# Status

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08-03

# outline

- HGam meeting
- my progress about the framework
- check and run the code given by Huijun

# HGam meeting

## Tuesday, 28 July 2015

15:30 - 15:40 **Introduction** *10'*
Speakers: Elisabeth Petit (DESY), Dag Gillberg (CERN)

15:40 - 15:55 **e→γ fake rate measurement using 13 TeV data** *15'*
Speakers: Andrey Loginov (Yale University (US)), Alizeh Maqbool (Yale University (US))

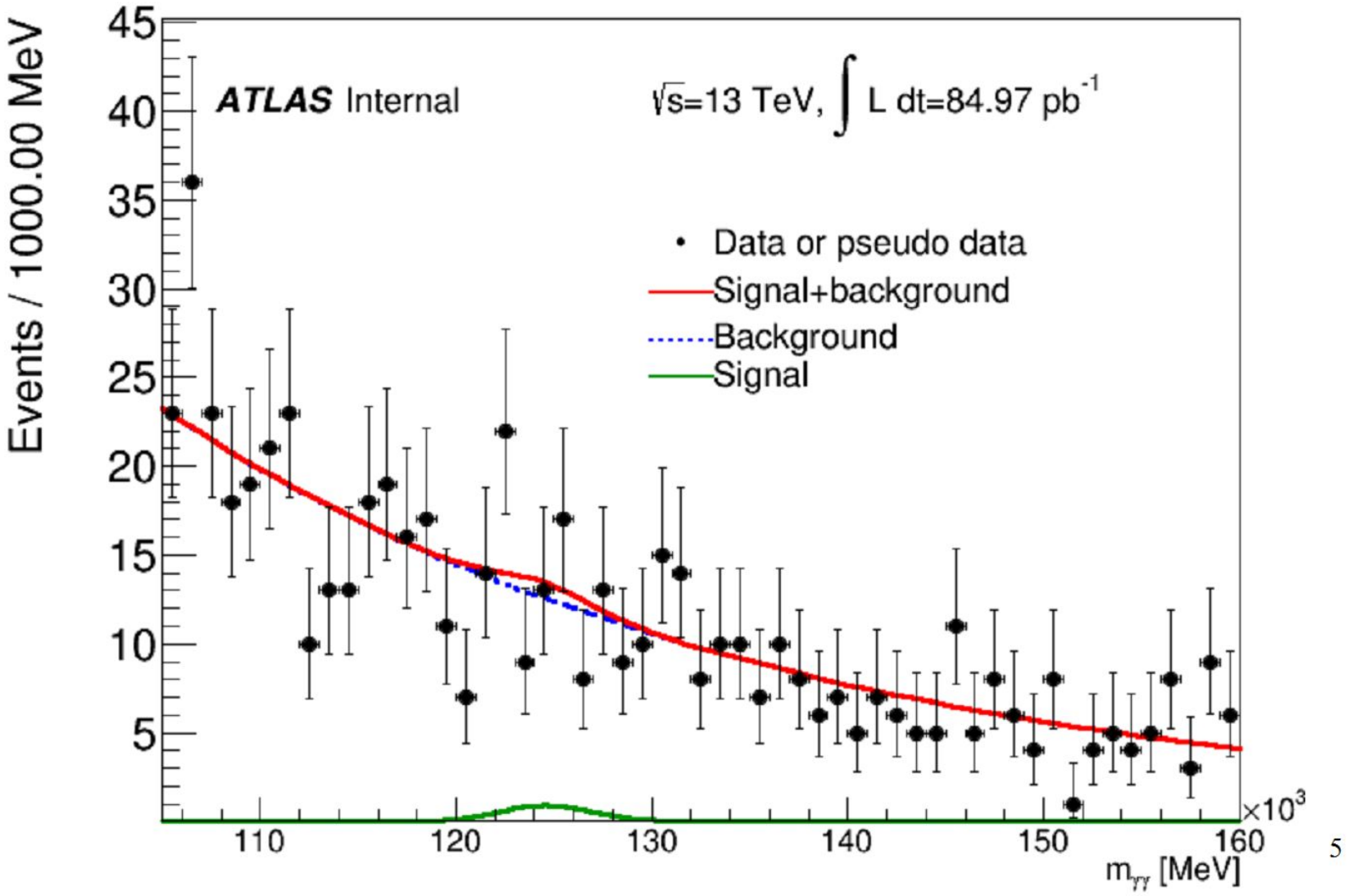
16:00 - 16:15 **Generic tool for signal diphoton mass resonance parametrization** *15'*
Speaker: Andrew Hard (The University of Wisconsin-Madison)

16:20 - 16:35 **Status of HGam MxAOD files and cutflow** *15'*
Speakers: Anthony James Thompson (University of Pennsylvania (US)), Christopher John Meyer (University of Pennsylvania (US))

16:40 - 16:55 **Look at first 85 pb-1 of data w/ H->gamma gamma** *15'*
Speaker: Marc Achille Escalier (LAL-Orsay (FR))

