

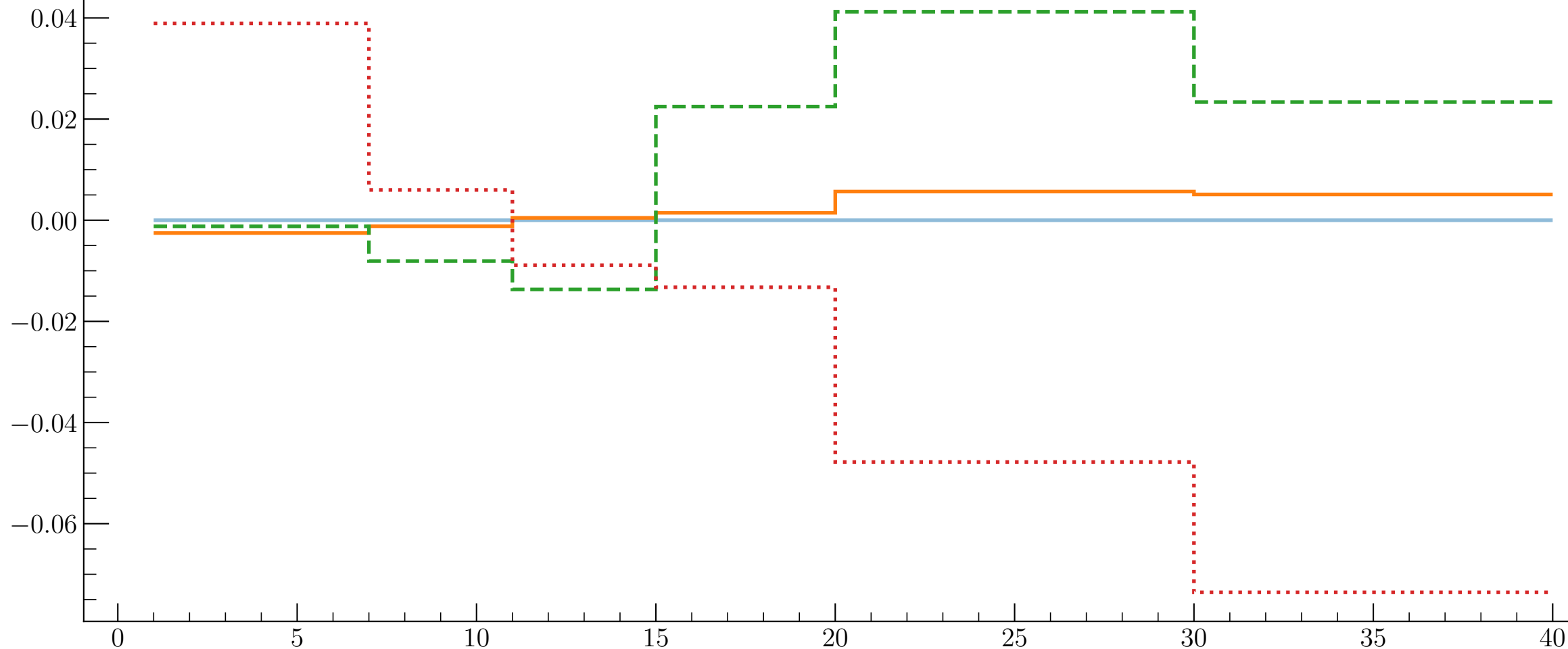
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

JetTrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $n_{\text{ch}}$

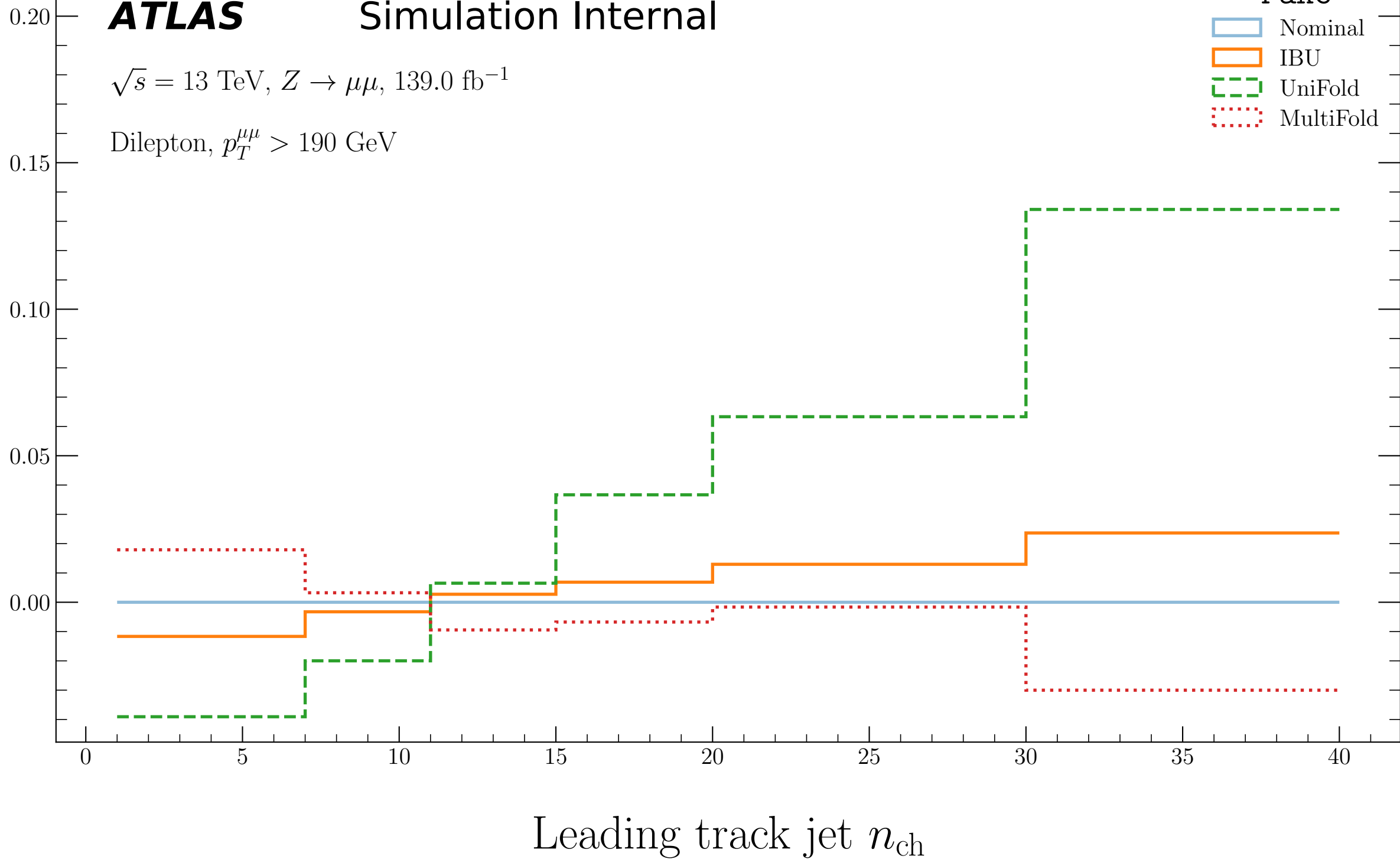
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

