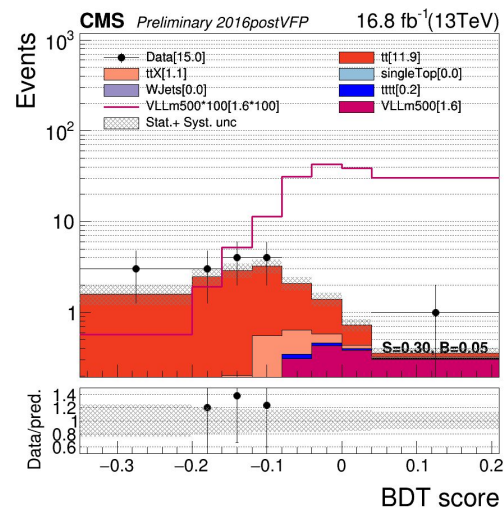
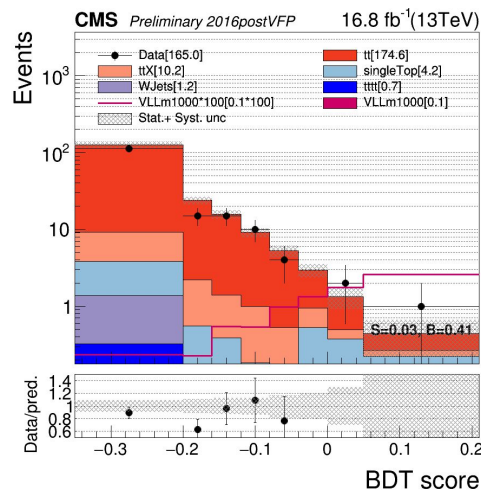
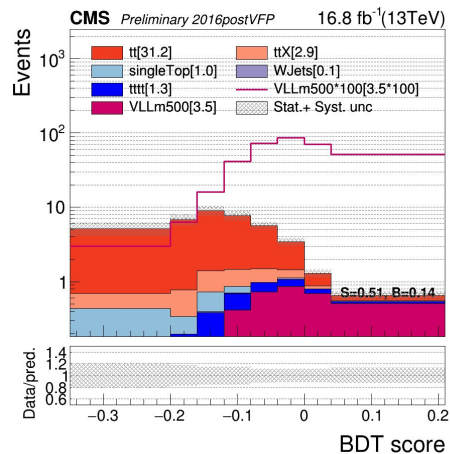


Analysis of 4top process with
VLL model(2016 postVFP)

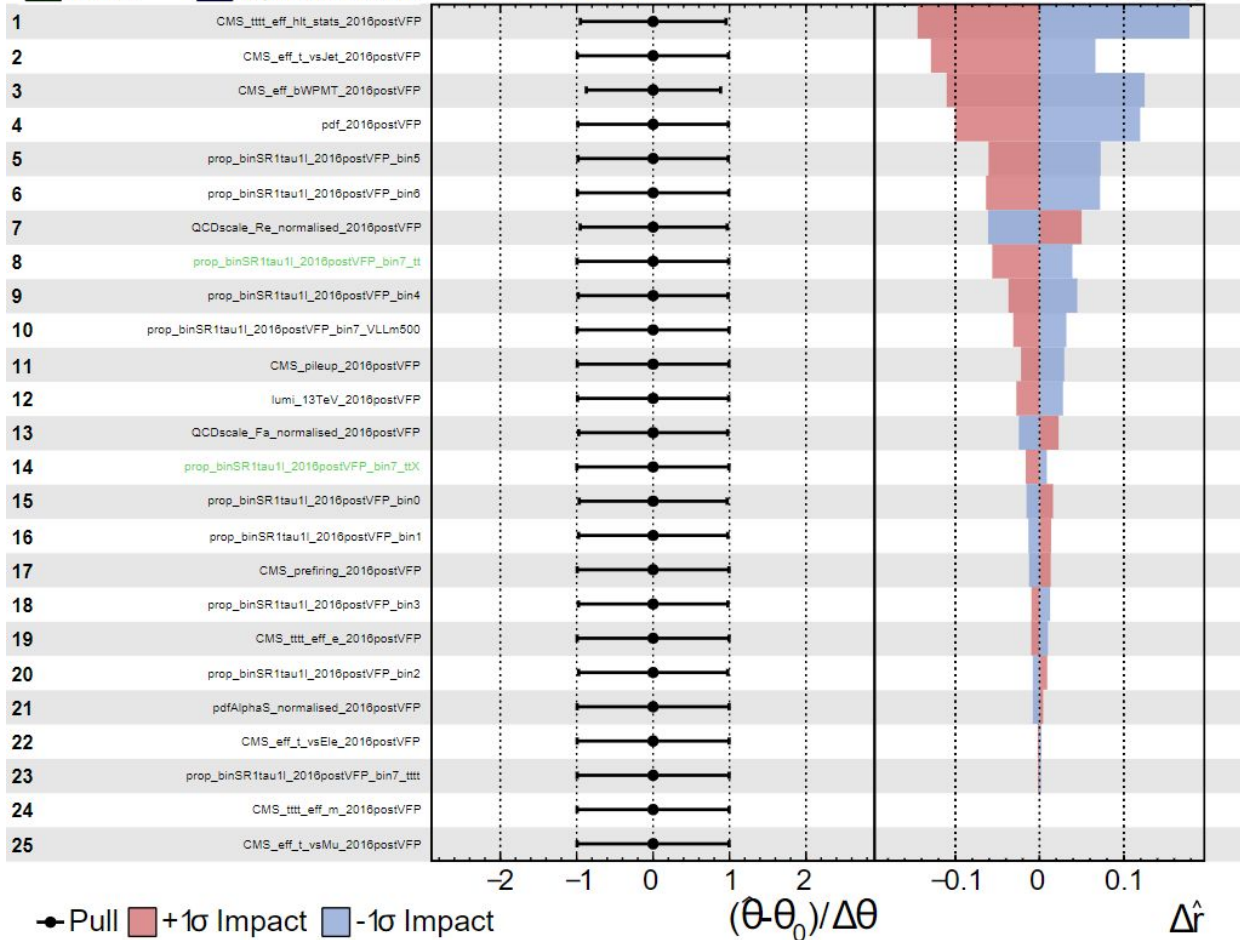
VLLm500 **best bin**(last bin: 0.04-0.2)



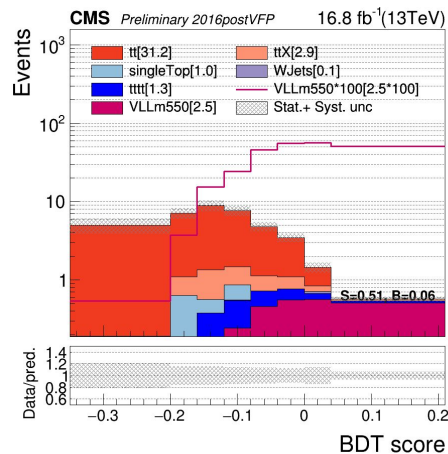
Unconstrained Gaussian
 Poisson AsymmetricGaussian

CMS Internal

$\hat{r} = 1.0^{+1.2}_{-0.8}$



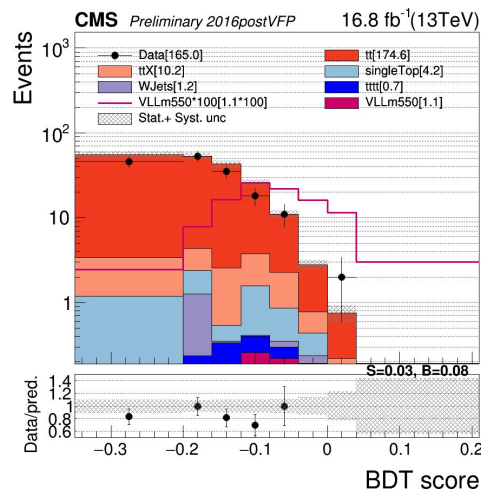
VLLm550 **best bin**(last bin: 0.04-0.2)



