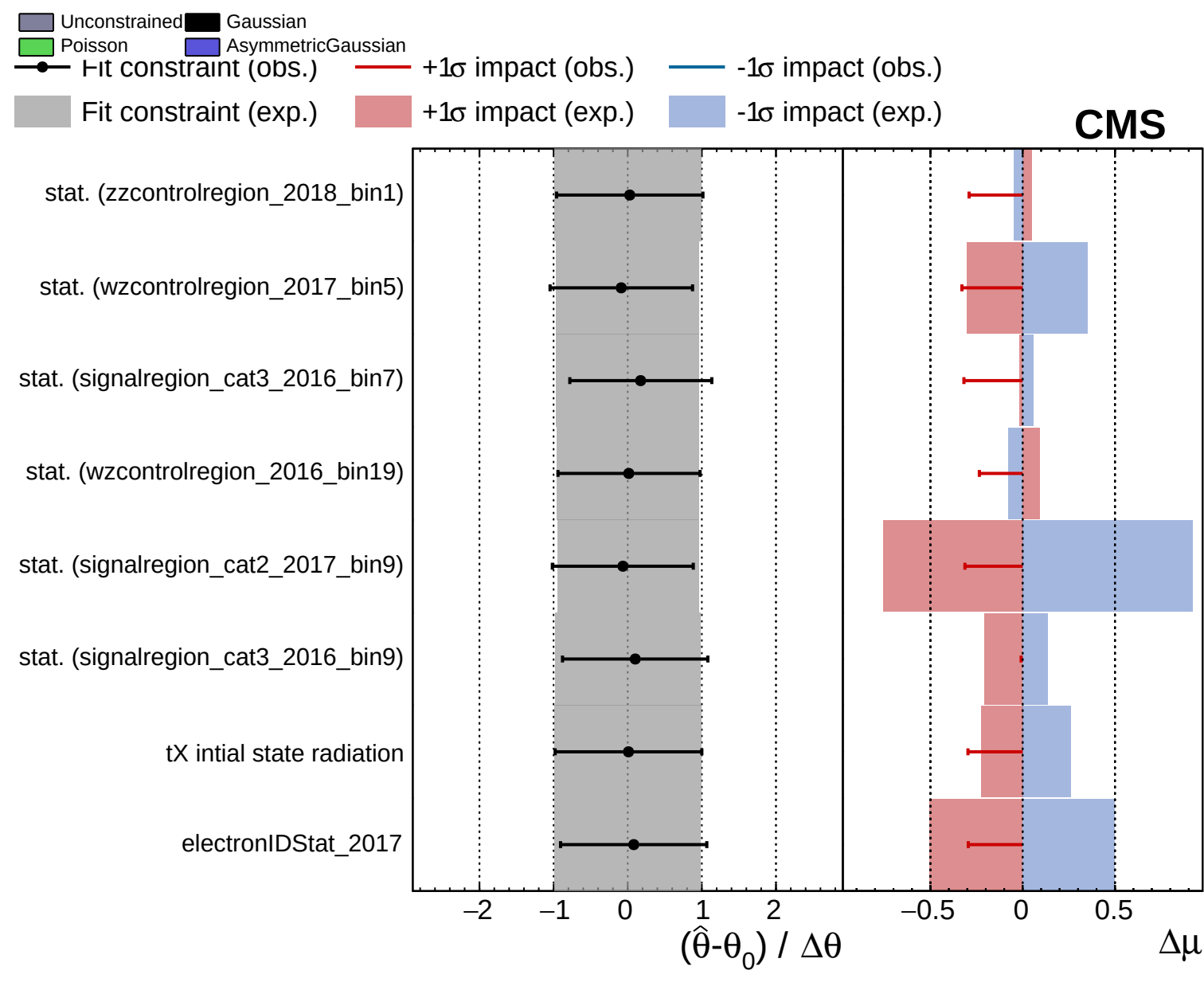

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
isrNorm_nonprompt
stat. (zzcontrolregion_2018_bin18)
stat. (wzcontrolregion_2017_bin8)
stat. (zzcontrolregion_2016_bin15)
stat. (zzcontrolregion_2018_bin16)
stat. (zzcontrolregion_2018_bin4)
stat. (zzcontrolregion_2017_bin10)
stat. (zzcontrolregion_2017_bin7)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.4
−0.2
0
0.2
0.4
Δμ