- Nominal
- IBU
- UniFold
- MultiFold



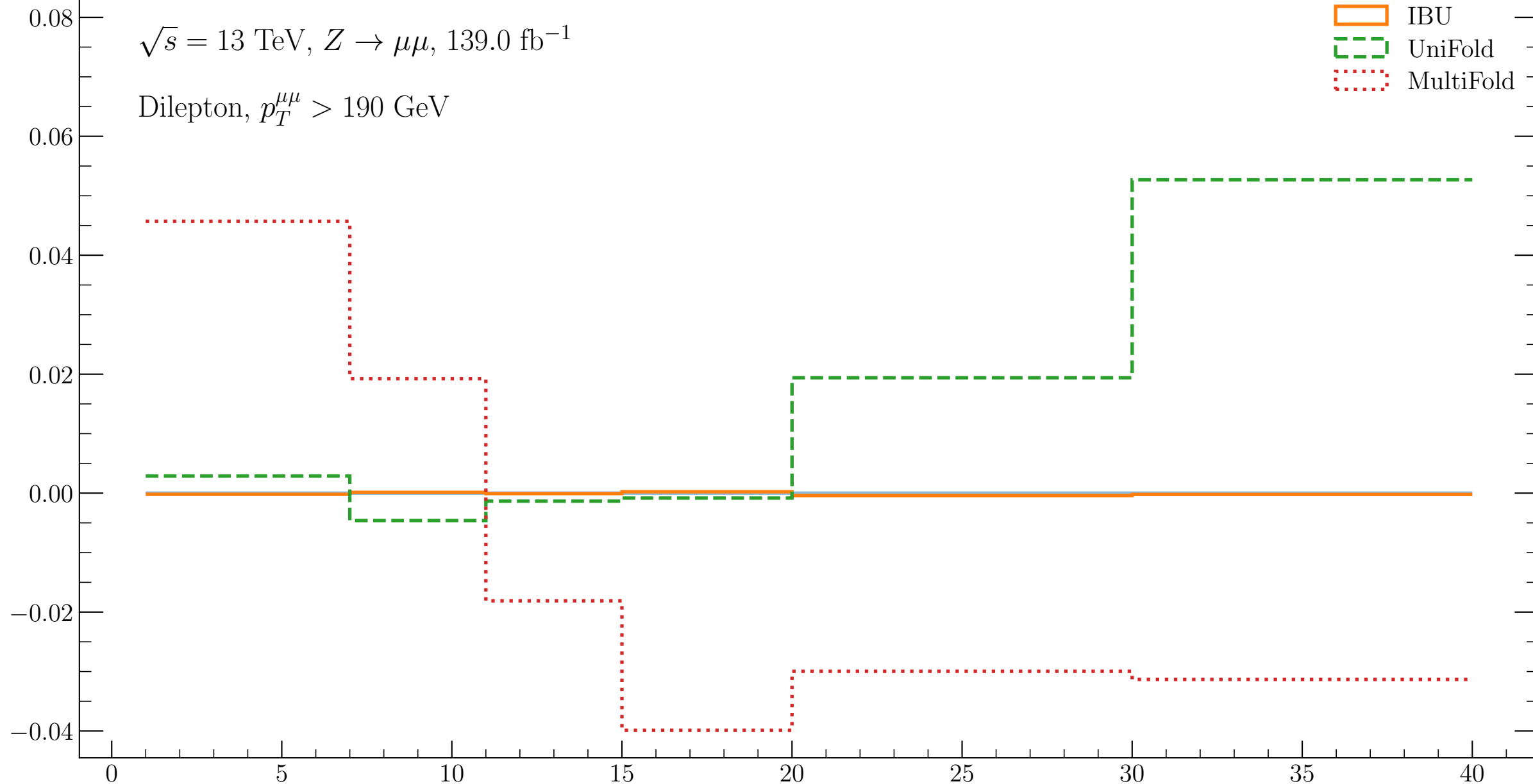
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

