

Weekly Report

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2016-03-28

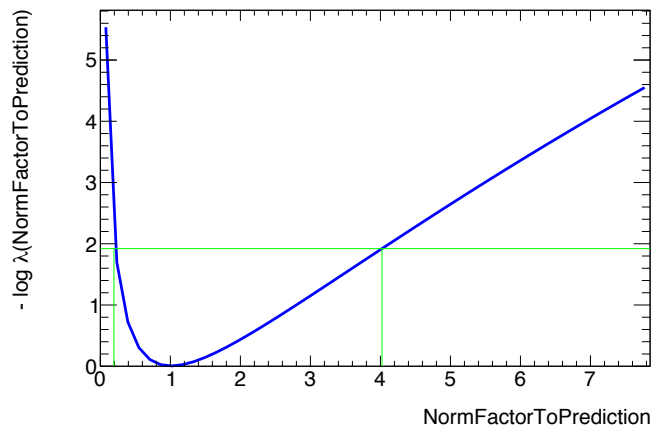
Things done this week

- Profile Likelihood ratio Curve of bbbb channel
 - Lack lxplus environment, run bbgg sample later
- Nuisance Parameters in bbbb channel are listed
 - Fit Value by NuisCheck Package.

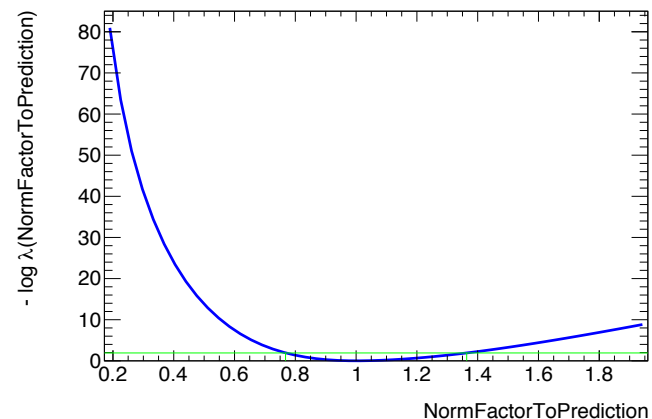
bbbb_sample_asimovData

Using AsimovData &
Atlas Style Plotting

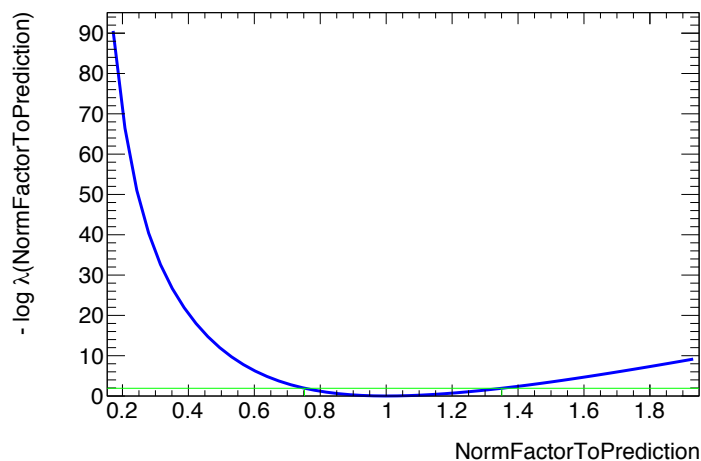
M400



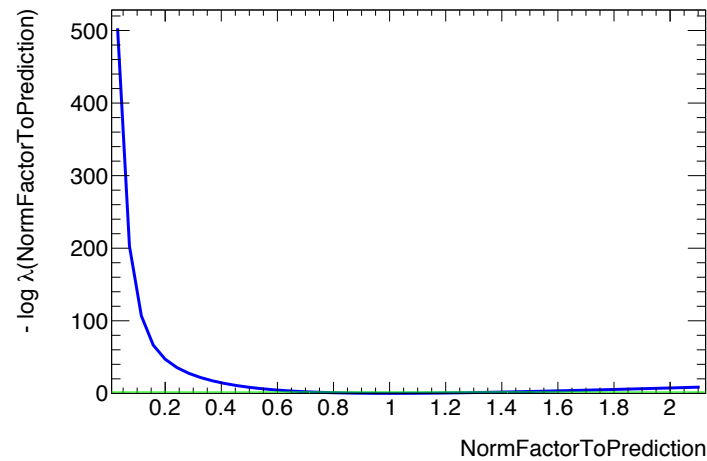
M500



M600

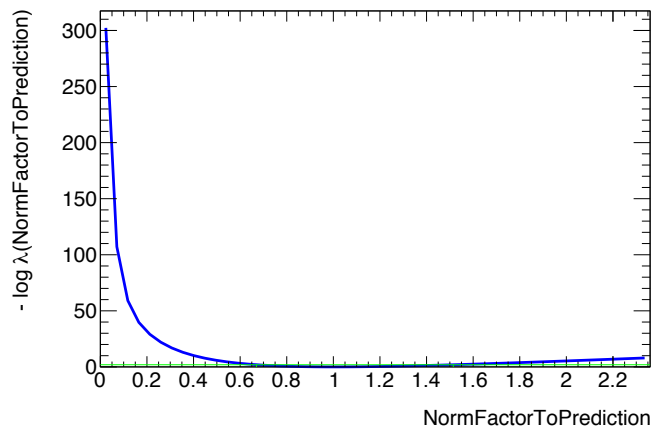


M700

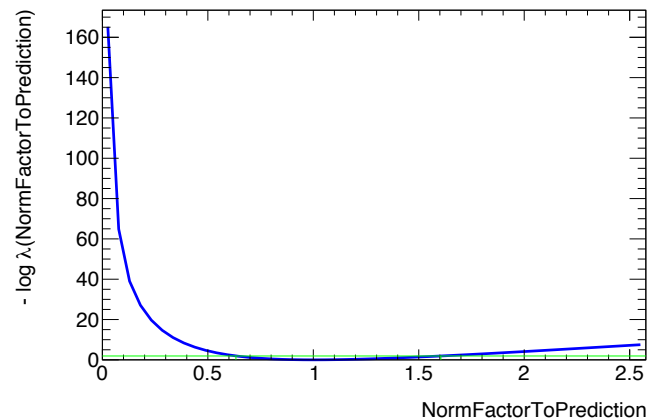


bbbb_Sample_asimovData

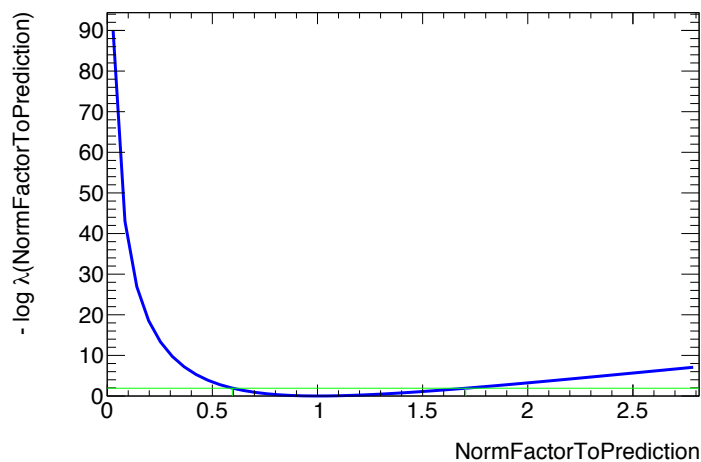
M800



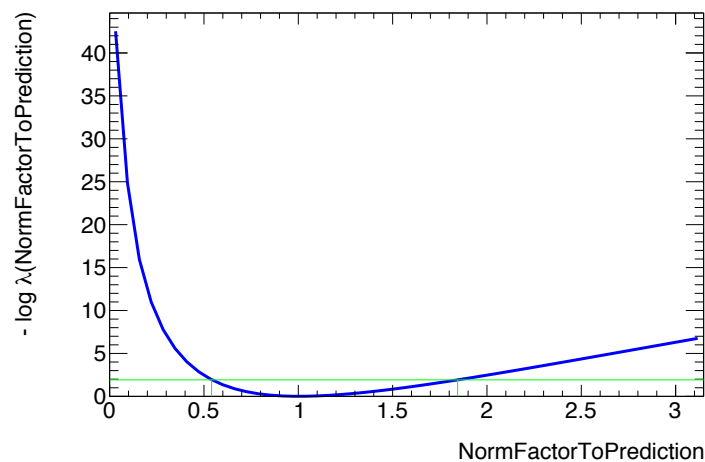
M900



M1000

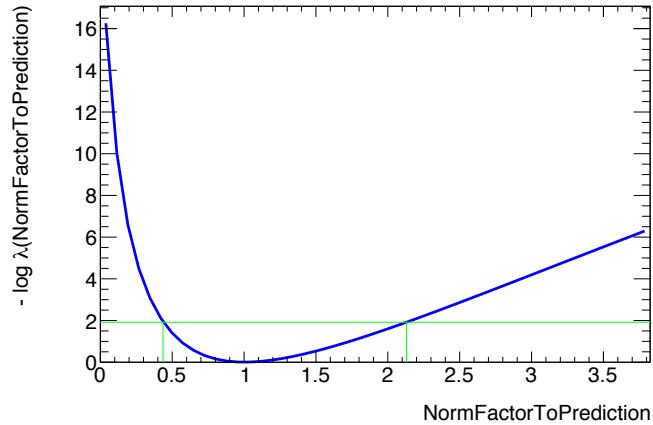


M1100

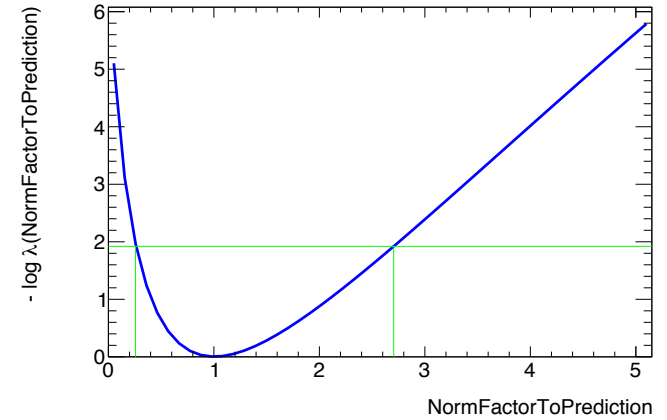


bbbb_Sample_asimovData

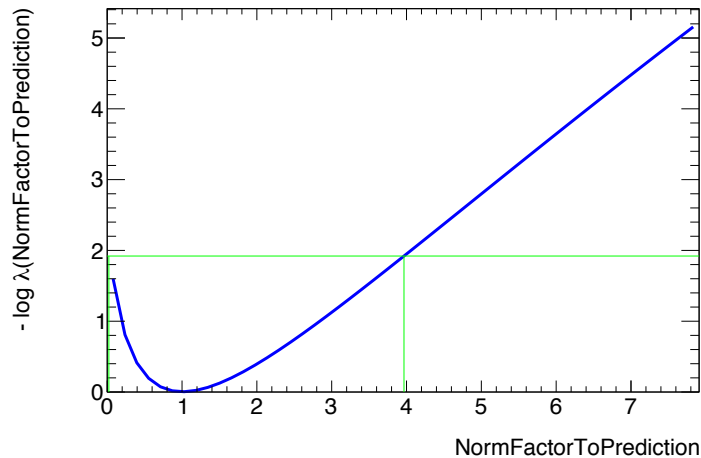
M1200



M1300



M1400



M1500

Met a problem

NuisCheck-bbbb

Nuisance parameter	m400	m500	m600	m700	m800	m900