# Data

**612 events**

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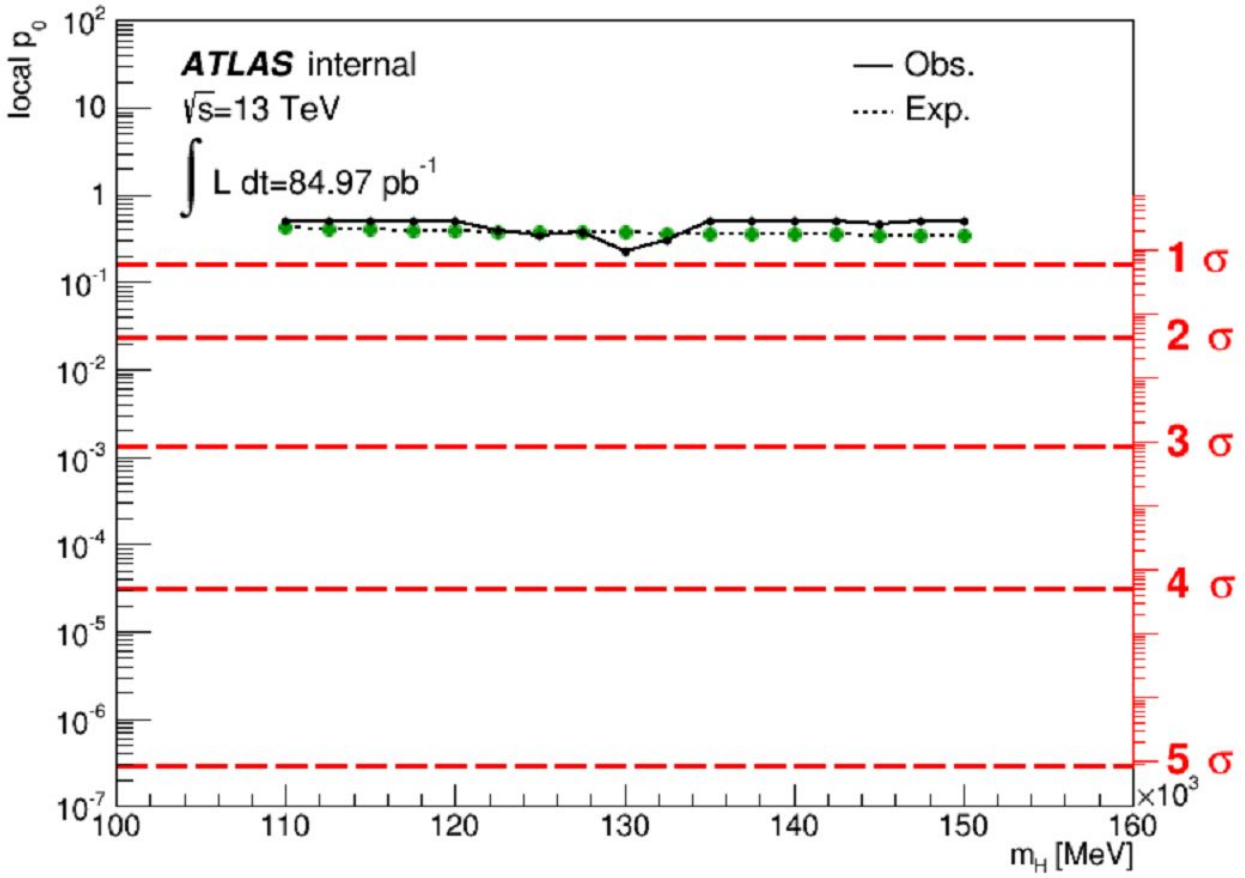
# $p_0$ scan

- Stat scan, using capped (historical one) p0




(markers corresponds to points scanned )