- Nominal
- IBU
- UniFold
- MultiFold



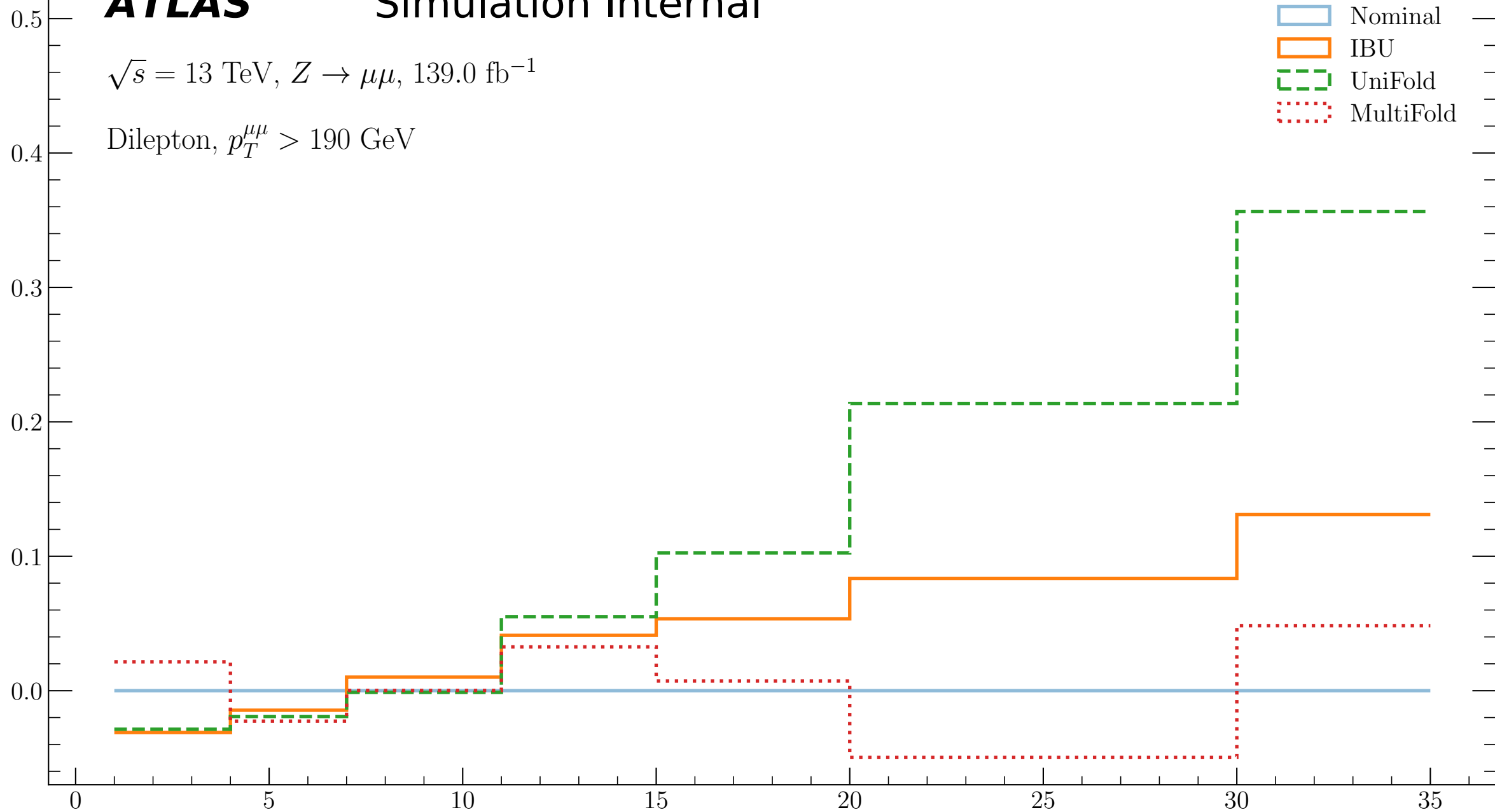
**ATLAS**

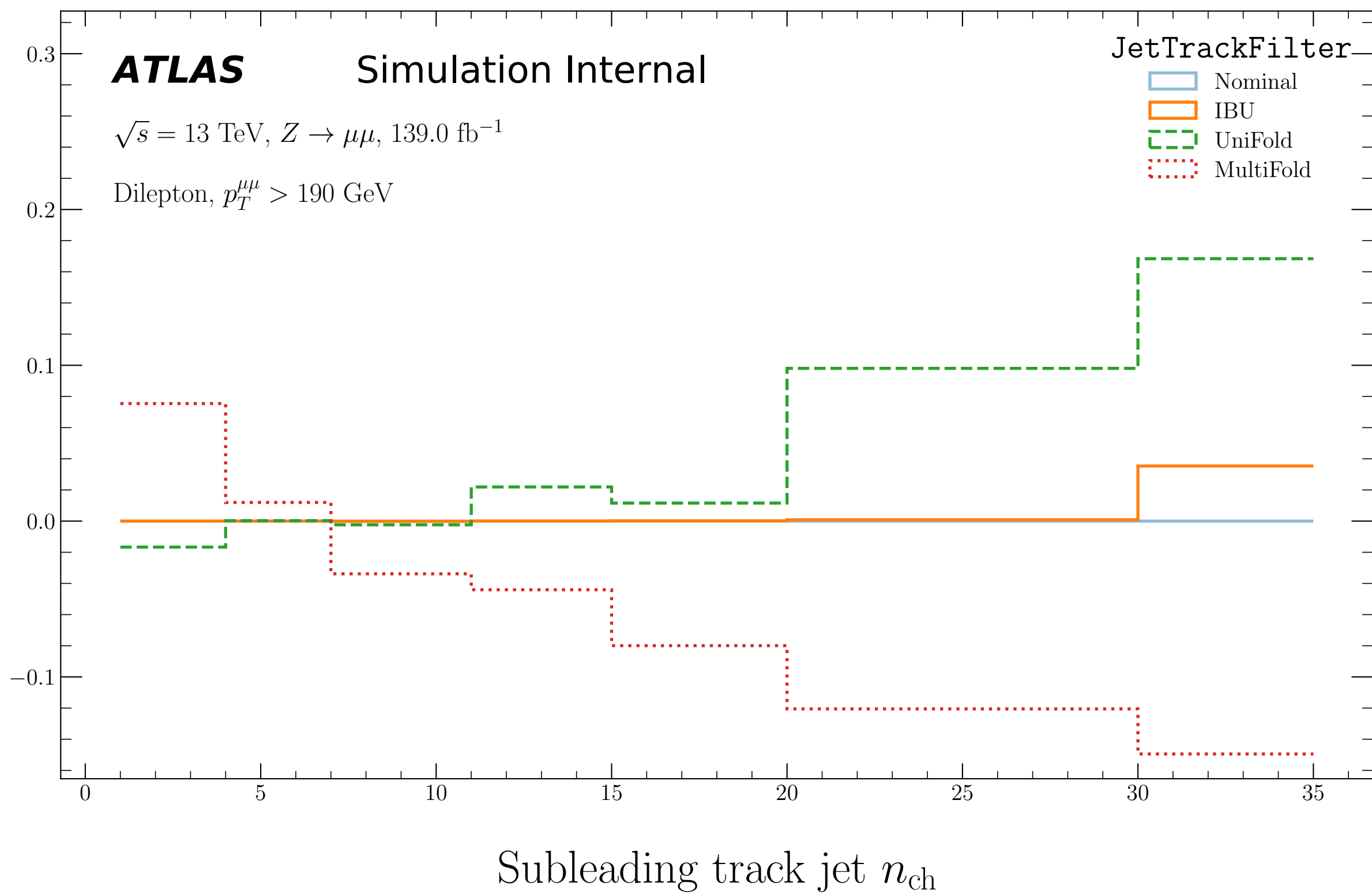
Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $n_{\text{ch}}$



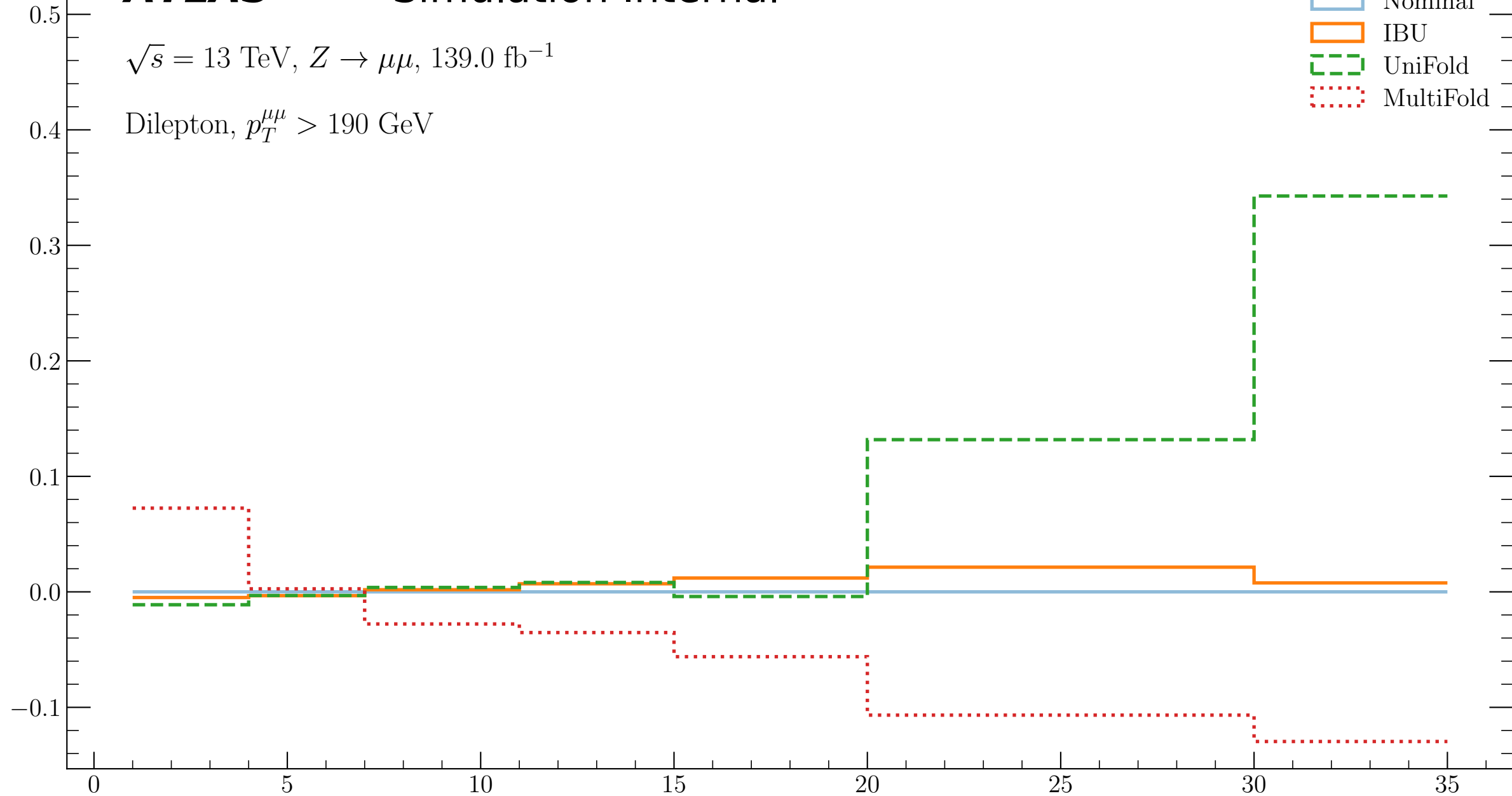
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $n_{\text{ch}}$