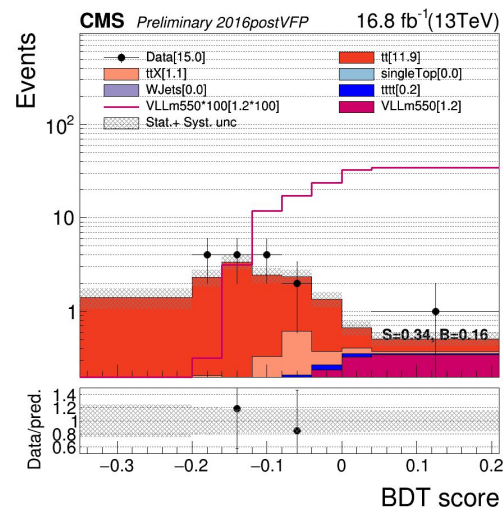
SR

limit: 2.56

significance: 1.36



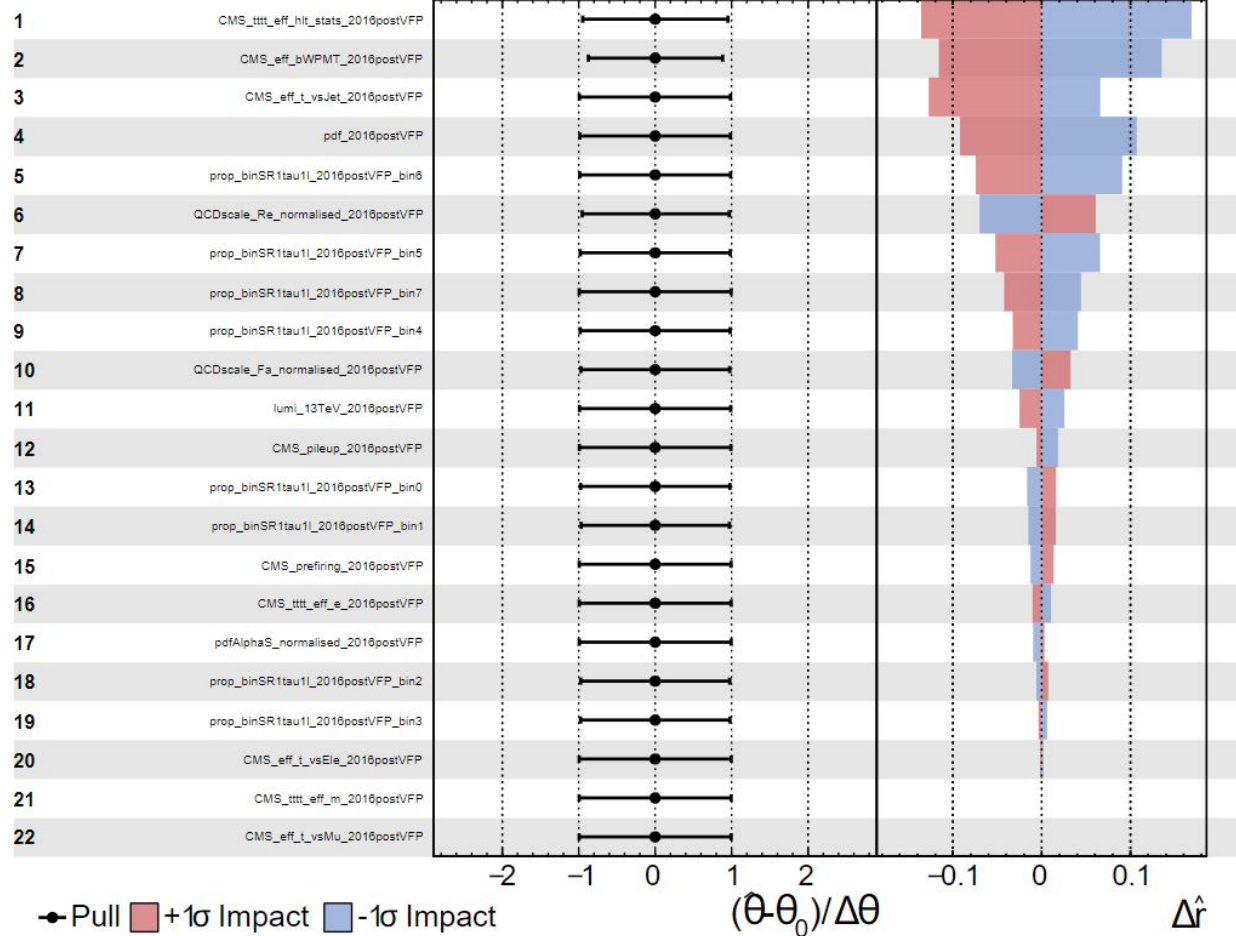
CR1



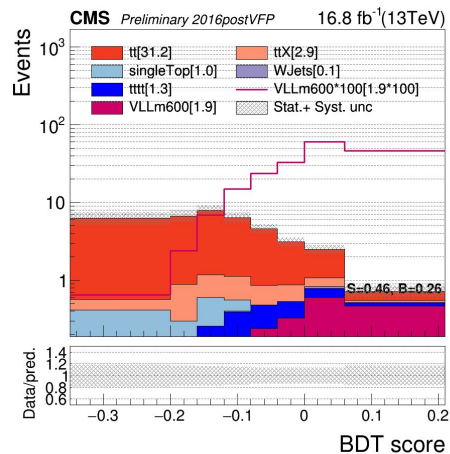
CR2

CMS Internal

$$\hat{r} = 1.0^{+1.4}_{-0.8}$$



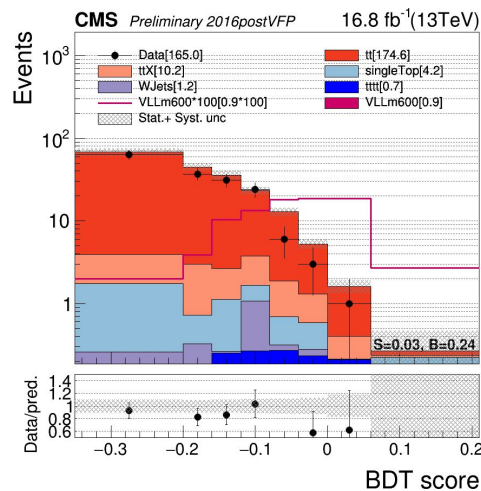
VLLm600 **best bin**(last bin: 0.06-0.2)



