Status

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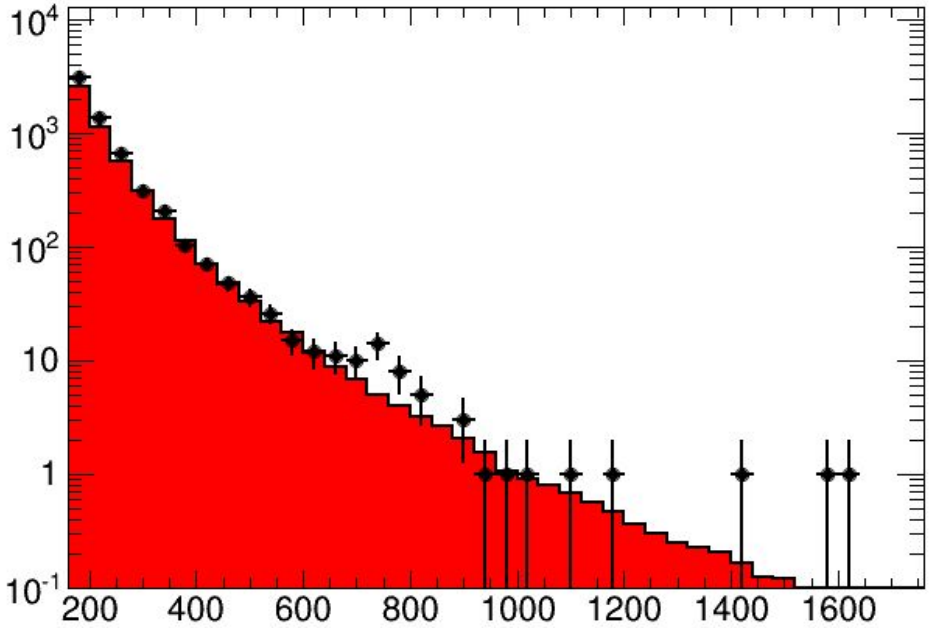
resolved Z(qq)γ

- EXOT6
  - (HLT_g120_loose || HLT_g140_loose || HLT_xe100) (other trigger needed?)
  - at least one loose photon or medium electron ,pT > 100 GeV
- based on HGam code
  - many bugs...
  - pileup reweight(solved): use p2419
  - truthLink
  - book keeper
- γjet
  - modify the code to select the second jet

high mass diphoton

- weight (h010)
  - weightInitial:mc_weight*PU_weight
  - XsBrEff: Xs*Br*FilterEff*lumi
  - sumWeights:sum of weights in xAOD
  - weightFinal: weightInitial*XsBrEff/sumWeights

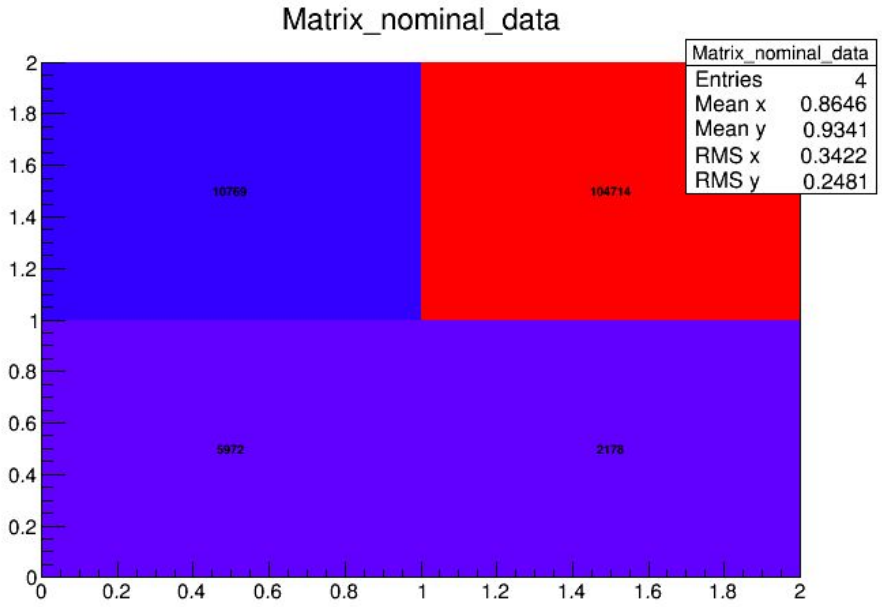


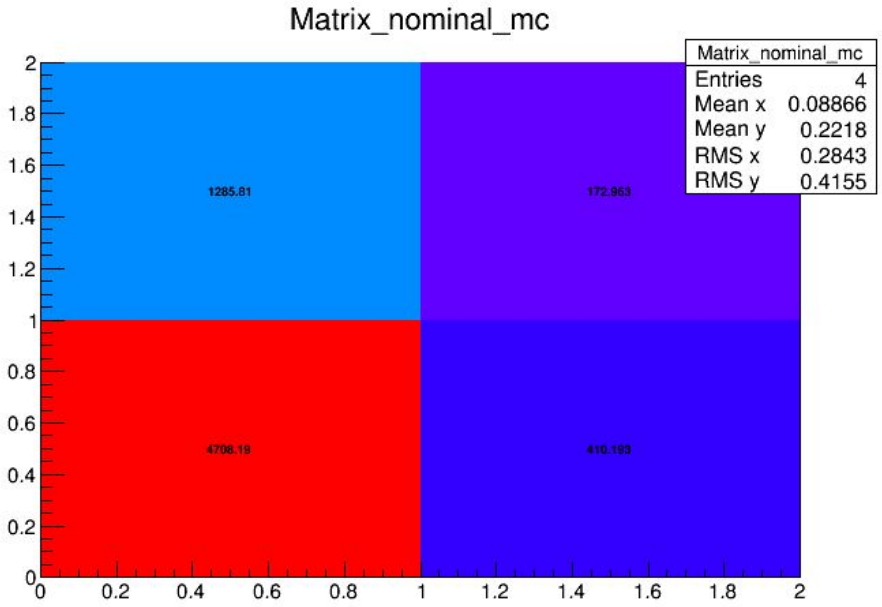
gamgam : 92.8%
(4709+365)/5972=85%
much smaller!!!