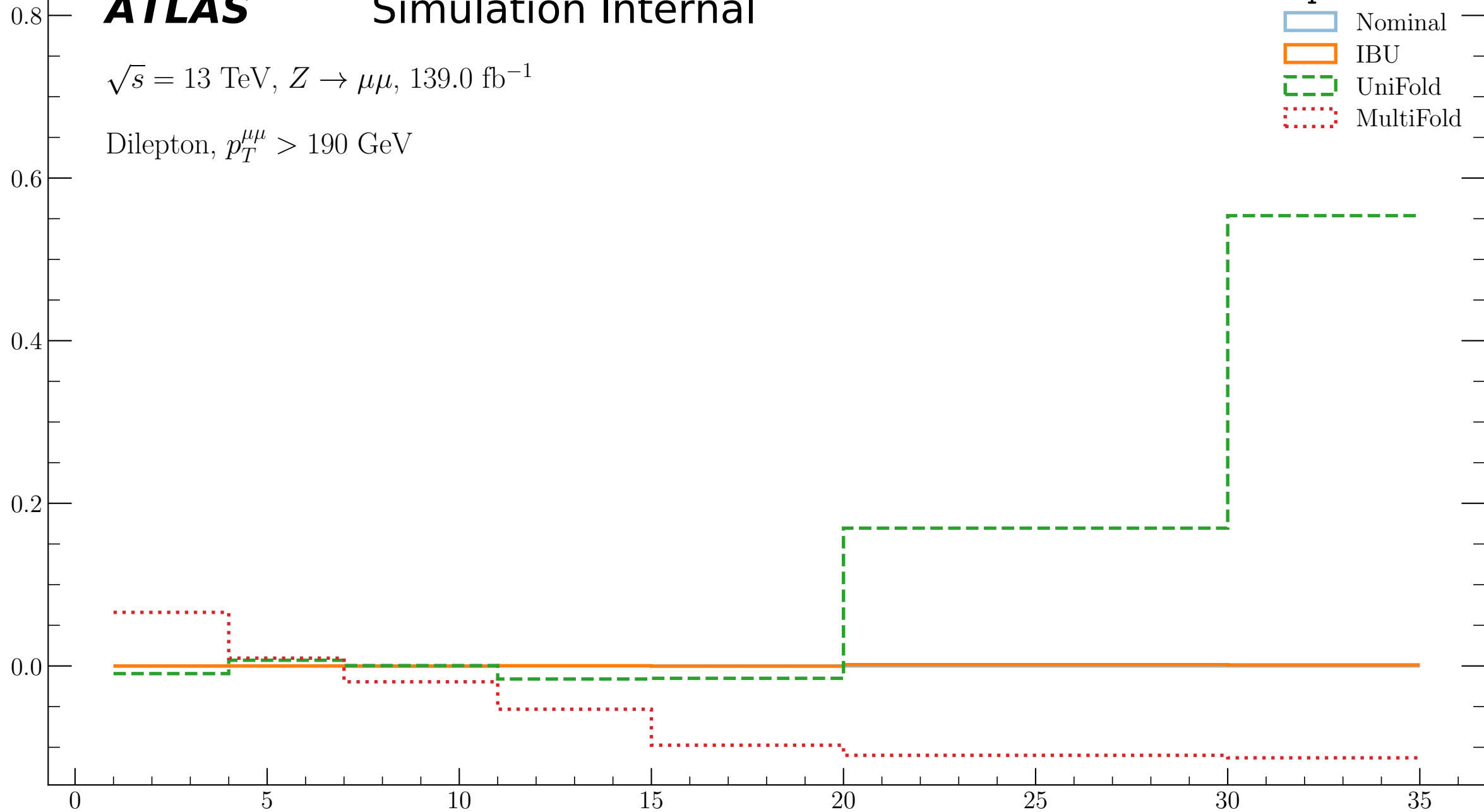
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $n_{\text{ch}}$



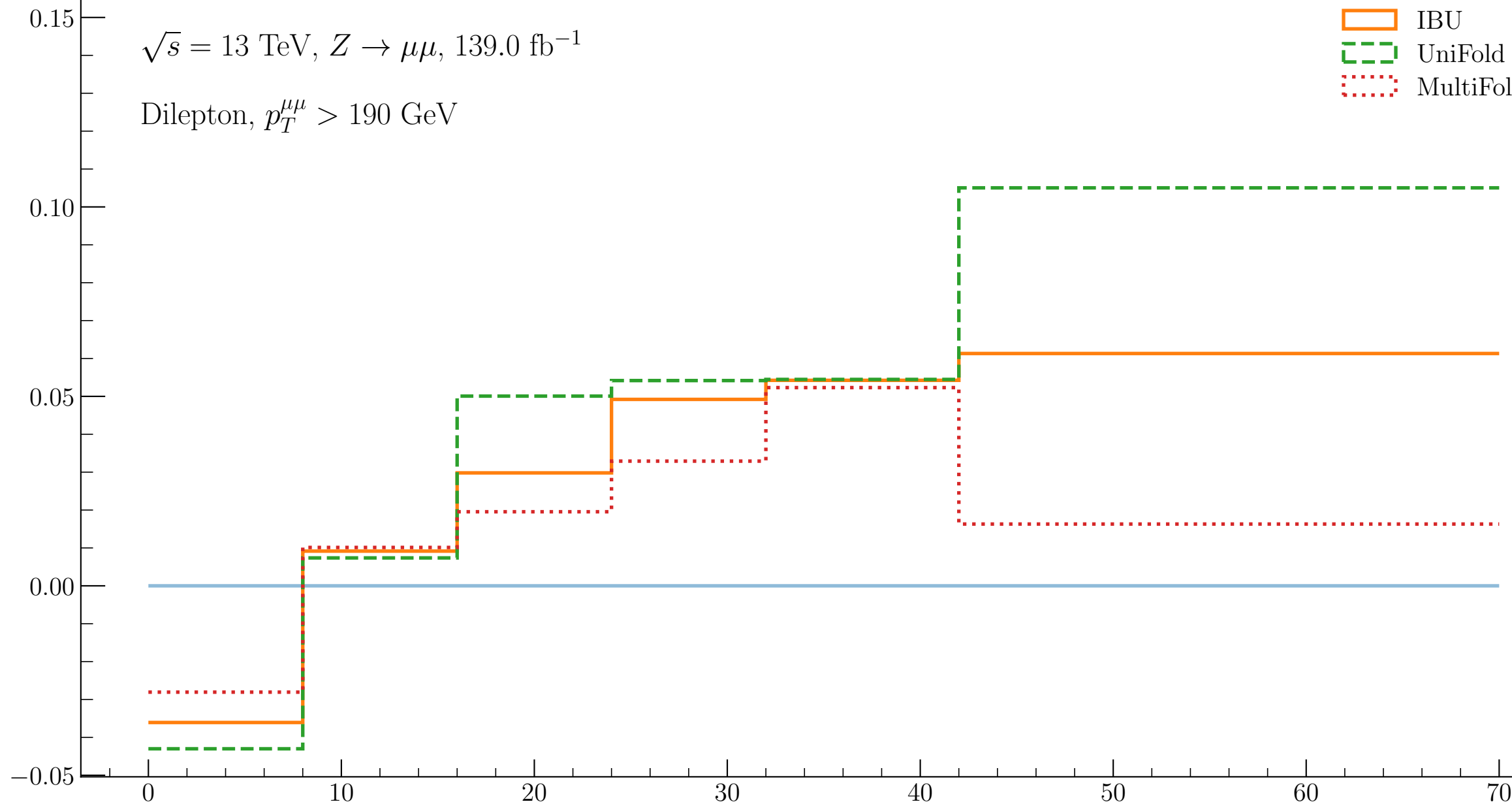
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $m$  [GeV]