$p_0^{obs}(m_H=125\ GeV)=0.31$

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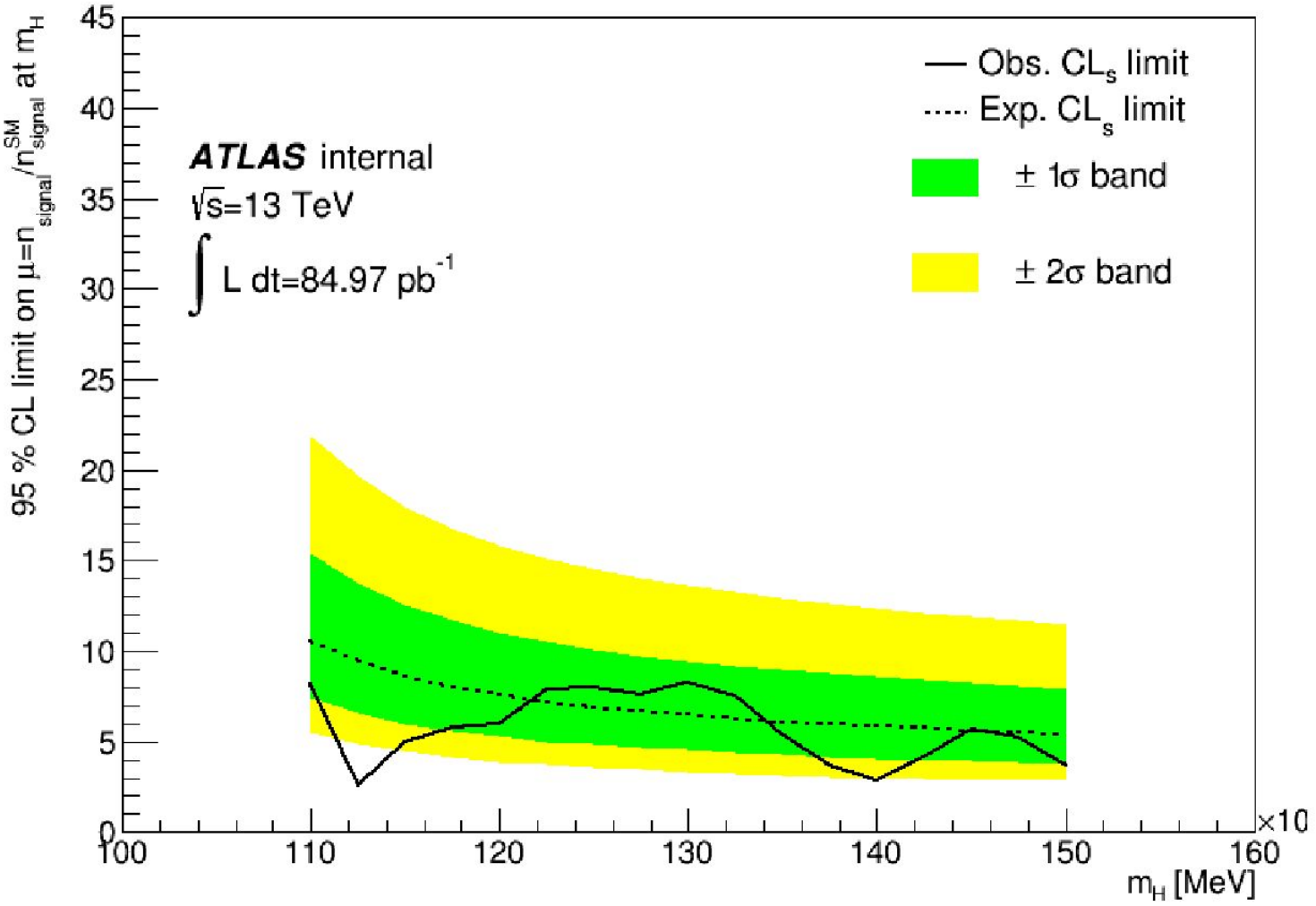
# Limit on signal SM