μ	$1_{-0.782}^{+0.782}$	$1_{-0.146}^{+0.146}$	$1_{-0.15}^{+0.15}$	$1_{-0.176}^{+0.176}$	$1_{-0.208}^{+0.208}$	$1_{-0.237}^{+0.237}$
ATLAS LUMI 2015	$-0.00224_{-0.993}^{+0.993}$	$-0.0023_{-0.993}^{+0.993}$	$0.00049_{-0.993}^{+0.993}$	$-0.00454_{-0.993}^{+0.993}$	$-0.00444_{-0.993}^{+0.993}$	$0.000815_{-0.993}^{+0.993}$
BTAG-B0-4b	$0.00343_{-0.993}^{+0.993}$	$3.19e-05_{-0.995}^{+0.995}$	$-0.000212_{-0.995}^{+0.995}$	$0.00314_{-0.994}^{+0.994}$	$-0.000266_{-0.993}^{+0.993}$	$0.000609_{-0.993}^{+0.993}$
BTAG-B1-4b	$0.00306_{-0.993}^{+0.993}$	$0.000523_{-0.995}^{+0.995}$	$0.000903_{-0.995}^{+0.995}$	$-0.000694_{-0.995}^{+0.995}$	$-0.000568_{-0.993}^{+0.993}$	$0.00136_{-0.993}^{+0.993}$
BTAG-B2-4b	$-0.000763_{-0.993}^{+0.993}$	$-0.000342_{-0.993}^{+0.993}$	$9.36e-05_{-0.993}^{+0.993}$	$-1.21e-06_{-0.993}^{+0.993}$	$0.00111_{-0.993}^{+0.993}$	$-4.36e-05_{-0.993}^{+0.993}$
BTAG-B3-4b	$-0.000132_{-0.993}^{+0.993}$	$0.000796_{-0.993}^{+0.993}$	$-0.000252_{-0.993}^{+0.993}$	$-0.00129_{-0.993}^{+0.993}$	$-0.00028_{-0.993}^{+0.993}$	$-0.000413_{-0.993}^{+0.993}$