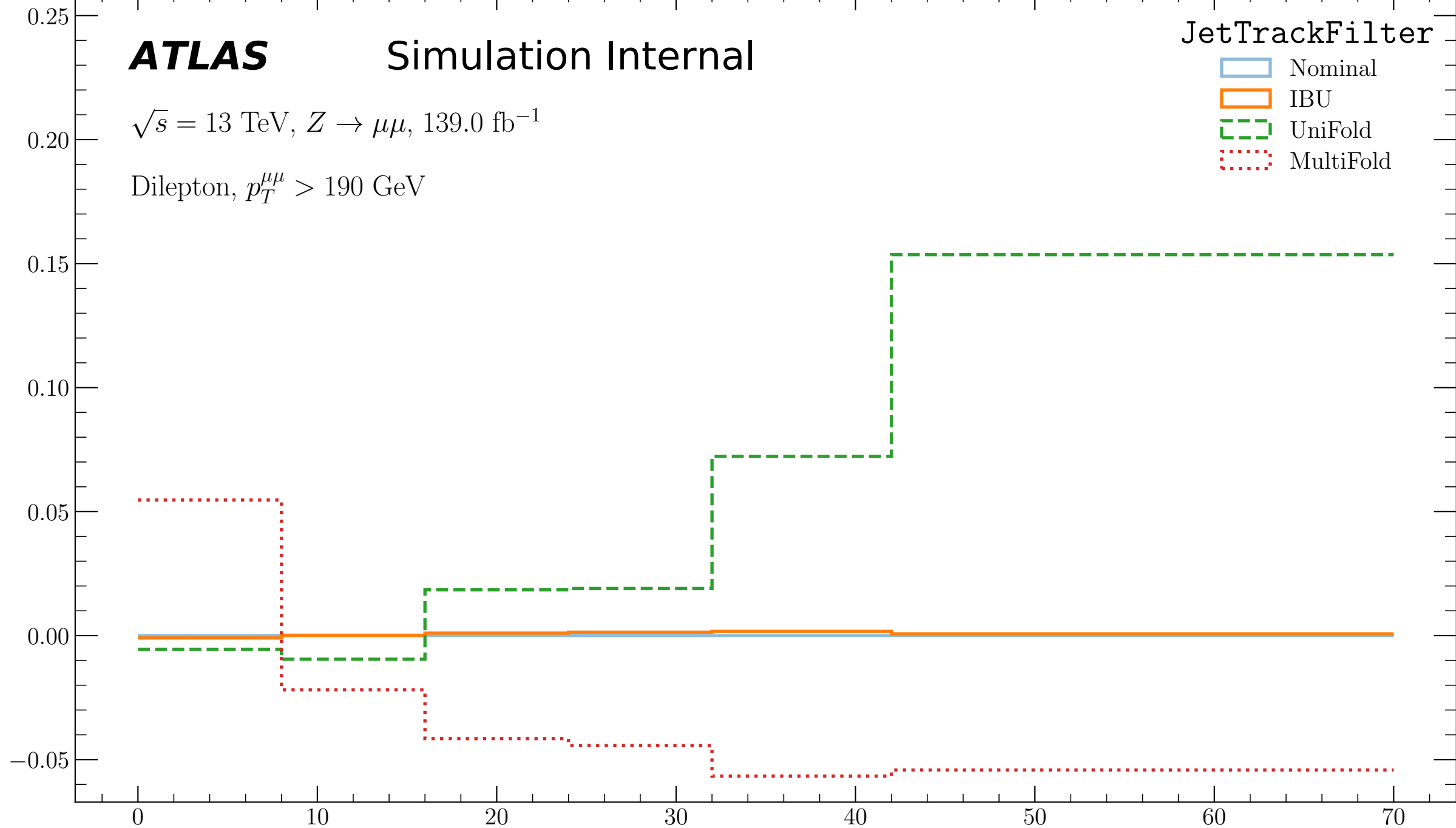
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

JetTrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $m$  [GeV]