Uses $CL_s$




Observed limit : O(3-10)xSM

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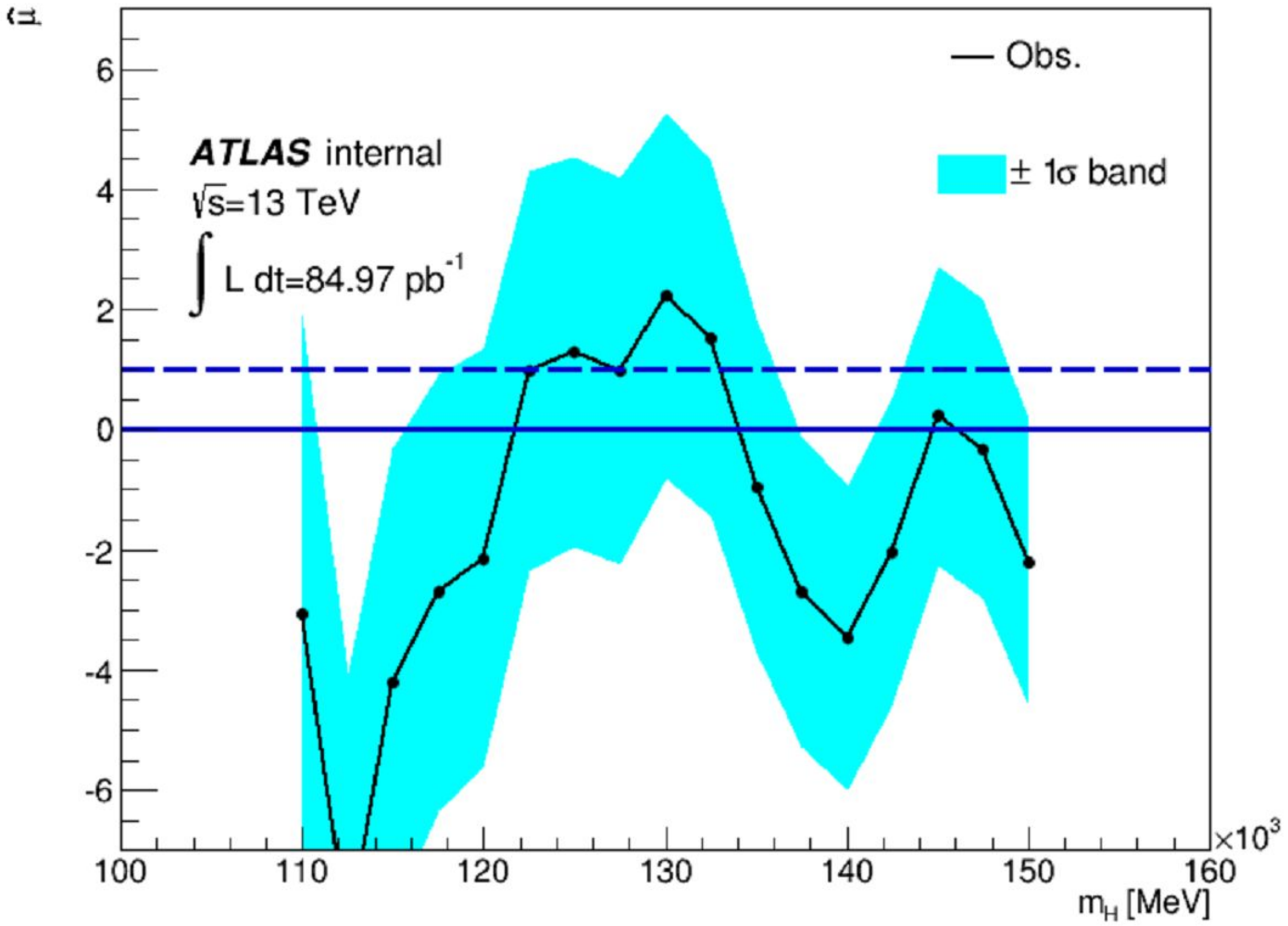
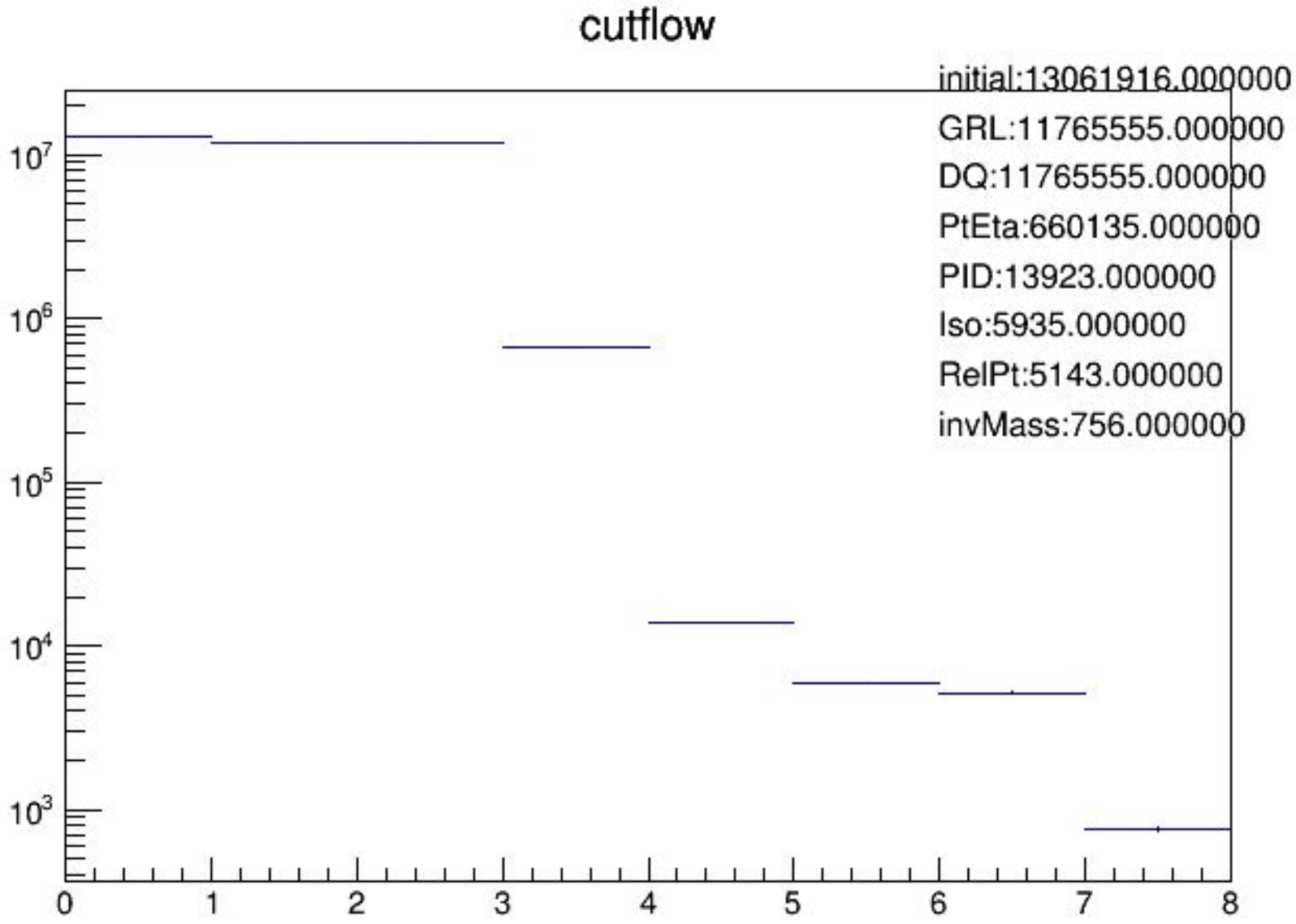
# Signal strength




