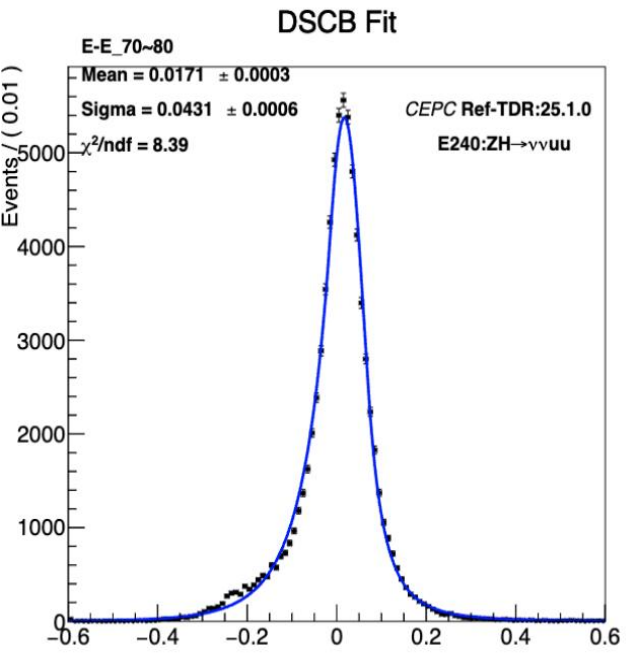
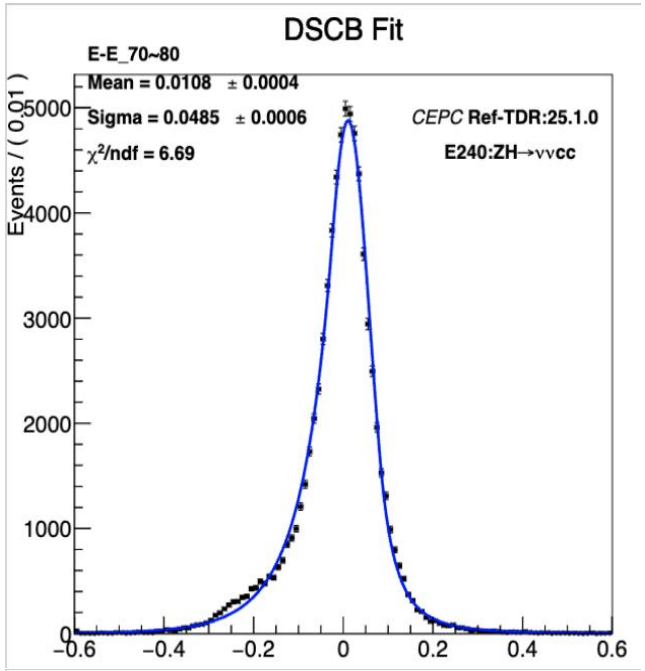
JES/JER

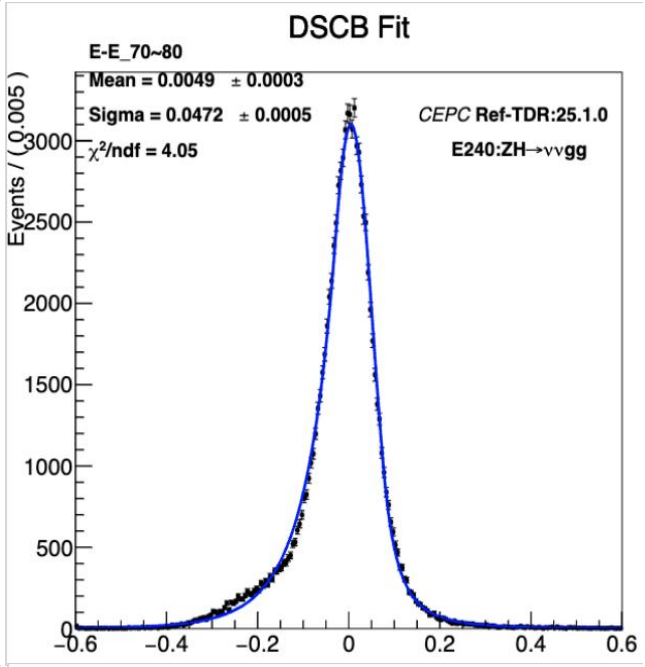
Hou Yingqi

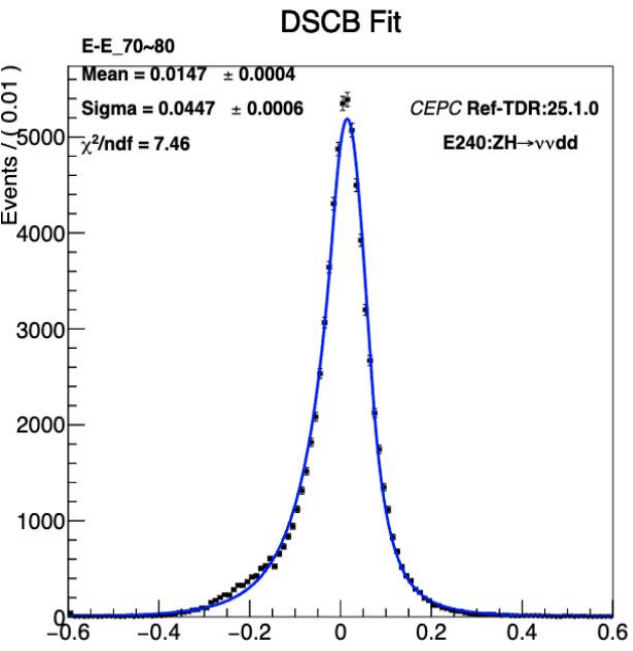
2025/3/5

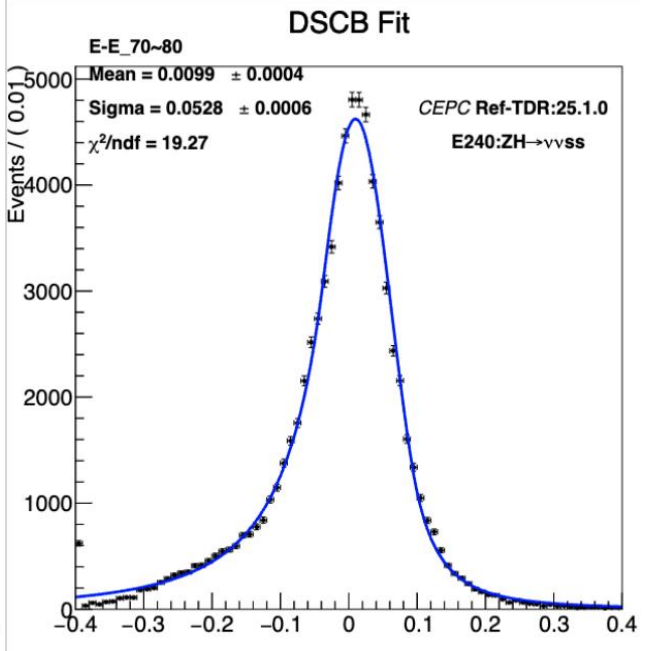
DeltaE of jet at 70~80GeV

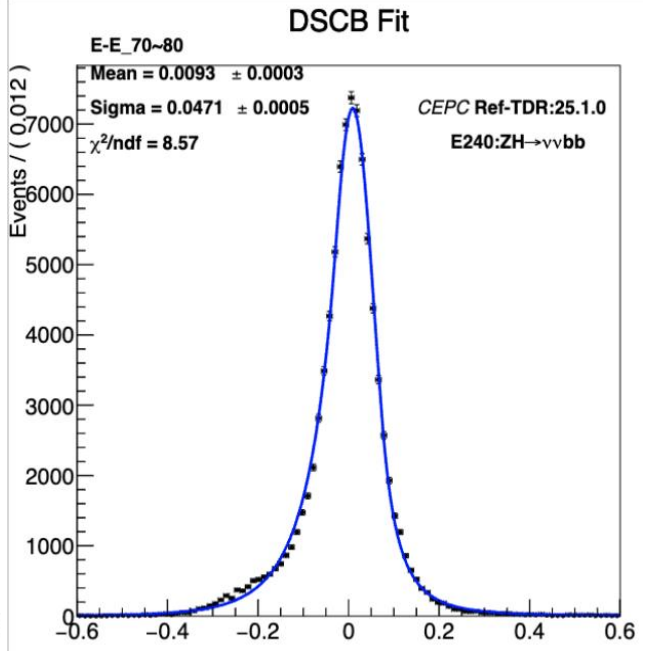




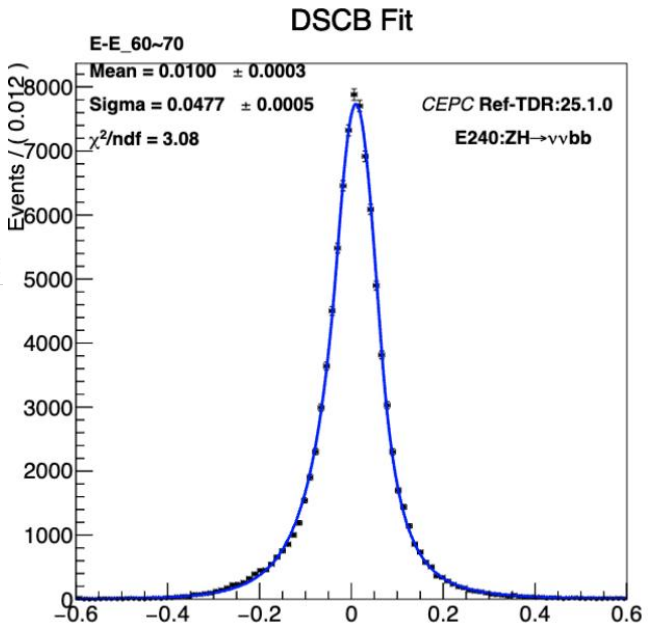






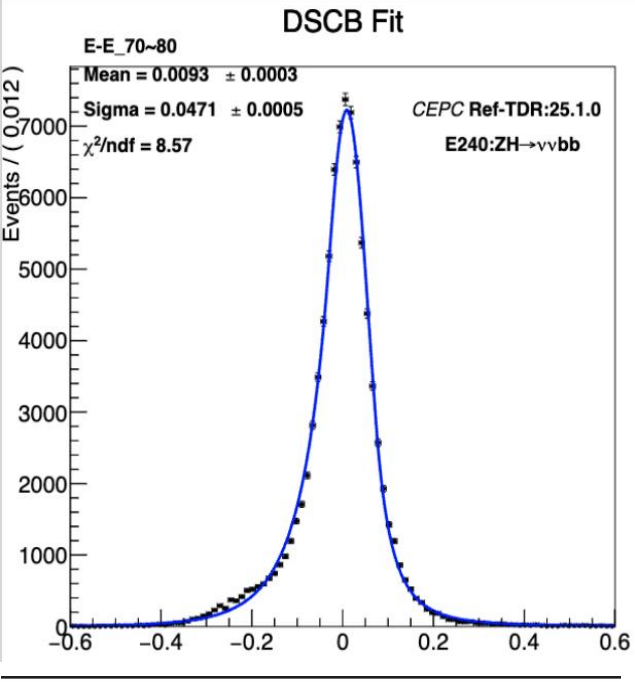


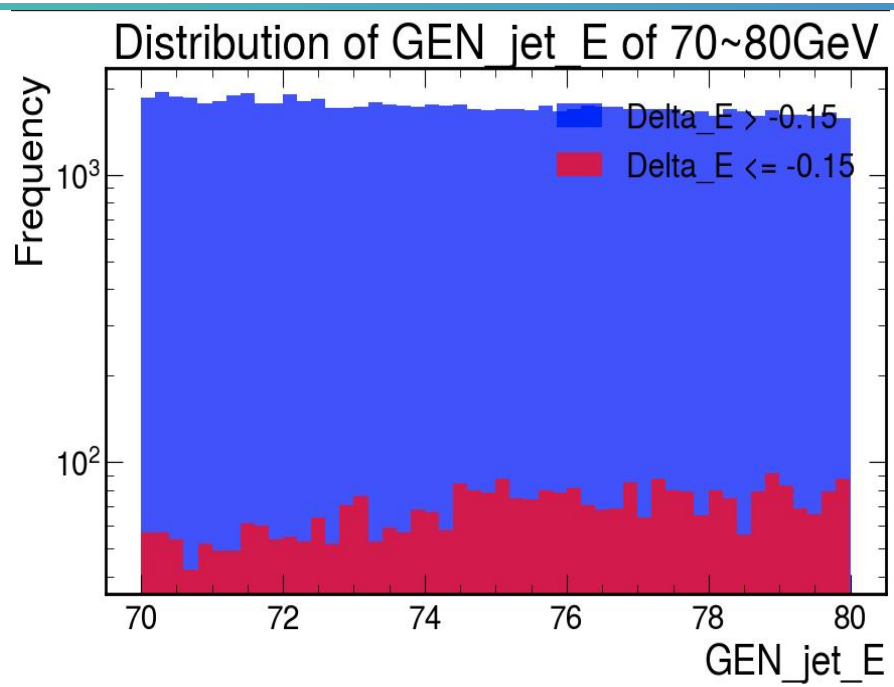
General fit

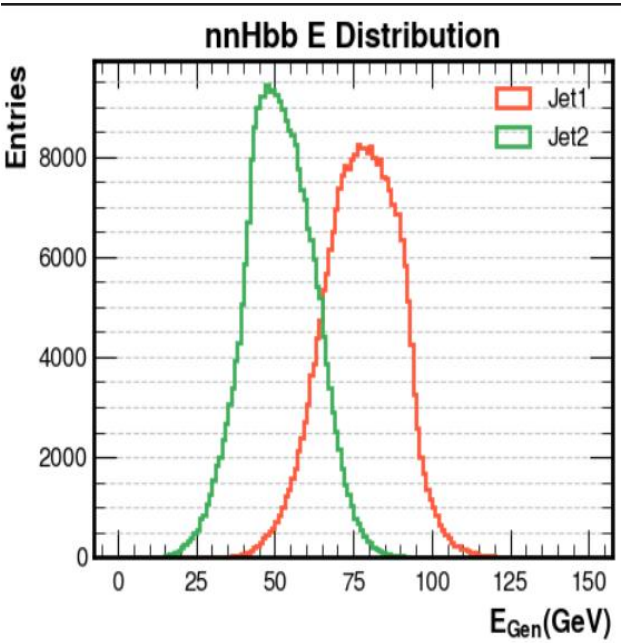


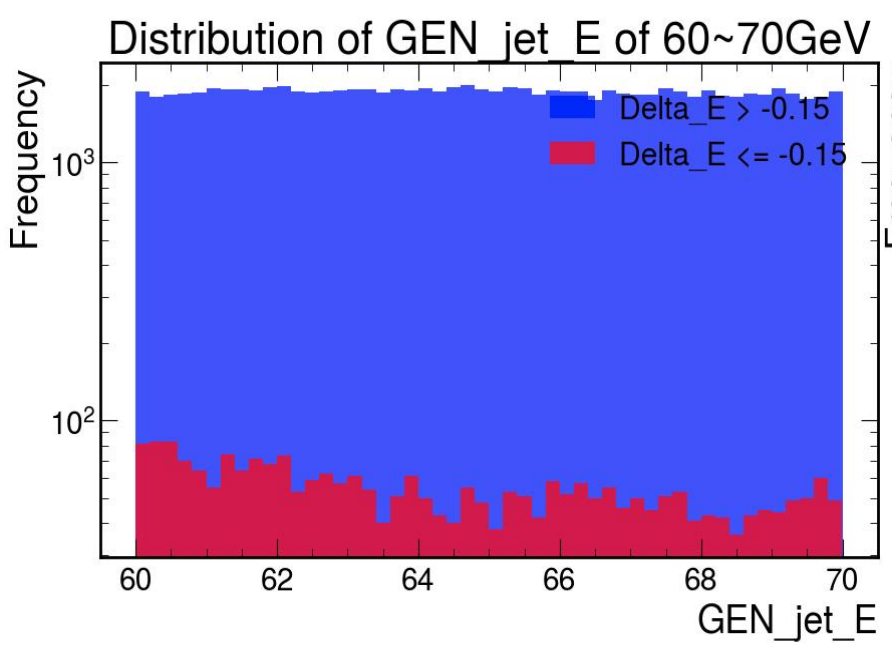
- ✓ The two sides are asymetrical, with a bump on the left