BTAG-B4-4b	$-8.82e-05_{-0.993}^{+0.993}$	$-0.000129_{-0.993}^{+0.993}$	$0.000453_{-0.993}^{+0.993}$	$-0.000614_{-0.993}^{+0.993}$	$-0.000255_{-0.993}^{+0.993}$	$-0.000289_{-0.993}^{+0.993}$
BTAG-Ex-4b	$0_{-0.993}^{+0.993}$	$-0.000477_{-0.992}^{+0.992}$	$0.000512_{-0.989}^{+0.989}$	$0.00604_{-0.988}^{+0.988}$	$-0.00273_{-0.991}^{+0.991}$	$0.00188_{-0.993}^{+0.993}$
JER-4b	$-0.00117_{-0.974}^{+0.974}$	$-0.0123_{-0.936}^{+0.936}$	$-0.0172_{-0.851}^{+0.851}$	$-0.0162_{-0.883}^{+0.883}$	$-0.000945_{-0.961}^{+0.961}$	$-0.00337_{-0.966}^{+0.966}$
JES-NP1-4b	$0.00267_{-0.816}^{+0.816}$	$0.00134_{-0.687}^{+0.687}$	$0.00361_{-0.722}^{+0.722}$	$-0.00397_{-0.769}^{+0.769}$	$-0.000808_{-0.886}^{+0.886}$	$-0.00398_{-0.959}^{+0.959}$
JES-NP2-4b	$-0.0277_{-0.993}^{+0.993}$	$0.0103_{-0.905}^{+0.905}$	$0.00405_{-0.882}^{+0.882}$	$-0.000114_{-0.898}^{+0.898}$	$-0.00125_{-0.961}^{+0.961}$	$0.000752_{-0.972}^{+0.972}$
JES-NP3-4b	$-3.37e-06_{-0.993}^{+0.993}$	$0.000566_{-0.926}^{+0.926}$	$-0.00101_{-0.938}^{+0.938}$	$0.00186_{-0.956}^{+0.956}$	$0.000277_{-0.979}^{+0.979}$	$-0.000359_{-0.989}^{+0.989}$