While important uncertainty, compatible w/ $\mu=1$ for $m_H=125$ GeV

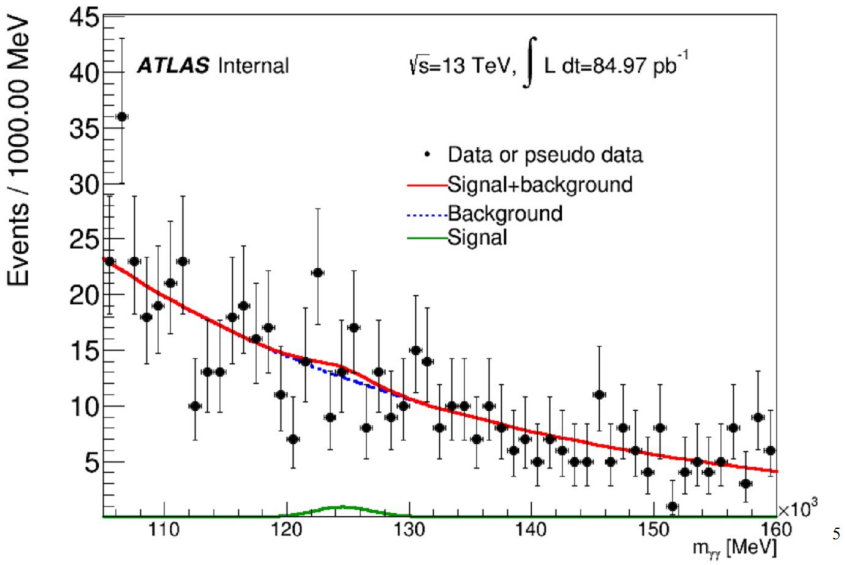
# my progress

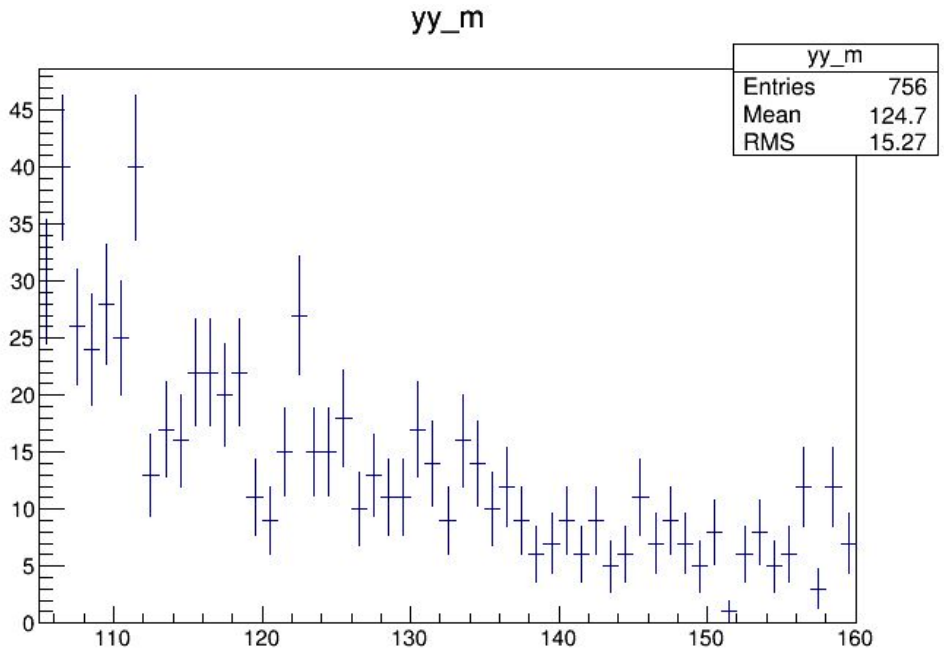
- draw some plots
- calculate luminosity with GRL:84.97pb-1
  https://atlas-lumicalc.cern.ch/
- cut
  GRL
  Detector Quality:LAr,Tile,Core
  PtEta:25GeV,|eta|<2.37,reject[1.37,1.52]
  PID:tight
  Iso:tight
  pT/myy:0.35,0.25
  invMass:[105,160]