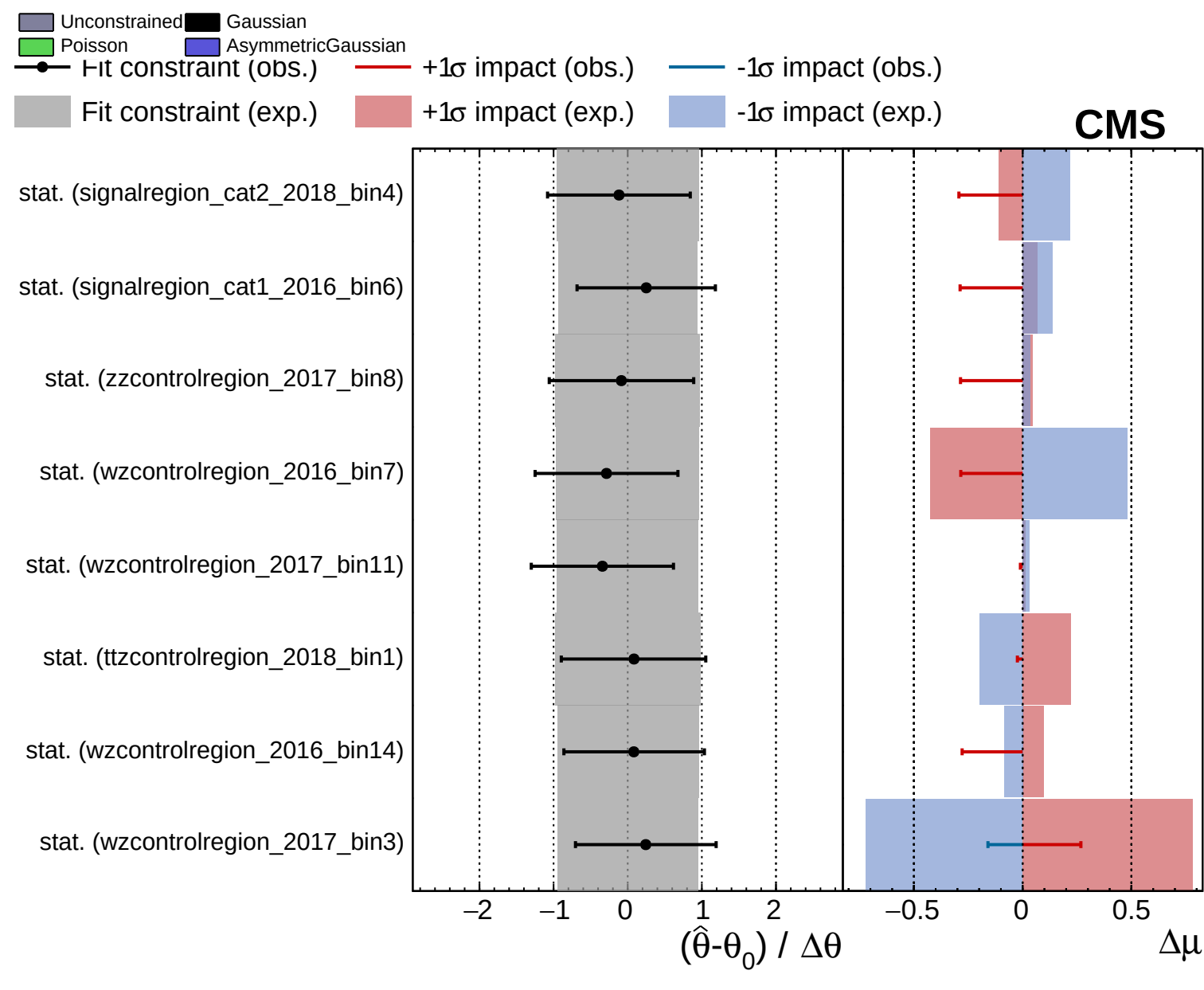

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (zzcontrolregion_2016_bin3)
stat. (zzcontrolregion_2018_bin11)
stat. (zzcontrolregion_2016_bin13)
stat. (zzcontrolregion_2016_bin18)
stat. (zzcontrolregion_2017_bin11)
stat. (zzcontrolregion_2016_bin12)
stat. (zzcontrolregion_2016_bin14)
stat. (zzcontrolregion_2016_bin17)
−2
−1
0
1
2
−0.4
−0.2
0
0.2
0.4
(θ̂-θ0) / Δθ
Δμ