QCD-Norm-4b	$-0.00548_{-0.955}^{+0.955}$	$0.000993_{-0.973}^{+0.973}$	$0.000743_{-0.969}^{+0.969}$	$-3.83e-05_{-0.963}^{+0.963}$	$5.72e-05_{-0.959}^{+0.959}$	$0.000355_{-0.956}^{+0.956}$
QCD-ShapeCR-4b	$-0.00111_{-0.902}^{+0.902}$	$0.000144_{-0.915}^{+0.915}$	$-0.00263_{-0.905}^{+0.905}$	$-0.00373_{-0.906}^{+0.906}$	$8.91e-05_{-0.908}^{+0.908}$	$0.00117_{-0.912}^{+0.912}$
THEORY	$-0.000741_{-0.993}^{+0.993}$	$-0.00559_{-0.992}^{+0.992}$	$-0.0016_{-0.993}^{+0.993}$	$0.00449_{-0.993}^{+0.993}$	$-0.00284_{-0.993}^{+0.993}$	$0.000487_{-0.993}^{+0.993}$
TTBAR-Norm-4b	$-0.000418_{-0.903}^{+0.903}$	$0.00464_{-0.959}^{+0.959}$	$-0.00125_{-0.929}^{+0.929}$	$0.00104_{-0.909}^{+0.909}$	$-0.000632_{-0.901}^{+0.901}$	$-0.000495_{-0.898}^{+0.898}$
TTBAR-ShapeCR-4b	$0.000506_{-0.993}^{+0.993}$	$0.000615_{-0.993}^{+0.993}$	$-0.00206_{-0.993}^{+0.993}$	$0.000556_{-0.993}^{+0.993}$	$-0.00121_{-0.993}^{+0.993}$	$0.000388_{-0.993}^{+0.993}$
TrigSF-4b	$-0.0015_{-0.993}^{+0.993}$	$-0.000372_{-0.991}^{+0.991}$	$-0.00147_{-0.993}^{+0.993}$	$0.000137_{-0.993}^{+0.993}$	$2.33e-05_{-0.993}^{+0.993}$	$-3.6e-05_{-0.993}^{+0.993}$