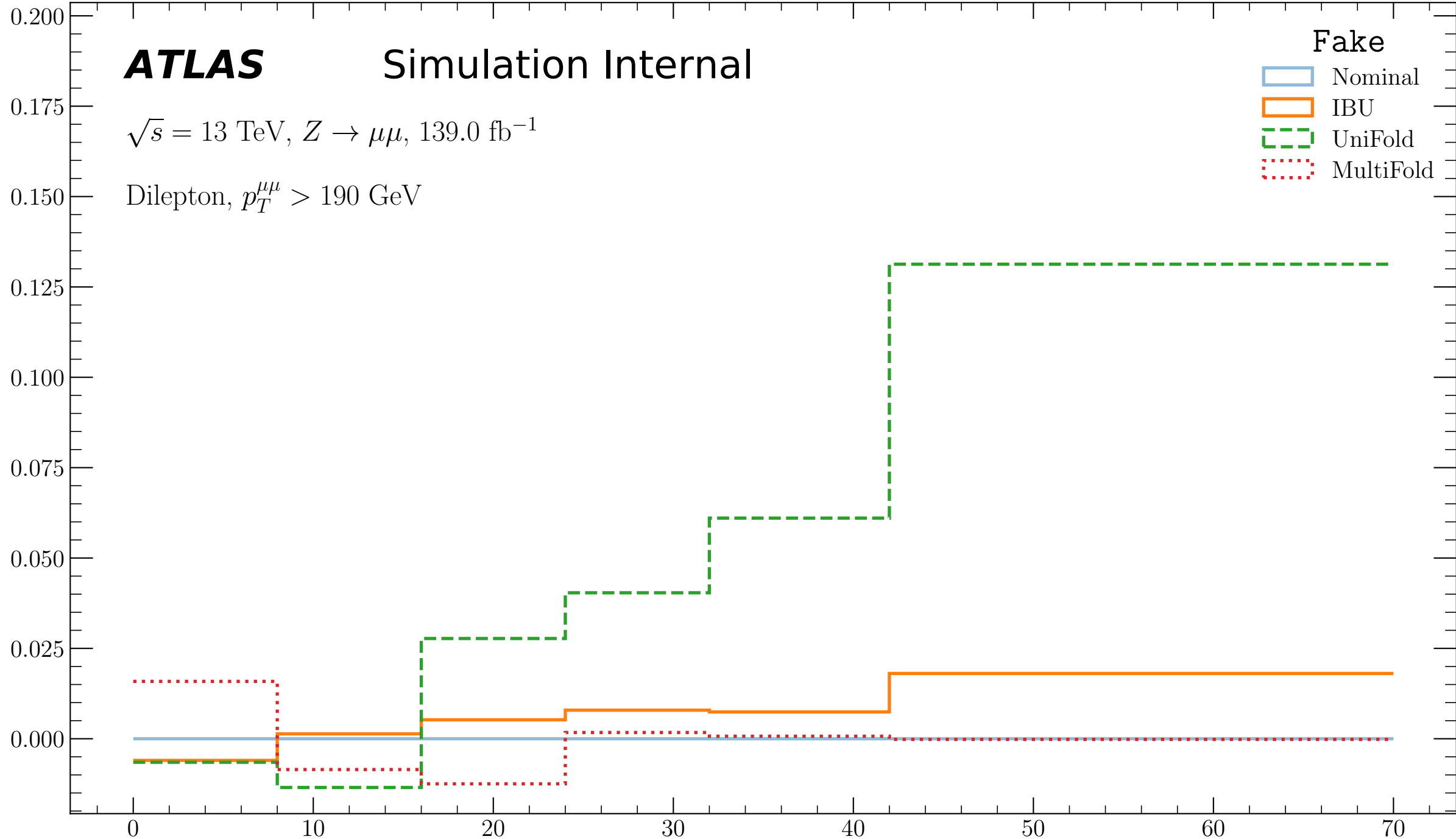
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $m$  [GeV]

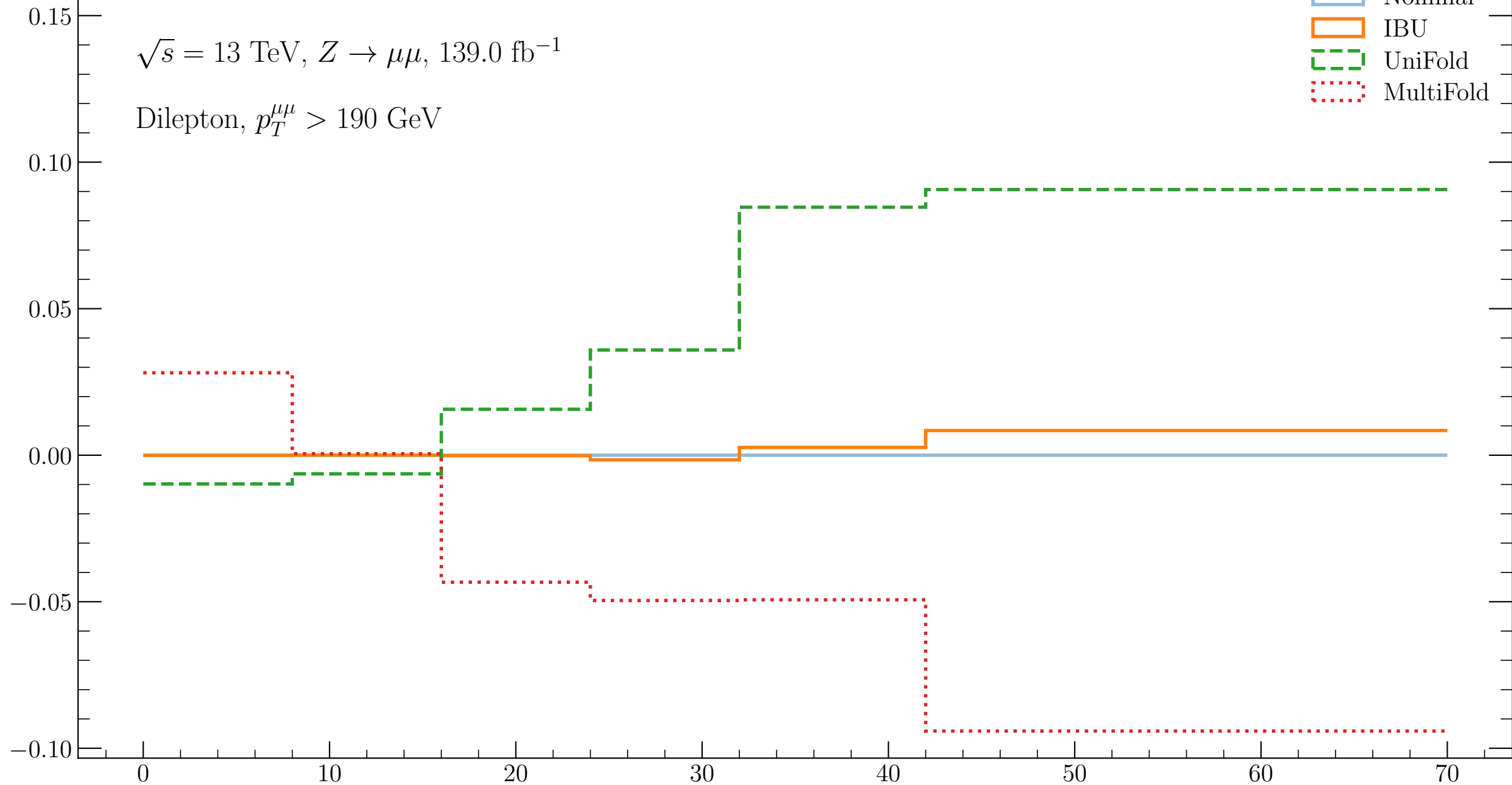
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $m$  [GeV]