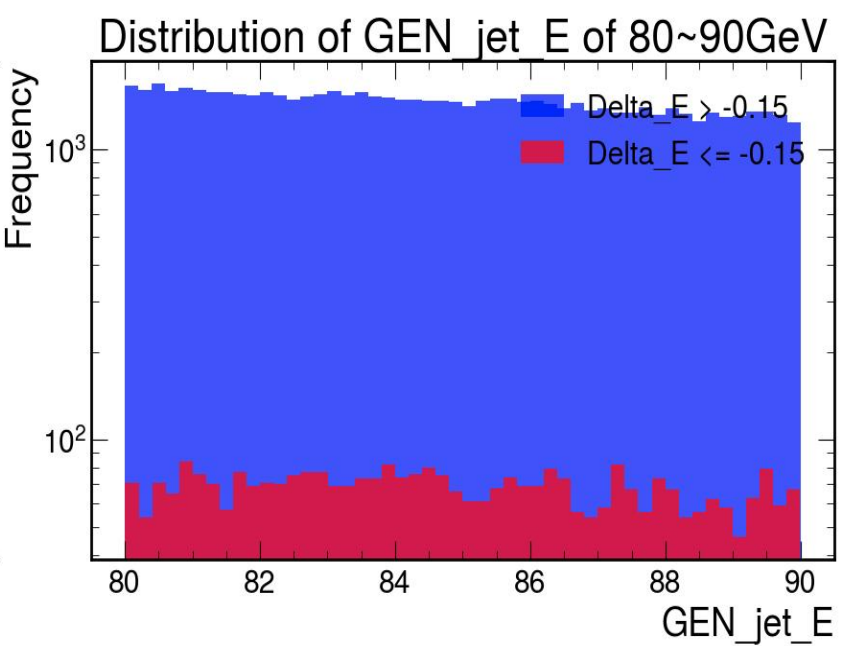
Jet of 70~80GeV GEN_jet_E in nnHbb



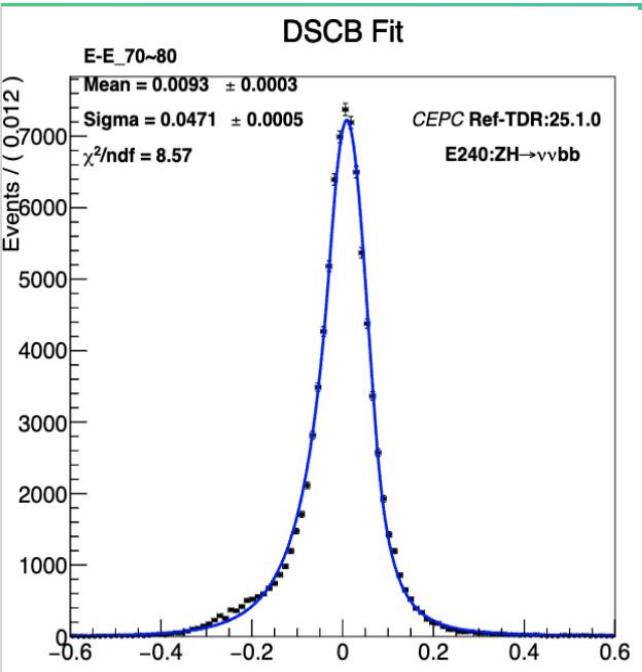


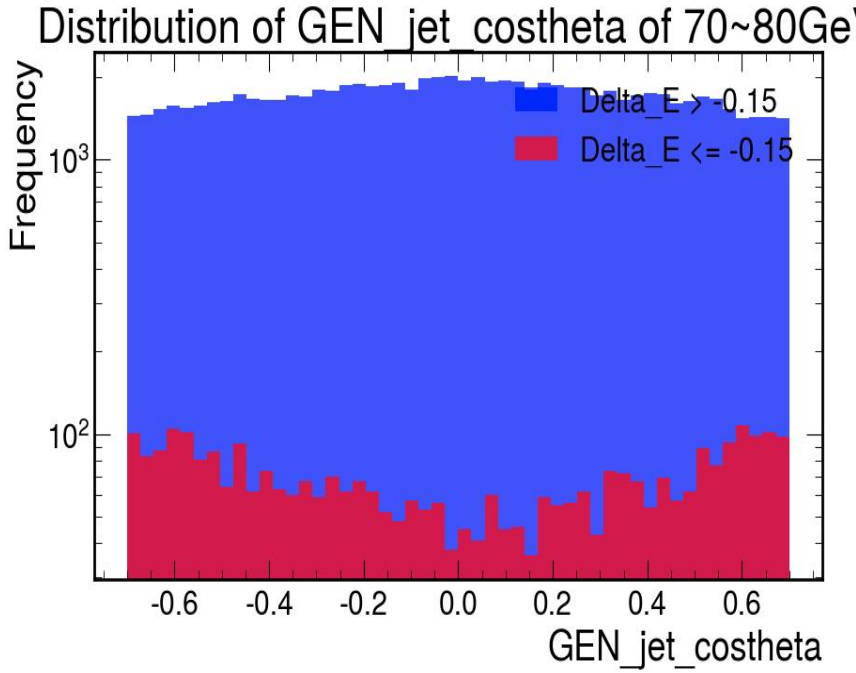


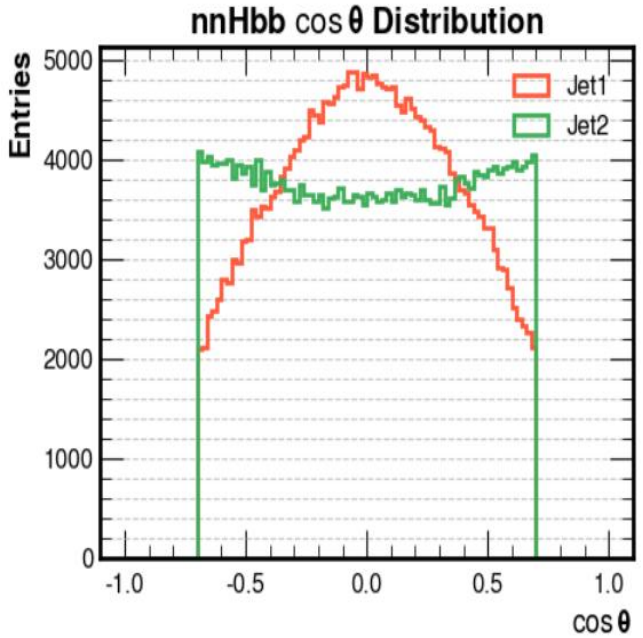


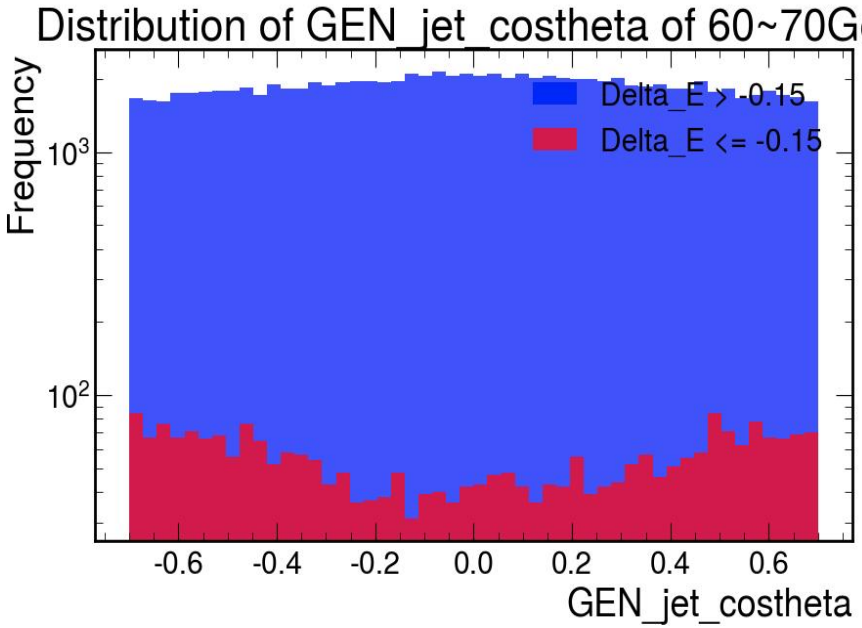


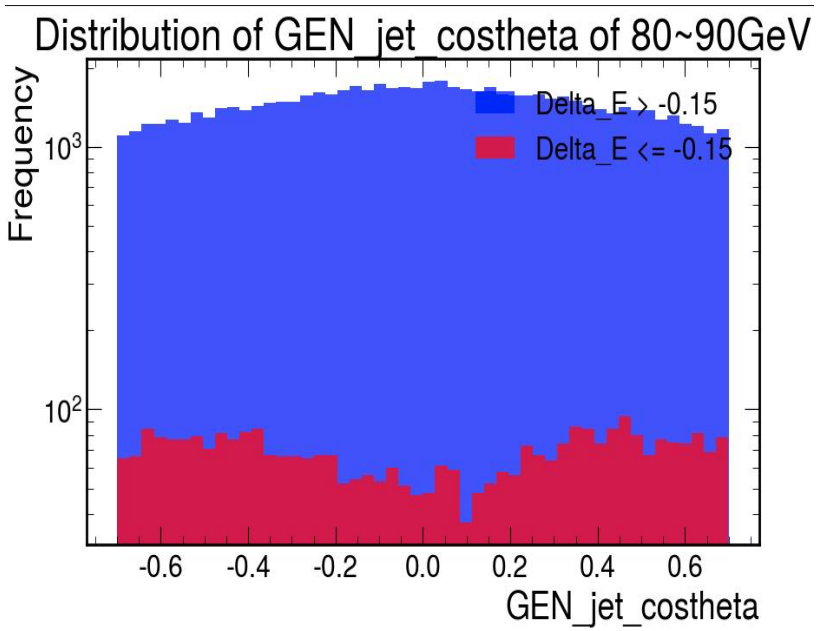
Jet of 70~80GeV GEN_jet_costheta in nnHbb



