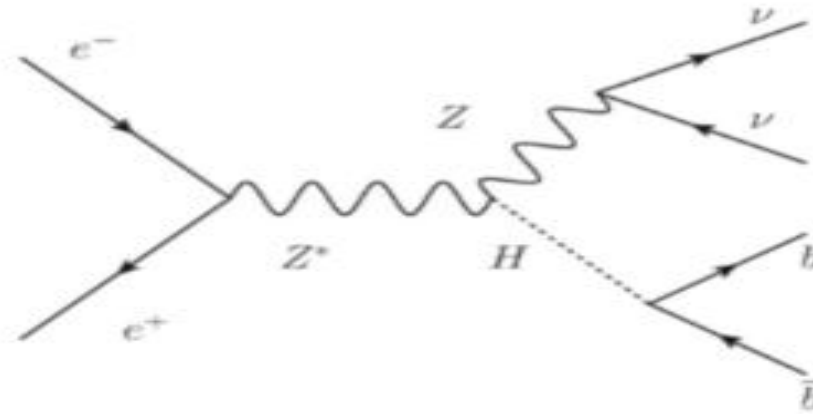


JER&JAR

Hou Yingqi

2024/11/13

Process



ZH->vvH,H->bb

```
data = getEntries("/cefs/higgs/houyingqi/jet_bbtot.root", "jets", variables)
```

from Kaili.

```
data_barrel = data[(abs(data["jet1_costheta"]) < 0.70) & (abs(data["jet2_costheta"]) < 0.70)]
```

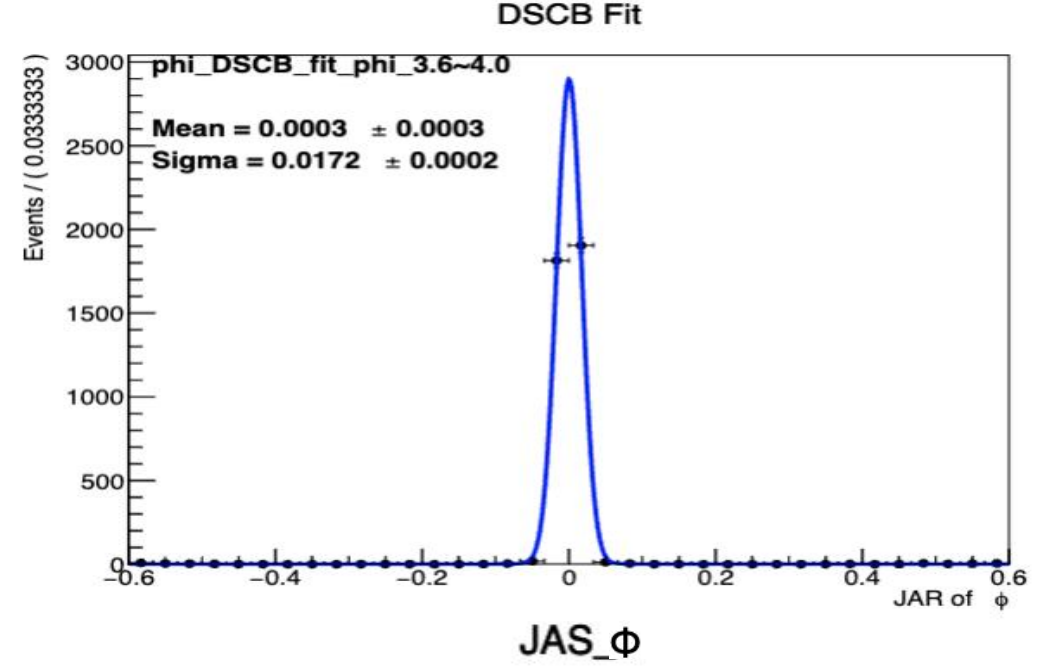
```
Total number of entries in dataAWK: 31486
```

```
Delta_jet = (Reco_jet-Gen_jet)/Gen_jet
```

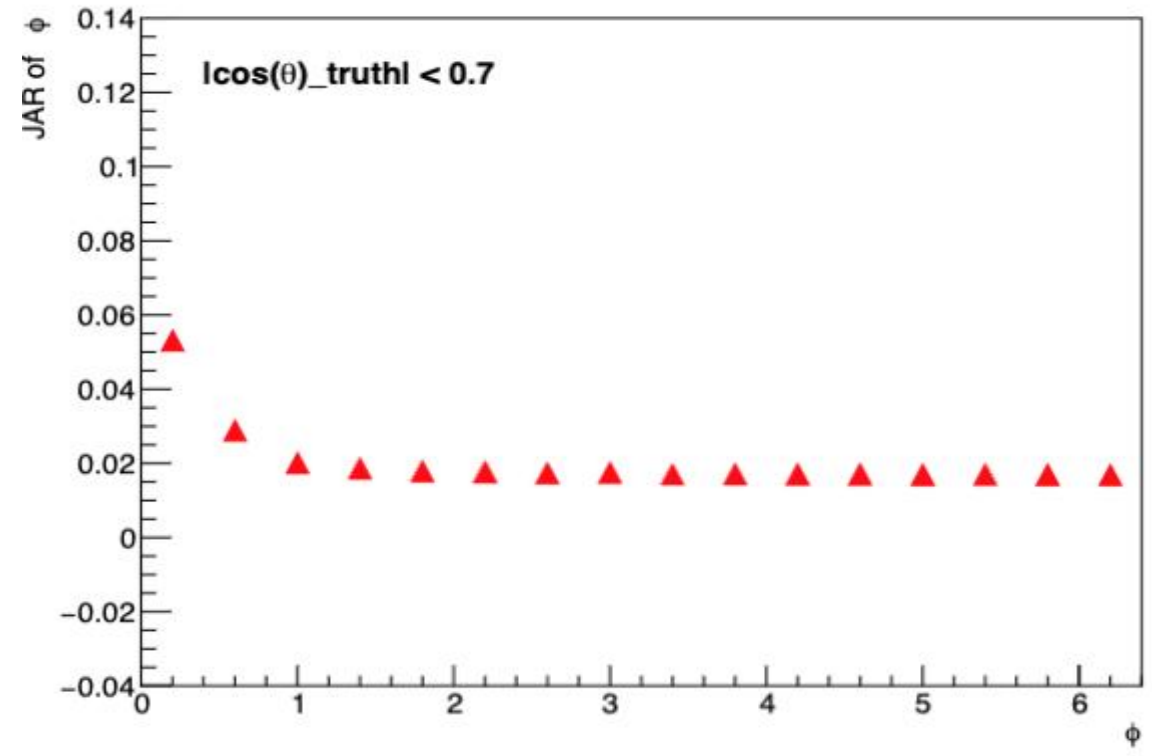
Events above and below the scope limits are included.

```
Jets_bins = [0, 0.4, 0.8, 1.2, 1.6, 2.0, 2.4, 2.8, 3.2, 3.6, 4.0, 4.4, 4.8, 5.2, 5.6, 6.0, 6.4]
```

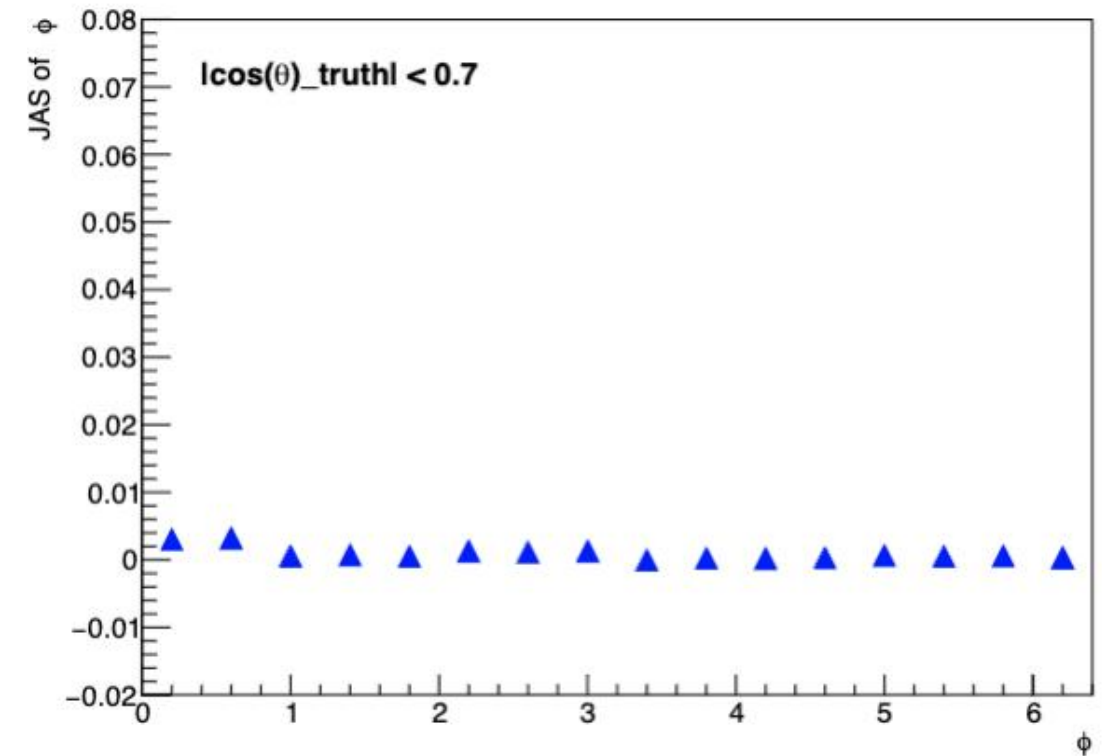
- ✓ JAR of ϕ reaches its maximum at $\Phi=0$.
- ✓ JAS of ϕ doesn't change significantly with Φ .