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

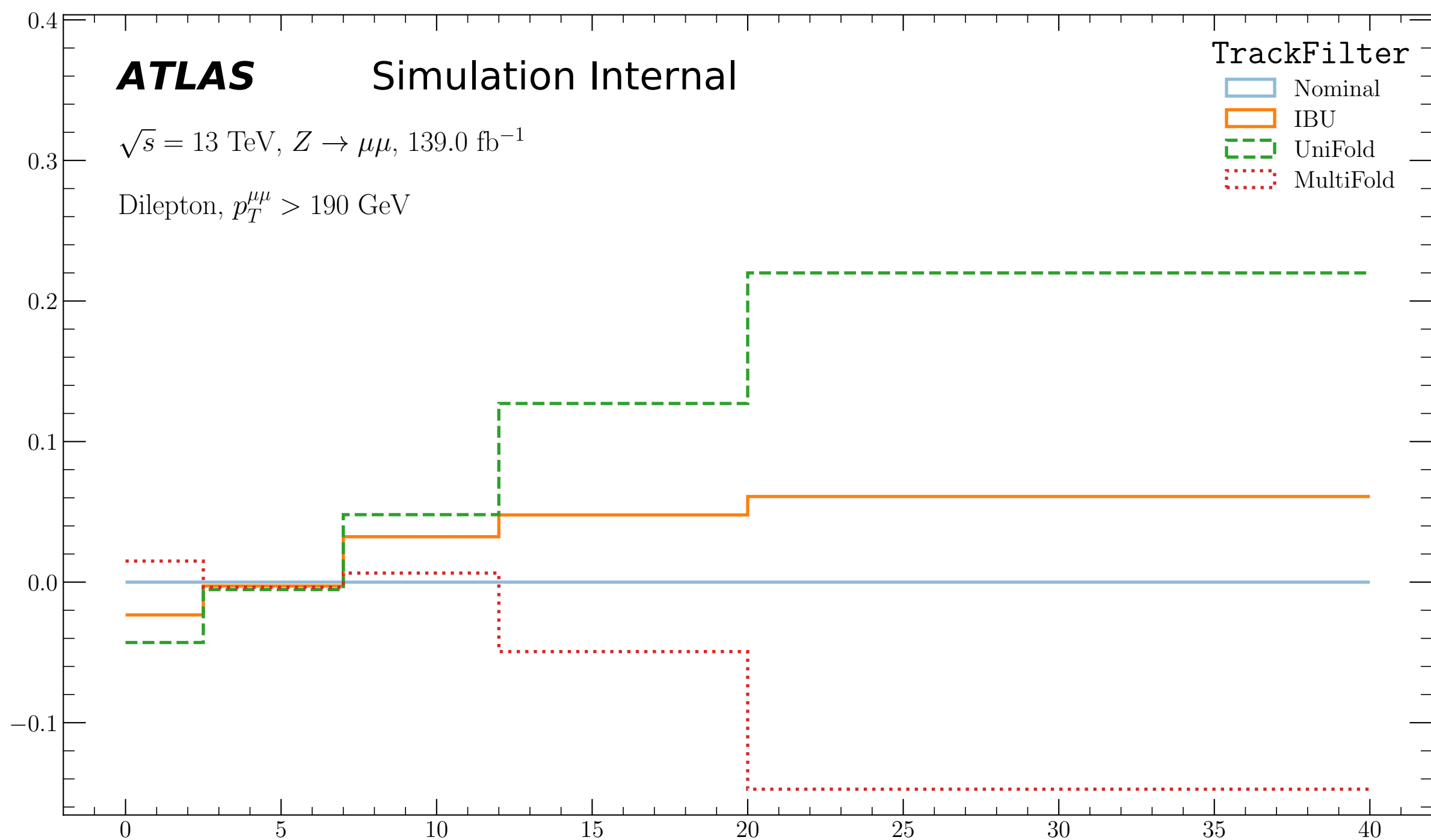
TrackFilter

Nominal

IBU

UniFold

MultiFold

Subleading track jet  $m$  [GeV]

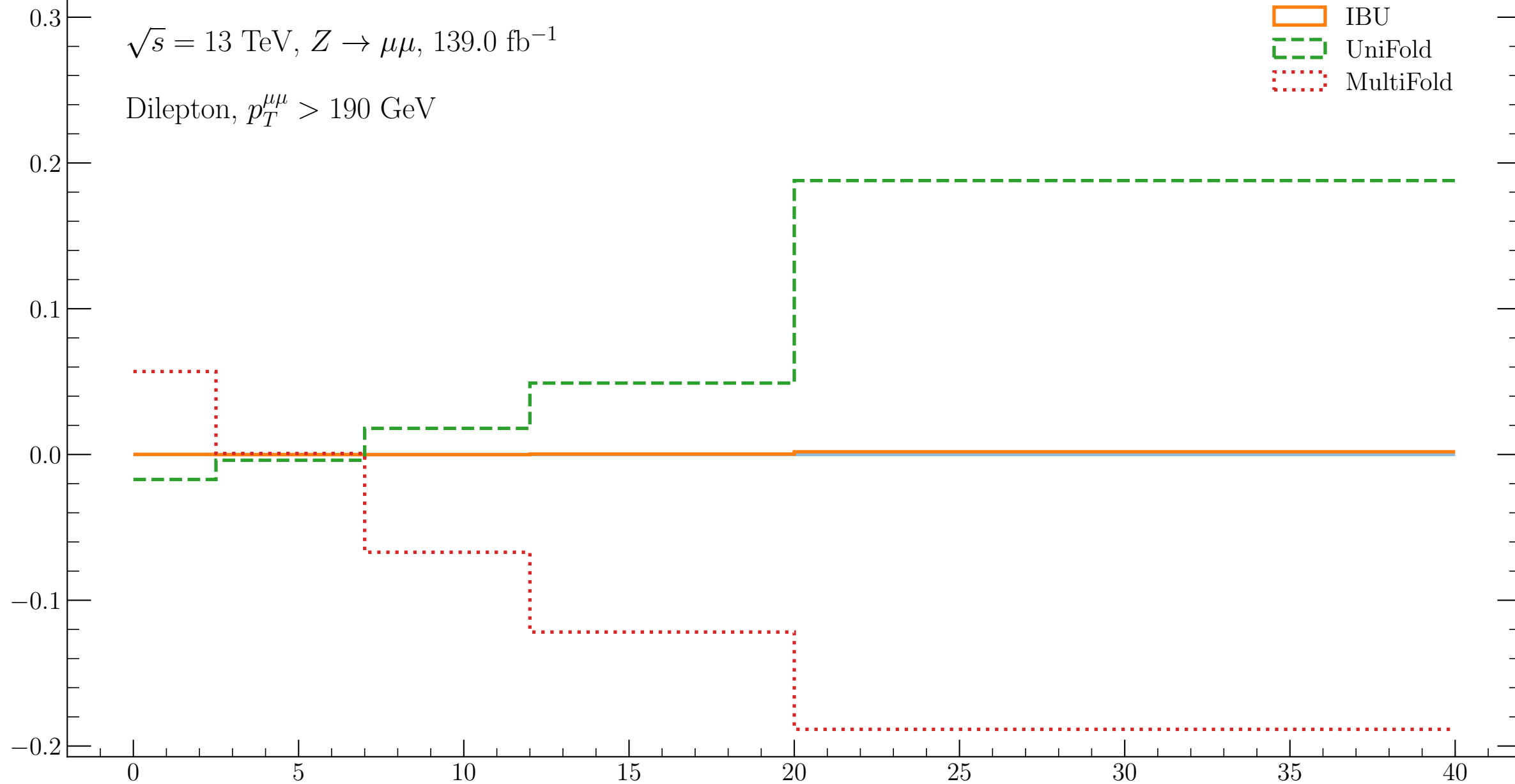
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

JetTrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $m$  [GeV]