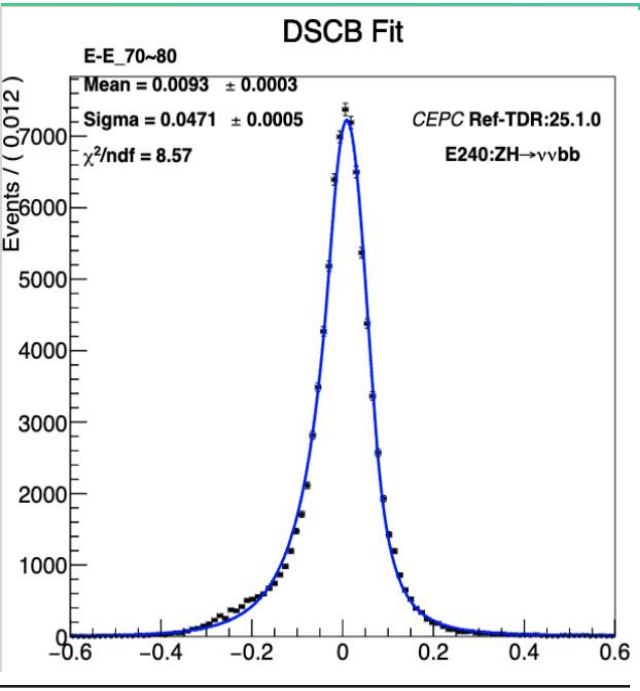


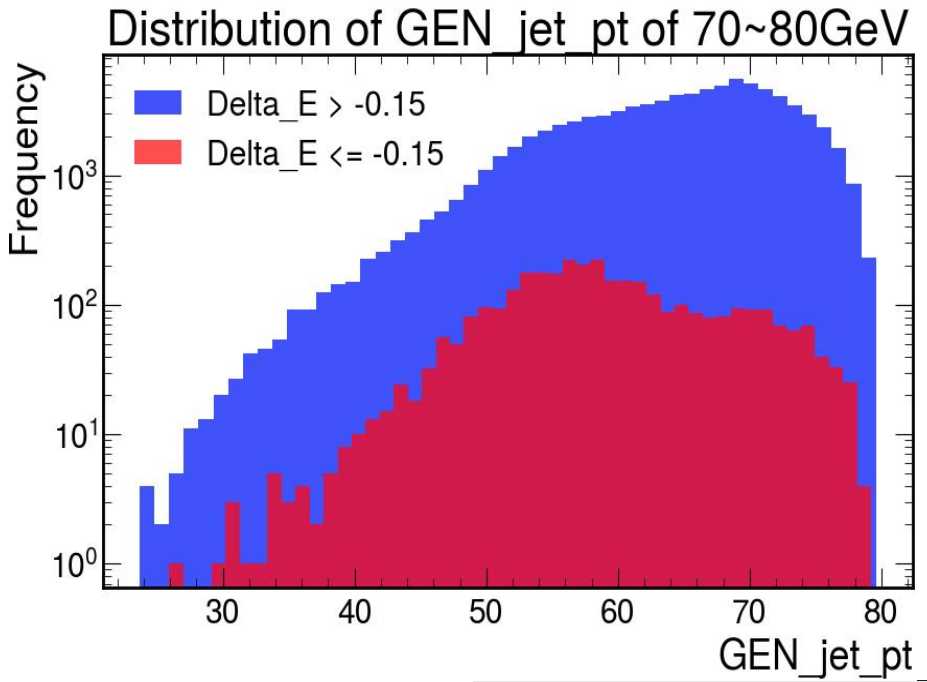


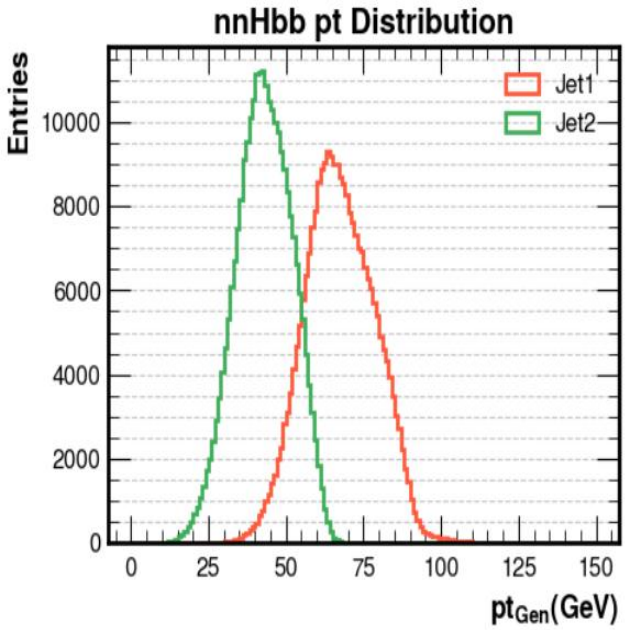


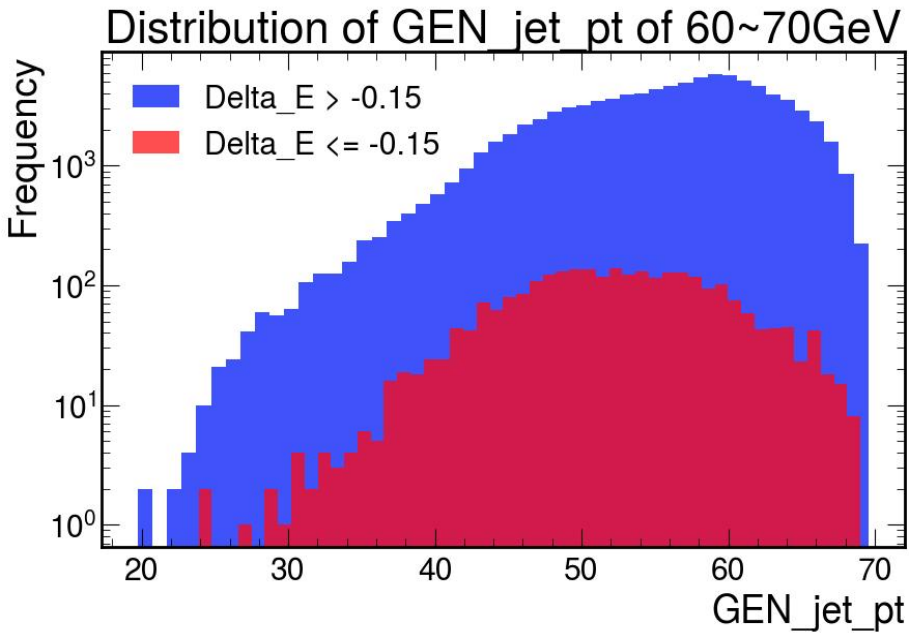


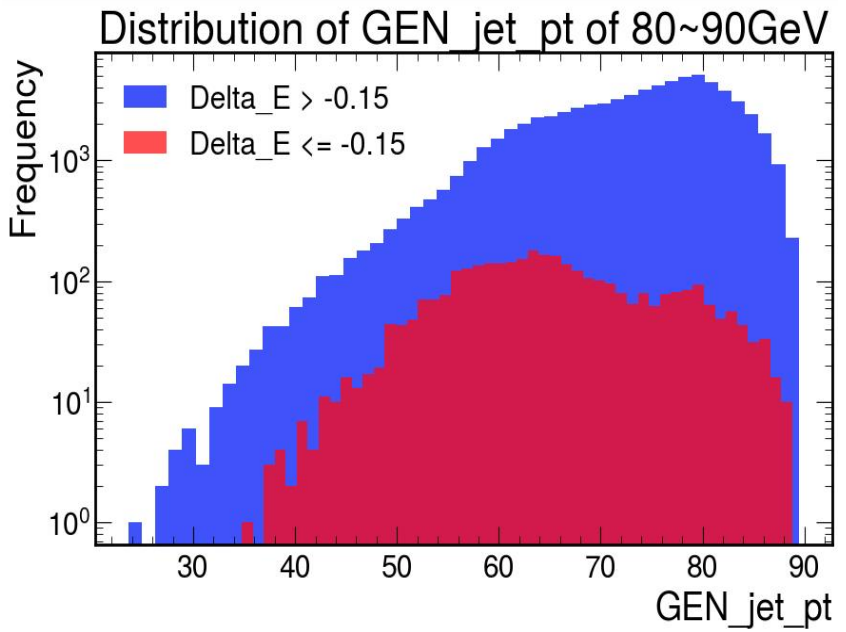
Jet of 70~80GeV GEN_jet_pt in nnHbb



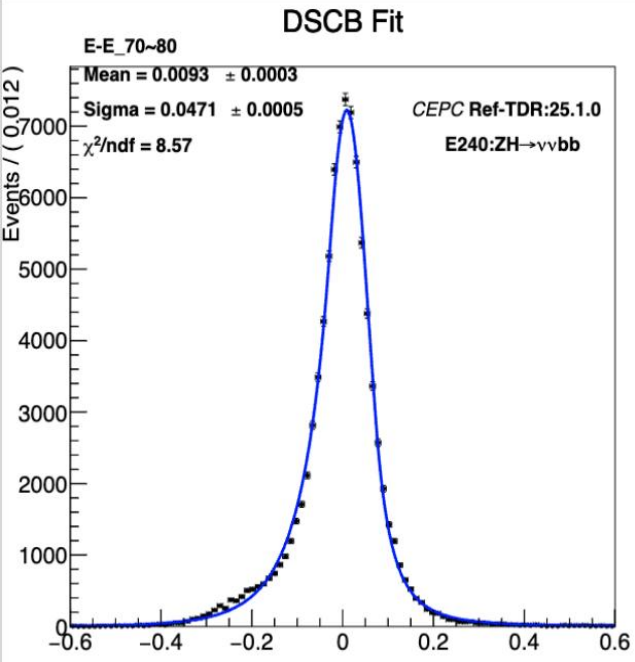


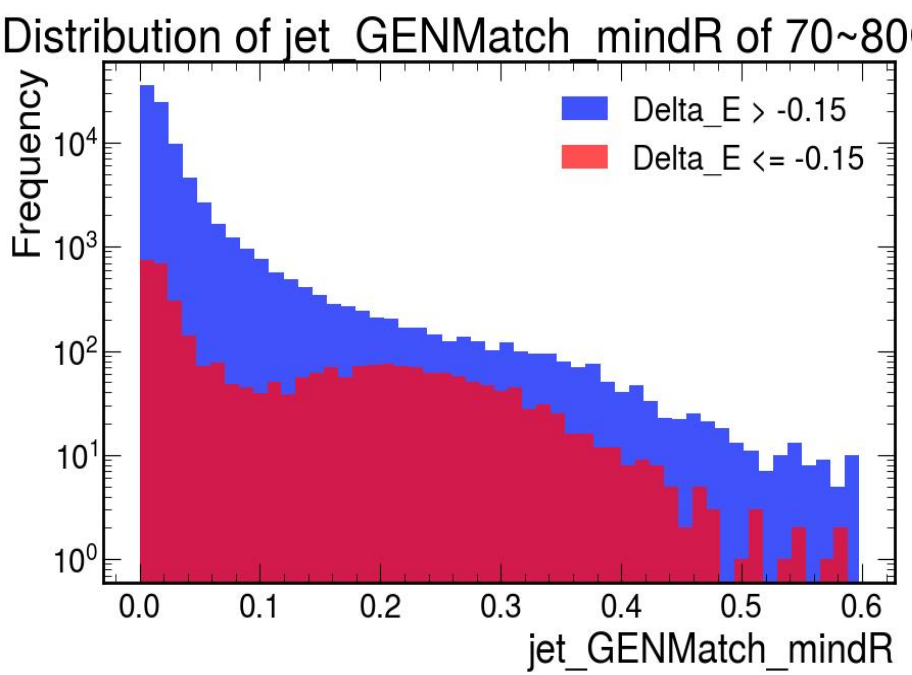


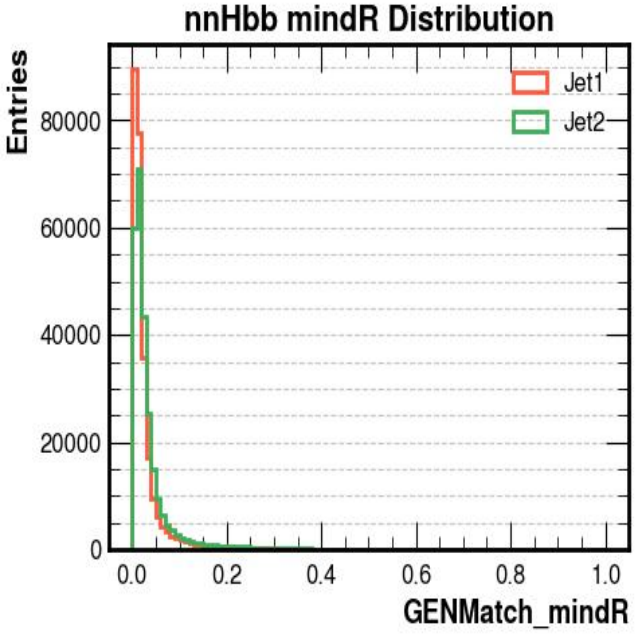


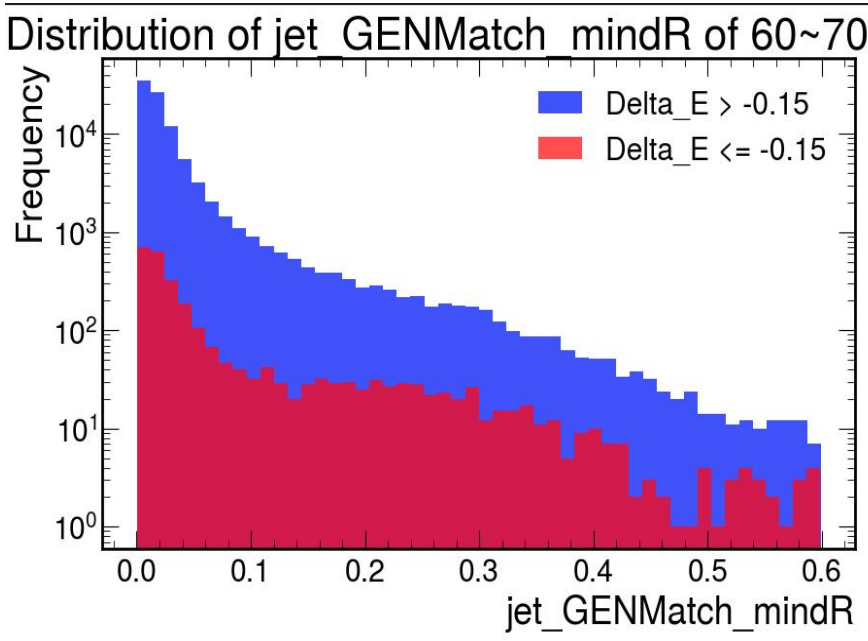


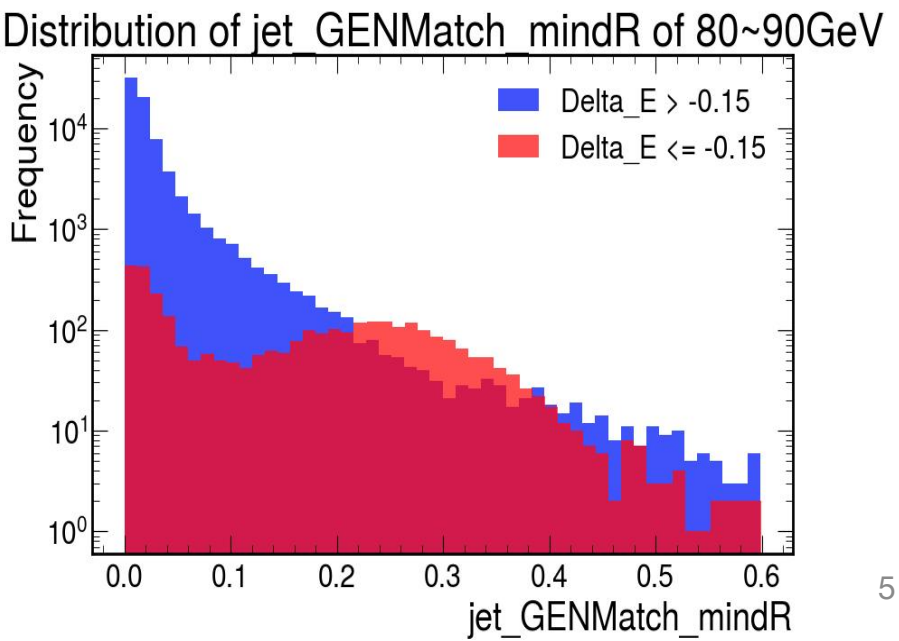
Jet of 70~80GeV GENMatch_mindR in nnHbb