data	**5972**
gamgam	4709
rev	365

2×2 sideband

- X axis: ID Y axis: ISO
- 0: pass 1: fail





2×2 sideband

- data-mc_gamgam

fail ISO	**9483**	**104541**
ISO	1263	1767
	ID	fail ID

1767*9483/104541=160

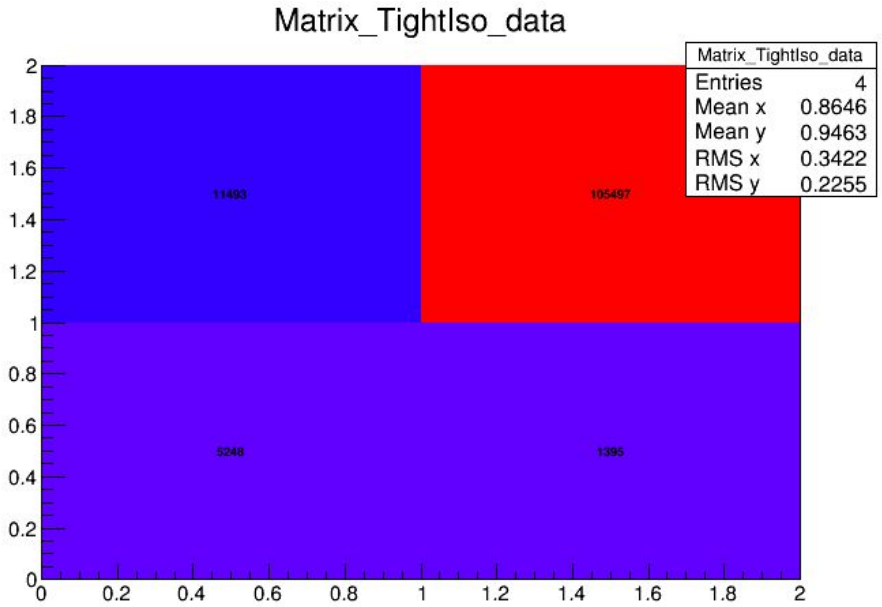
yj and jj in signal region is 160. gamgam fraction is 4708/(160+4708)=96.7%

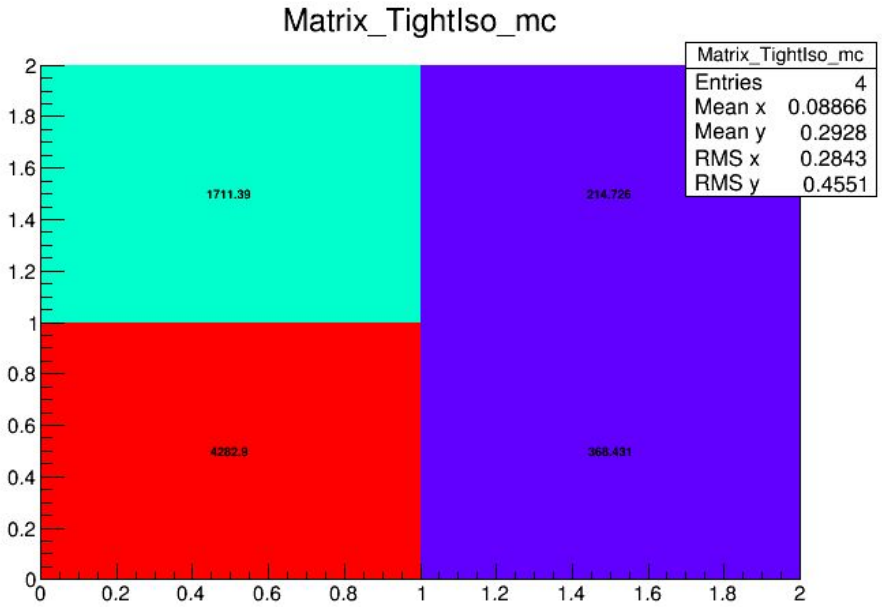
to be validated!

Tight Isolation

- current ISO:
  - topoetcone40<0.022*pt+2.45
  - ptcone20<0.05*pt
- my tight ISO:
  - topoetcone40<0.011+2.45
  - ptcone20<0.03*pt

data	5248
gamgam	4282





Tight ISO

- data-mc_gamgam

fail ISO	**9781**	**105282**
ISO	965	1026
	ID	fail ID

1026*9781/105282=95

yj and jj in signal region is 95. gamgam fraction is 4282/(95+4282)=97.8%

to be validated!

Summary

- 2×2 sideband I use here may be not accurate.Fake rate and efficiency is used to estimate the diphoton purity in the note.
- to do
  - modify Zgam code
  - float resolution fit? to many free parameters in Double Side CB(mu, sigma,alpha_low,N_low,alpha_high,N_high)
  - combine the control region?