NuisCheck-bbbb

Nuisance parameter	m1000	m1100	m1200	m1300	m1400	m1500
μ	$1^{+0.268}_{-0.268}$	$1^{+0.313}_{-0.313}$	$0.999^{+0.399}_{-0.399}$	$1^{+0.565}_{-0.565}$	$1^{+0.878}_{-0.878}$	$1^{+1.41}_{-1.41}$
ATLAS.LUMI_2015	$-0.000418^{+0.993}_{-0.993}$	$-0.000609^{+0.993}_{-0.993}$	$0.000103^{+0.993}_{-0.993}$	$0.000535^{+0.993}_{-0.993}$	$3.63e-05^{+0.993}_{-0.993}$	$-0.000146^{+0.993}_{-0.993}$
BTAG-B0-4b	$-0.000643^{+0.993}_{-0.993}$	$0.00107^{+0.993}_{-0.993}$	$-6.87e-05^{+0.993}_{-0.993}$	$-0.000644^{+0.993}_{-0.993}$	$-5.48e-05^{+0.993}_{-0.993}$	$0.000222^{+0.993}_{-0.993}$
BTAG-B1-4b	$0.00131^{+0.993}_{-0.993}$	$0.0016^{+0.993}_{-0.993}$	$-0.000511^{+0.993}_{-0.993}$	$-9.56e-05^{+0.993}_{-0.993}$	$-9.77e-05^{+0.993}_{-0.993}$	$0.000396^{+0.993}_{-0.993}$
BTAG-B2-4b	$-0.00031^{+0.993}_{-0.993}$	$0.000326^{+0.993}_{-0.993}$	$-8.67e-05^{+0.993}_{-0.993}$	$-0.000324^{+0.993}_{-0.993}$	$-1.94e-05^{+0.993}_{-0.993}$	$7.54e-05^{+0.993}_{-0.993}$
BTAG-B3-4b	$-0.000137^{+0.993}_{-0.993}$	$0.000218^{+0.993}_{-0.993}$	$-6.12e-05^{+0.993}_{-0.993}$	$-0.000197^{+0.993}_{-0.993}$	$-1.16e-05^{+0.993}_{-0.993}$	$4.73e-05^{+0.993}_{-0.993}$
BTAG-B4-4b	$-5.23e-05^{+0.993}_{-0.993}$	$0.000105^{+0.993}_{-0.993}$	$-2.92e-05^{+0.993}_{-0.993}$	$-9.24e-05^{+0.993}_{-0.993}$	$-5.46e-06^{+0.993}_{-0.993}$	$2.23e-05^{+0.993}_{-0.993}$
BTAG-Ex-4b	$-0.000181^{+0.994}_{-0.994}$	$-0.00123^{+0.994}_{-0.994}$	$0.0025^{+0.993}_{-0.993}$	$-0.00107^{+0.993}_{-0.993}$	$0.00013^{+0.993}_{-0.993}$	$-0.000545^{+0.993}_{-0.993}$
JER-4b	$-0.0123^{+0.986}_{-0.986}$	$0.00107^{+0.989}_{-0.989}$	$0.000357^{+0.988}_{-0.988}$	$-0.000596^{+0.984}_{-0.984}$	$-1.31e-05^{+0.992}_{-0.992}$	$1.79e-05^{+0.993}_{-0.993}$
JES-NP1-4b	$0.00451^{+0.973}_{-0.973}$	$-0.000202^{+0.986}_{-0.986}$	$0.000355^{+0.988}_{-0.988}$	$-0.000662^{+0.983}_{-0.983}$	$1.01e-05^{+0.992}_{-0.992}$	$-9.81e-05^{+0.993}_{-0.993}$
JES-NP2-4b	$0.000415^{+0.977}_{-0.977}$	$-0.000346^{+0.982}_{-0.982}$	$1.02e-05^{+0.99}_{-0.99}$	$6.99e-05^{+0.992}_{-0.992}$	$4.89e-06^{+0.992}_{-0.992}$	$-2.77e-05^{+0.993}_{-0.993}$
JES-NP3-4b	$0.00017^{+0.989}_{-0.989}$	$-0.000285^{+0.991}_{-0.991}$	$1.61e-07^{+0.992}_{-0.992}$	$-0.000666^{+0.987}_{-0.987}$	$3.1e-06^{+0.993}_{-0.993}$	$-1.09e-05^{+0.993}_{-0.993}$
QCD-Norm-4b	$0.00124^{+0.956}_{-0.956}$	$0.00506^{+0.955}_{-0.955}$	$0.00726^{+0.954}_{-0.954}$	$0.000147^{+0.954}_{-0.954}$	$7.32e-06^{+0.953}_{-0.953}$	$-3.96e-05^{+0.953}_{-0.953}$
QCD-ShapeCR-4b	$0.00225^{+0.916}_{-0.916}$	$-0.00106^{+0.918}_{-0.918}$	$0.00213^{+0.915}_{-0.915}$	$0.000229^{+0.914}_{-0.914}$	$3.23e-05^{+0.909}_{-0.909}$	$-0.000215^{+0.907}_{-0.907}$
THEORY	$-0.000484^{+0.993}_{-0.993}$	$-0.000483^{+0.993}_{-0.993}$	$0.000104^{+0.993}_{-0.993}$	$0.000611^{+0.993}_{-0.993}$	$5.57e-05^{+0.993}_{-0.993}$	$-0.000269^{+0.993}_{-0.993}$
TTBAR-Norm-4b	$0.000478^{+0.898}_{-0.898}$	$-0.00401^{+0.897}_{-0.897}$	$-0.00315^{+0.897}_{-0.897}$	$-4e-05^{+0.897}_{-0.897}$	$4.48e-06^{+0.897}_{-0.897}$	$-1.69e-05^{+0.897}_{-0.897}$
TTBAR-ShapeCR-4b	$-0.00327^{+0.993}_{-0.993}$	$0.00609^{+0.993}_{-0.993}$	$0.00035^{+0.992}_{-0.992}$	$6.27e-05^{+0.993}_{-0.993}$	$1.94e-06^{+0.993}_{-0.993}$	$-1.04e-05^{+0.993}_{-0.993}$
TrigSF-4b	$5.34e-06^{+0.993}_{-0.993}$	$-5.09e-05^{+0.993}_{-0.993}$	$2.46e-05^{+0.993}_{-0.993}$	$0.000111^{+0.993}_{-0.993}$	$7.68e-06^{+0.993}_{-0.993}$	$-3.08e-05^{+0.993}_{-0.993}$

bbbb NP's List

How they exactly take effect depends on the definitions in code.
I just note which it is about.

Parameter	Description
μ	Signal Strength
Lumi_2015	Luminosity
BTag-B(0、1、2、3、4、ex)	6 parameters for B-Tagging scale factor / Algorithm
JER	Jet Energy Resolution
JES(NP1-3)	3 parameters for Jet Energy Scale
QCD-Norm	QCD normalization
QCD-ShapeCR	QCD shape (Control Region?)
ttbar-Norm	ttbar normalization
ttbar-ShapeCR	ttbar shape (Control Region?)
theory	Theory uncertainties
TrigSF	Trigger Scale Factor
Gamma_stat_bin	80 parameters for gamma statistics?