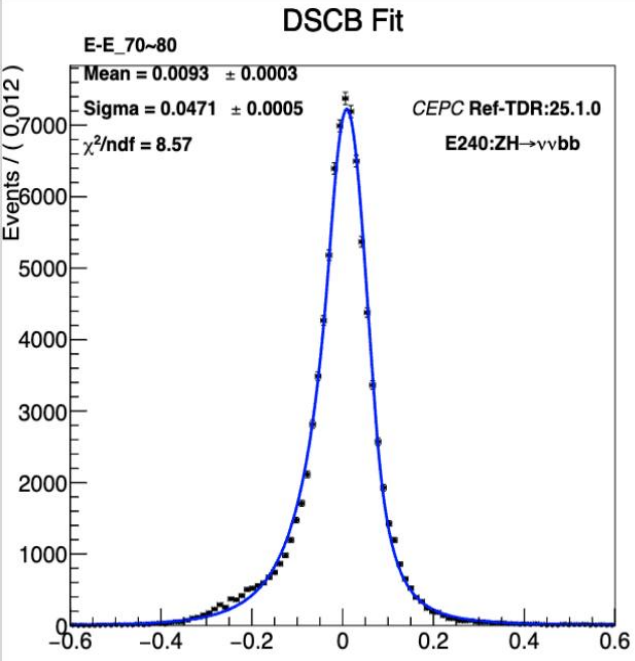


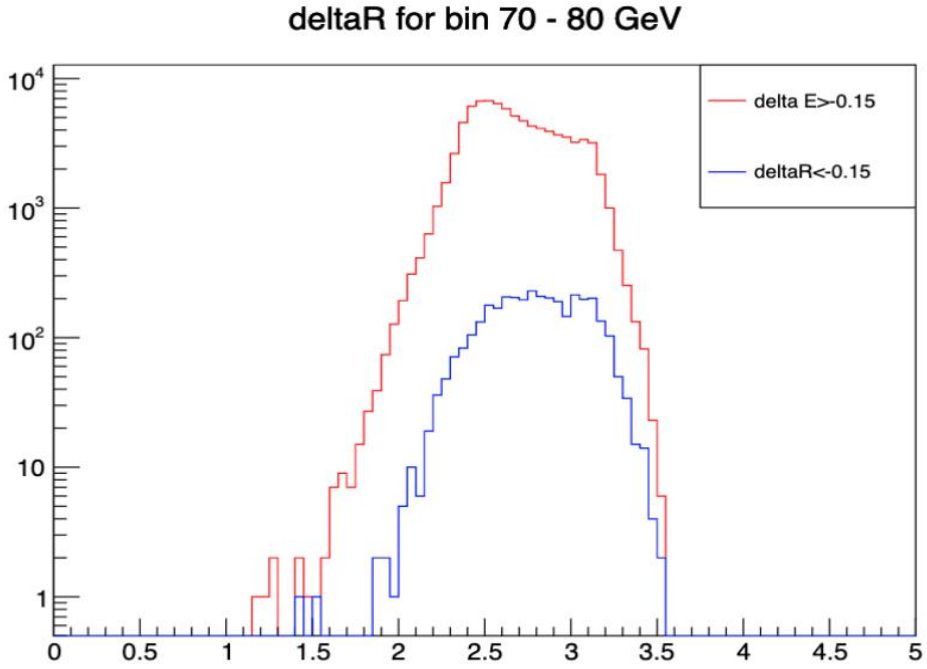


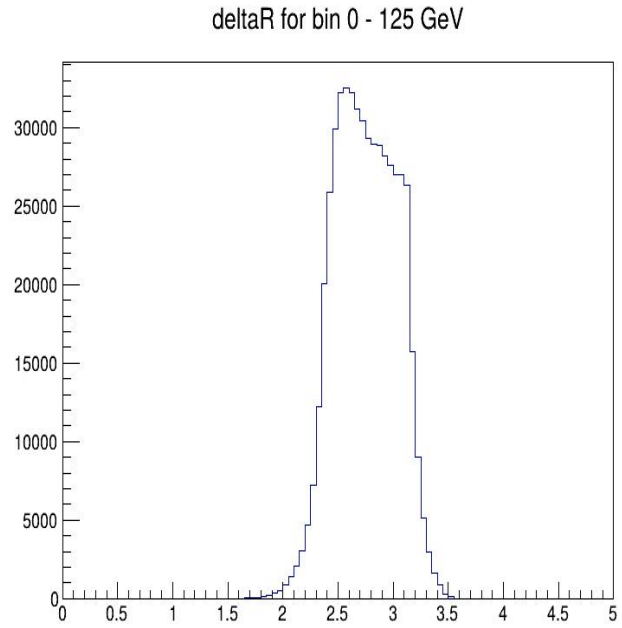


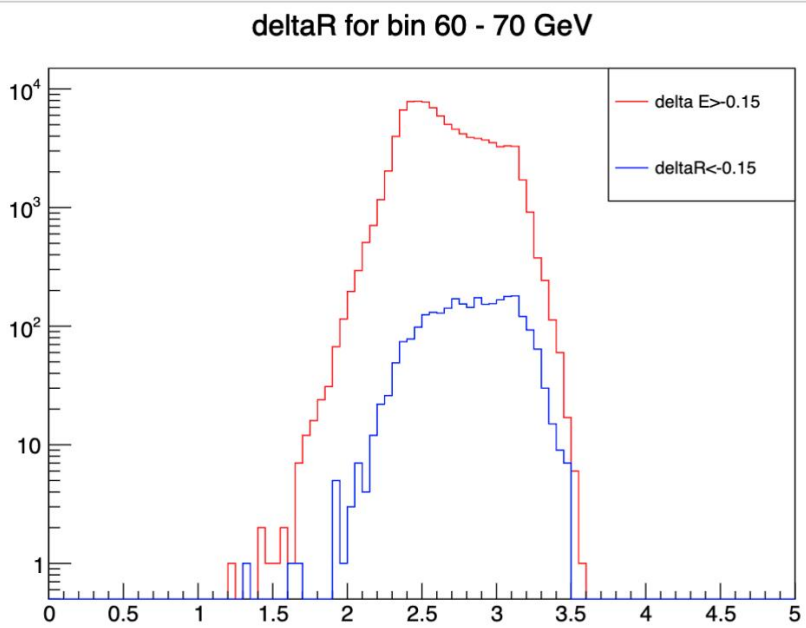


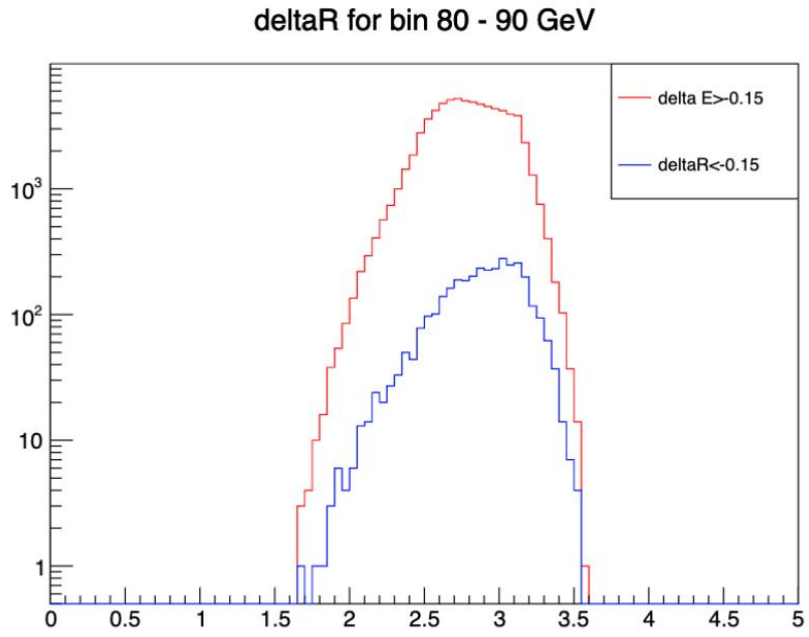
Jet of 70~80GeV GEN_Reco_DeltaR in nnHbb



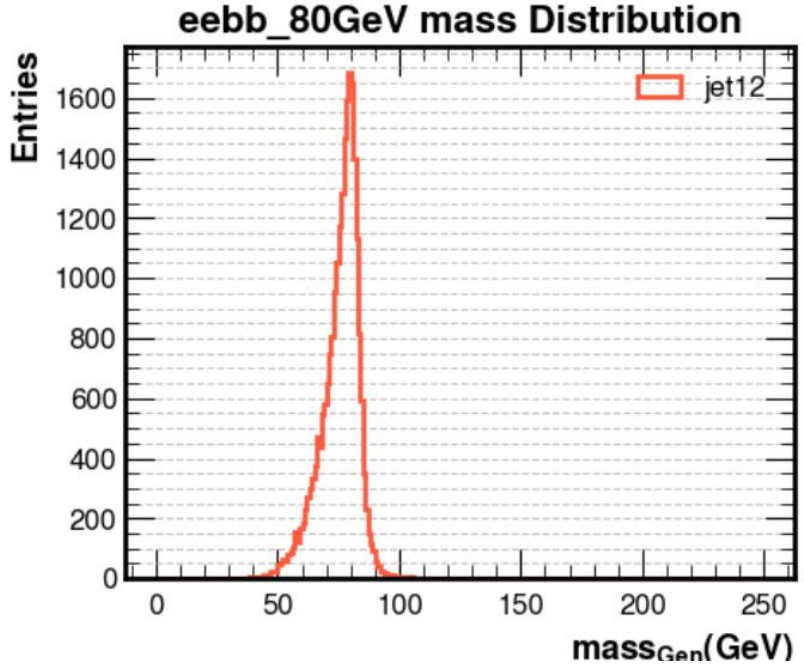


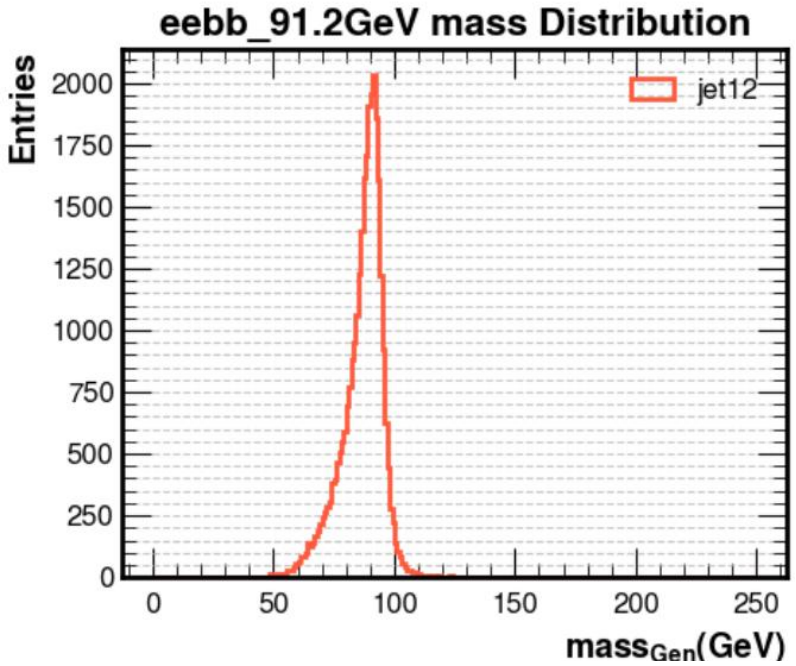


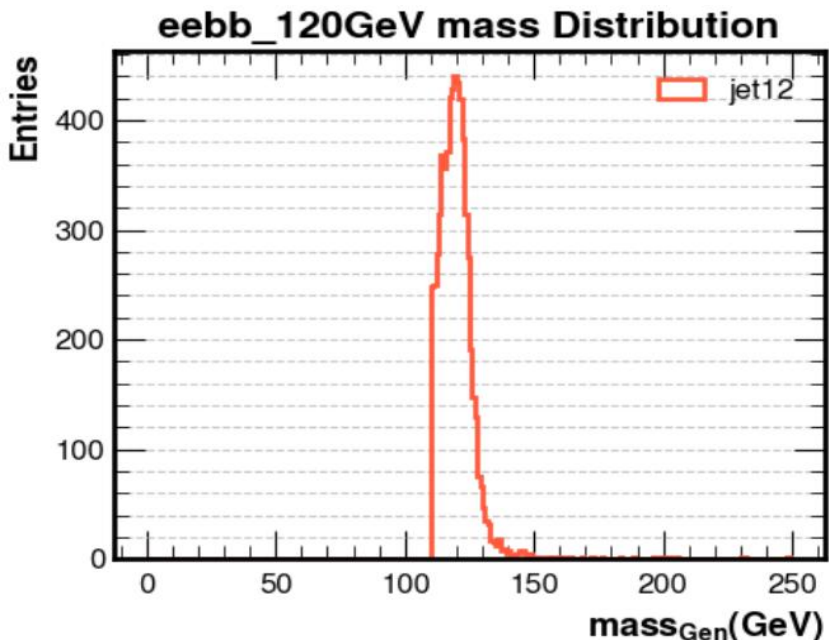


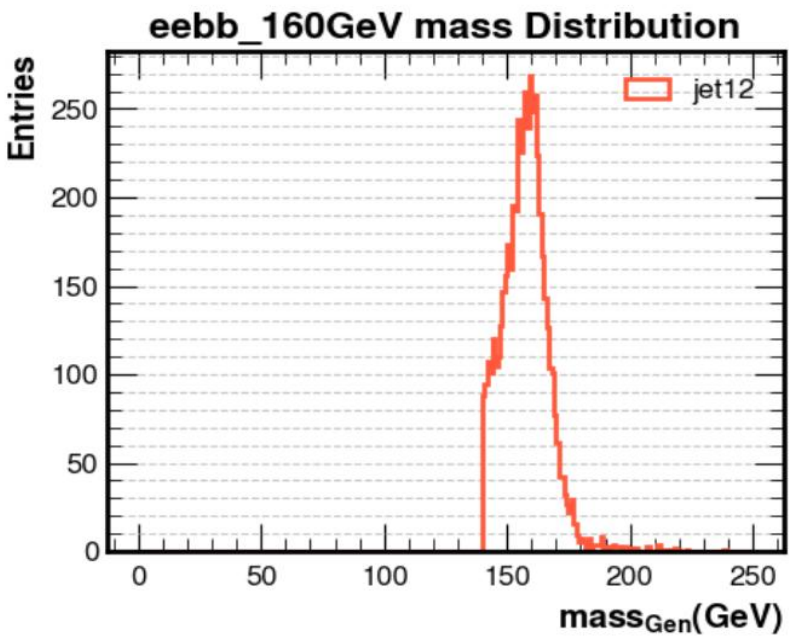


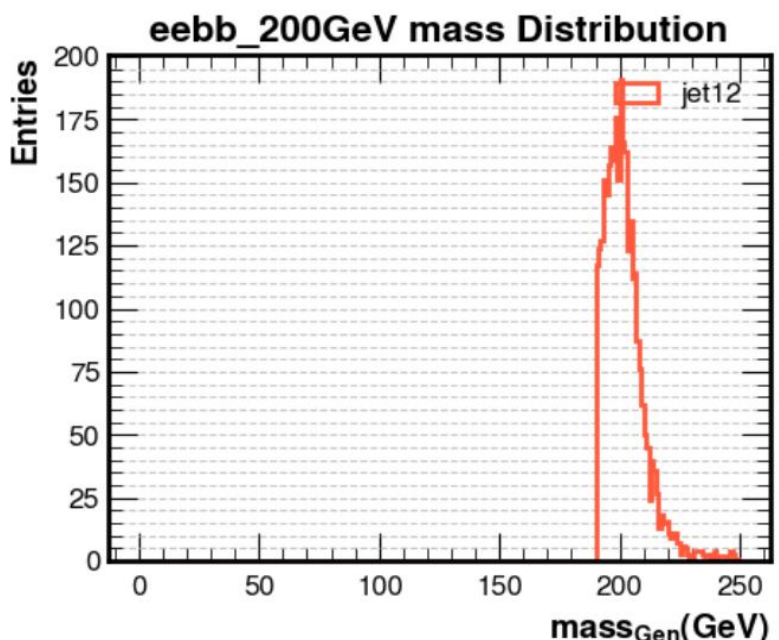
Reco_jet mass od eeqq(eebb)