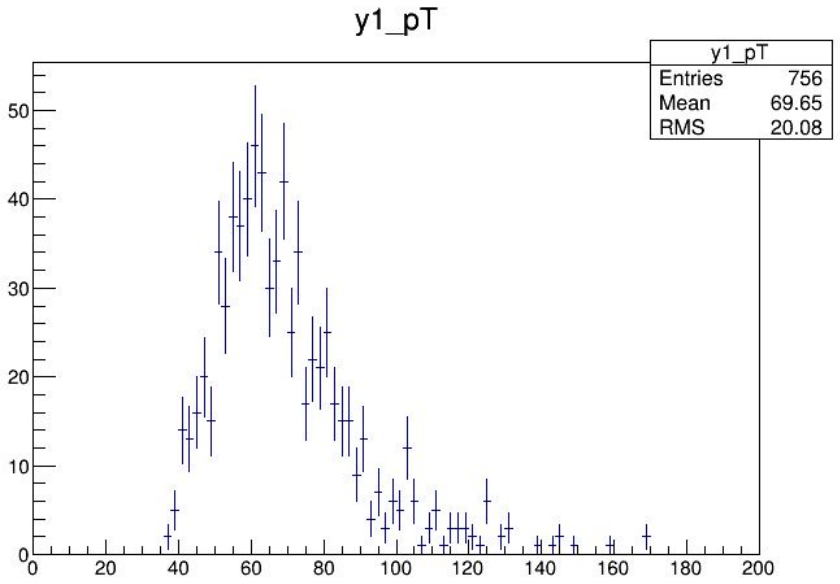

cutflow
initial:13061916.000000
GRL:11765555.000000
DQ:11765555.000000
PtEta:660135.000000
PID:13923.000000
Iso:5935.000000
RelPt:5143.000000
invMass:756.000000
$10^7$
$10^6$
$10^5$
$10^4$
$10^3$
0
1
2
3
4
5
6
7
8

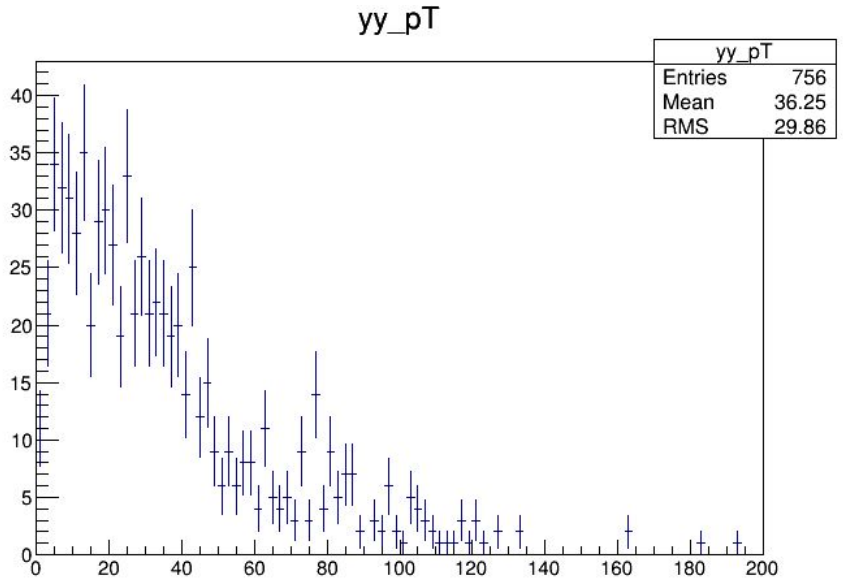
# Data

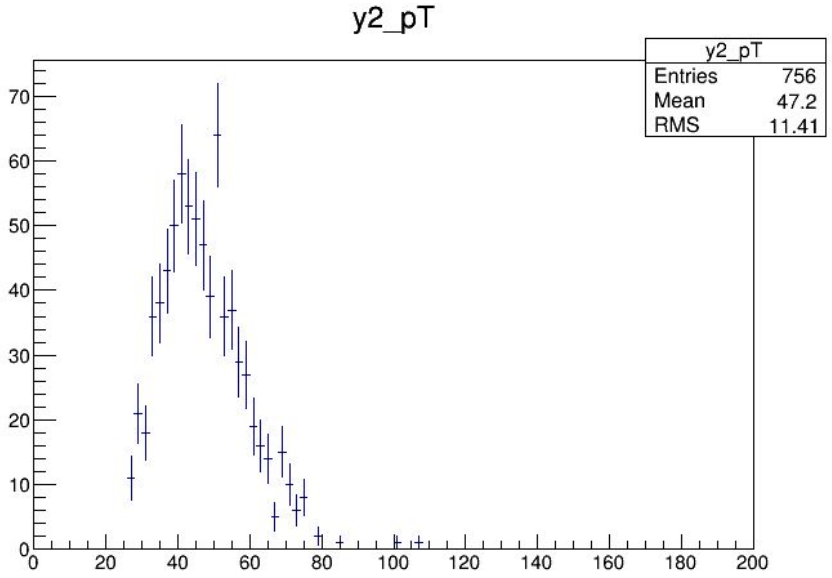
**612 events**




y1_pT
y1_pT
Entries 756
Mean 69.65
RMS 20.08


yy_pT
yy_pT
Entries 756
Mean 36.25
RMS 29.86


y2_pT
y2_pT
Entries 756
Mean 47.2
RMS 11.41

- photon
  pT:25GeV
  eta:|eta|<2.37,reject [1.37,1.52]
  pT/invMass:0.35,0.25
  PID:tight
  Iso:
  invMass:[105,160]

- electron

  pT:15GeV

  eta:|eta|<2.47,reject [1.37,1.52]

  PID:

  Iso:
- muon

  pT>10GeV,|eta|<2.7,Iso

- jet
  pT:25GeV
  rapdity:4.4
  jet cleaning
  JVF  -1
  JVT  0.64
  btag : MV1>0.9
- may have some problems when initialize m_j_nb_25GeV(line 749)
- please crosscheck it
- is anyone else still using or updating this code?