bbgg NP's List

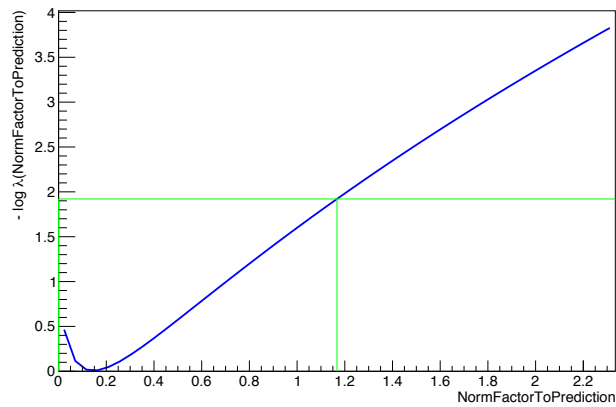
Prod. Mode	Nuisance Parameter	Scale		Nuisance Parameter	PDF	
		Value	Asym. (up/down)		Value	Asym. (up/down)
ggF	GGFTh	7.8%	0.92	GGPdf	6.9%	1.087
$VBFh$	VBFTh	0.2%	-	QQPdf	8.1%	-
Wh	VHTh	1.0%	-	QQPdf	2.8%	0.93
Zh	VHTh	3.1%	-	QQPdf	2.3%	-
$t\bar{t}h$	TTHTh	9.3%	0.41	GGPdf	2.5%	-

Parameter	Description	Parameter	Description
μ	Signal Strength	dFT_EFF	
Lumi_2012	Luminosity	dFT_EFF_Eigen-Light	
isEM	is Electromagnetic	bias	
Iso	Isolation	dSig	
PRW_DATASF	PRW_data scale factor	dMass	
dJES	Jet Energy Scale	slope	
dJER	Jet Energy Resolution	dGGFstat.bb/jj	ggF's stats uncertainties about bb/jj
BRgg/bb	Branching Ratio of gamma/bb pair	dGGFTh	ggF's Scale Factor
Nbkg_jj	Bkg from jj	dGGPDF	ggF's PDF factor
Nbkg_bb	Bkg from bb		

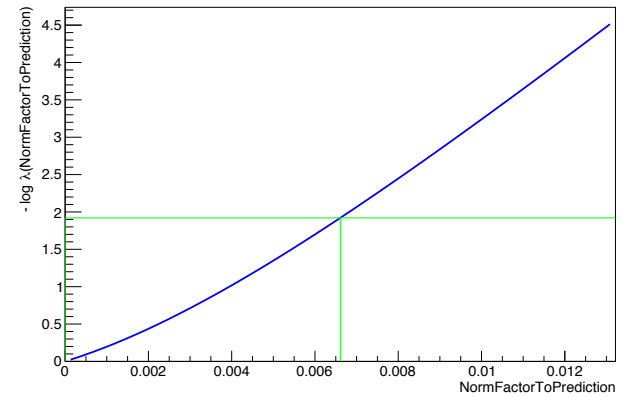
backups

bbbb_Sample_obsData

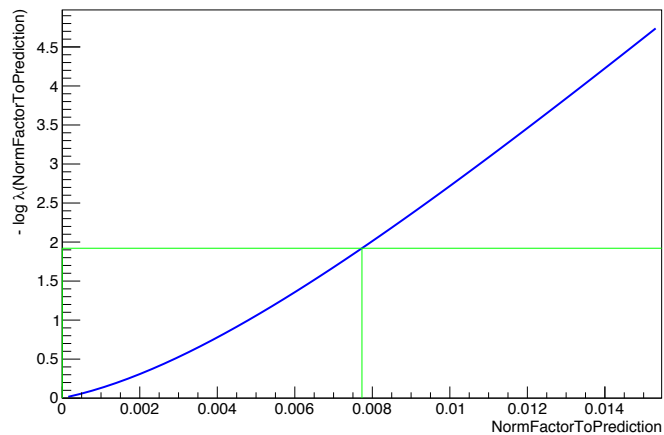
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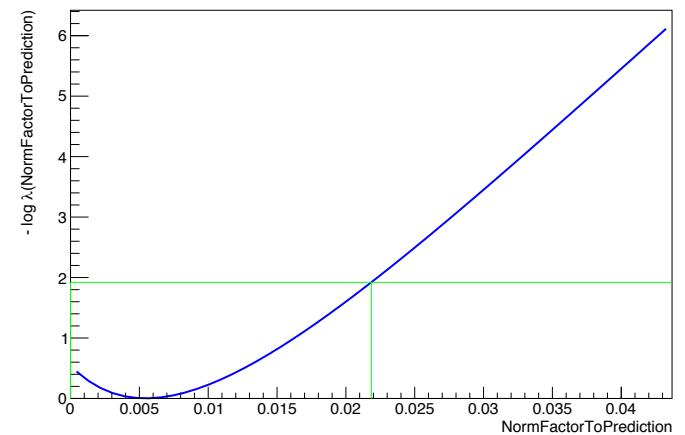
M500