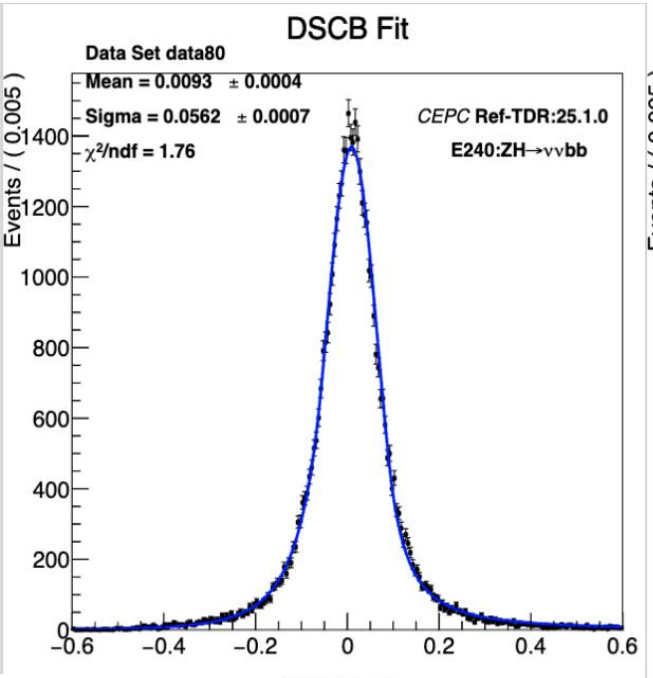


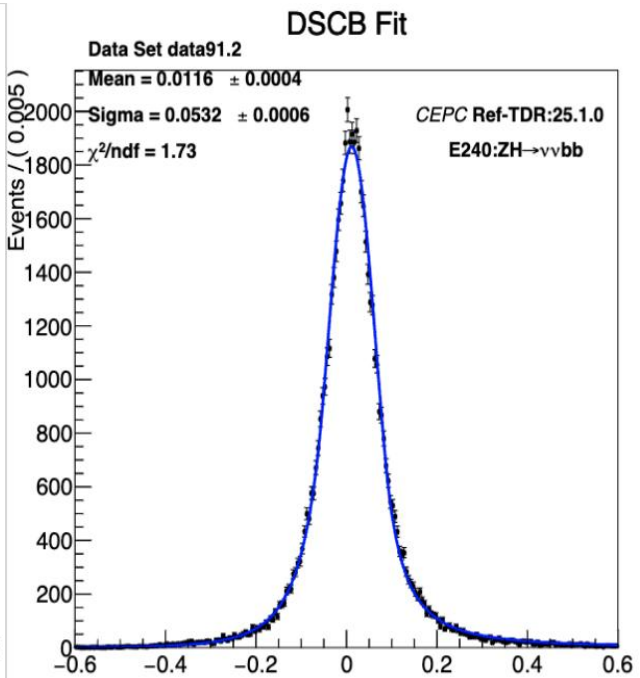


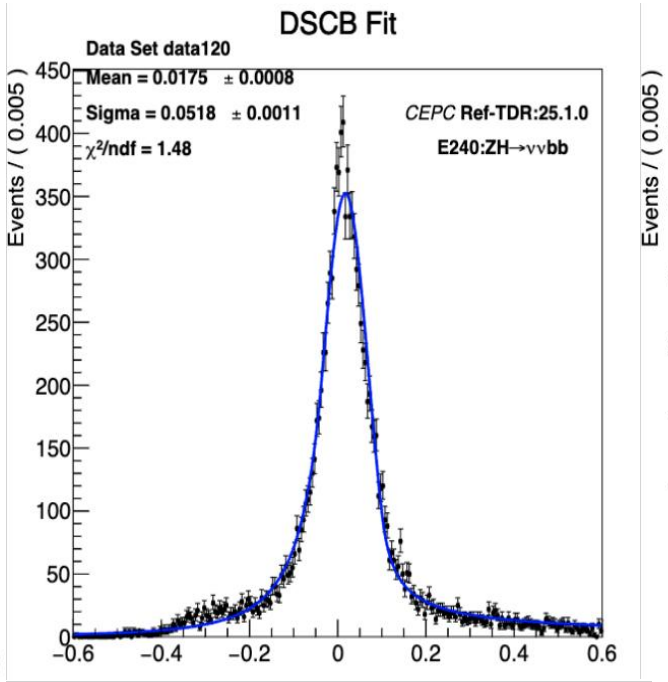


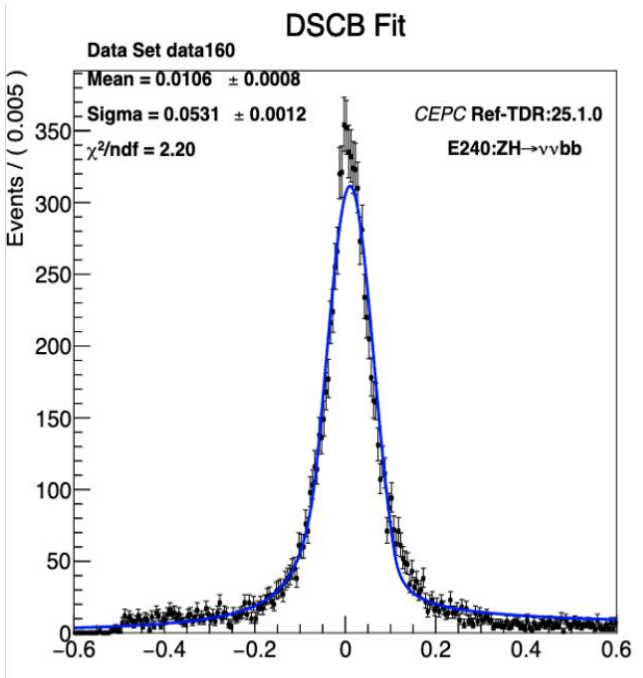


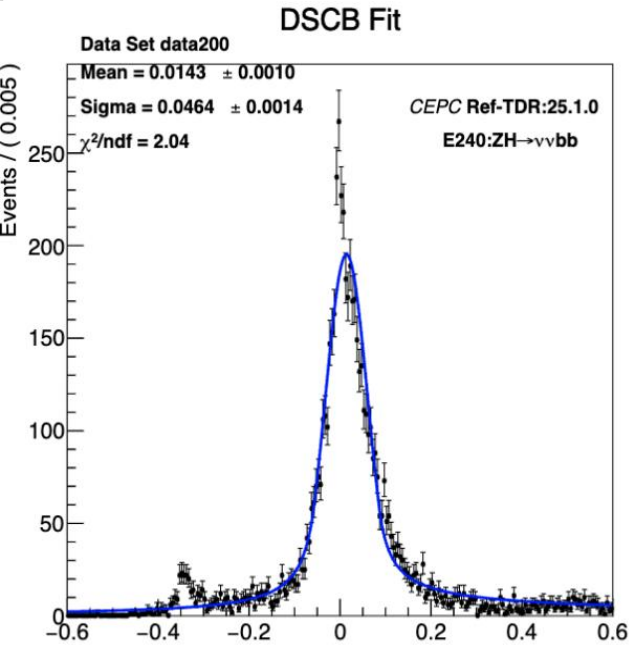
JER of eeqq(eebb)

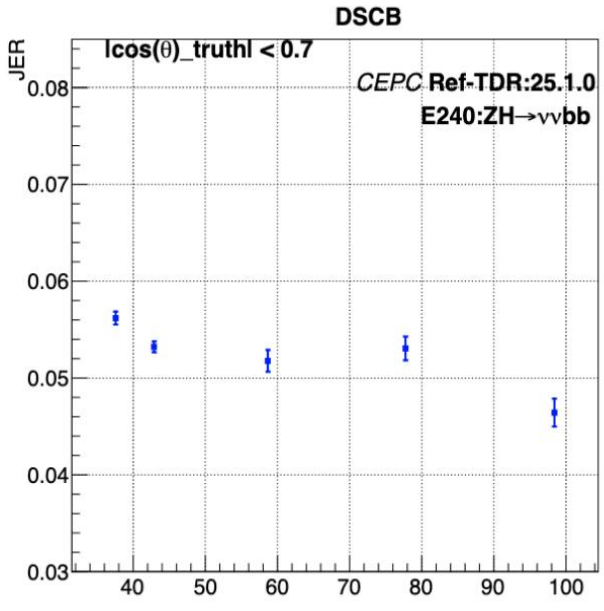




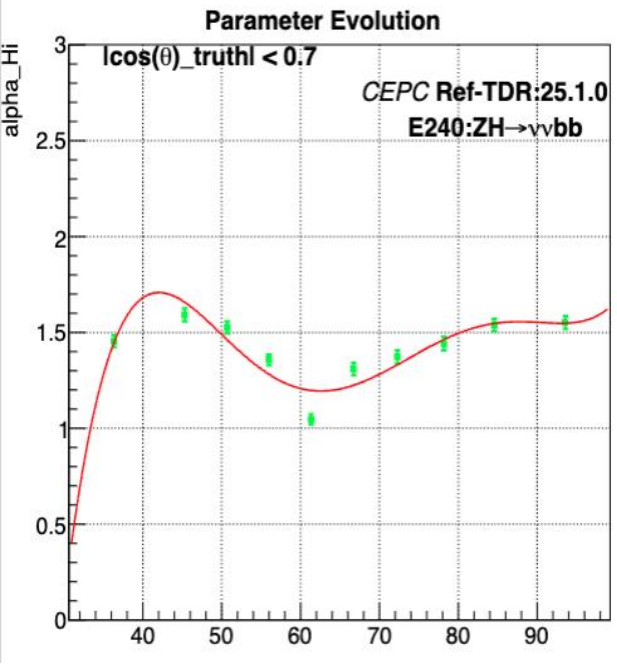


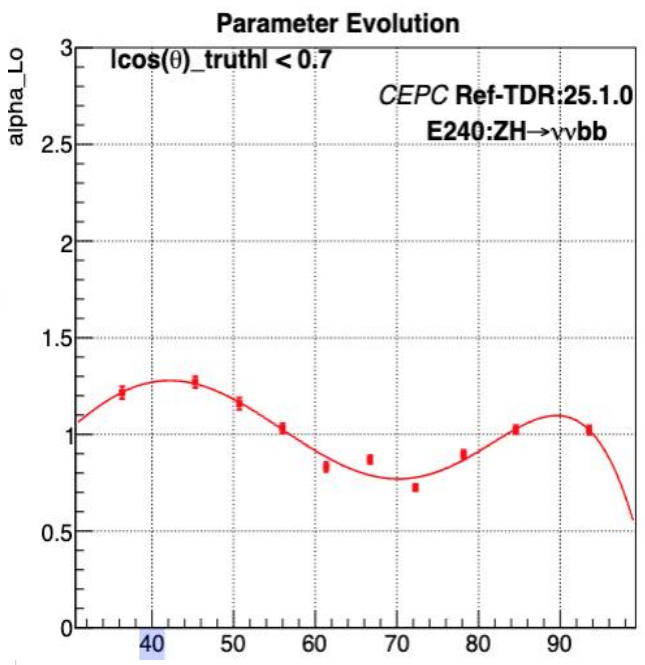


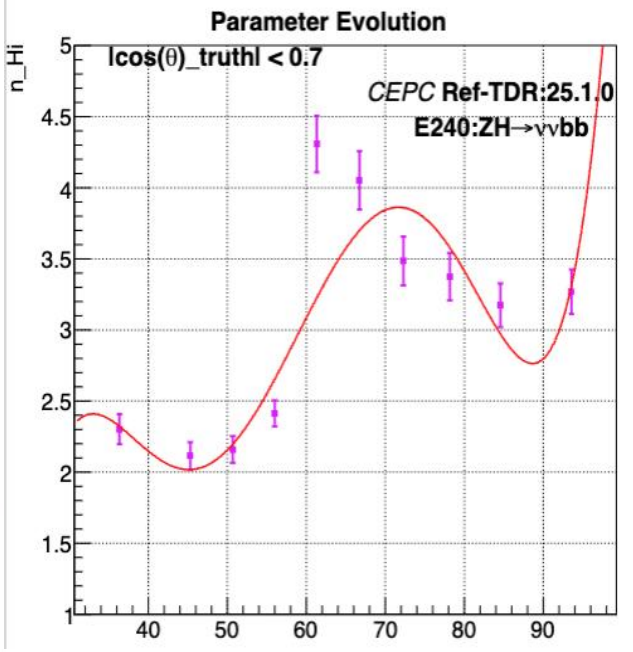


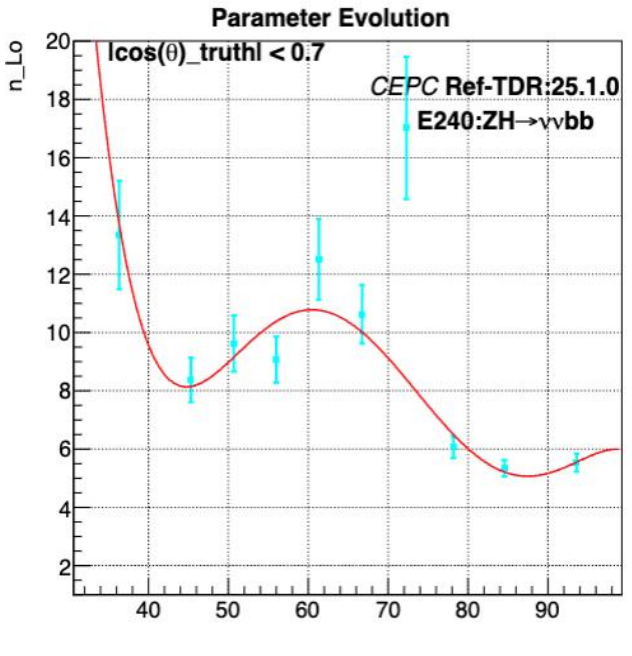


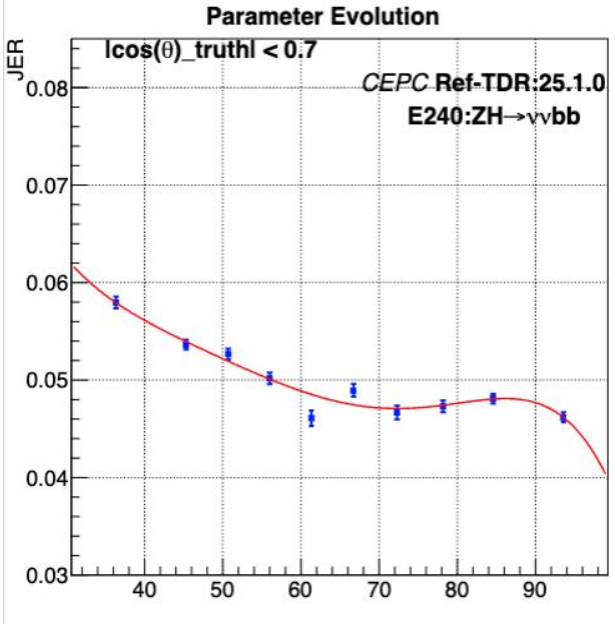
parameters of nnHbb change with GEN_jet_E