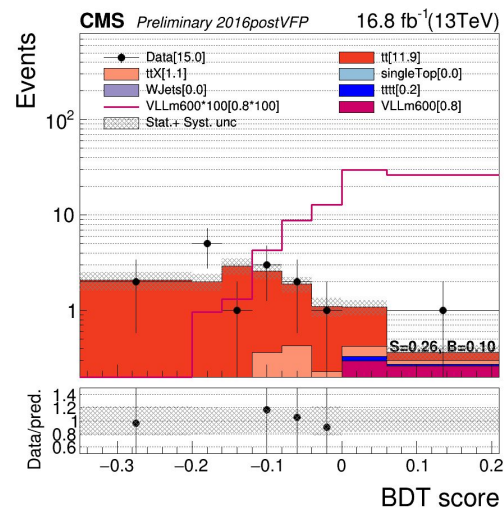
SR

limit: 3.54

significance: 0.85



CR1

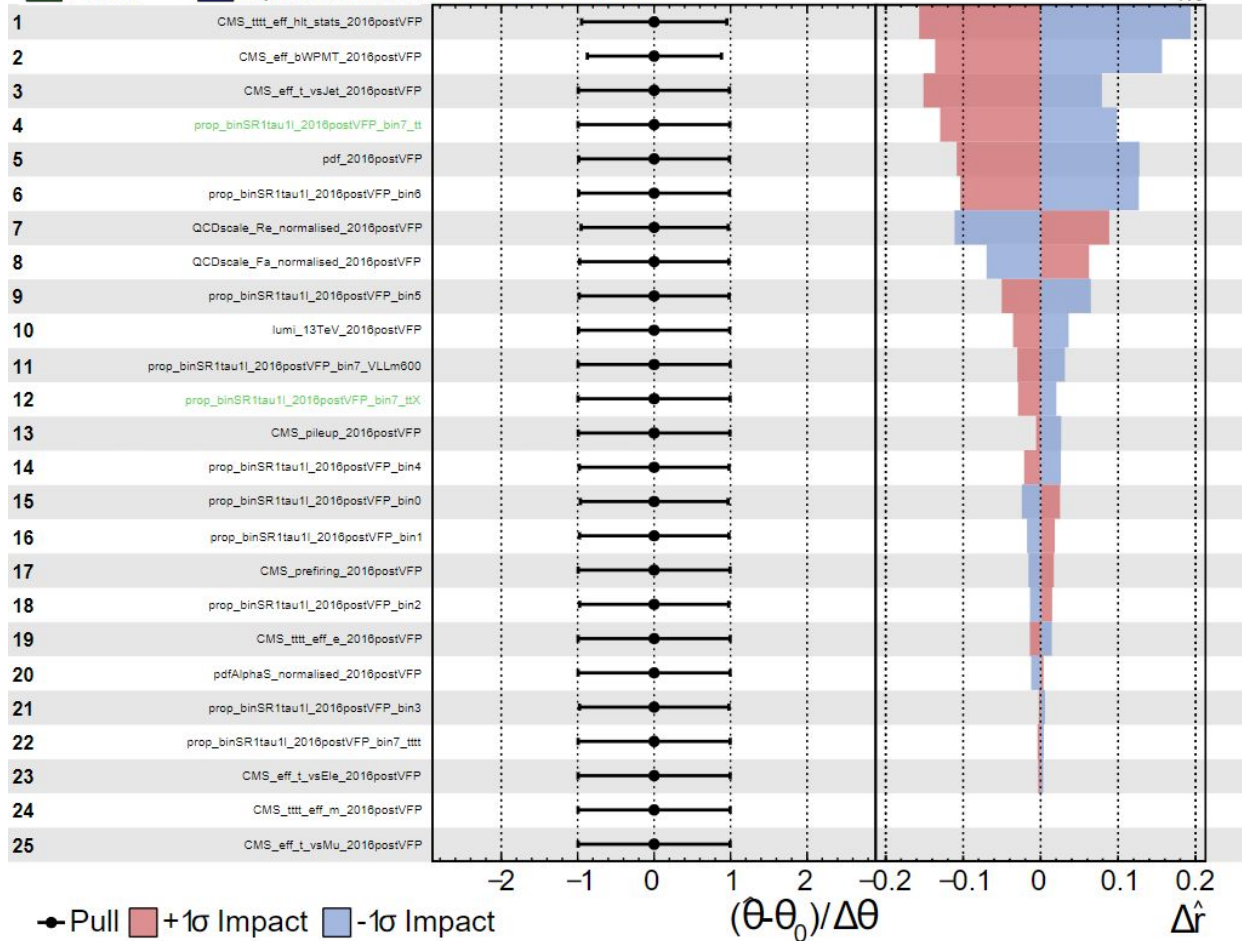


CR2

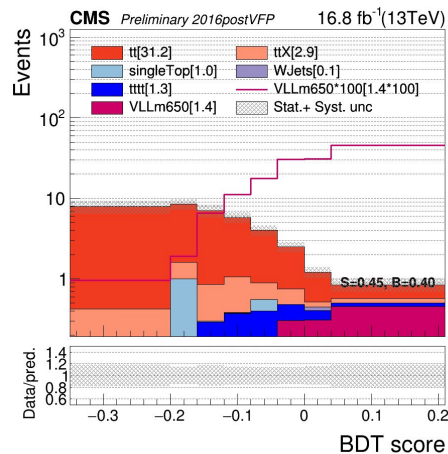
Unconstrained
 Gaussian
 Poisson
 AsymmetricGaussian

CMS Internal

$\hat{r} = 1.0^{+1.8}_{-1.0}$



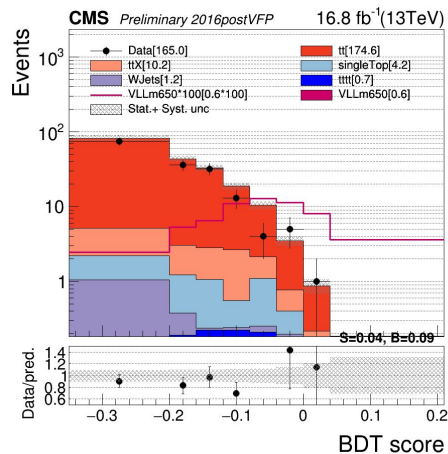
VLLm650 **best bin**(last bin: 0.04-0.2)



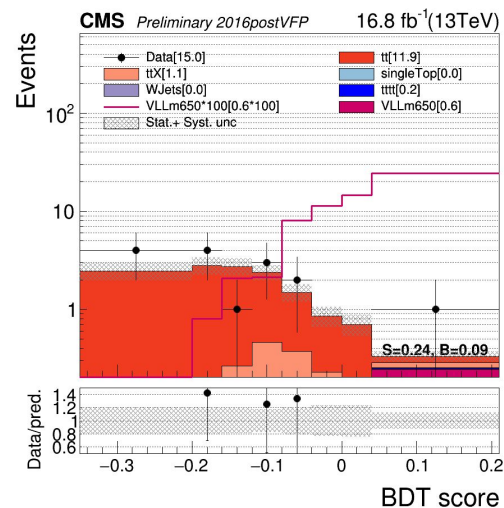
SR

limit: 4.28

significance: 0.70



CR1

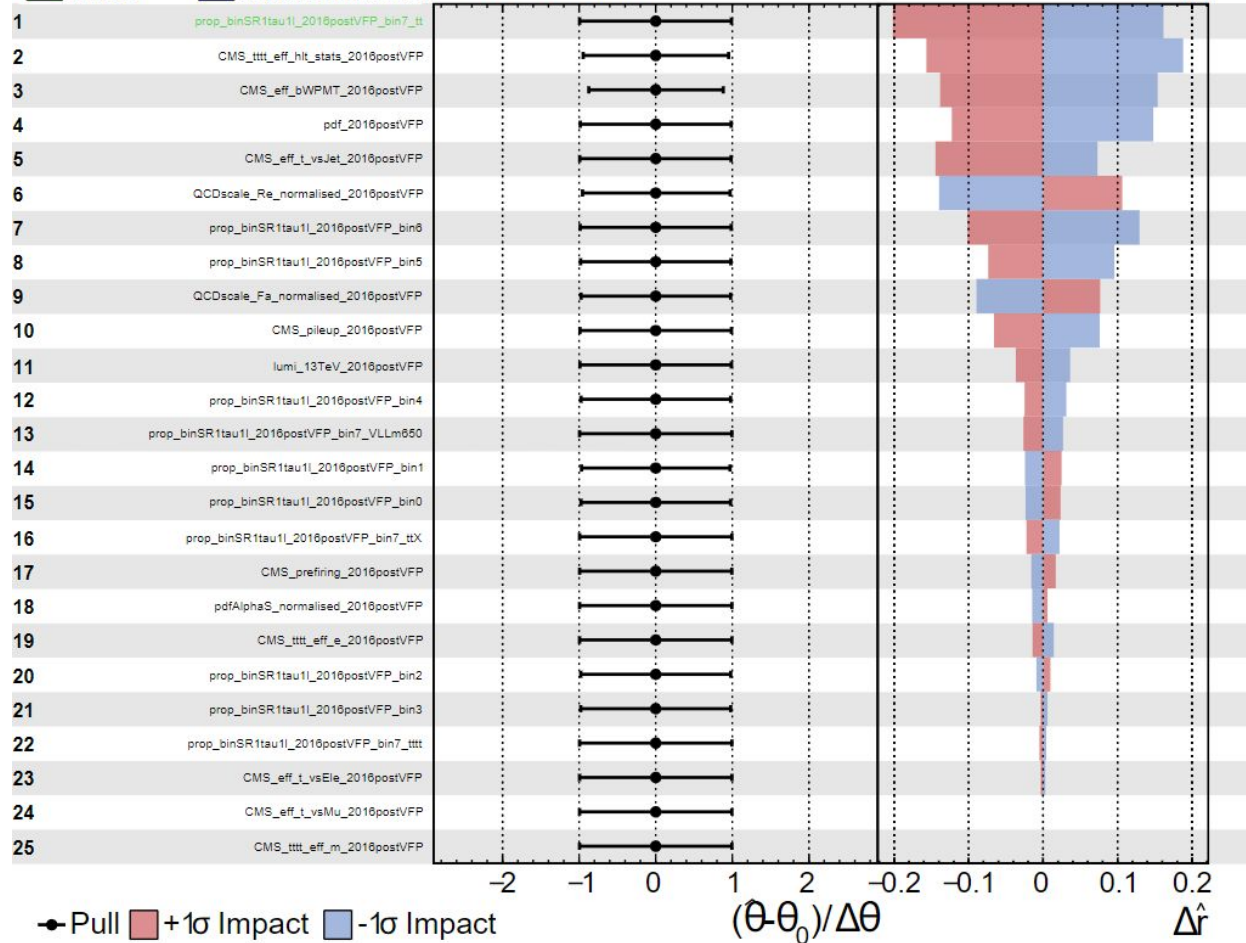


CR2

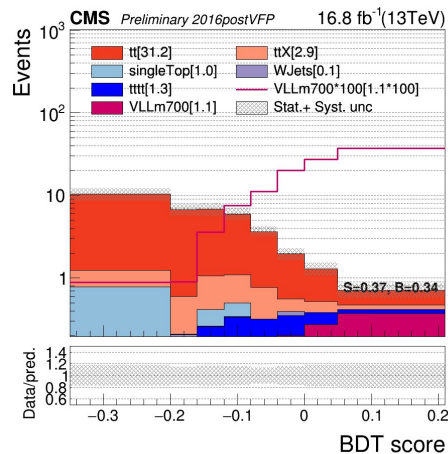
Unconstrained
 Gaussian
 Poisson
 AsymmetricGaussian

CMS Internal

$\hat{r} = 1.0^{+2.1}_{-1.0}$



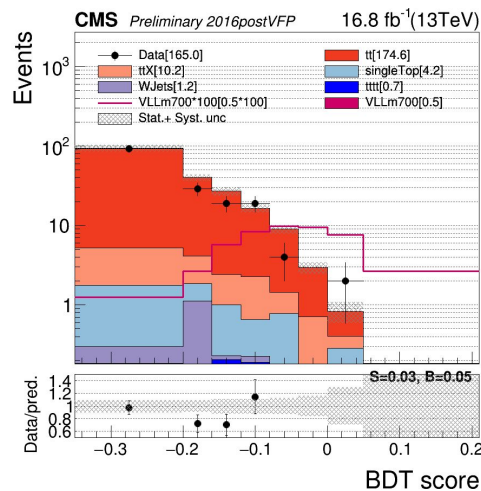
VLLm700 **best bin**(last bin: 0.05-0.2)