M600

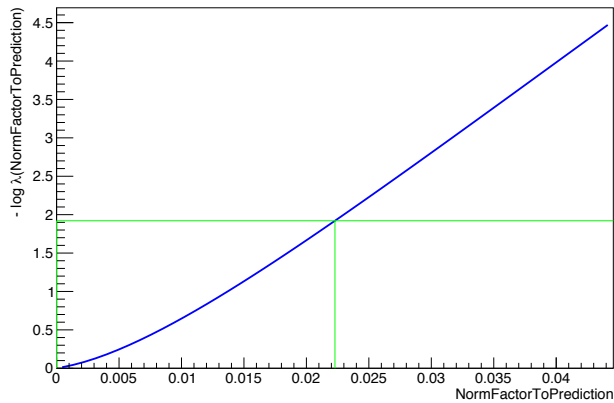


M700

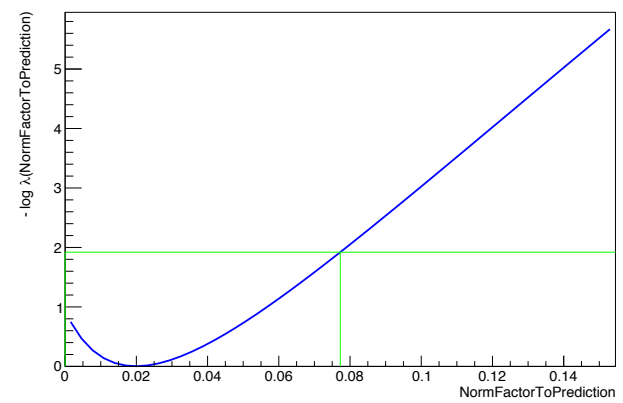


bbbb_Sample_obsData

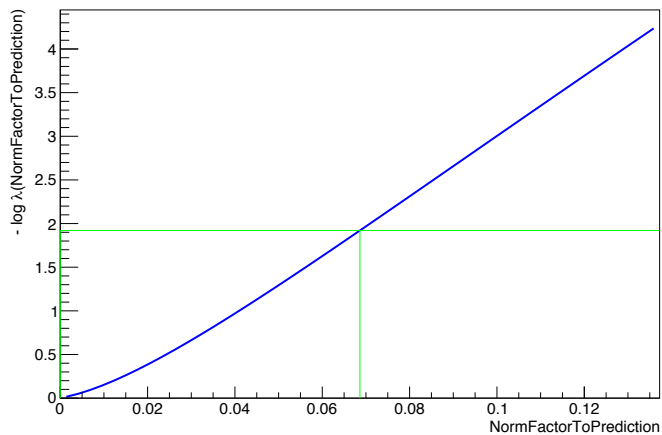
M800



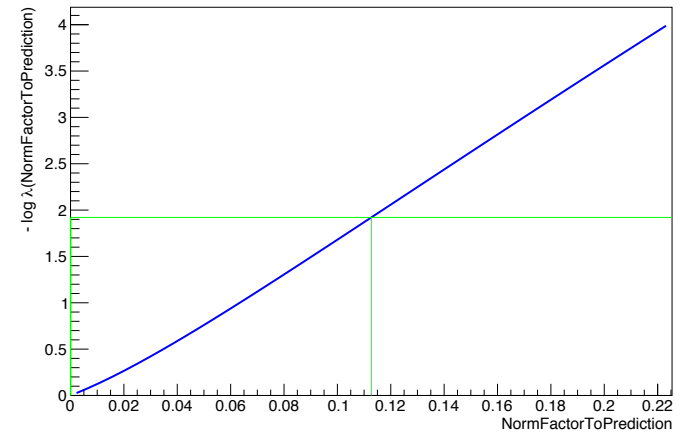
M900



M1000

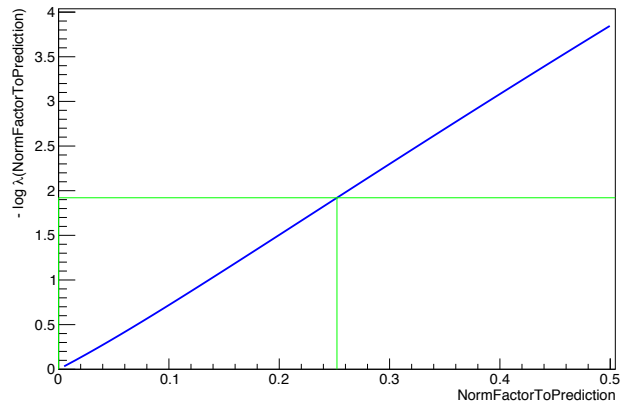


M1100

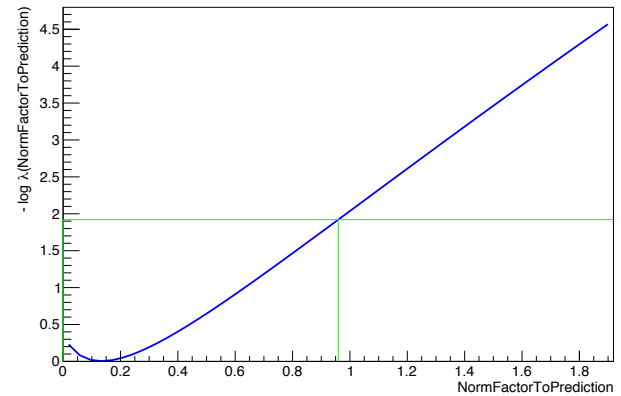


bbbb_Sample_obsData

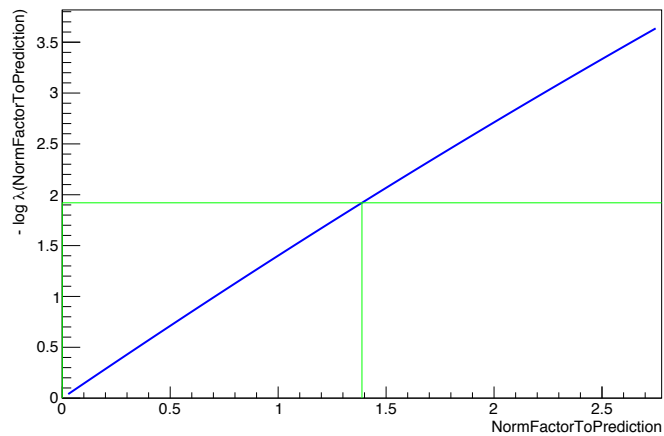
M1200



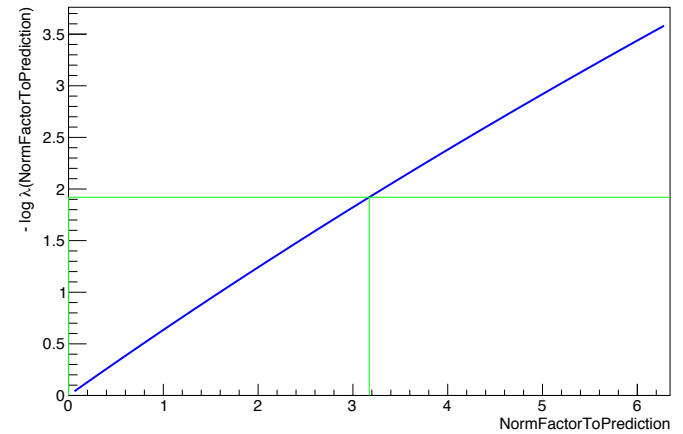
M1300



M1400



M1500



NuisCheck-bbagg

For 3000-res sample all results to 0.
As Hitter package not used yet,
fit value not convincing.

Table 1: 1251.Nonres

Nuisance parameter	postfit value (in σ unit)	Nuisance parameter	postfit value (in σ unit)
μ	-15.4^{+105}_{-105}	dGGFStat_bb	$0.0126^{+0.503}_{-0.503}$
isEM	$0.0482^{+1.65}_{-1.65}$	dVBFStat_bb	$0.000182^{+0.5}_{-0.5}$
Iso	$0.0834^{+2.16}_{-2.16}$	dWHStat_bb	$0.000366^{+0.5}_{-0.5}$
lumi_2012	0.0892^{+3}_{-3}	dZHStat_bb	$0.00111^{+0.5}_{-0.5}$
PRW_DATASF	$0.0639^{+1.23}_{-1.23}$	dTTHStat_bb	$0.00595^{+0.5}_{-0.5}$
dFT_EFF_Eigen_B	$0.208^{+7.6}_{-7.6}$	dBBHStat_bb	$0.00623^{+0.504}_{-0.504}$