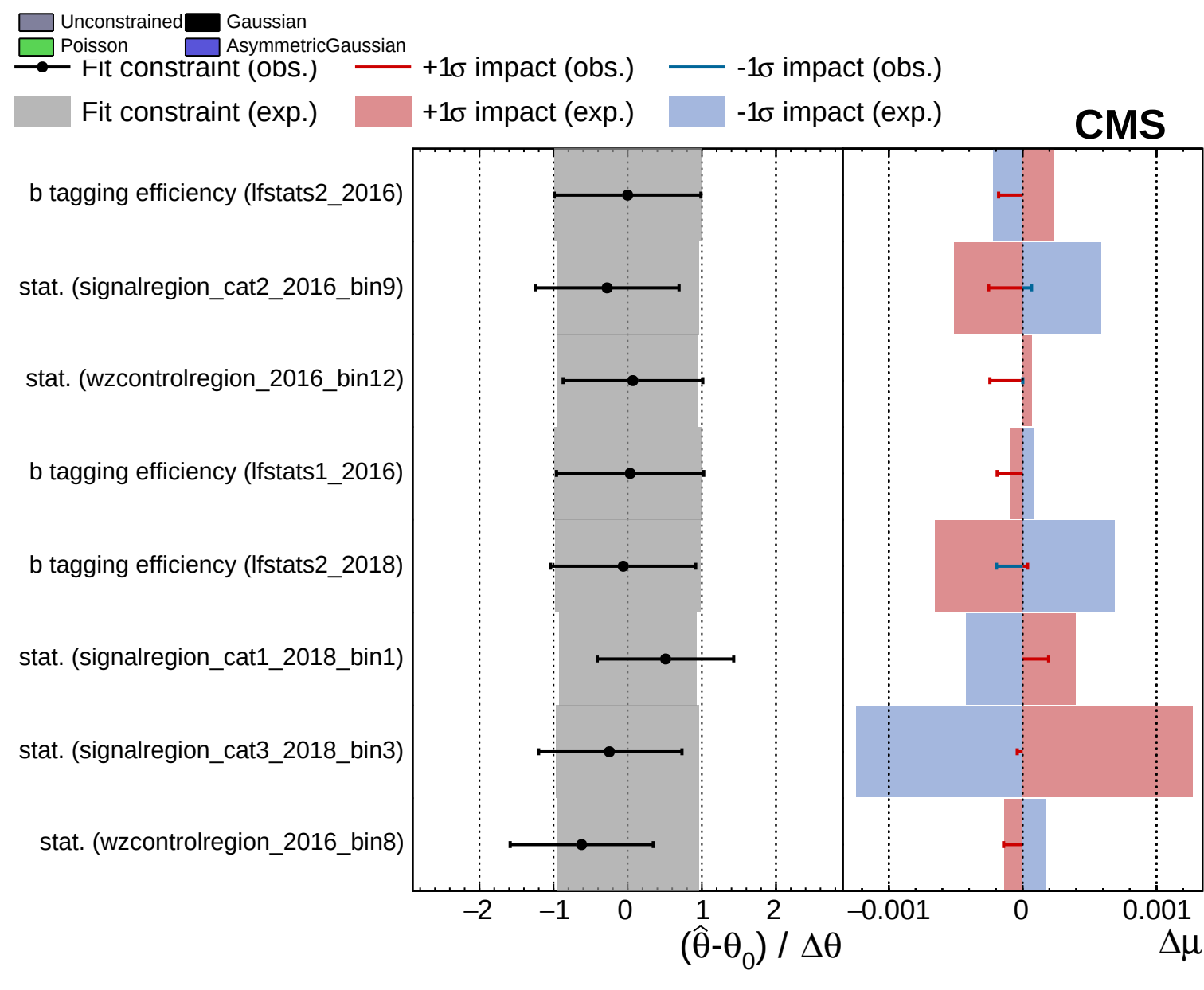

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (zzcontrolregion_2017_bin3)
stat. (signalregion_cat2_2017_bin3)
stat. (zzcontrolregion_2017_bin13)
stat. (zzcontrolregion_2017_bin4)
isrNorm_multiboson
stat. (zzcontrolregion_2018_bin0)
stat. (signalregion_cat2_2016_bin1)
stat. (wzcontrolregion_2017_bin6)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.5
0
0.5
Δμ