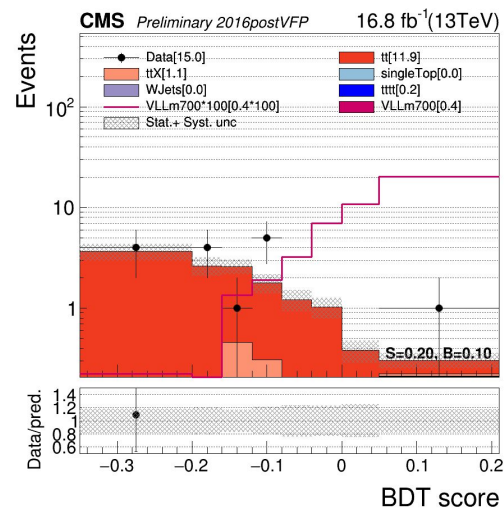
SR

limit: 5.20

significance: 0.61



CR1

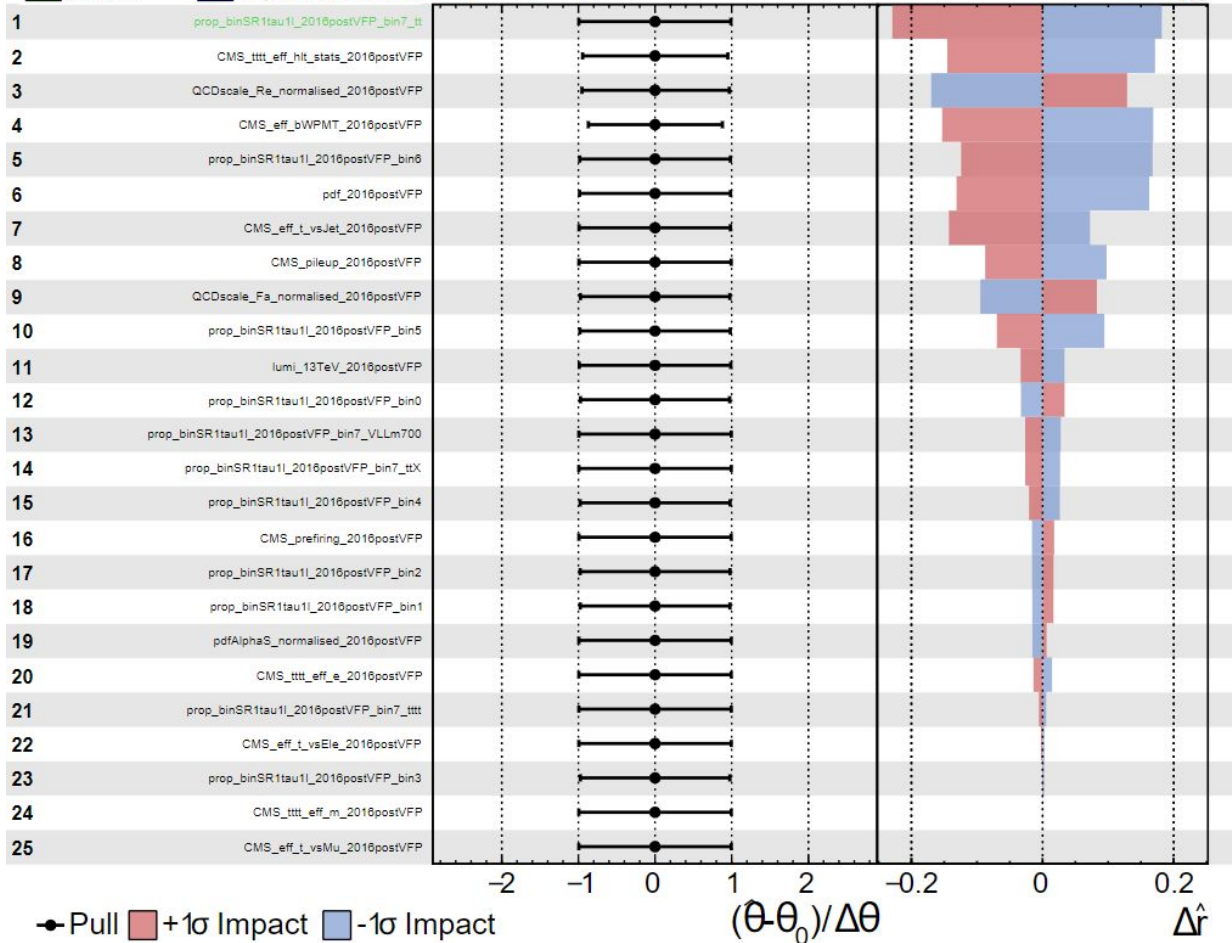


CR2

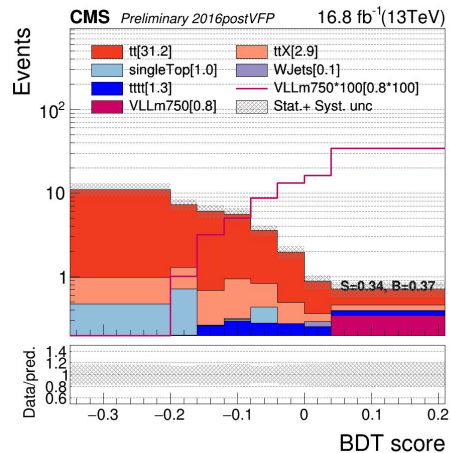
Unconstrained Gaussian
 Poisson AsymmetricGaussian

CMS Internal

$\hat{r} = 1.0^{+2.5}_{-1.0}$



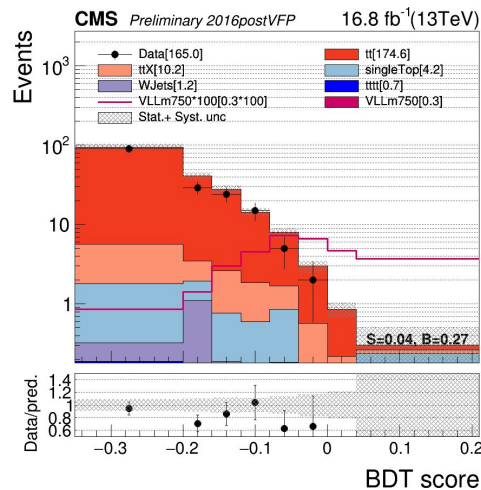
VLLm750 **best bin**(last bin: 0.04-0.2)