dFT_EFF_charm	$0.000776^{+0.5}_{-0.5}$	dGGHF	$0.0356^{+0.529}_{-0.529}$
dFT_EFF	$0.0982^{+3.08}_{-3.08}$	dQQHF	$0.001^{+0.501}_{-0.501}$
dFT_EFF_Eigen_Light	$-0.0146^{+0.132}_{-0.132}$	dMass	$0.0666^{+0.5}_{-0.5}$
dJES	$0.035^{+0.929}_{-0.929}$	dSig	$0.00141^{+0.674}_{-0.674}$
dJER	$-0.208^{+1.5}_{-1.5}$	nbkg_bb	$14.1^{+1.26e-06}_{-1.26e-06}$
dFT_EFF_Eigen_C	$0.0124^{+0.501}_{-0.501}$	slope	$-0.0258^{+0.00188}_{-0.00188}$
BRgg	0.109^{+3}_{-3}	dBSMStat_bb	$-0.000179^{+0.976}_{-0.976}$
dGGFTh	$0.00674^{+0.499}_{-0.499}$	BRbb	$0.0492^{+2.11}_{-2.11}$
dVBFTh	$8.81e-06^{+0.5}_{-0.5}$	bias	$-0.0309^{+0.5}_{-0.5}$
dVHTh	$0.000262^{+0.497}_{-0.497}$	dGGFStat_jj	$0.00248^{+0.499}_{-0.499}$
dTTHTh	$0.00689^{+0.5}_{-0.5}$	dVBFStat_jj	$4.46e-05^{+0.5}_{-0.5}$
dBBHTh	$0.00605^{+0.5}_{-0.5}$	dWHStat_jj	$0.000134^{+0.5}_{-0.5}$
dGGPdf	$0.0176^{+0.499}_{-0.499}$	dZHStat_jj	$0.000111^{+0.5}_{-0.5}$
dQQPdf	$0.000215^{+0.5}_{-0.5}$	dTTHStat_jj	$6.54e-05^{+0.5}_{-0.5}$
		dBBHStat_jj	$0.000328^{+0.5}_{-0.5}$
		nbkg_jj	$293^{+8.67}_{-8.67}$
		dBSMStat_jj	$0^{+0.5}_{-0.5}$