# overlap removal

- electrons and muons close to photons

  el_DR_photon: 0.4

  mu_DR_photon: 0.4
- jets close to photons and electrons

  jet_DR_photon: 0.4

  jet_DR_electron: 0.2
- muons and electrons close to jets

  mu_DR_jet: 0.4

  el_DR_jet: 0.4

| y1 | y2 | yy |
|---|---|---|
| pT | pT | M |
| eta | eta | pT |
| phi | phi | |
| E | E | |
| calo_iso(topoetcone40) | calo_iso(topoetcone40) | |
| trk_iso(ptcone20) | trk_iso(ptcone20) | |

| e1,mu1 | e2,mu2 | ee,mumu |
|---|---|---|
| pT | pT | M |
| eta | eta | |
| phi | phi | |
| E | E | |
| calo_iso | calo_iso | |
| trk_iso | trk_iso | |
| charge | charge | |

| j1 | j2 | bj1 | bj2 | jj |
|---|---|---|---|---|
| pT | pT | pT | pT | M |
| eta | eta | eta | eta | DeltaEta |
| phi | phi | phi | phi | |
| E | E | E | E | |

- yy_jj_DeltaPhi
- y_j_DeltaR_min
- yy_jj_DeltaEta
- MET_signi
- MET
- MET_phi
- y_costhetastarBA
- y_costhetastarCS
- y_phistarCS
- eta_Zeppenfeld