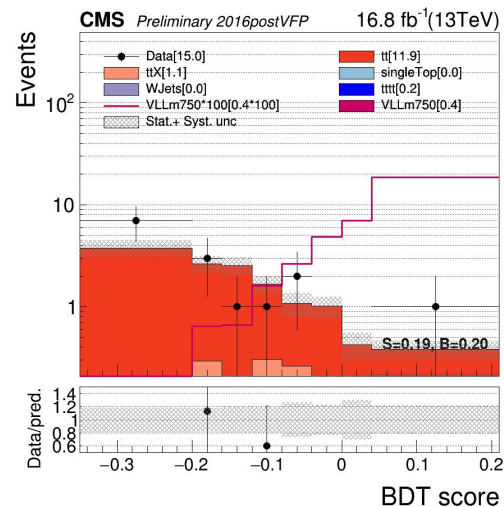
SR

limit: 6.43

significance: 0.52



CR1

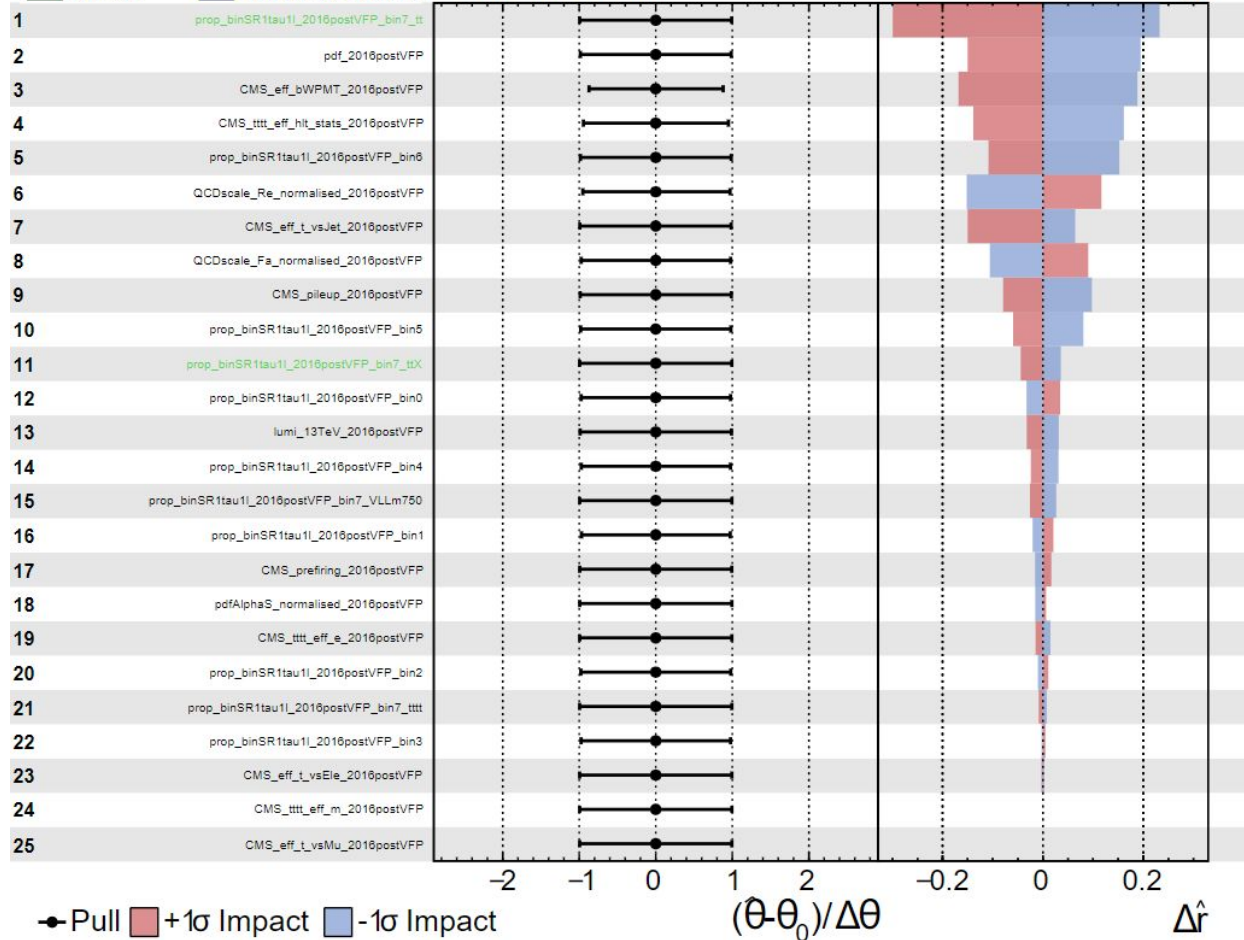


CR2

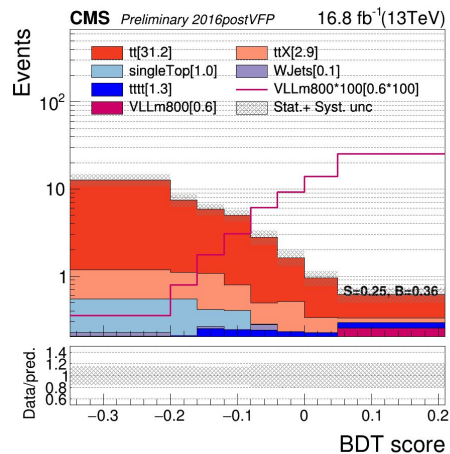
Unconstrained
 Gaussian
 Poisson
 AsymmetricGaussian

CMS Internal

$\hat{r} = 1.0^{+3.0}_{-1.0}$



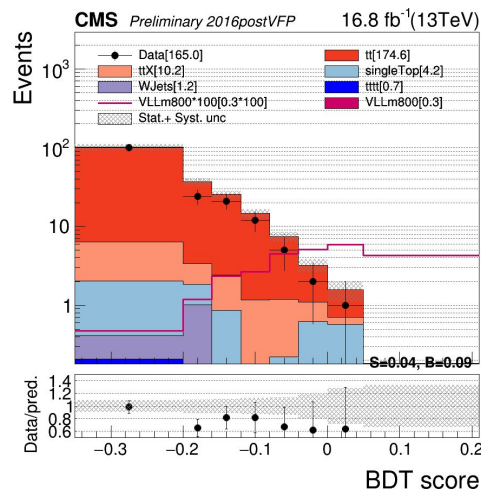
VLLm800 **best bin**(last bin: 0.05-0.2)



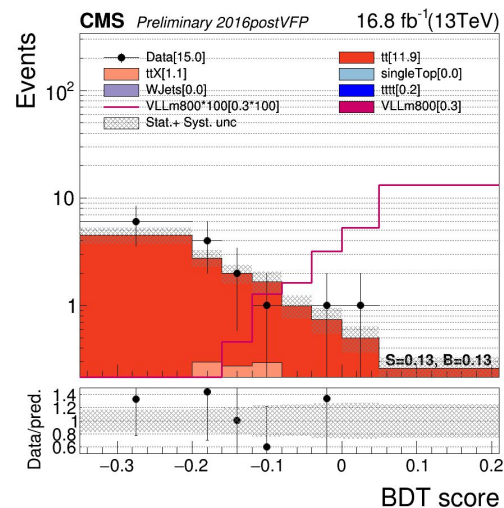
SR

limit: 8.53

significance: 0.40



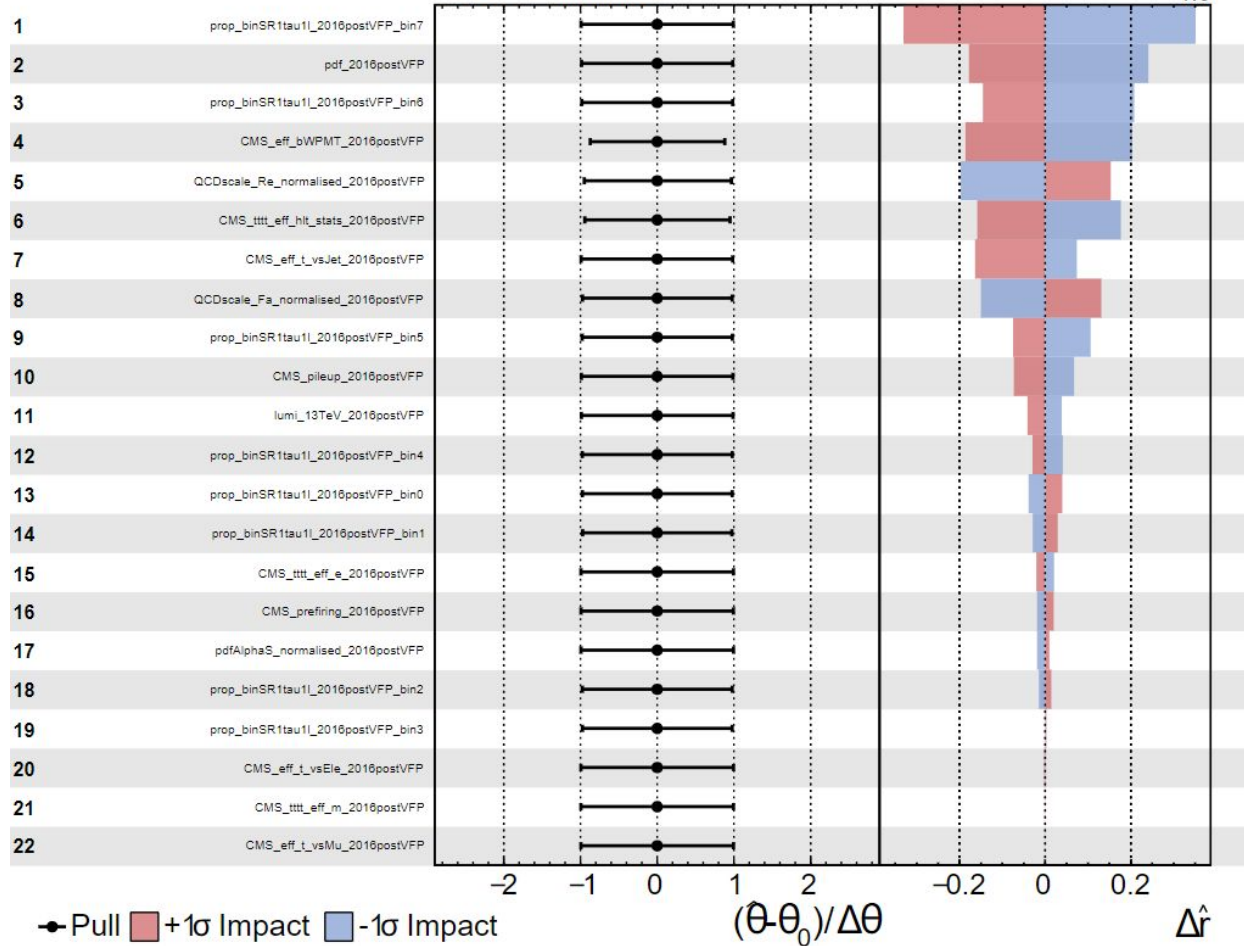
CR1



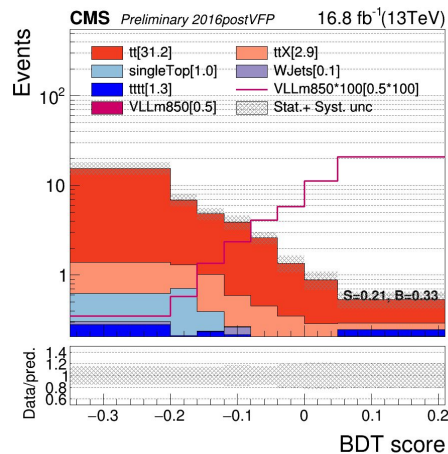
CR2

CMS Internal

$$\hat{r} = 1.0^{+3.8}_{-1.0}$$



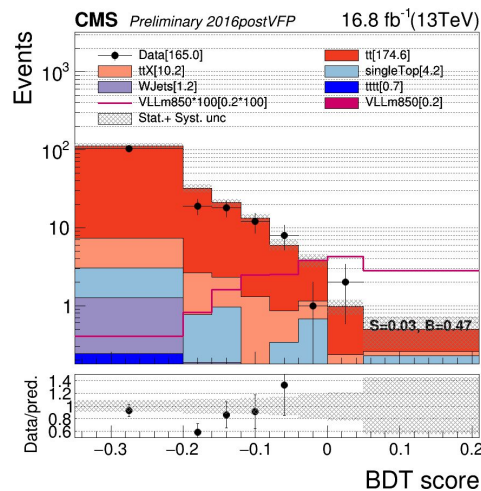
VLLm850 **best bin**(last bin: 0.05-0.2)