JAR_ ϕ

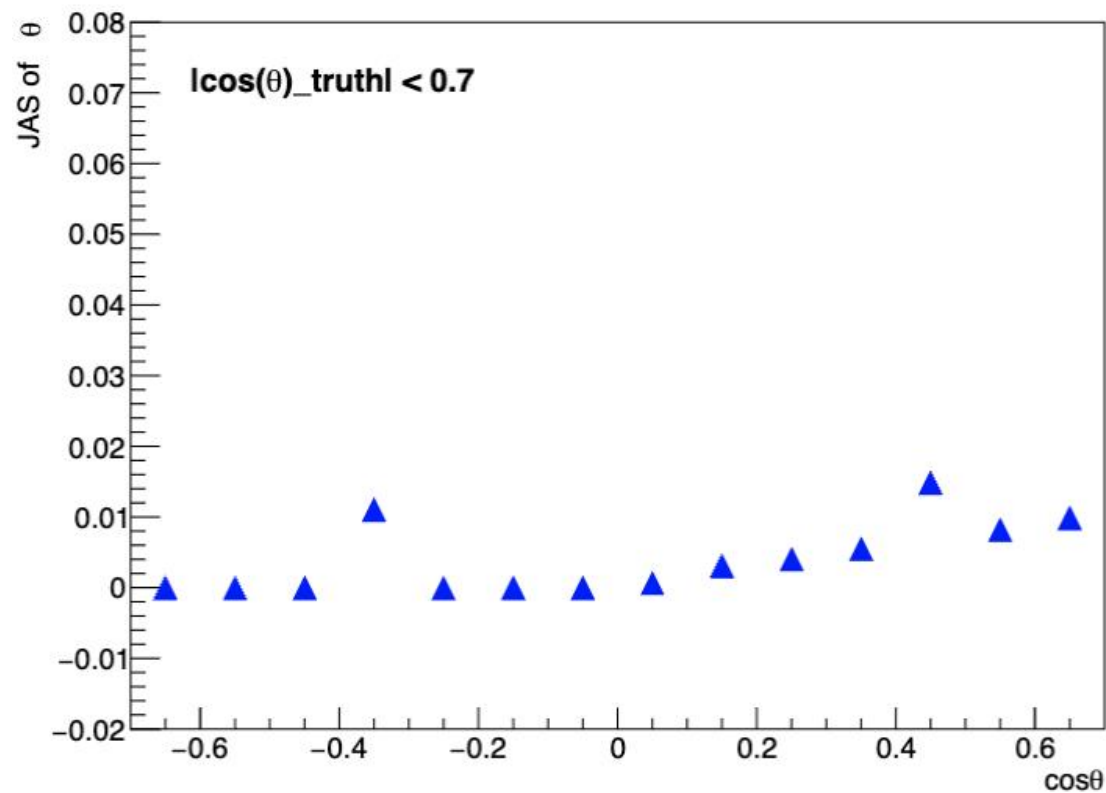
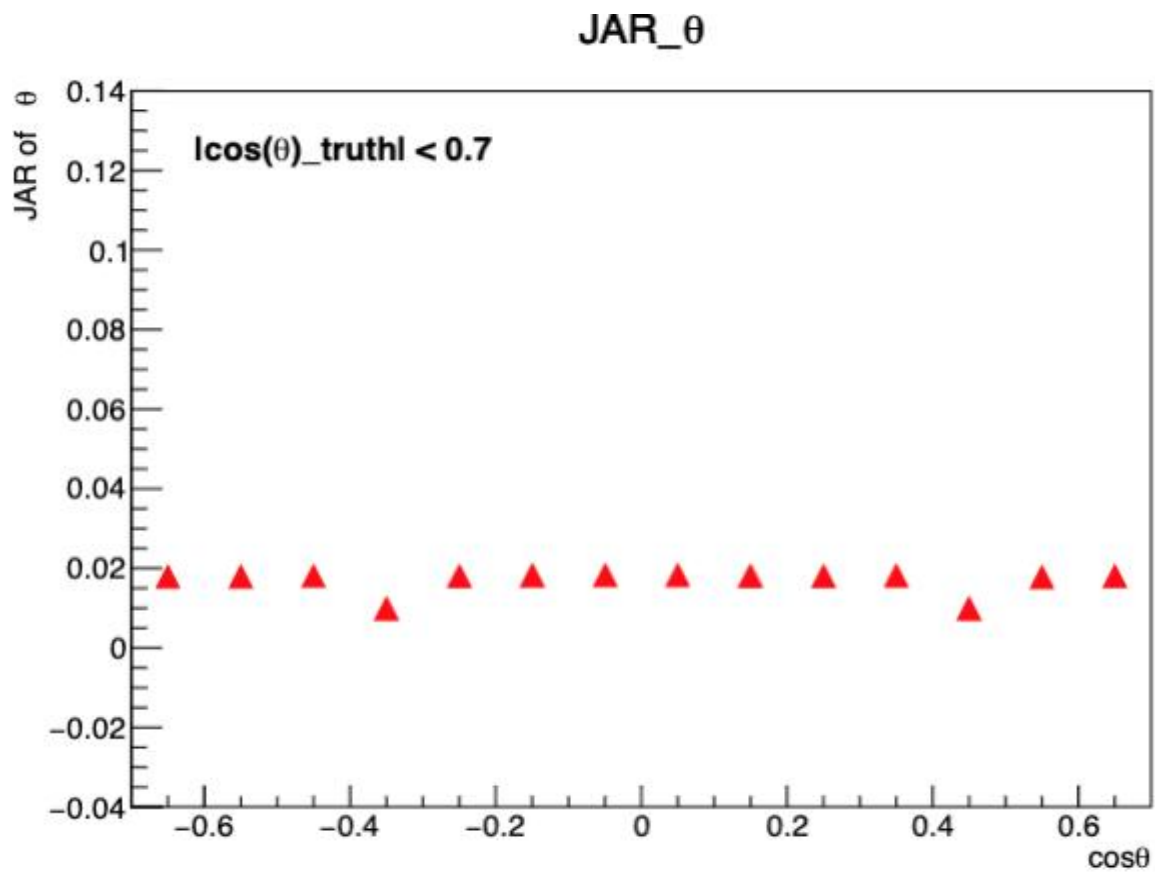
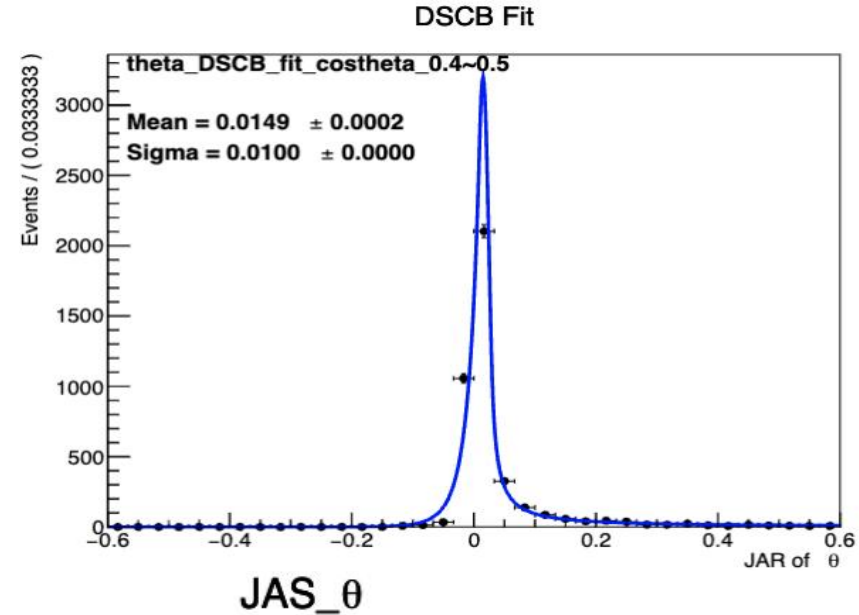