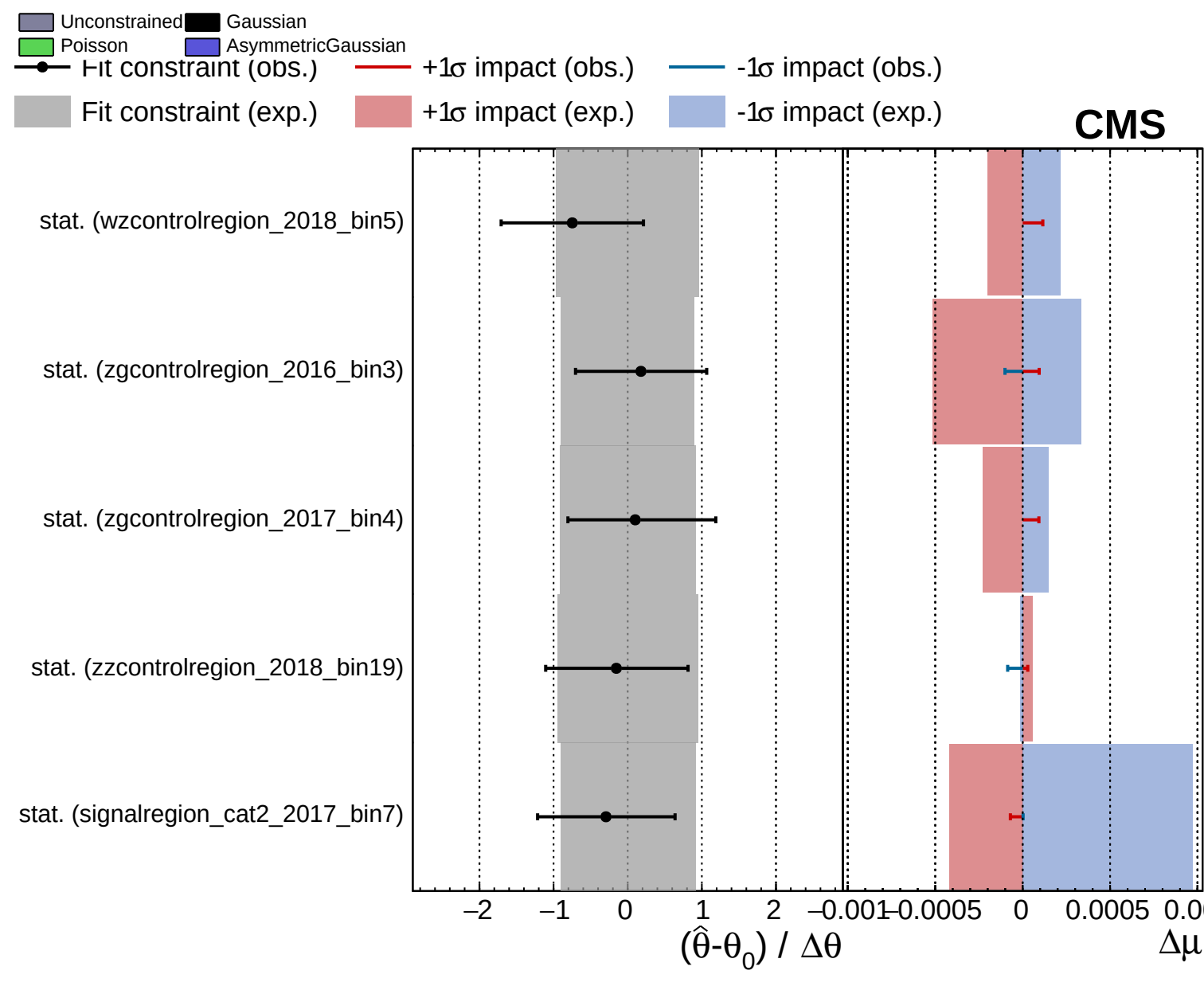

Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (wzcontrolregion_2016_bin13)
stat. (signalregion_cat2_2018_bin6)
stat. (zzcontrolregion_2017_bin0)
stat. (signalregion_cat3_2017_bin10)
stat. (wzcontrolregion_2016_bin2)
stat. (zzcontrolregion_2017_bin6)
stat. (signalregion_cat3_2018_bin6)
stat. (wzcontrolregion_2018_bin17)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.001
−0.0005
0
0.0005
0.00
Δμ


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (zzcontrolregion_2016_bin2)
stat. (zzcontrolregion_2016_bin4)
stat. (wzcontrolregion_2017_bin12)
stat. (wzcontrolregion_2016_bin4)
stat. (signalregion_cat1_2018_bin3)
stat. (wzcontrolregion_2017_bin13)
stat. (zzcontrolregion_2017_bin1)
stat. (signalregion_cat1_2016_bin1)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.5
0
0.5
Δμ


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (zzcontrolregion_2018_bin1)
stat. (wzcontrolregion_2017_bin5)
stat. (signalregion_cat3_2016_bin7)
stat. (wzcontrolregion_2016_bin19)
stat. (signalregion_cat2_2017_bin9)
stat. (signalregion_cat3_2016_bin9)
tX intial state radiation
electronIDStat_2017
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.5