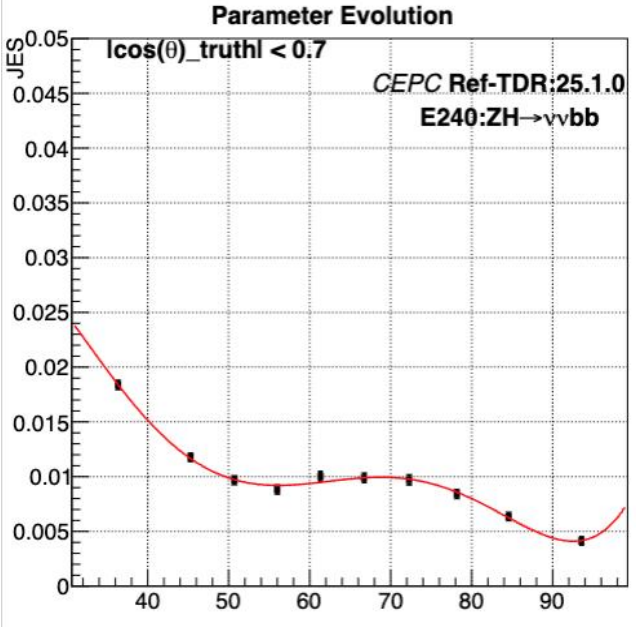




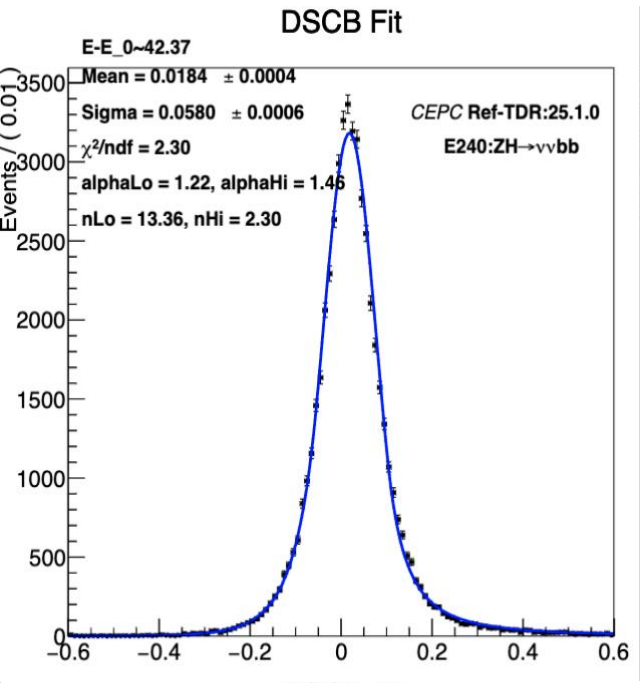


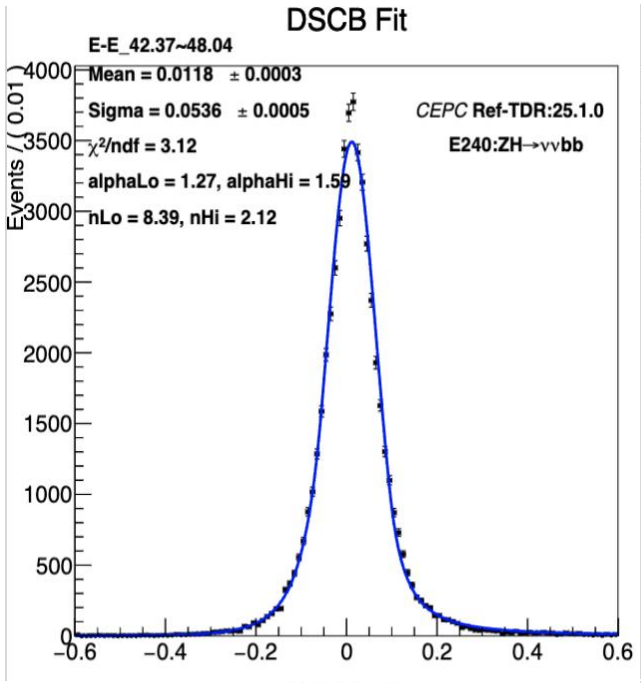


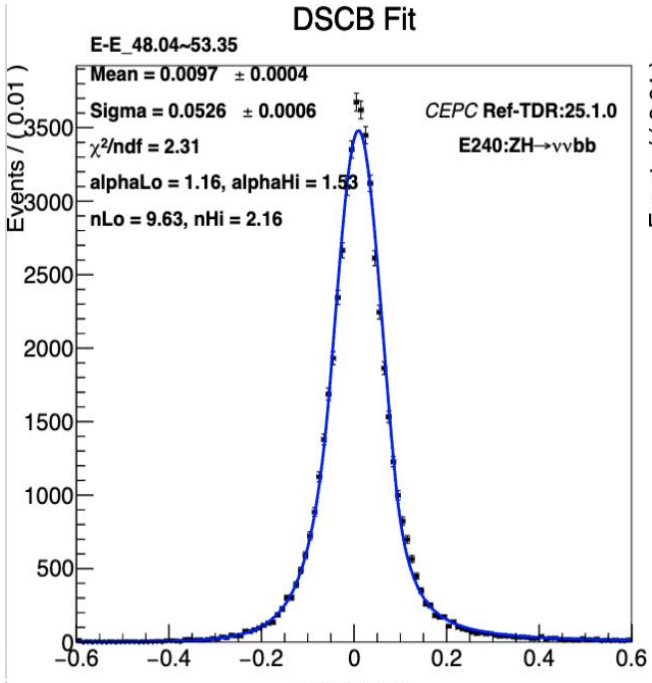


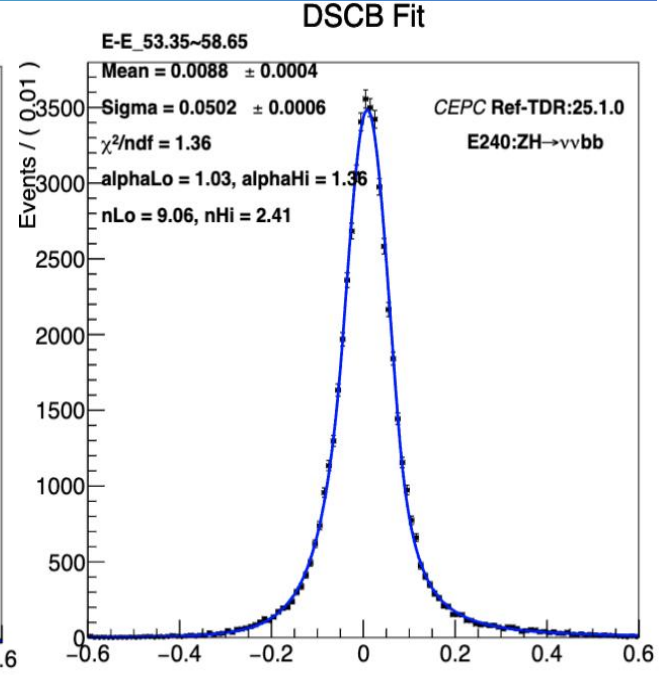


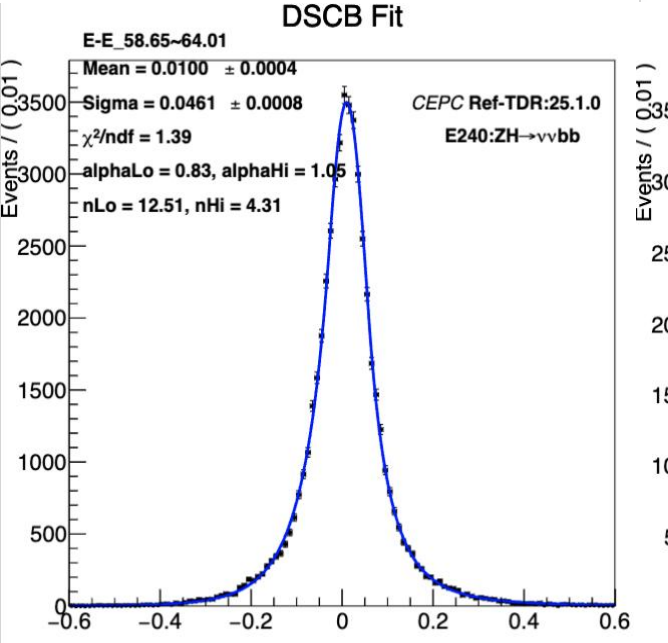
fit result of nnHbb

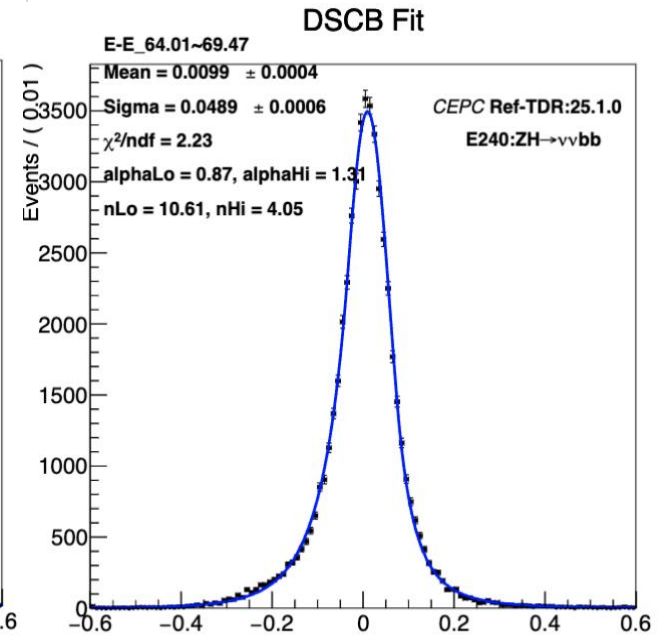


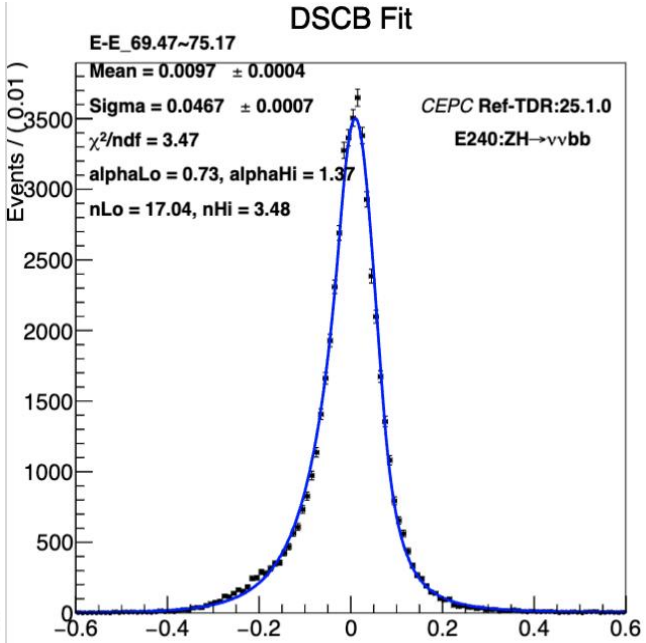




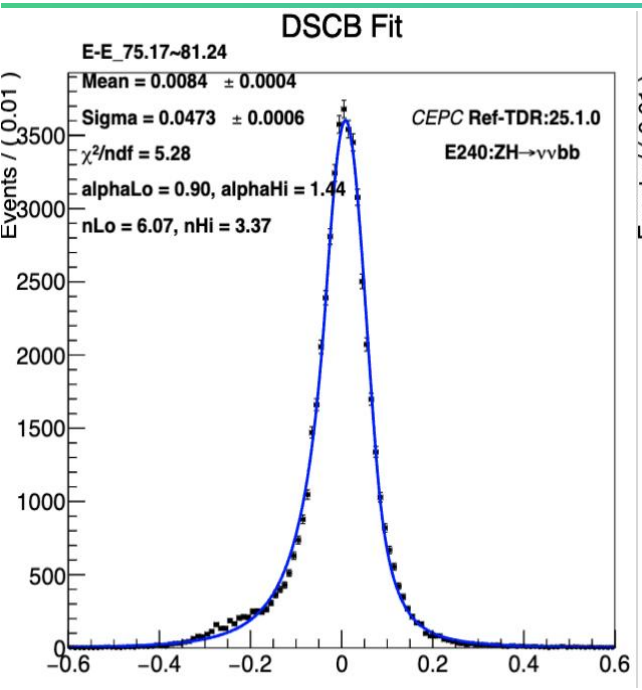


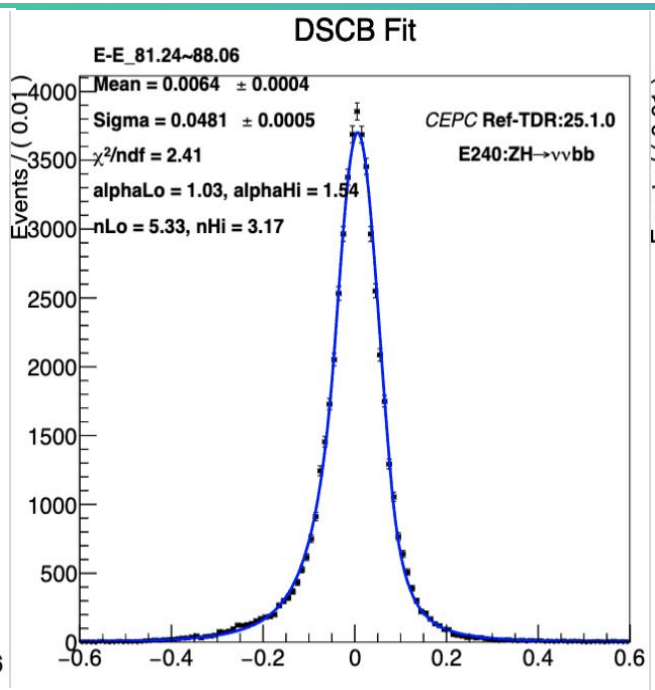


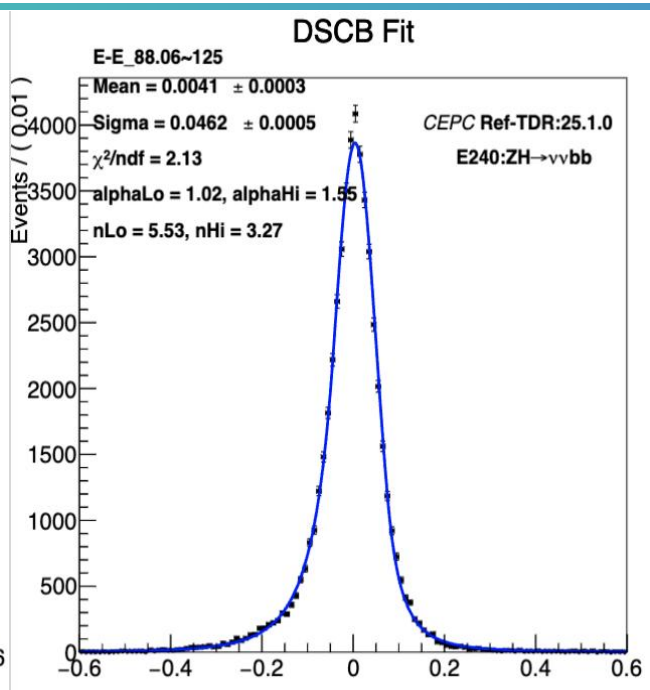




fit result of nnHbb







parameter of nnHbb

Searching for 40.8 GeV:
At 40.8 GeV:
  alphaLo: 1.1733 (at 36.3384 GeV)
  alphaHi: 1.3114 (at 36.3384 GeV)
  nLo: 14.9168 (at 36.3384 GeV)
  nHi: 3.2423 (at 36.3384 GeV)