JAS_ ϕ



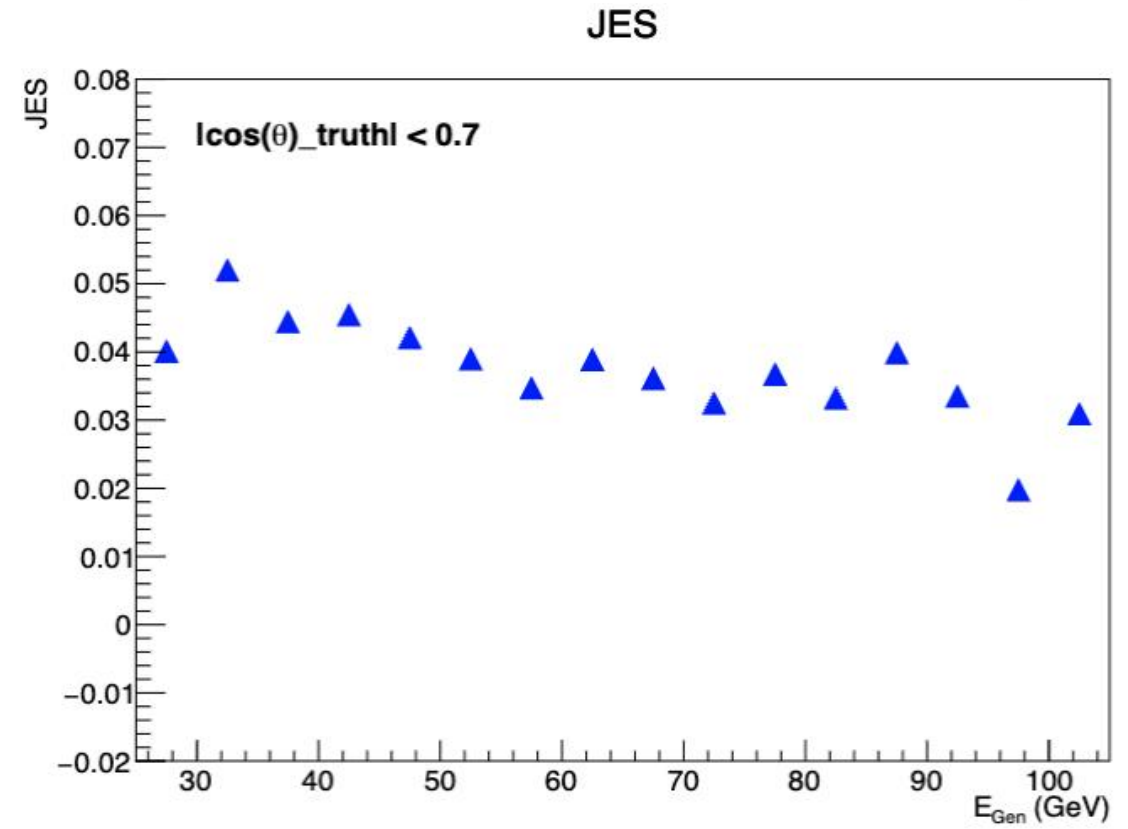
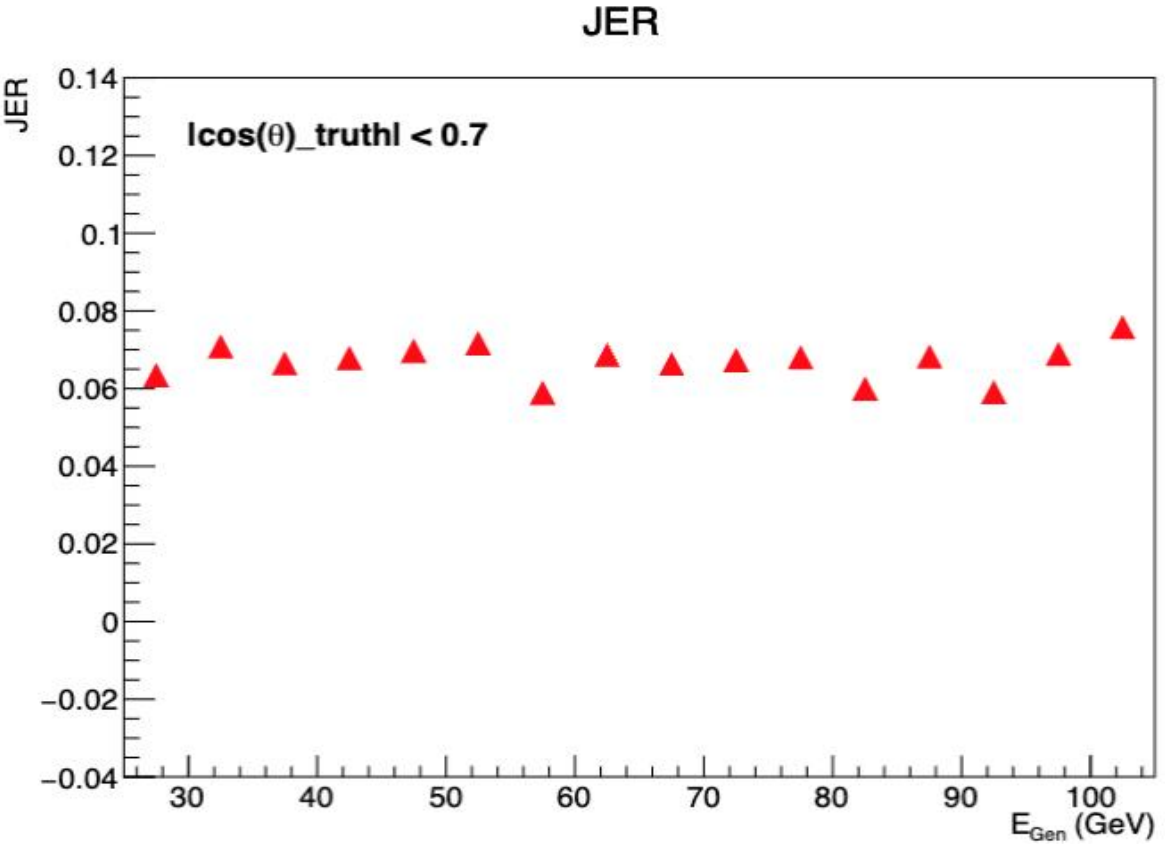
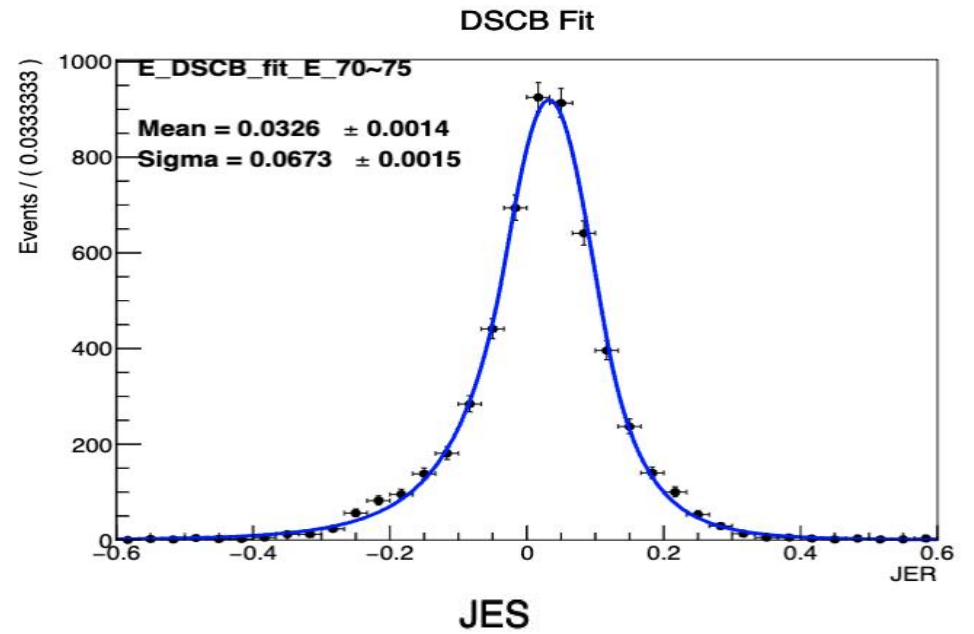
Jets_bins = [-0.7, -0.6, -0.5, -0.4, -0.3, -0.2, -0.1, 0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7]

- ✓ JAR of θ doesn't change significantly with the increase of $\cos\theta$.
- ✓ JAS of θ gradually increases as $\cos\theta$ increases.



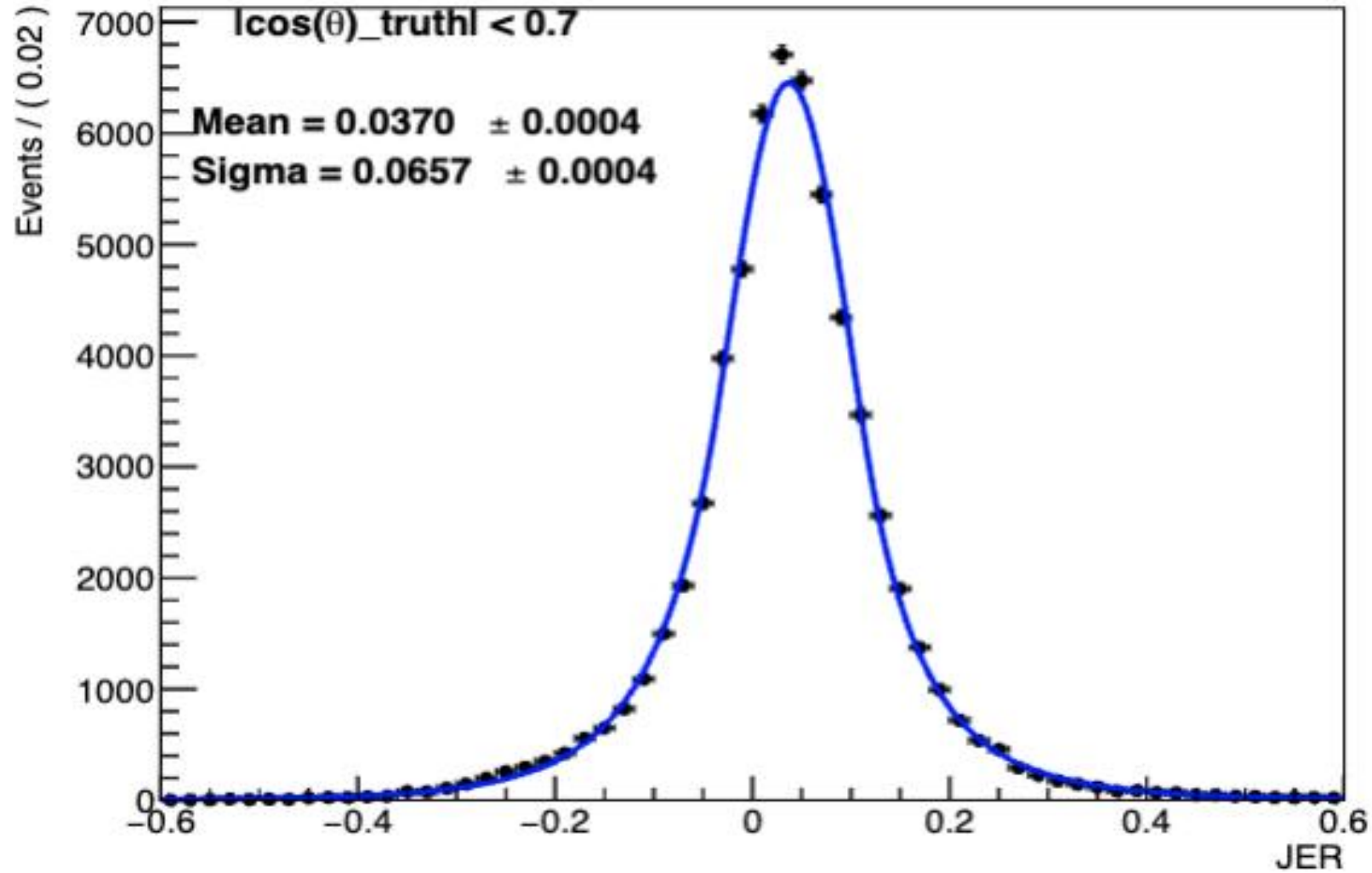
```
Jets_bins = [10, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 120]
```

- JER doesn't change significantly with the increase of energy.
- JES gradually decreases as energy increases.