0
0.5
Δμ


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (signalregion_cat2_2018_bin4)
stat. (signalregion_cat1_2016_bin6)
stat. (zzcontrolregion_2017_bin8)
stat. (wzcontrolregion_2016_bin7)
stat. (wzcontrolregion_2017_bin11)
stat. (ttzcontrolregion_2018_bin1)
stat. (wzcontrolregion_2016_bin14)
stat. (wzcontrolregion_2017_bin3)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.5
0
0.5
Δμ


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
b tagging efficiency (lfstats2_2016)
stat. (signalregion_cat2_2016_bin9)
stat. (wzcontrolregion_2016_bin12)
b tagging efficiency (lfstats1_2016)
b tagging efficiency (lfstats2_2018)
stat. (signalregion_cat1_2018_bin1)
stat. (signalregion_cat3_2018_bin3)
stat. (wzcontrolregion_2016_bin8)
−2
−1
0
1
2
(θ̂-θ0) / Δθ
−0.001
0
0.001
Δμ


Unconstrained
Gaussian
Poisson
AsymmetricGaussian
Fit constraint (obs.)
+1σ impact (obs.)
-1σ impact (obs.)
Fit constraint (exp.)
+1σ impact (exp.)
-1σ impact (exp.)
CMS
stat. (wzcontrolregion_2018_bin5)
stat. (zgcontrolregion_2016_bin3)
stat. (zgcontrolregion_2017_bin4)
stat. (zzcontrolregion_2018_bin19)
stat. (signalregion_cat2_2017_bin7)
–2
–1
0
1
2
–0.001
–0.0005
0
0.0005
0.0
(θ̂-θ0) / Δθ
Δμ