# Data

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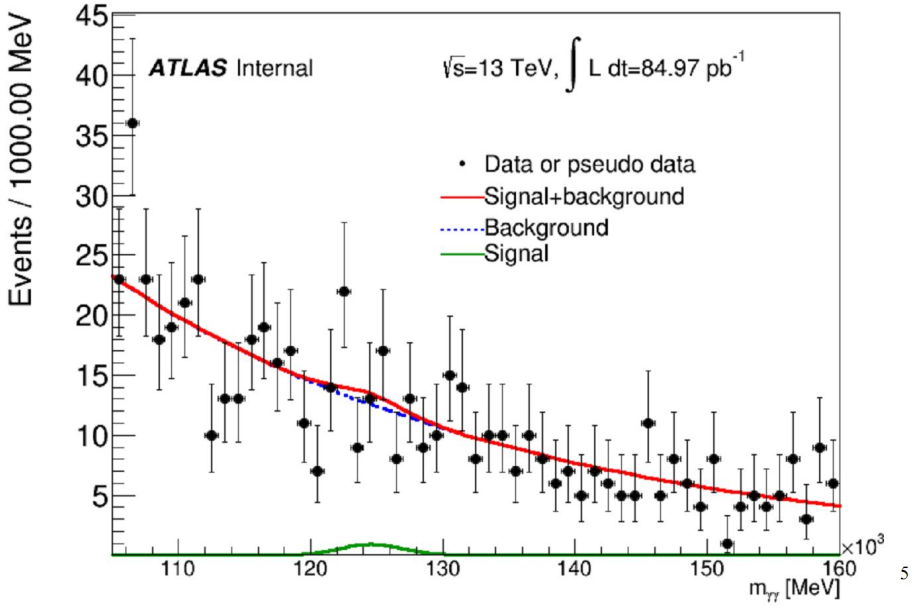
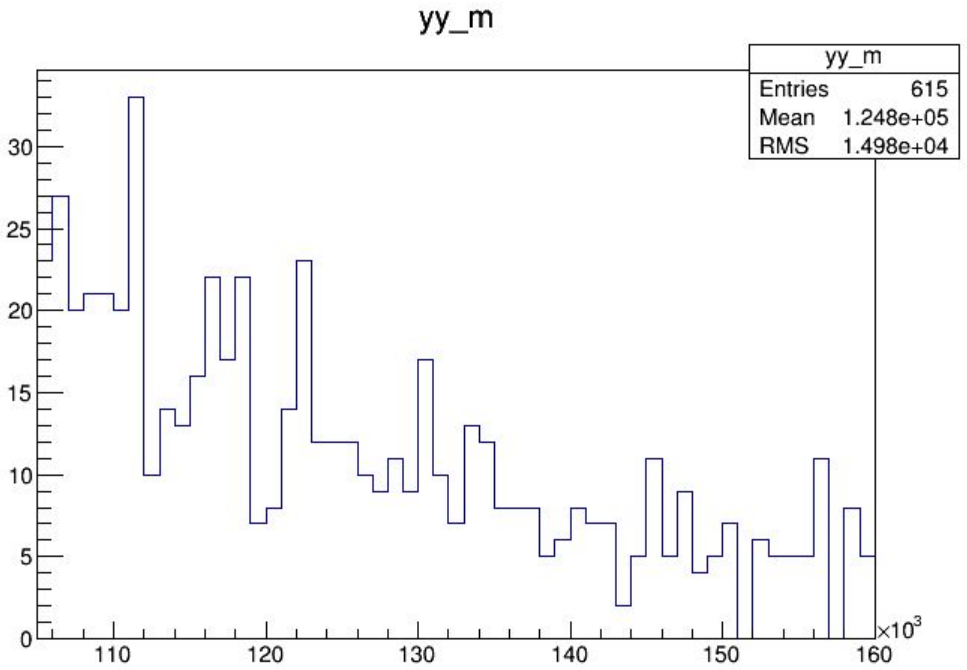
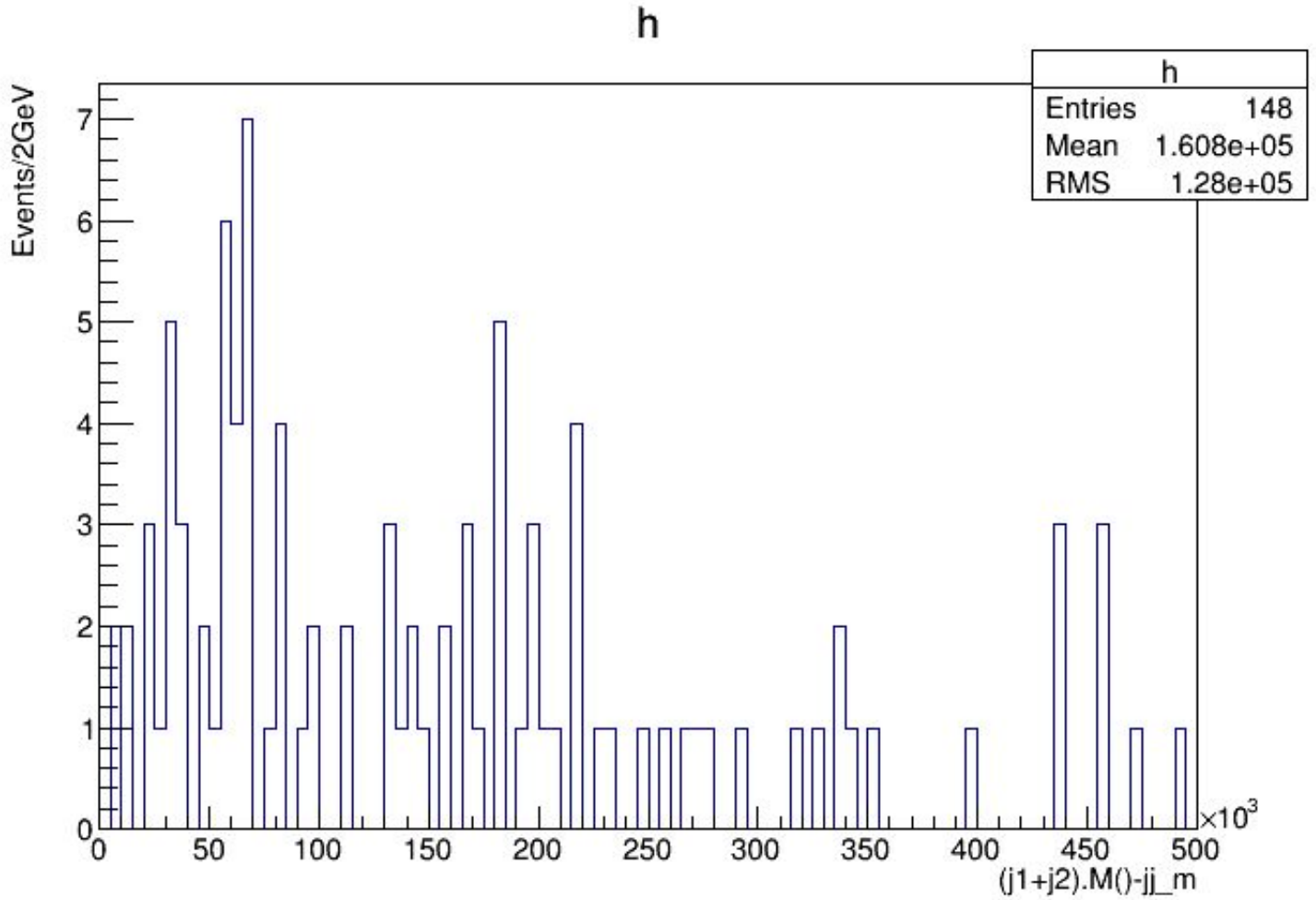



seems inconsistent!




- (j1+j2).M()-jj_m
- TLorentzVector j1,j2 are initialized wrongly in the ProdModesAnalysis code.

# Summary

- some useful information by checking code
- run one dataset in one job and merge them by hand
- If have the code ,statistic plots can be repeated.
- what else can we do with 13TeV data?
- ProdModesAnalysis needs to be checked