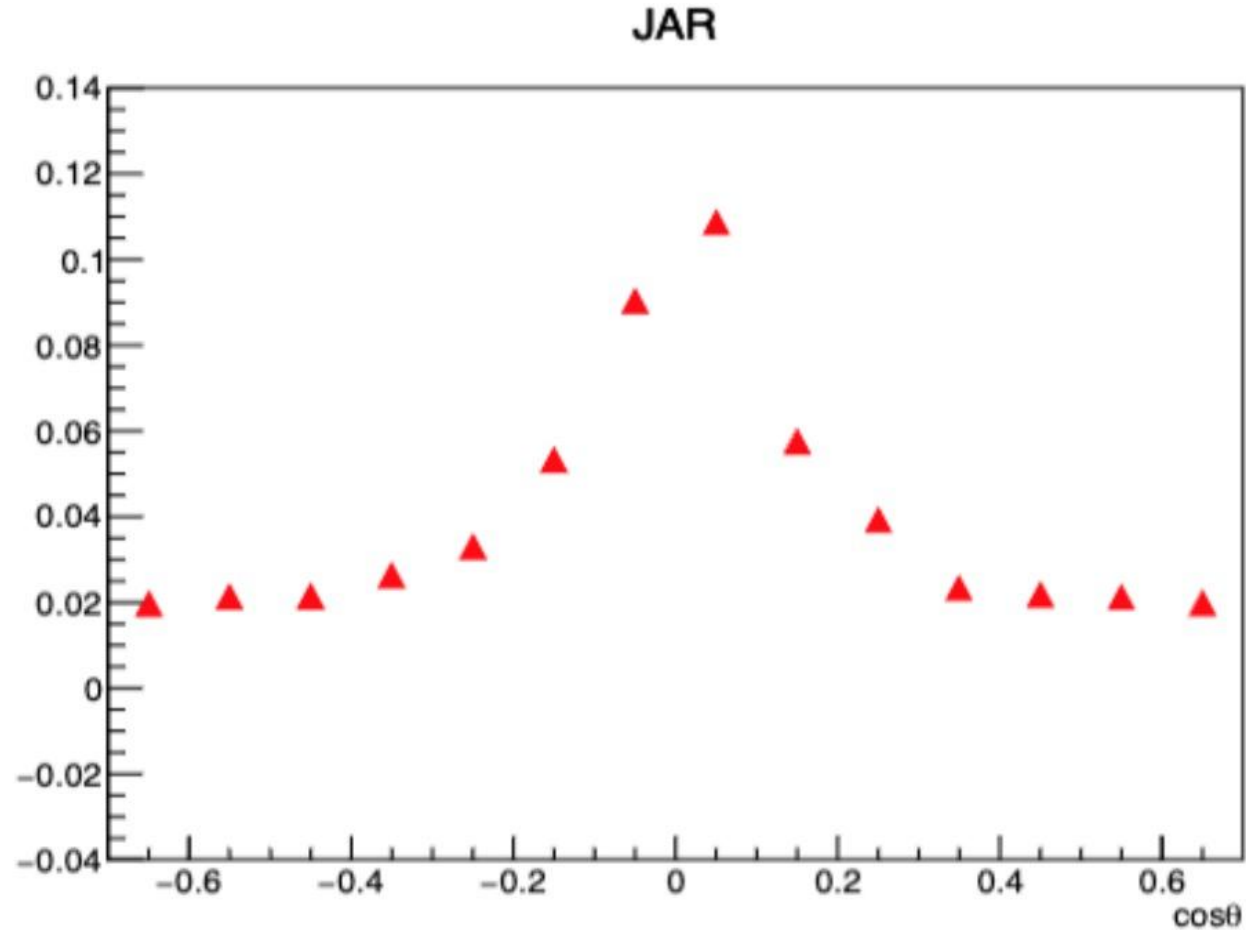


Jet(modification)

DSCB Fit



Addtionly Find



- Incorrectly treated $\cos\theta$ as the variable of JAR.
- It has a peak at $\cos\theta=0$. Why?

Back Up

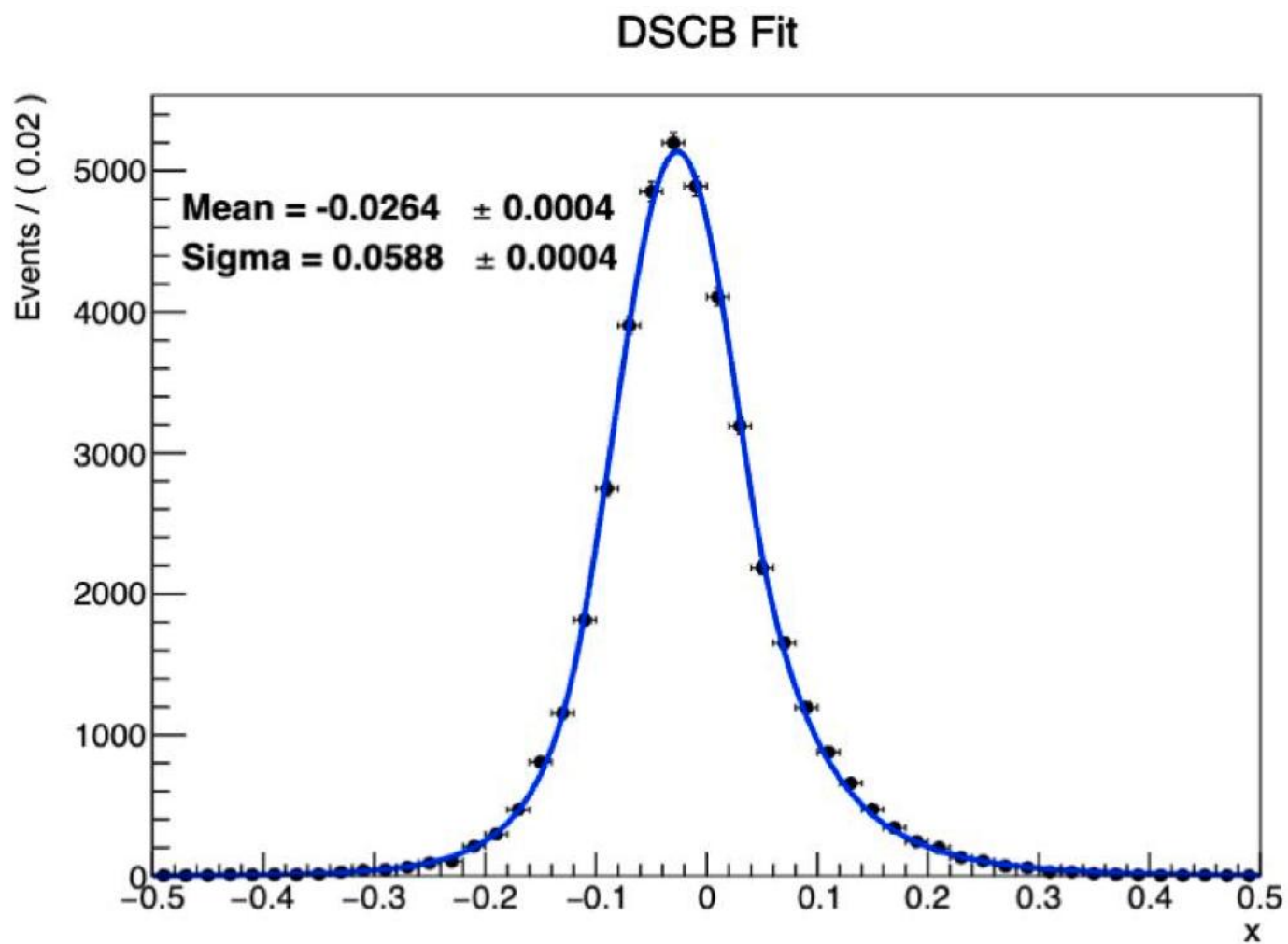
JER

Hou Yingqi

2024/11/06

```
data = getEntries("/cefs/higgs/houyingqi/jet_bbttotal.root", "jets", variables)
```

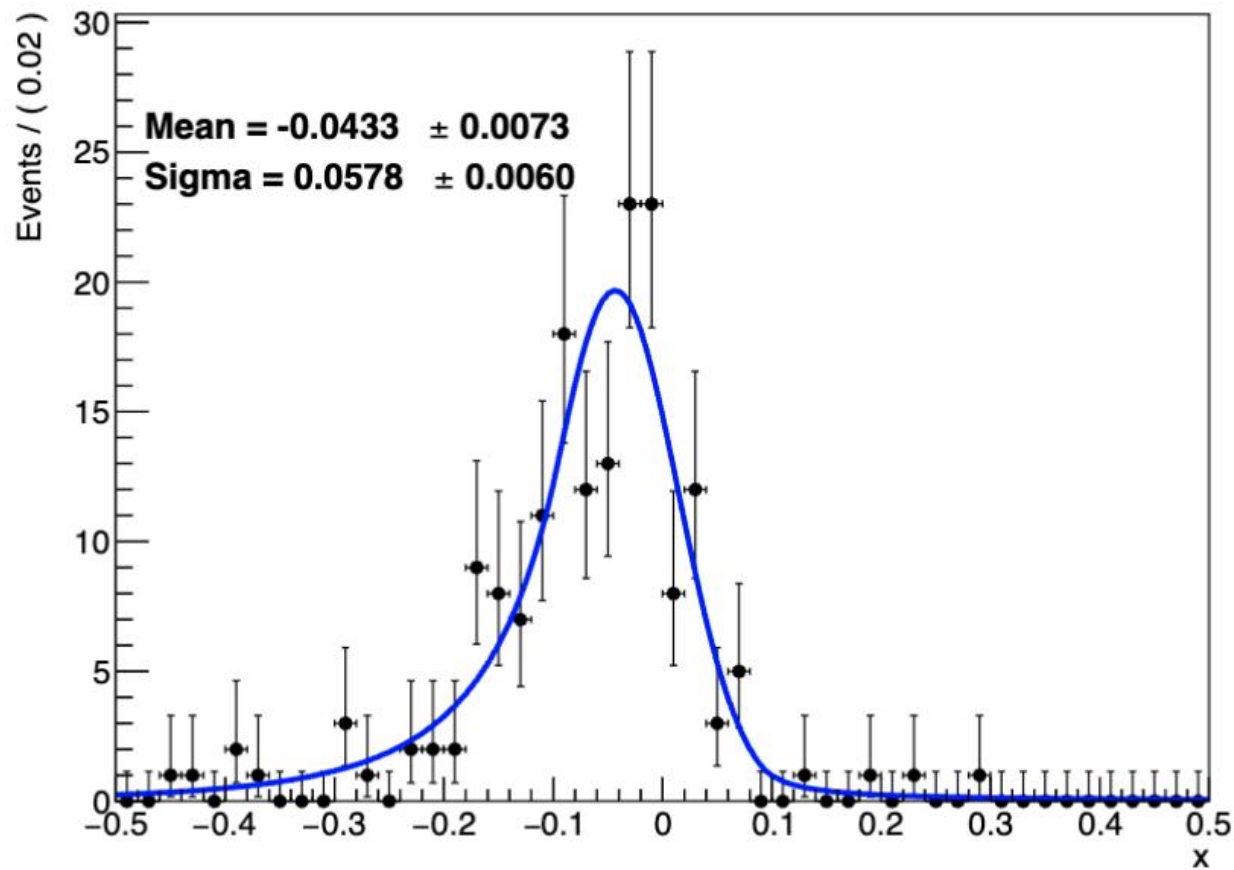
jet1 + jet2(是不区分jet1和jet2)