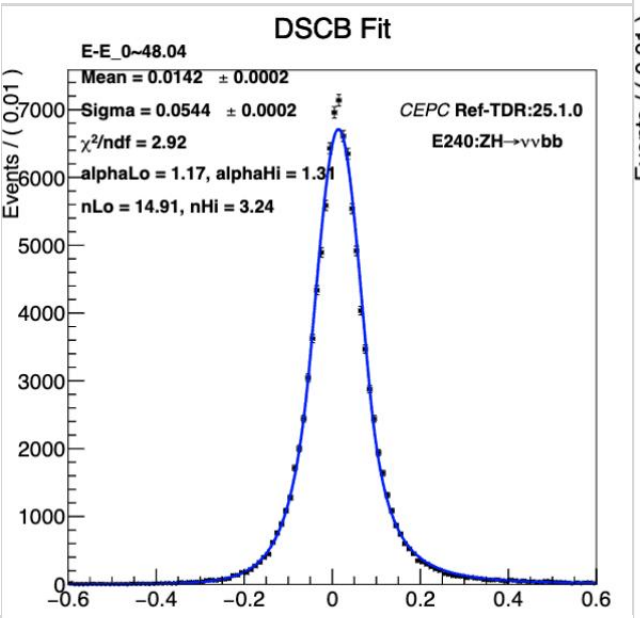
Searching for 53.3 GeV:
At 53.3 GeV:
  alphaLo: 1.0979 (at 50.6947 GeV)
  alphaHi: 1.3564 (at 50.6947 GeV)
  nLo: 11.2575 (at 50.6947 GeV)
  nHi: 3.0436 (at 50.6947 GeV)

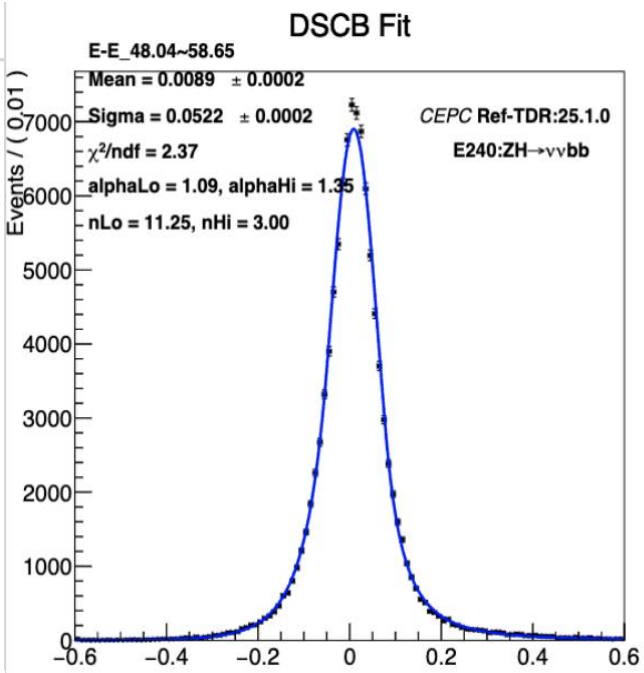
Searching for 64.0 GeV:
At 64.0 GeV:
  alphaLo: 0.7959 (at 61.3324 GeV)
  alphaHi: 0.9868 (at 61.3324 GeV)
  nLo: 15.5275 (at 61.3324 GeV)
  nHi: 5.1525 (at 61.3324 GeV)

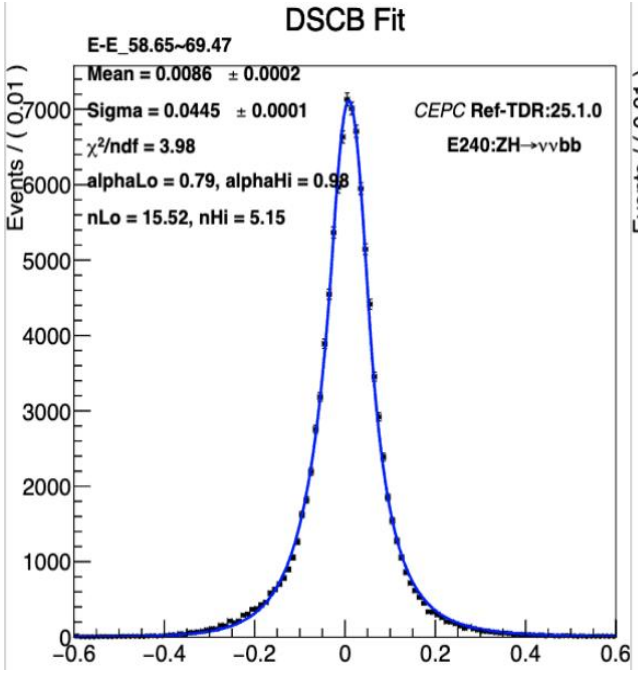
Searching for 75.2 GeV:
At 75.2 GeV:
  alphaLo: 0.7178 (at 72.2787 GeV)
  alphaHi: 1.3603 (at 72.2787 GeV)
  nLo: 19.9999 (at 72.2787 GeV)
  nHi: 3.7155 (at 72.2787 GeV)

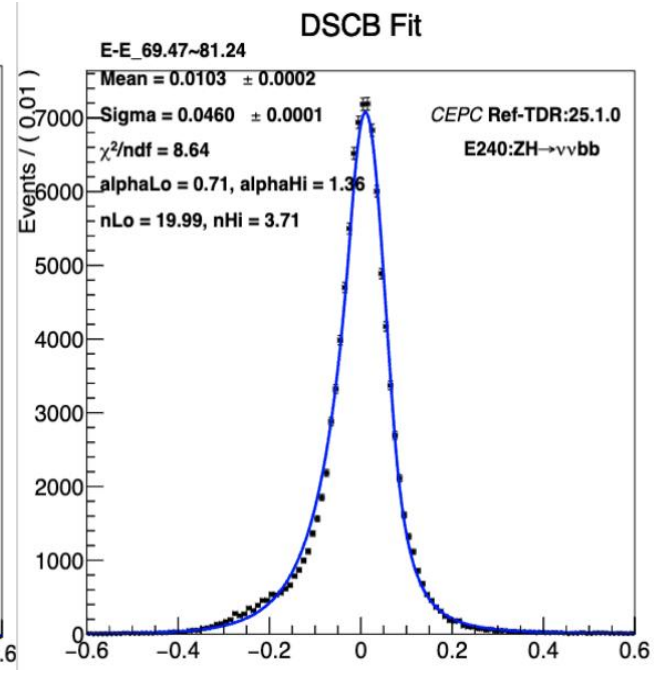
Searching for 89.1 GeV:
At 89.1 GeV:
  alphaLo: 0.9662 (at 93.5518 GeV)
  alphaHi: 1.5337 (at 93.5518 GeV)
  nLo: 6.9177 (at 93.5518 GeV)
  nHi: 3.4318 (at 93.5518 GeV)