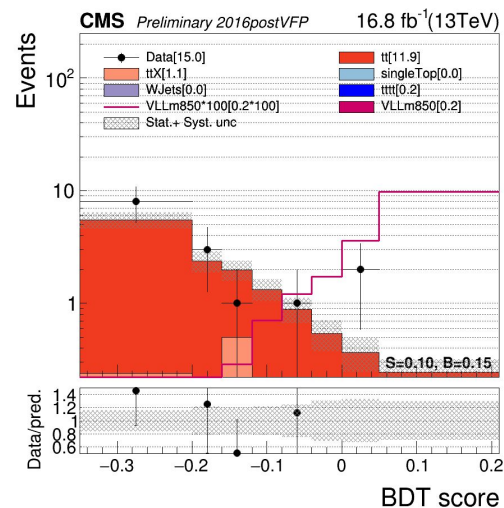
SR

limit: 10.38

significance: 0.35



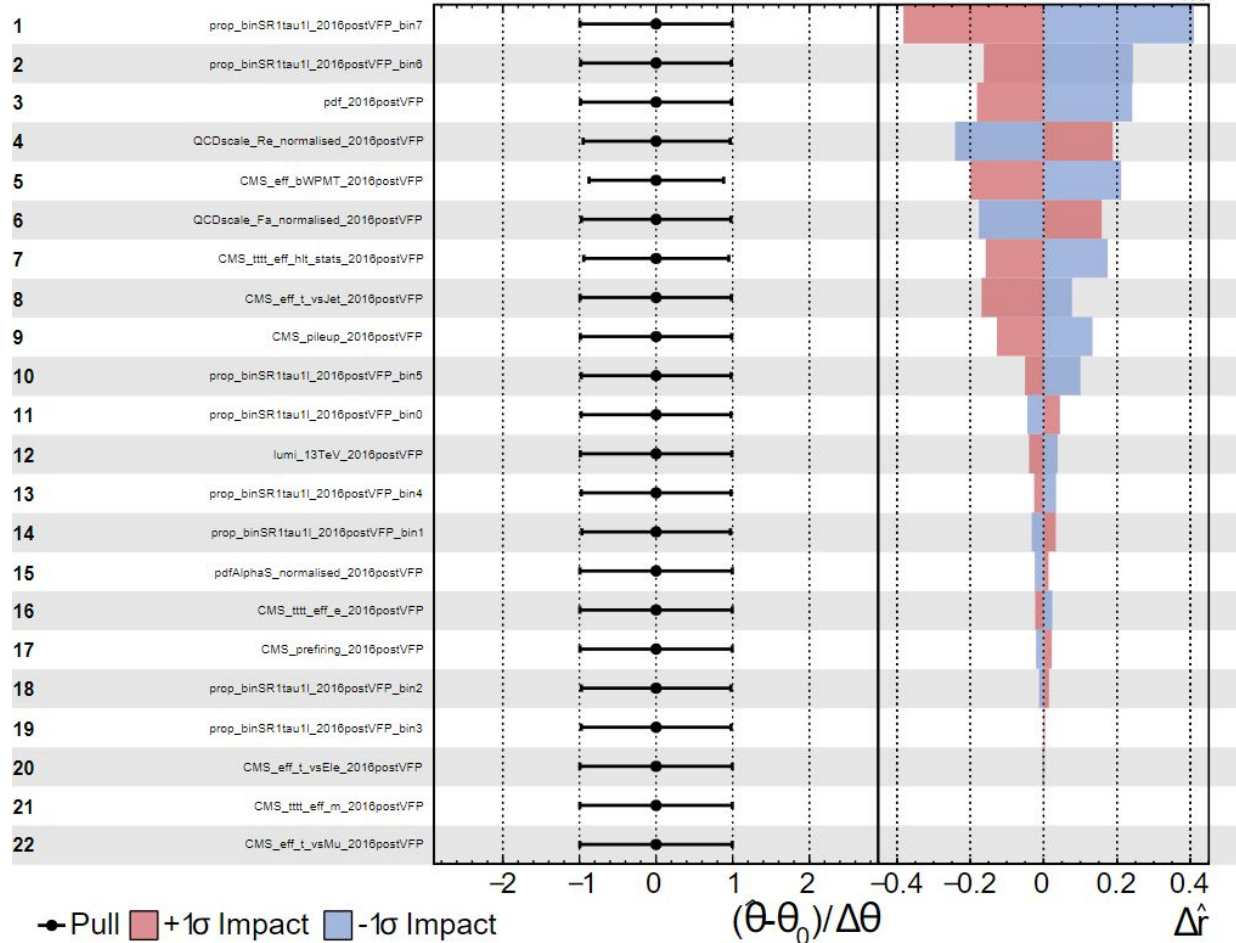
CR1



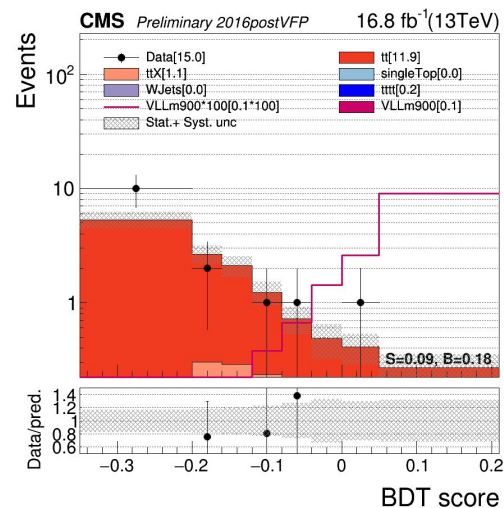
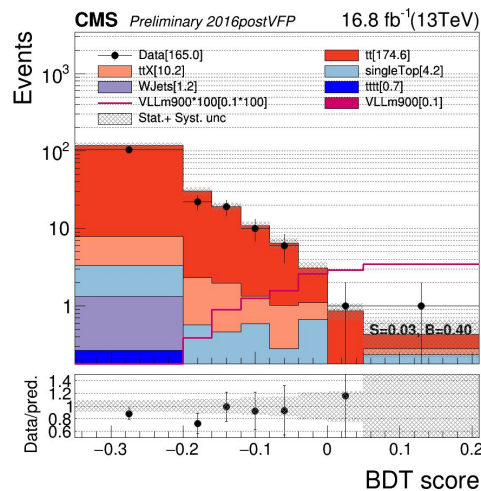
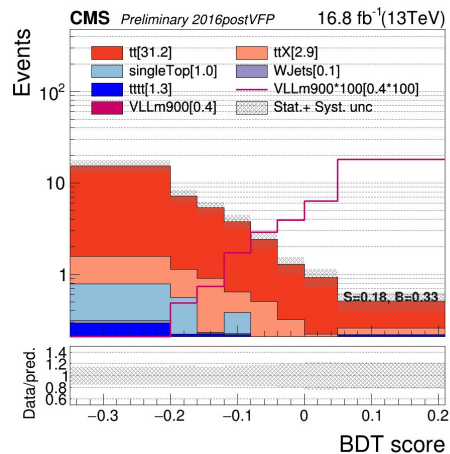
CR2