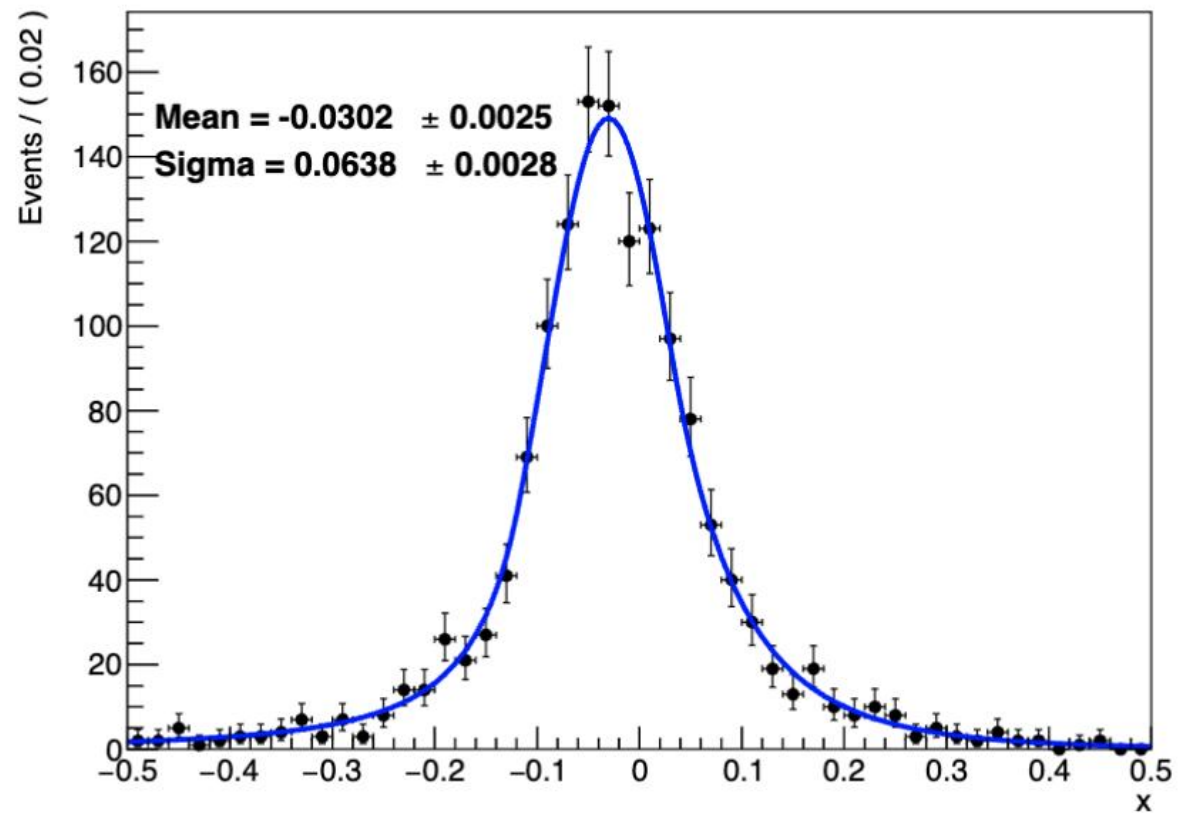
```
Delta_E = (Gen_E - Reco_E)/Gen_E
```

```
data_barrel = data[(abs(data["jet1_costheta"]) < 0.85) & (abs(data["jet2_costheta"]) < 0.85)]
```

