

# Weekly report

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# VBF Higgs CP

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## 2x2D method for yy fraction

- Full results need new derivation of sample, locally test the code now.
- Data: part of 2015 data, 270k events.
- MC: mc16a, ~50k events.
- dependence:  $m_{yy}$ ,  $\mu$ , OO1, category(TT, TL, LT, LL)
- Considered syst: L'2, L'5(fudge factor and generator are not considered).

```
WGGTITI = 0.886103 + 0 - 0.0175697
WGJTITI = 1.13097 + 0.00560595 - 0
WJGTITI = 1.86984 + 0.00619831 - 0
WJJTITI = 0.00258559 + 0.00485048 - 0
WGJJGTITI = 3.00081 + 0.0118043 - 0
PURITYJGTITI = 0.771516 + 0.00321693 - 0
PURITYJJTITI = 0.000664761 + 0.00124743 - 0
PURITYTITI = 0.227819 + 0 - 0.00446437
```

DATA\_m\_yy\_LoosePrime3: Minimization successful, bin = -1/56 nAA = 4 0 and nd = 0

Solving data sideband : DATA\_m\_yy\_LoosePrime3

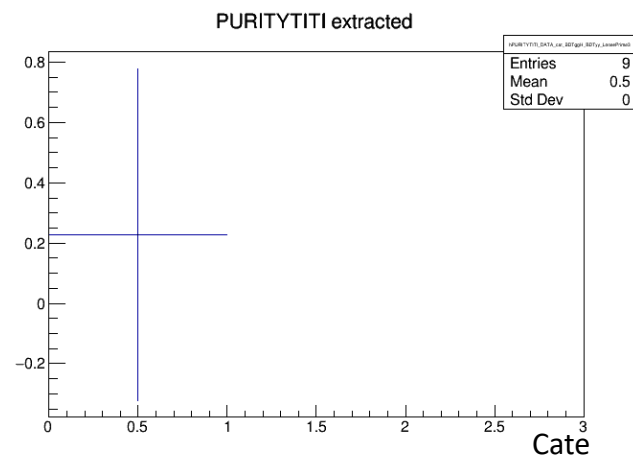
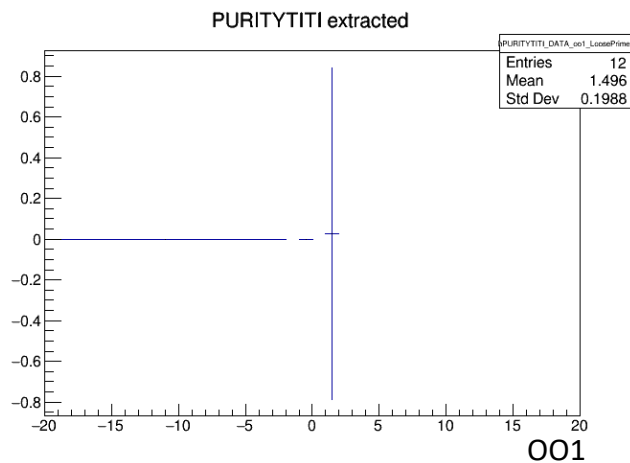
TNamed.Print Name = DATA\_m\_yy\_LoosePrime3, Title =

MODE = FIT

NTOT = 13 +/- 3.60555 (Prediction: 18.5628 dchi2=2.38033)  
NAA = 4 +/- 2 (Prediction: 3.8895 dchi2=0.00305262)  
NAB = 1 +/- 1 (Prediction: 1.37815 dchi2=0.142996)  
NAC = 0 +/- 0 (Prediction: 1.38235 dchi2=inf)  
NAD = 2 +/- 1.41421 (Prediction: 1.40603 dchi2=0.176401)  
NBA = 2 +/- 1.41421 (Prediction: 2.05536 dchi2=0.00153254)  
NBB = 2 +/- 1.41421 (Prediction: 1.24232 dchi2=0.287041)  
NBC = 0 +/- 0 (Prediction: 0.17968 dchi2=inf)  
NBD = 1 +/- 1 (Prediction: 1.31676 dchi2=0.100334)  
NCA = 0 +/- 0 (Prediction: 1.62208 dchi2=inf)  
NCB = 0 +/- 0 (Prediction: 0.16779 dchi2=inf)  
NCC = 0 +/- 0 (Prediction: 0.0415745 dchi2=inf)  
NCD = 0 +/- 0 (Prediction: 0.07174 dchi2=inf)  
NDA = 0 +/- 0 (Prediction: 1.65767 dchi2=inf)  
NDB = 1 +/- 1 (Prediction: 0.999805 dchi2=3.80314e-08)  
NDC = 0 +/- 0 (Prediction: 0.0930053 dchi2=inf)  
NDD = 0 +/- 0 (Prediction: 1.05896 dchi2=inf)  
E1I = 0.92969 +/- 0.0268978 (Prediction: 0.929667 dchi2=7.62808e-07)  
E2I = 0.938421 +/- 0.0248343 (Prediction: 0.938421 dchi2=3.35149e-11)  
E1T = 0.978179 +/- 0.0135968 (Prediction: 0.978179 dchi2=1.49008e-15)  
E2T = 0.987005 +/- 0.0129111 (Prediction: 0.987005 dchi2=1.08729e-09)  
EP1I = 0.927984 +/- 0.0257043 (Prediction: 0.927985 dchi2=4.00219e-09)  
EP2I = 0.927251 +/- 0.0253619 (Prediction: 0.92702 dchi2=8.28396e-05)  
EP1T = 0.970708 +/- 0.0154645 (Prediction: 0.970708 dchi2=1.06415e-15)  
EP2T = 0.988177 +/- 0.0117495 (Prediction: 0.98818 dchi2=4.46875e-08)  
X1G = 1.00978 +/- 0.0111149 (Prediction: 1.00977 dchi2=9.55169e-08)  
X2G = 0.999059 +/- 0.00100176 (Prediction: 0.999058 dchi2=2.92997e-07)  
X1GG = 1.00283 +/- 0.00816329 (Prediction: 1.00278 dchi2=3.36089e-05)

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## 2x2DSB result



Code works without ERROR or bugs, but the result is not like what we expect. Might due to the statistics.

I will re-run this result with new samples.