CMS Internal

$\hat{r} = 1.0^{+4.5}_{-1.0}$

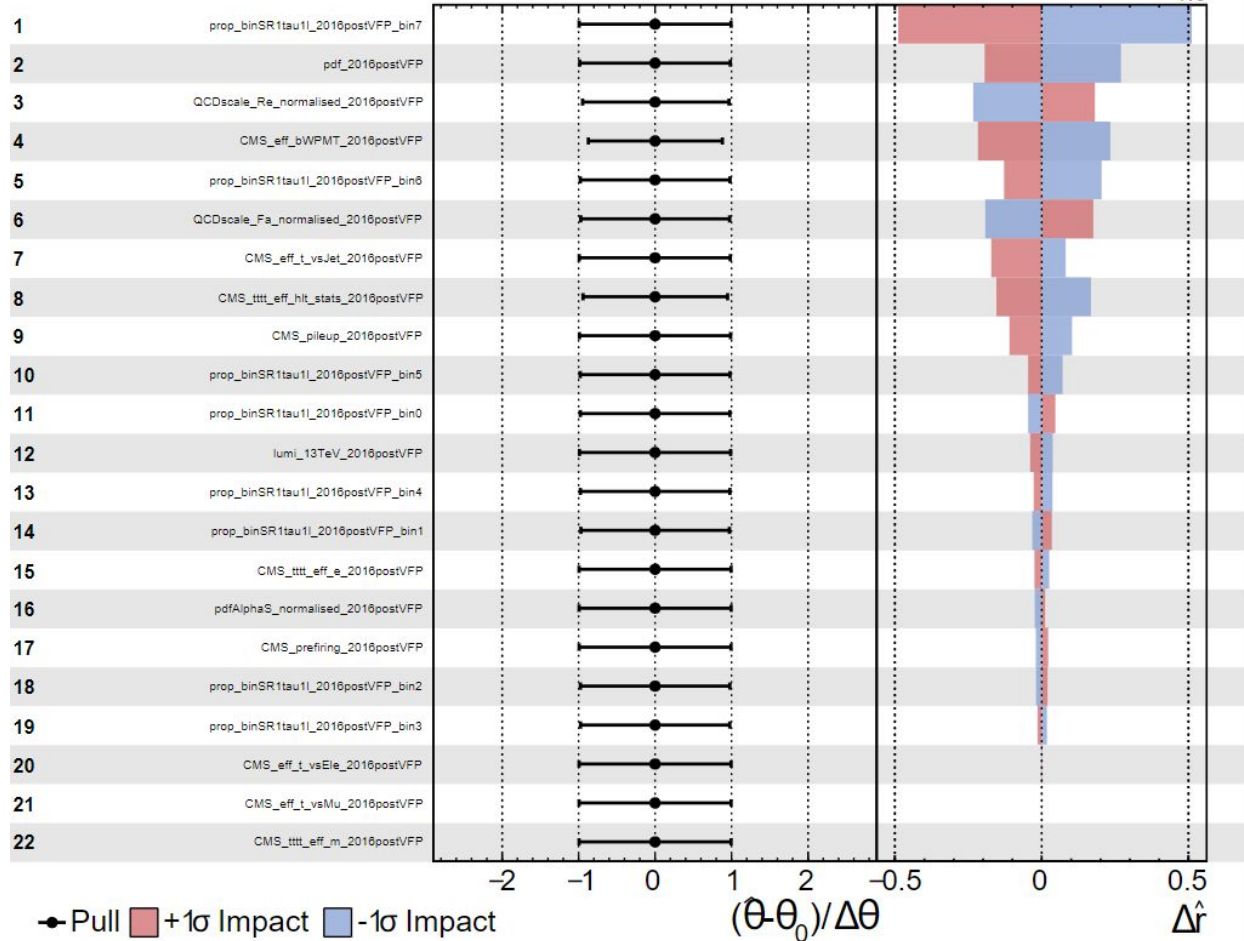


VLLm900 **best bin**(last bin: 0.05-0.2)

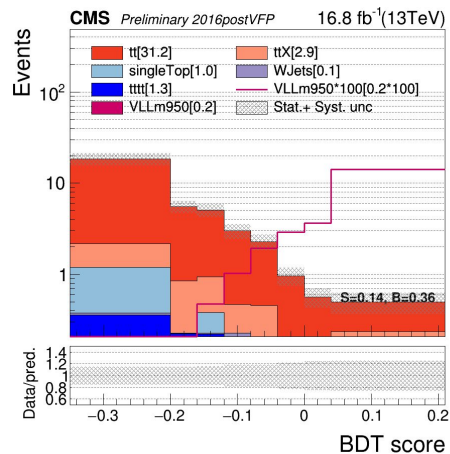


CMS Internal

$\hat{r} = 1.0^{+5.5}_{-1.0}$



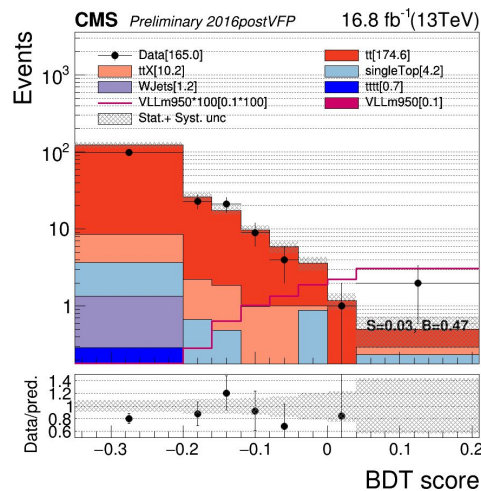
VLLm950 **best bin**(last bin: 0.04-0.2)