Jet1=50GeV(反)
DSCB Fit

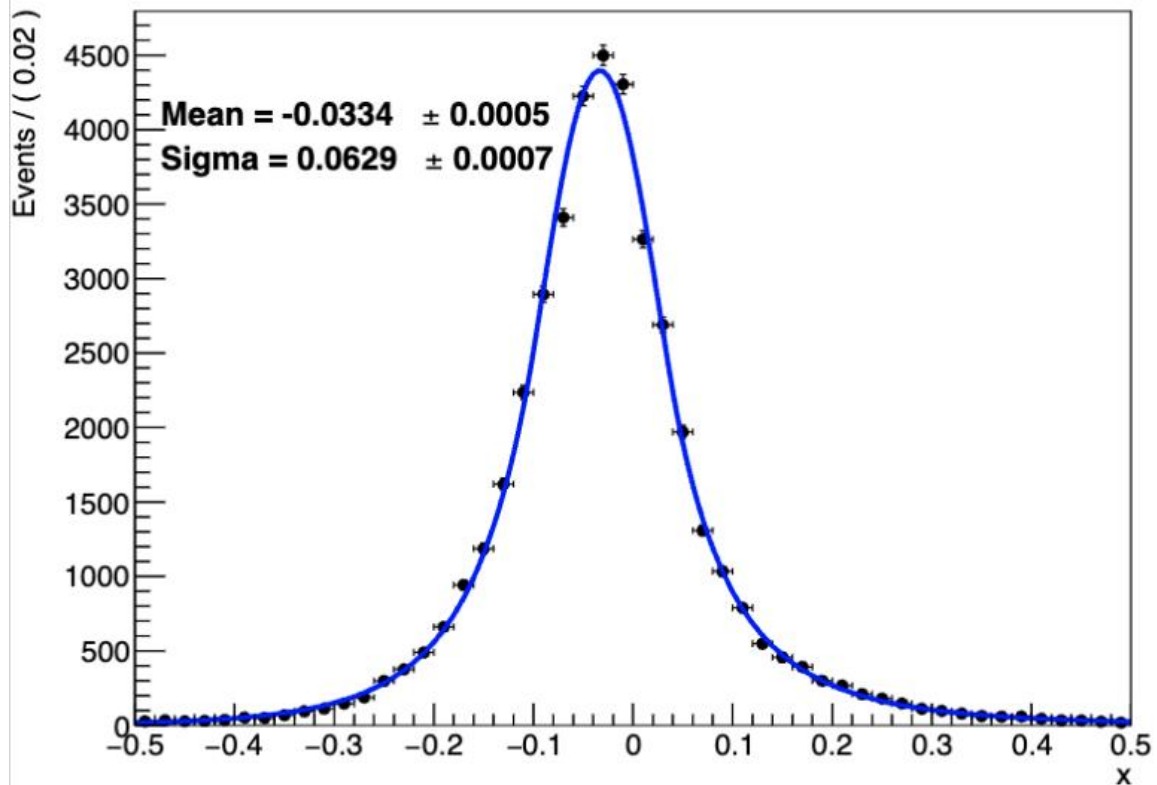


Jet2=50GeV
DSCB Fit



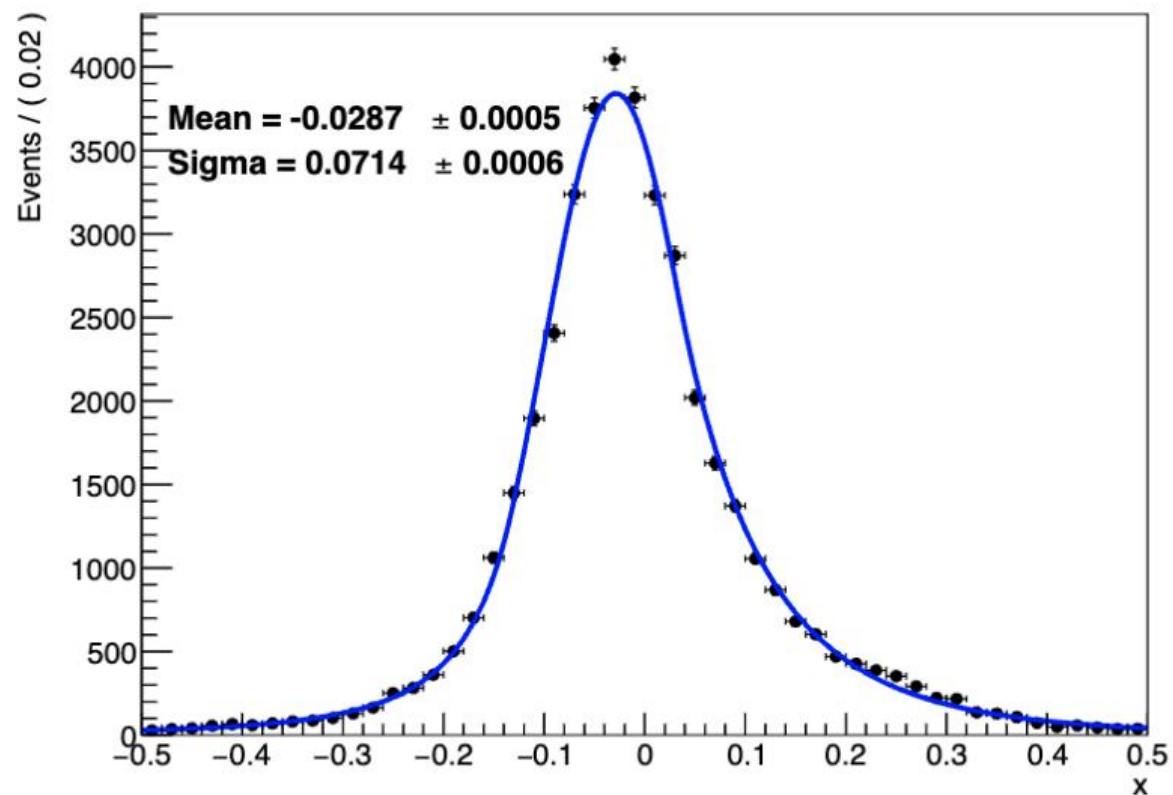
Jet1

DSCB Fit



Jet2

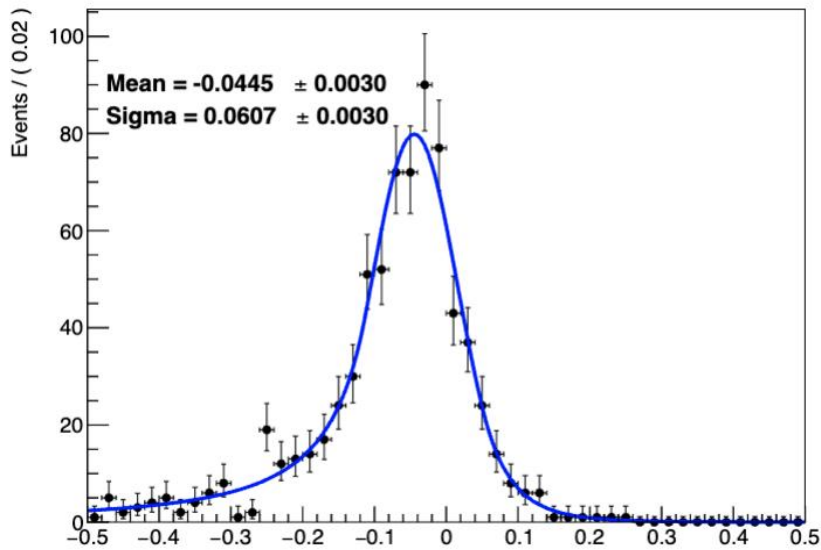
DSCB Fit



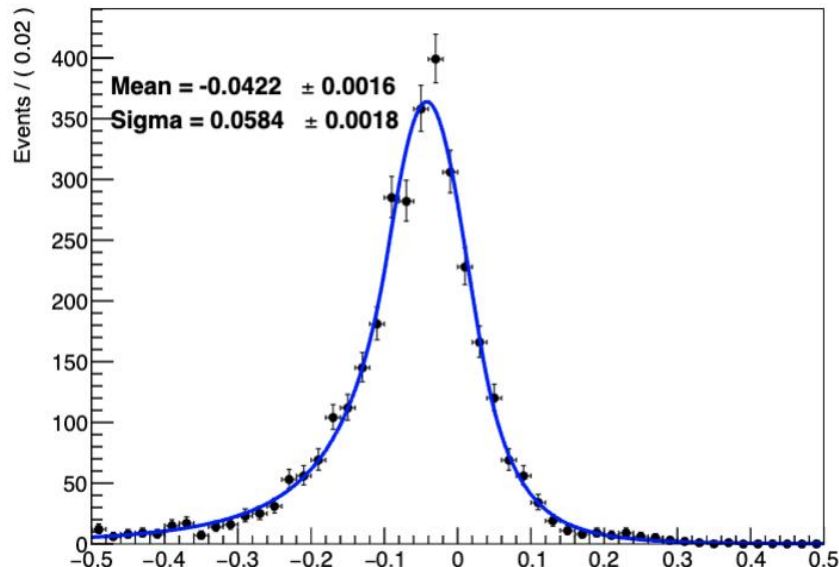
Jet1

[20, 50, 60, 70, 75, 80, 90, 100, 110, 140]