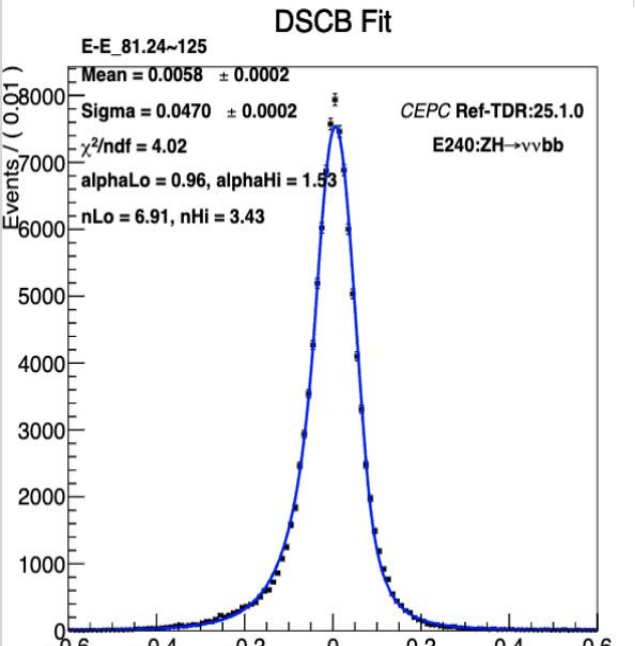
parameter fixed of nnHbb

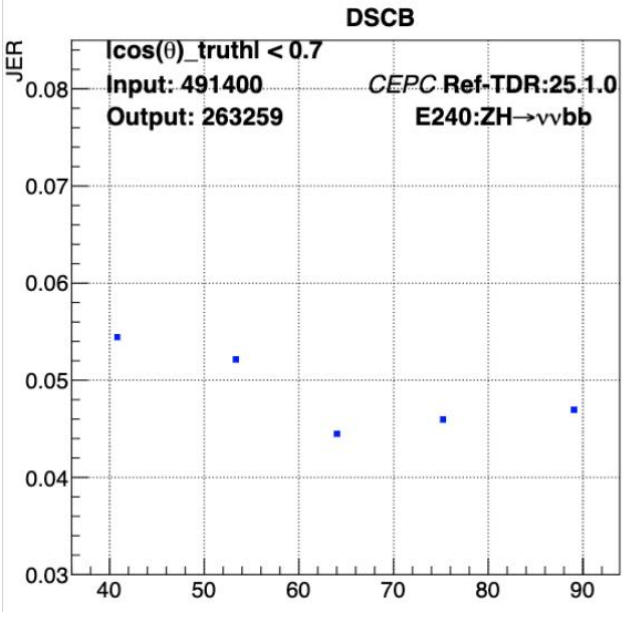




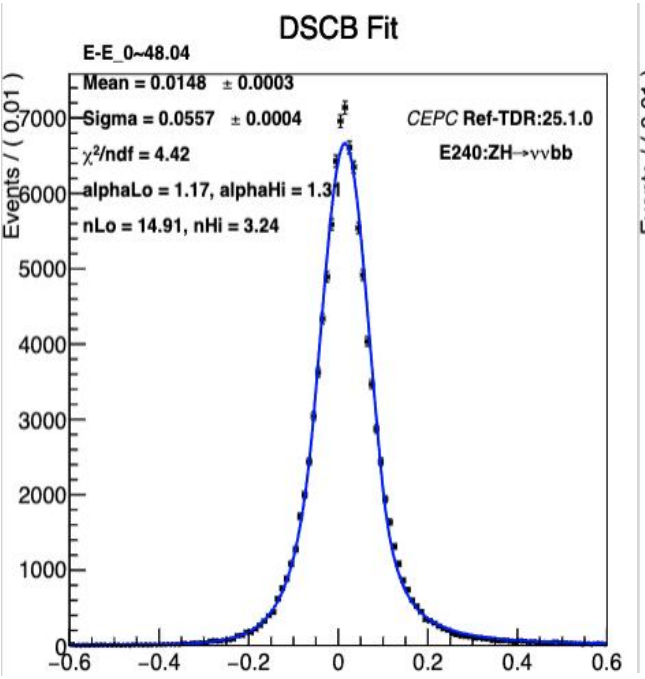


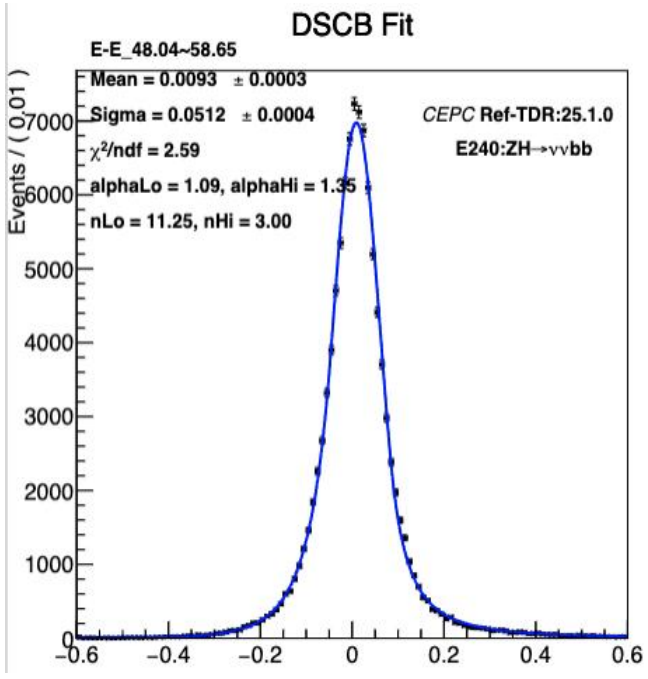


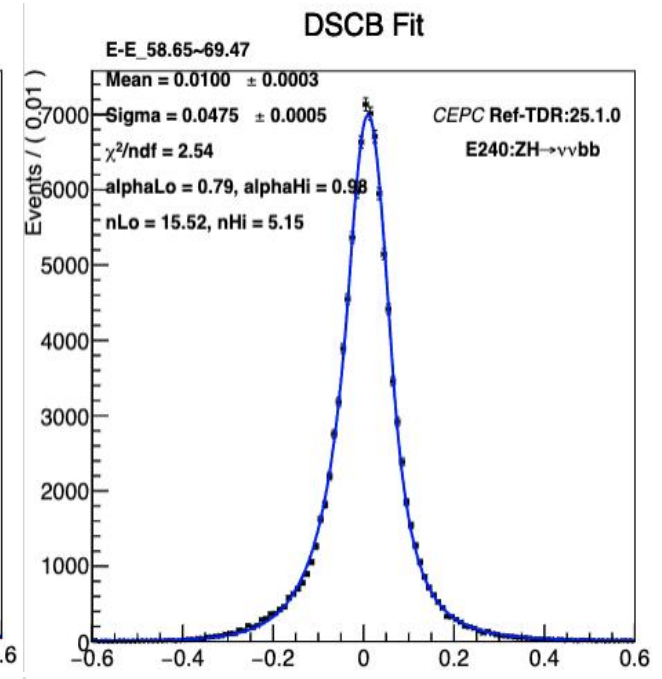


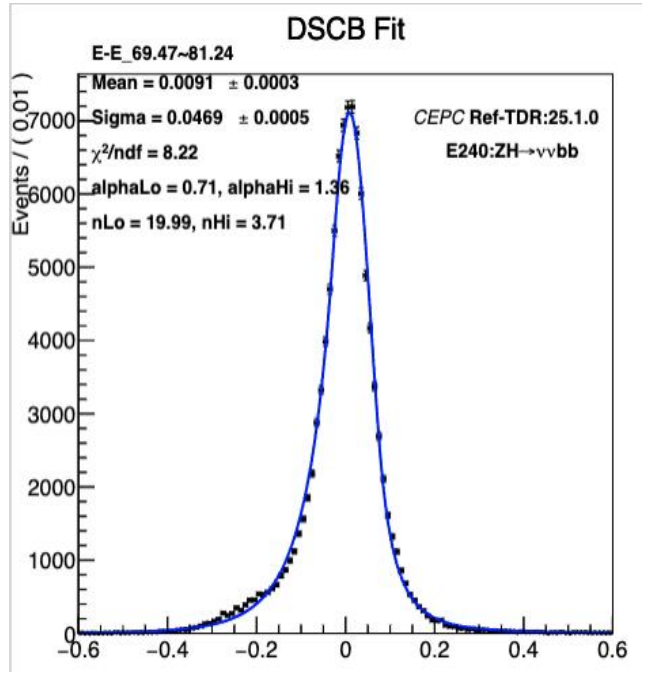


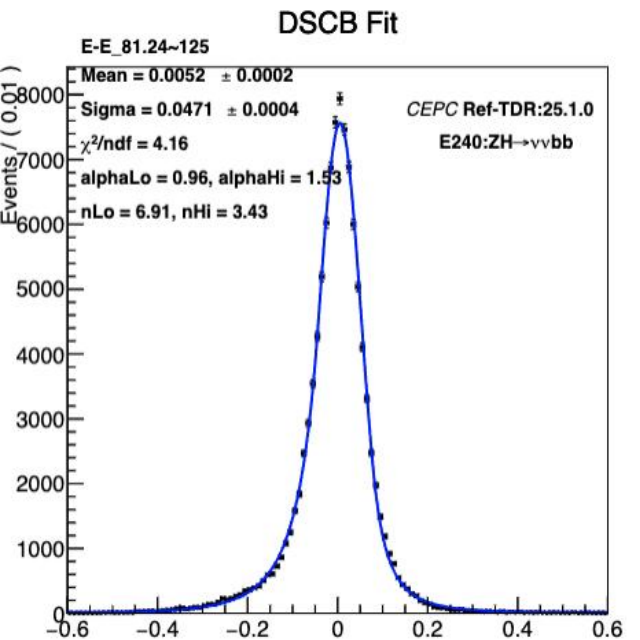
parameter with a range of nnHbb

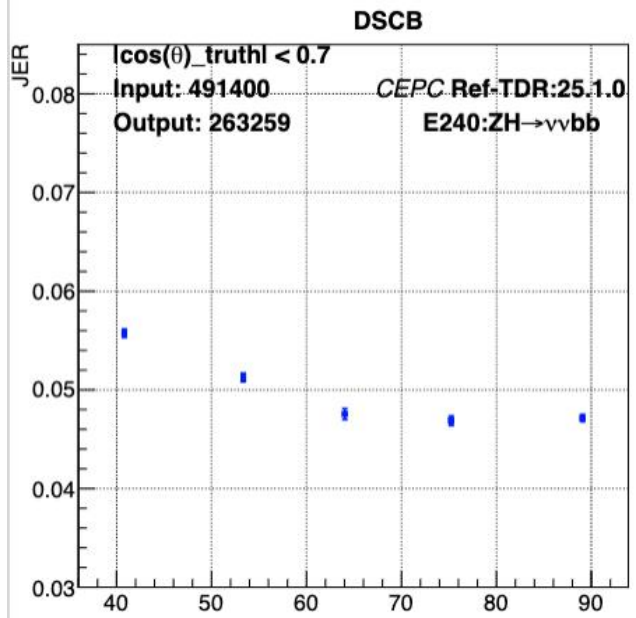








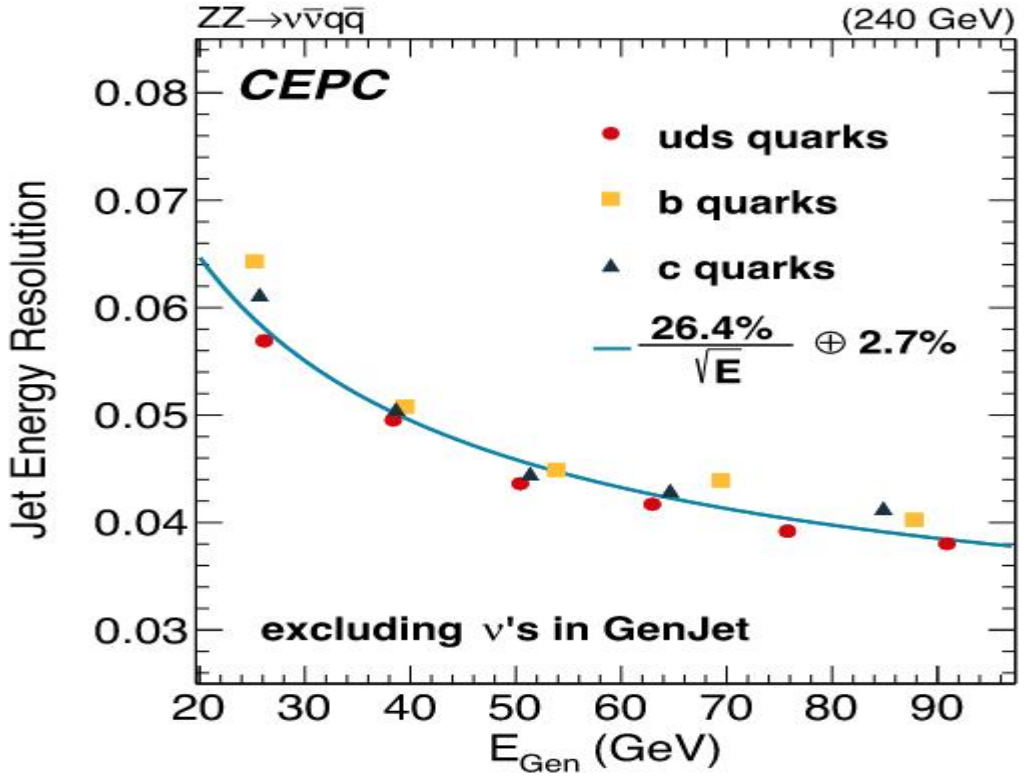


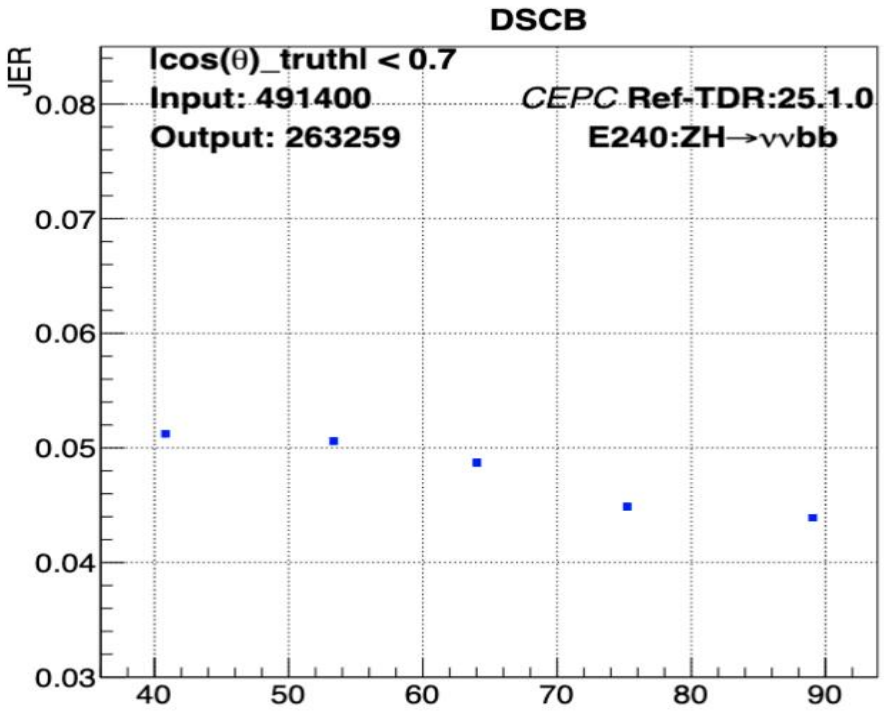


JER of nnHbb

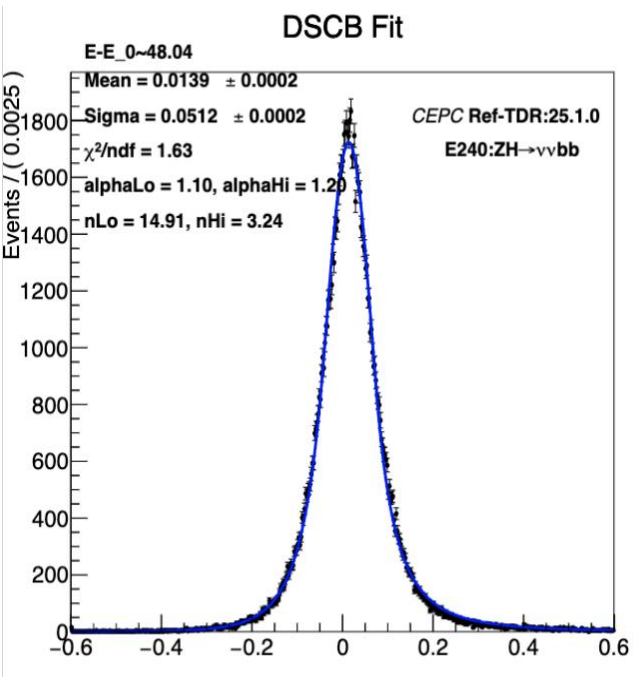
```
alphaLo_values = [1.1, 1.09, 0.9, 0.71, 1]
alphaHi_values = [1.2, 1.35 , 1.2 , 1.36 , 1.2]
nLo_values = [14.91 , 11.25 , 15.52 , 19.99 , 3]
nHi_values = [3.24 , 3.0, 5.15 , 3.71, 9]
```

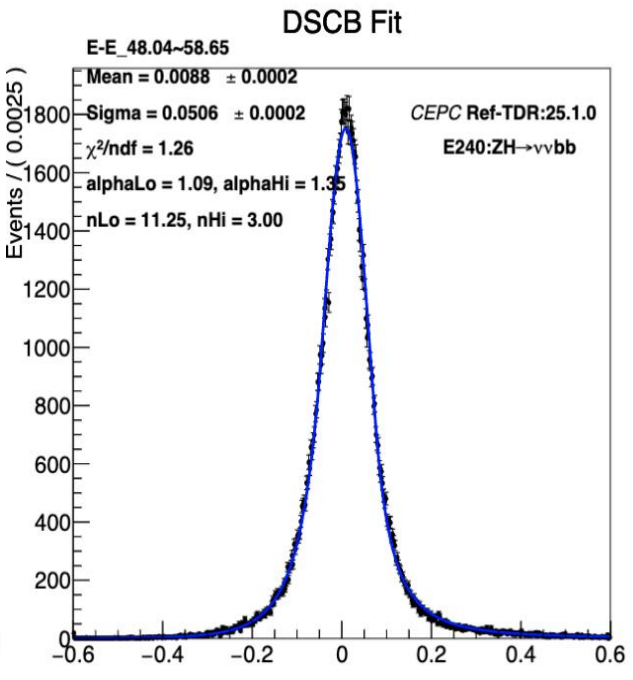
```
# 定义拟合模型 (DSCB)
mean = ROOT.RooRealVar("mean", "mean", 0.01 , 0, 0.03)
sigma = ROOT.RooRealVar("sigma", "sigma", 0.01, 0, 0.07)

alphaLo = ROOT.RooRealVar("alphaLo", "alphaLo", alphaLo_val )
alphaHi = ROOT.RooRealVar("alphaHi", "alphaHi", alphaHi_val )
nLo = ROOT.RooRealVar("nLo", "nLo", nLo_val, 0, 1000)
nHi = ROOT.RooRealVar("nHi", "nHi", nHi_val, 0, 1000)  # n是左
```

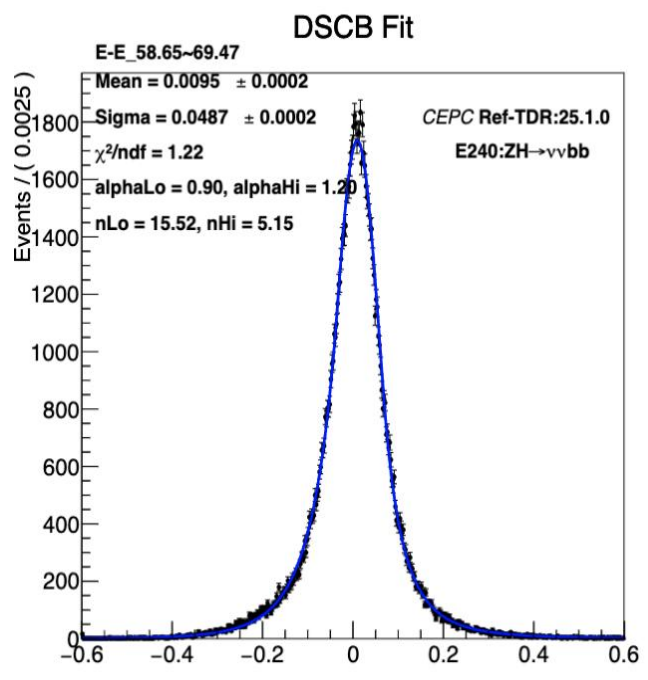


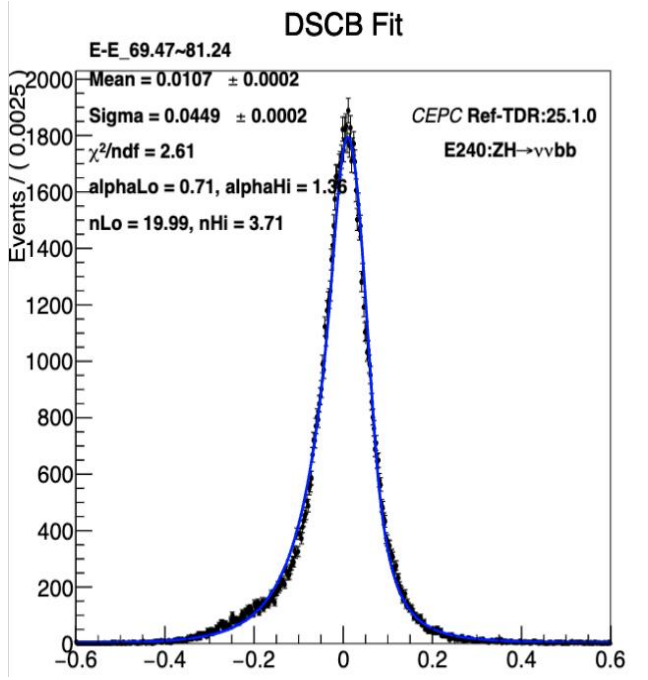


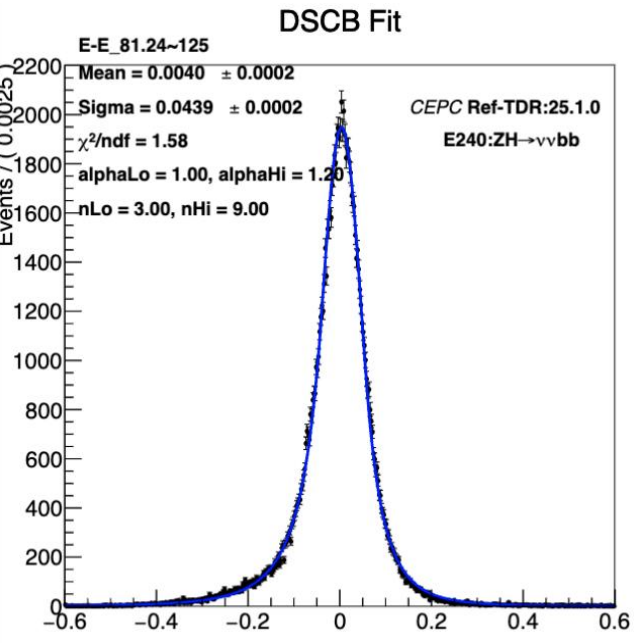
fit result of nnHbb











Thanks!