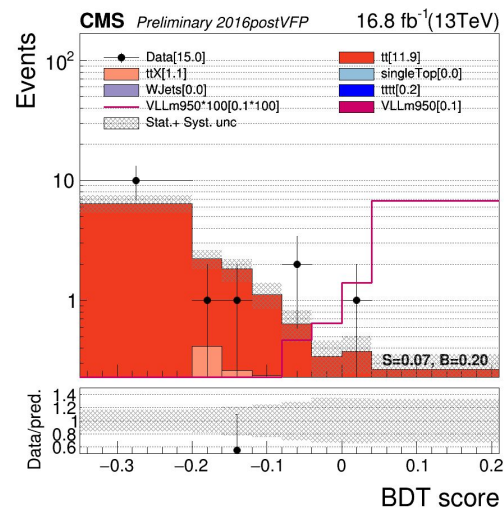
SR

limit: 17.75

significance: 0.22



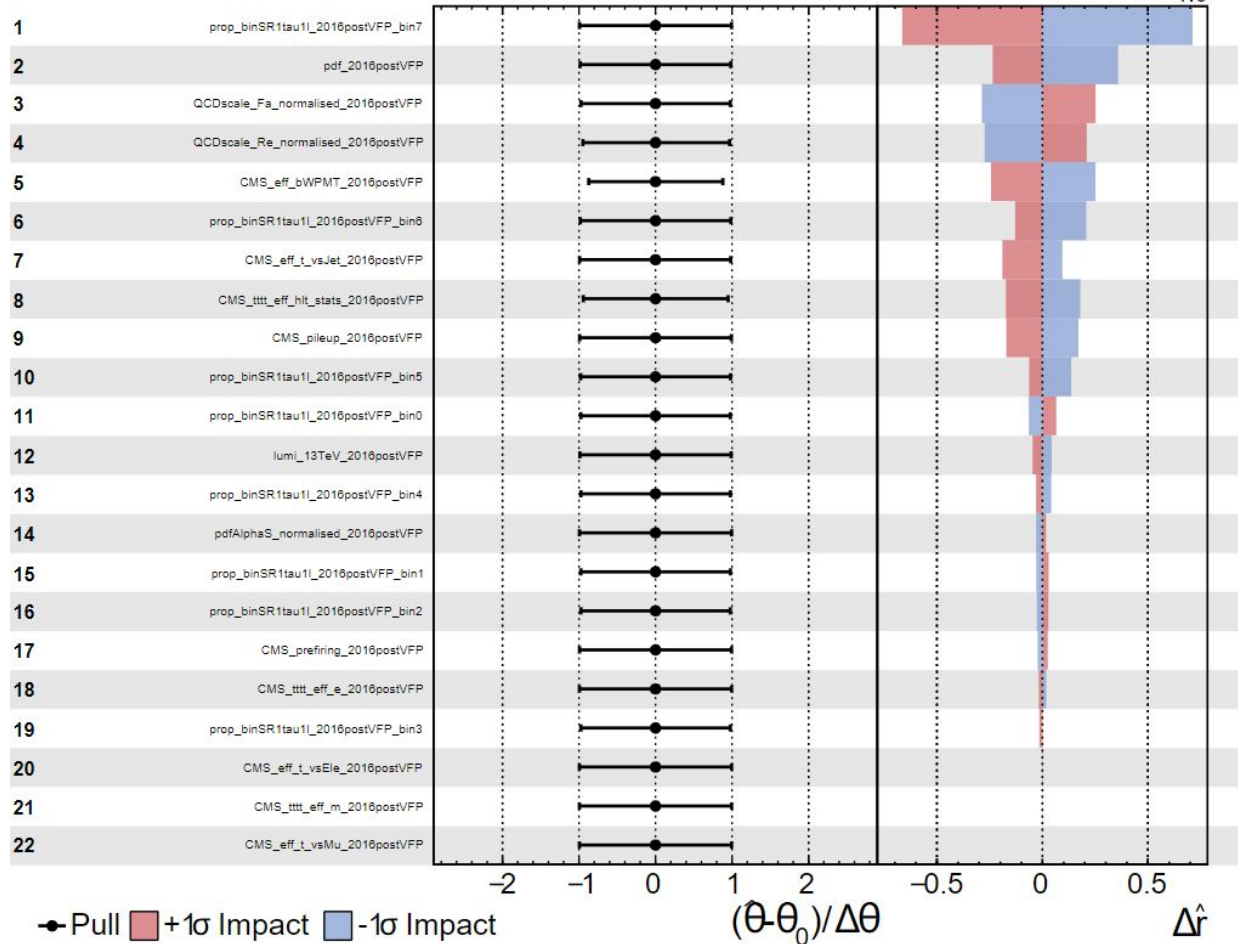
CR1



CR2

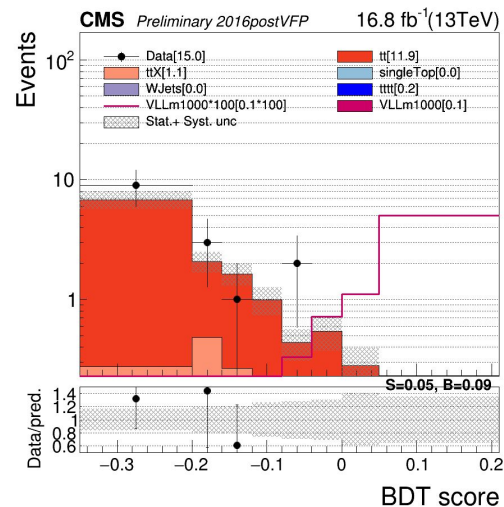
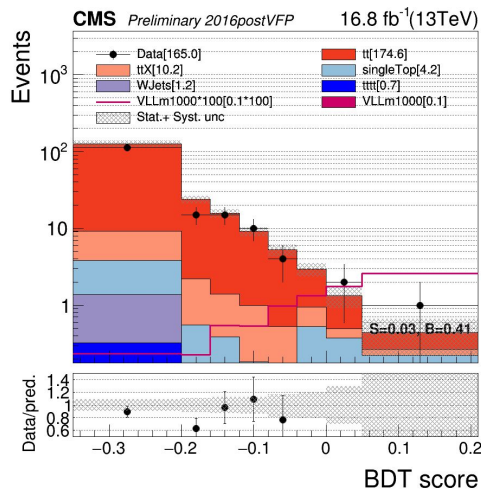
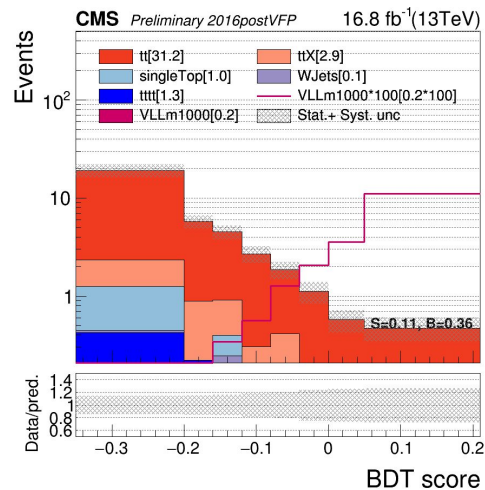
CMS Internal

$$\hat{r} = 1.0^{+7.1}_{-1.0}$$



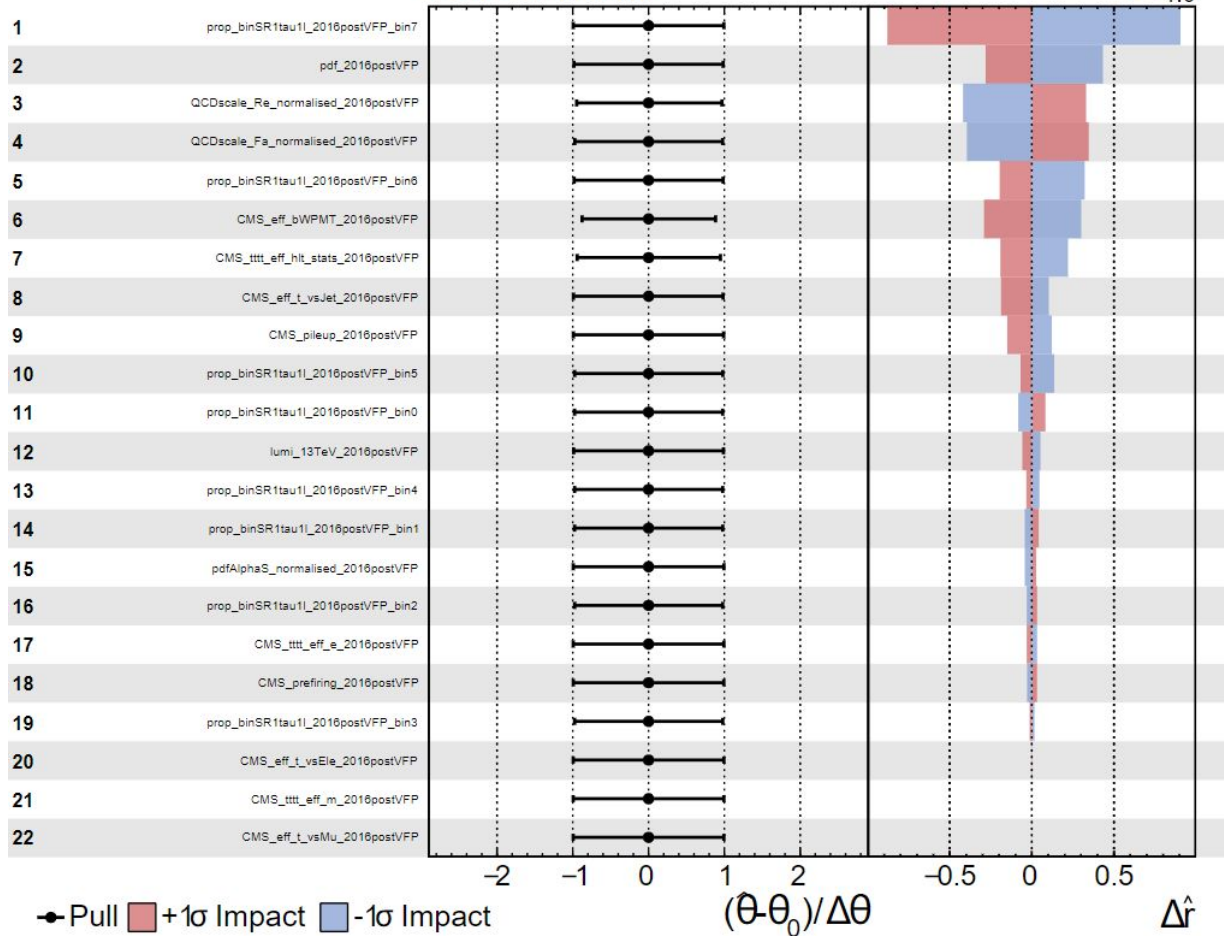
VLLm1000

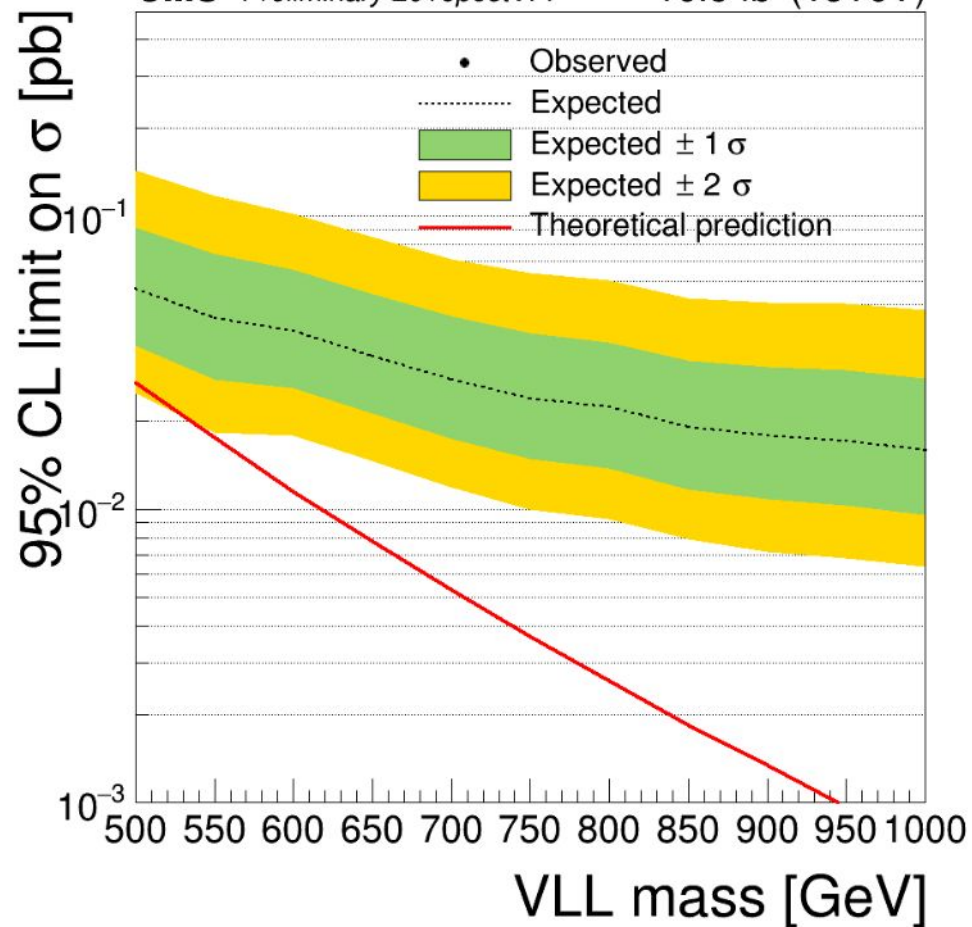
best bin (last bin: 0.05-0.2)



CMS *Internal*

$$\hat{r} = 1.0^{+8.9}_{-1.0}$$





To do list:

- ❑ Samples list with VLL
- ❑ VLL sample validation: event entries...