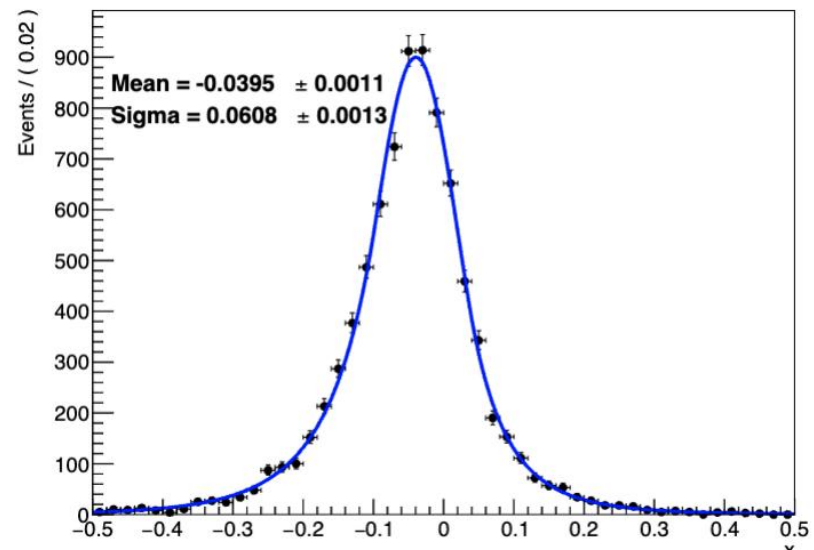
DSCB Fit



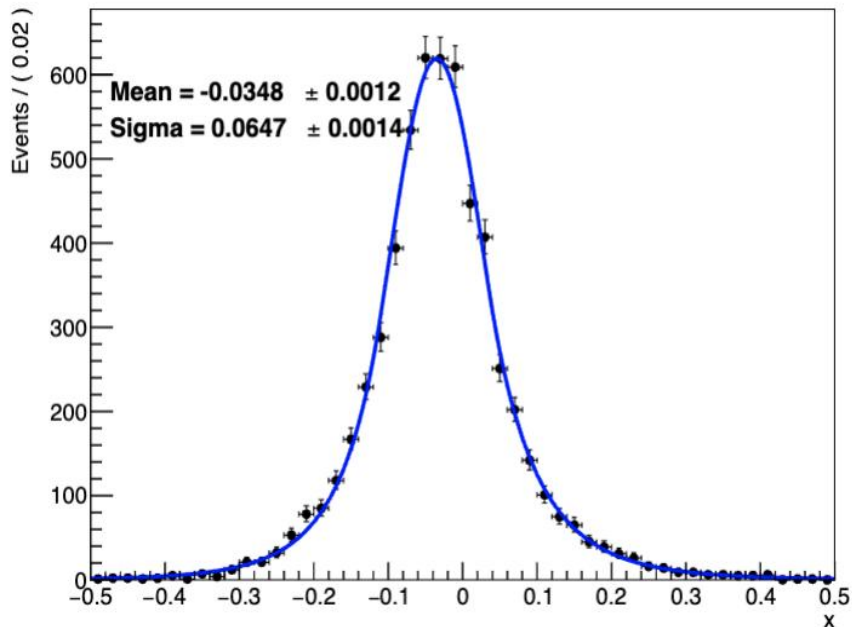
DSCB Fit



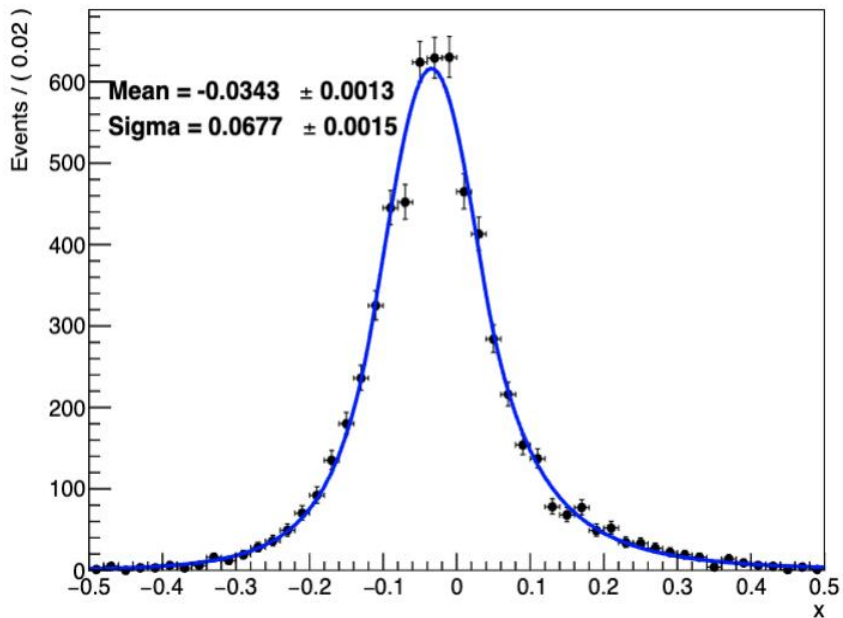
DSCB Fit



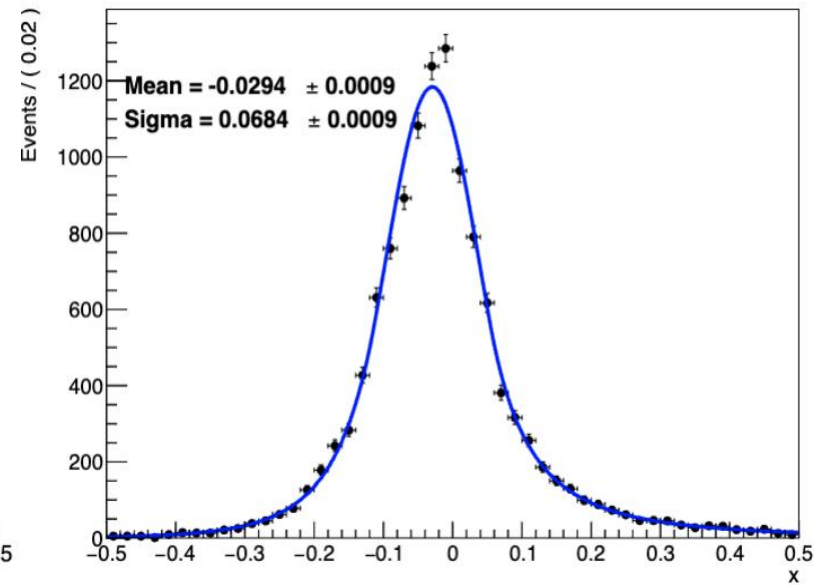
DSCB Fit



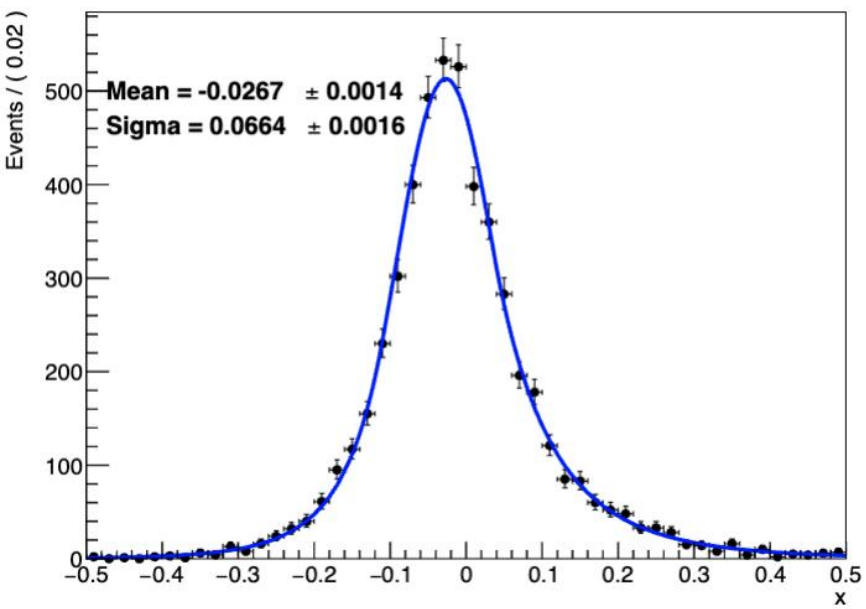
DSCB Fit



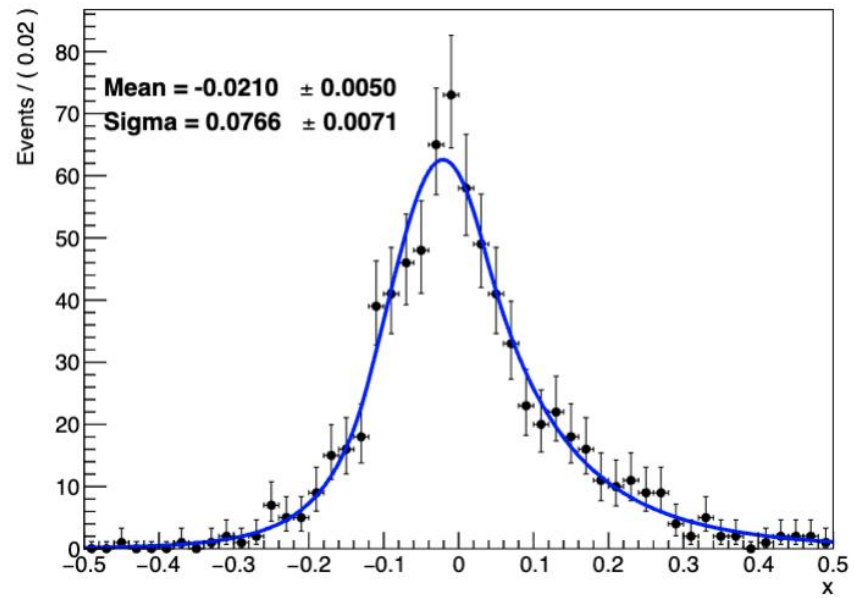
DSCB Fit



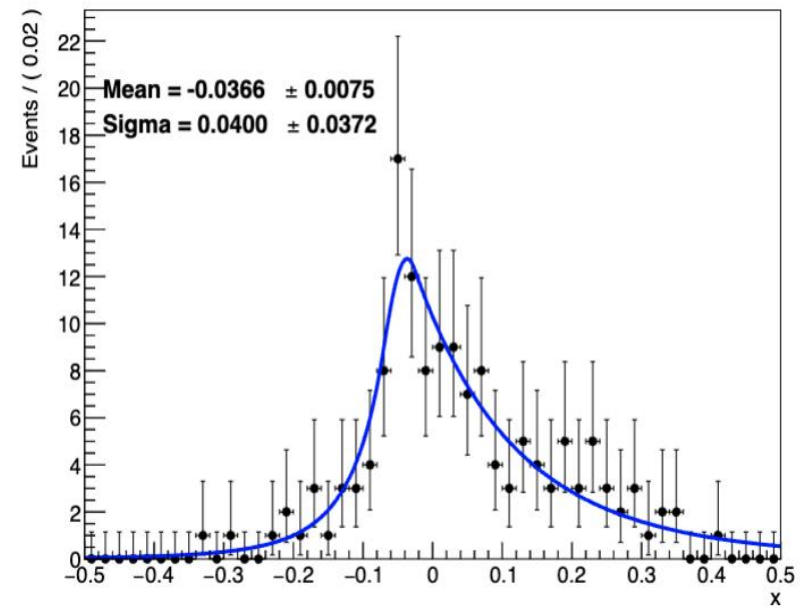
DSCB Fit



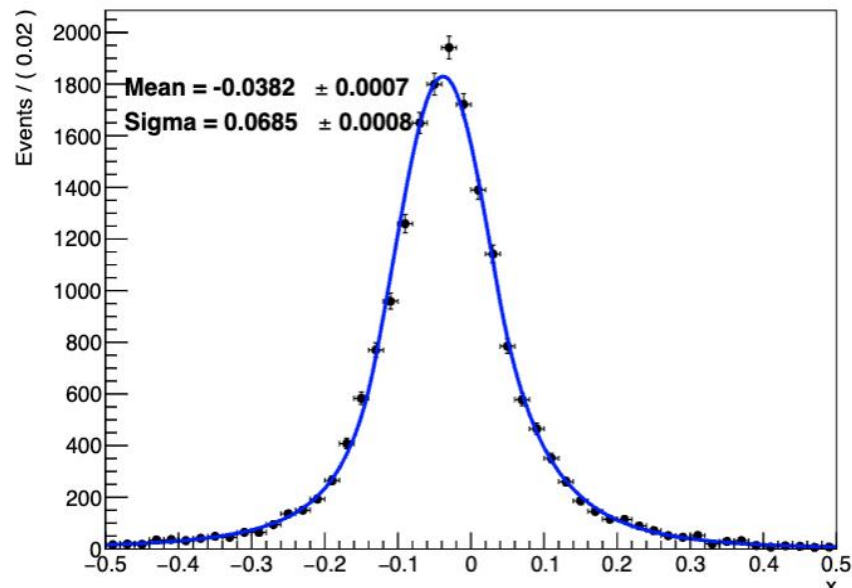
DSCB Fit



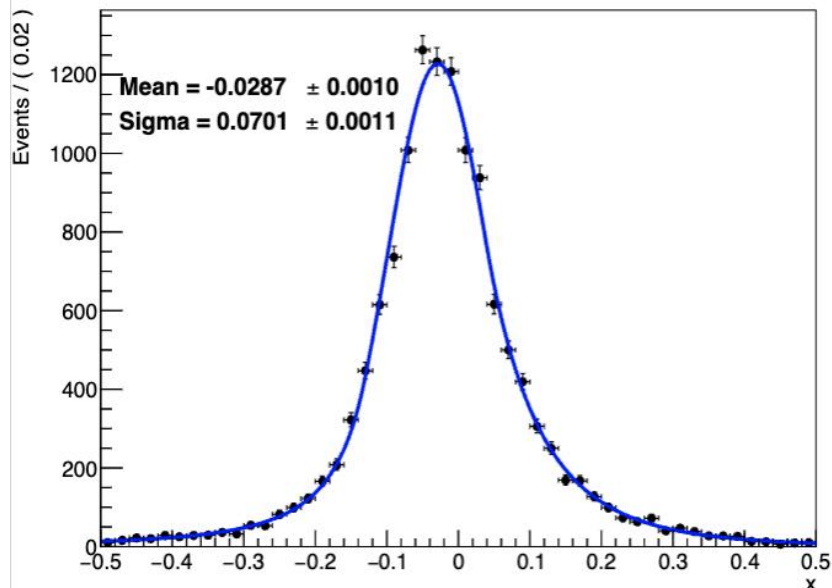
DSCB Fit



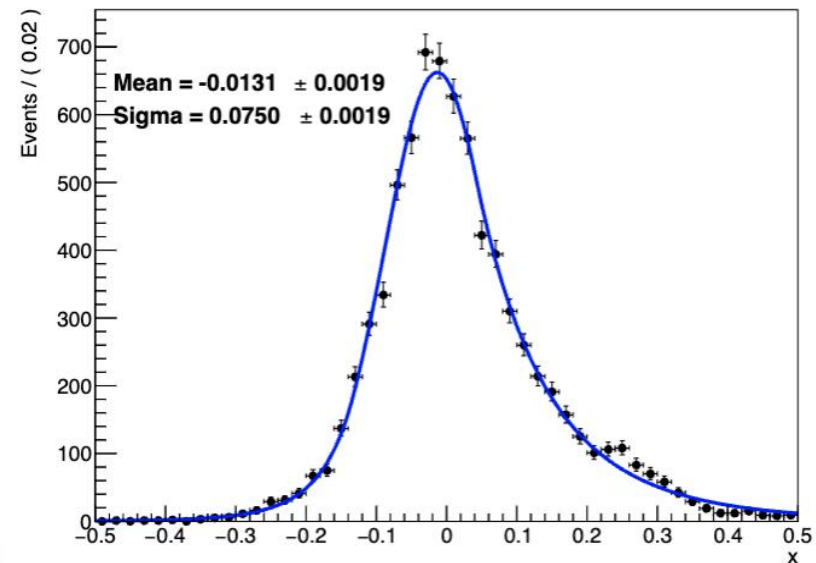
DSCB Fit



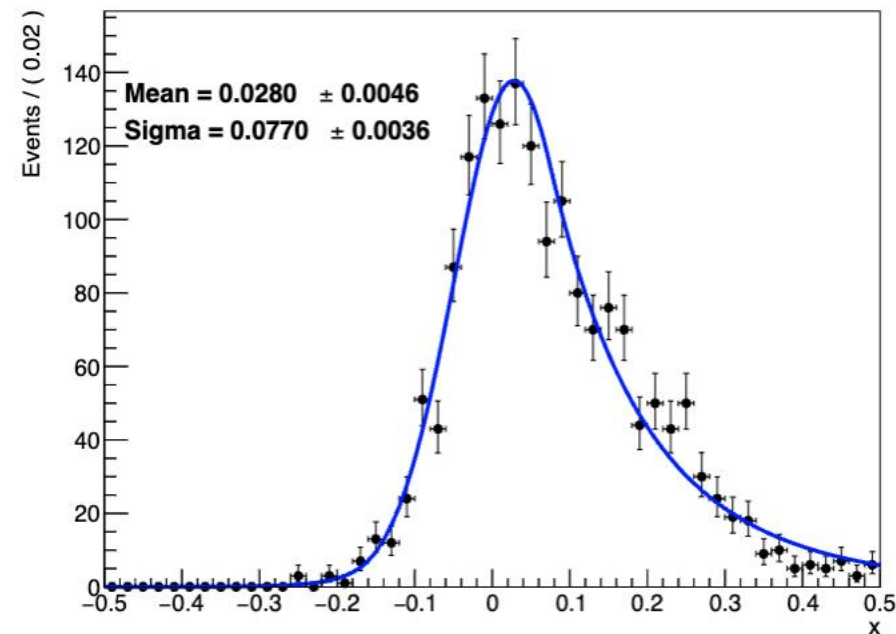
DSCB Fit



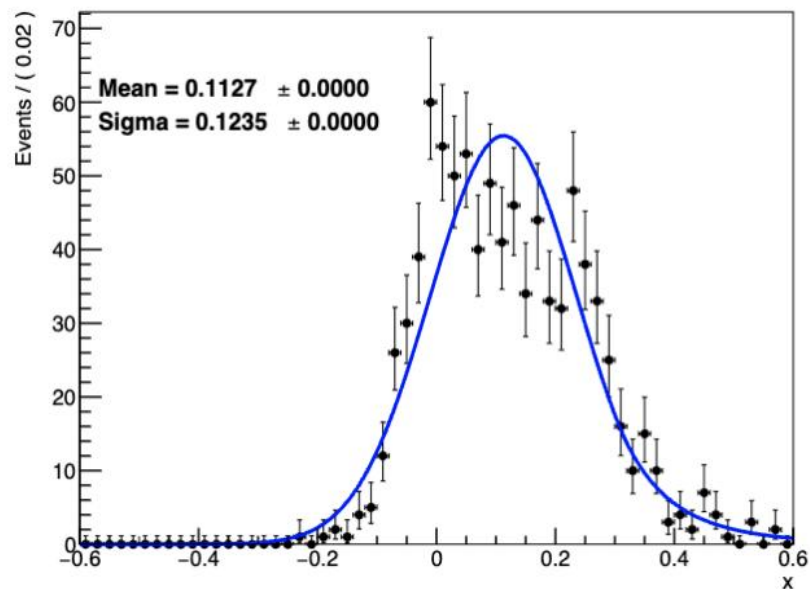
DSCB Fit



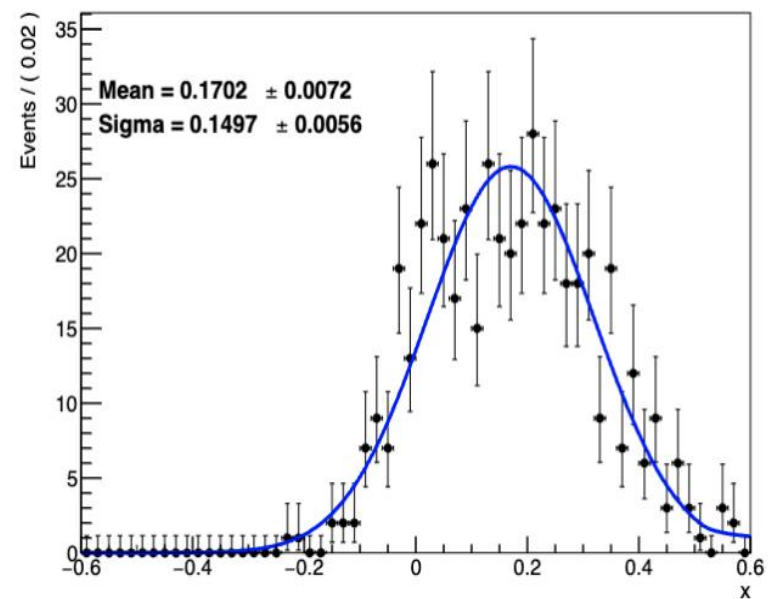
DSCB Fit



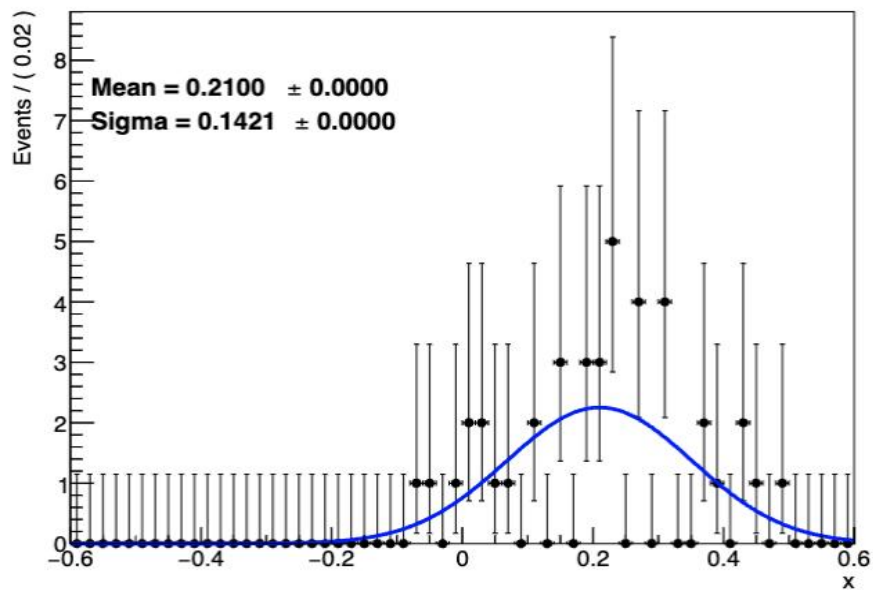
DSCB Fit



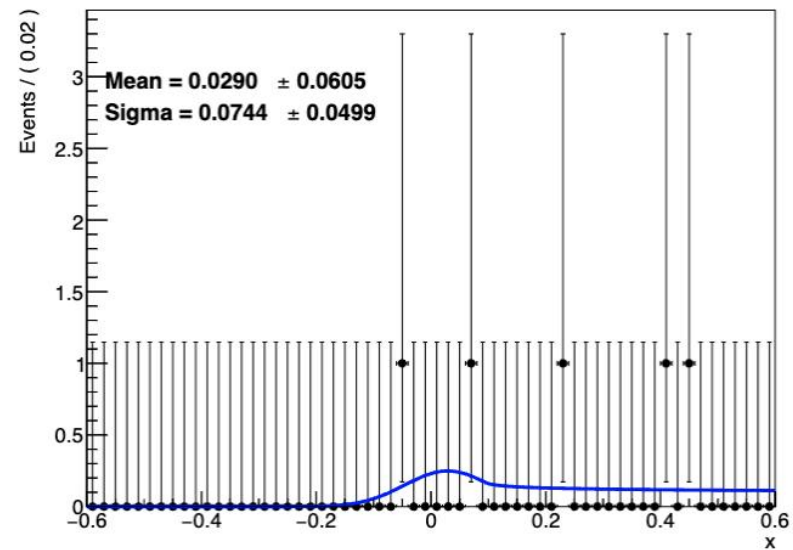
DSCB Fit



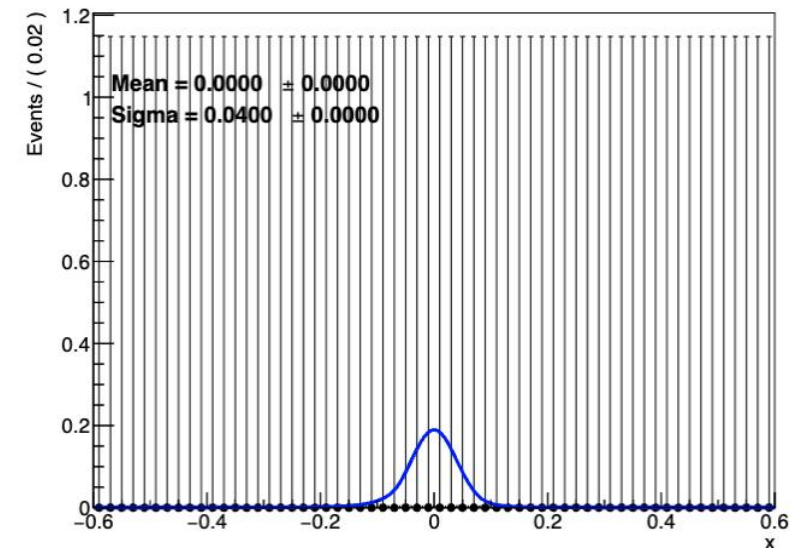
DSCB Fit



DSCB Fit



DSCB Fit



Jet1 has better energy resolution than Jet2.