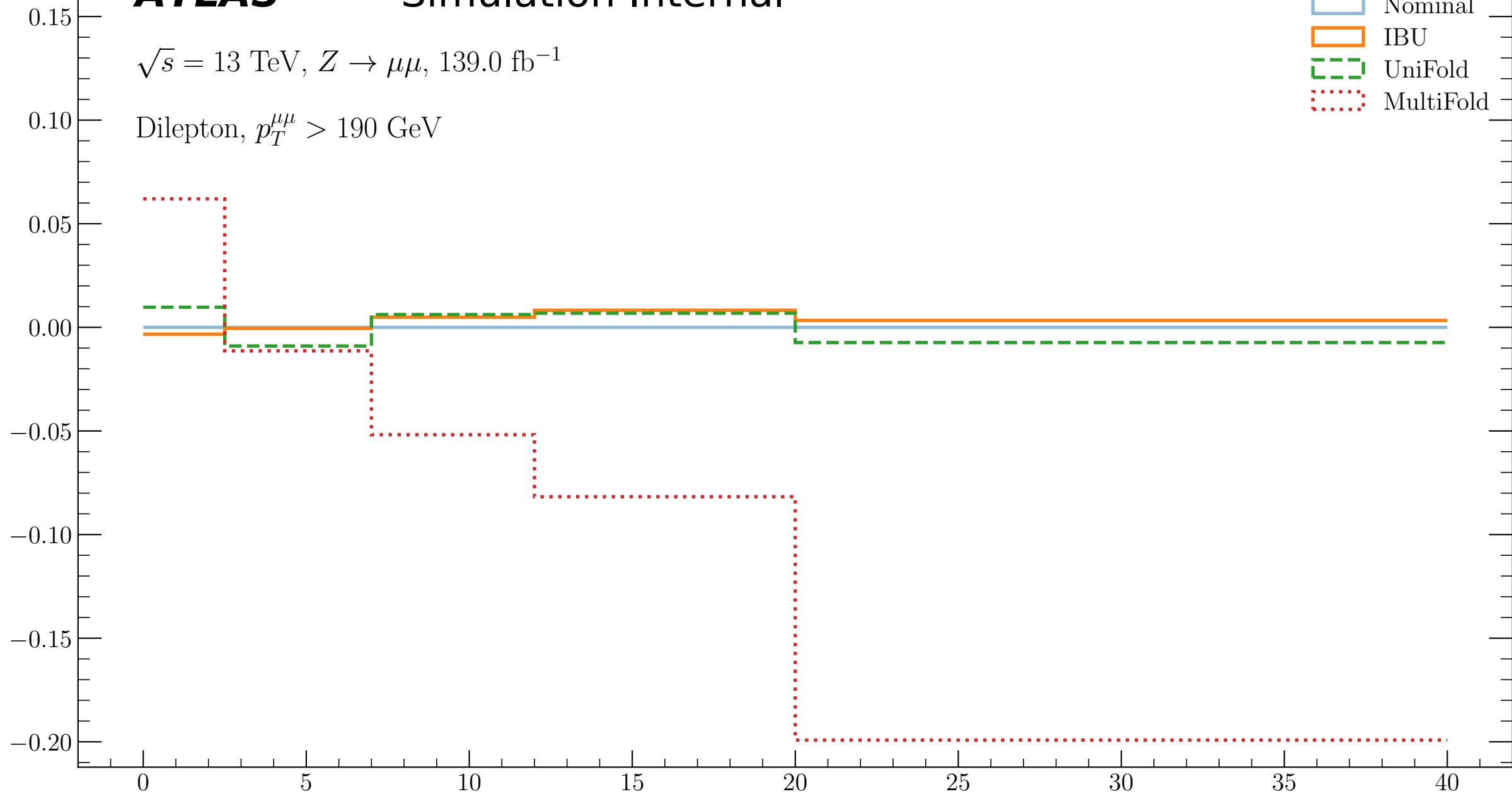
**ATLAS**

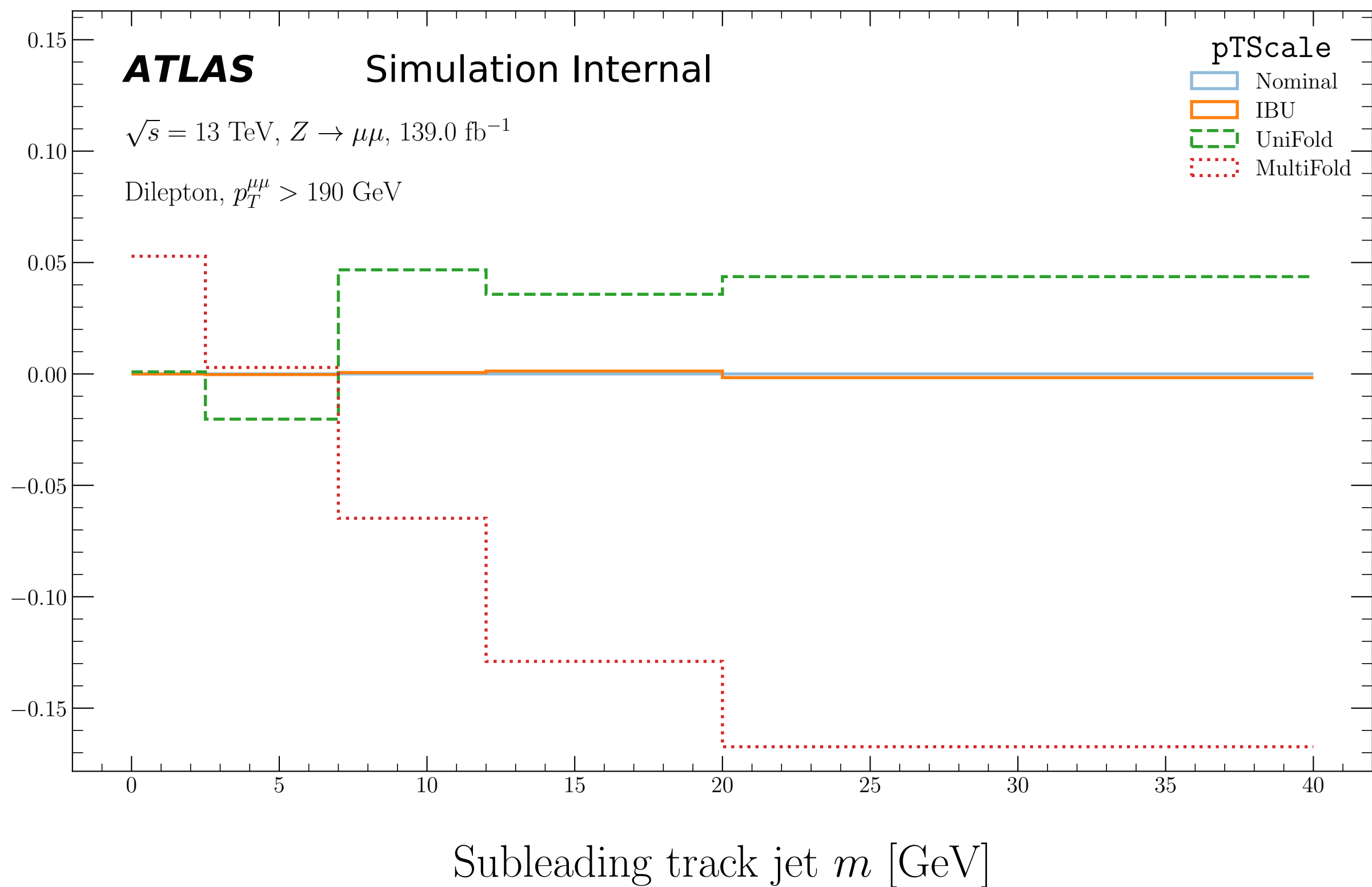
Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

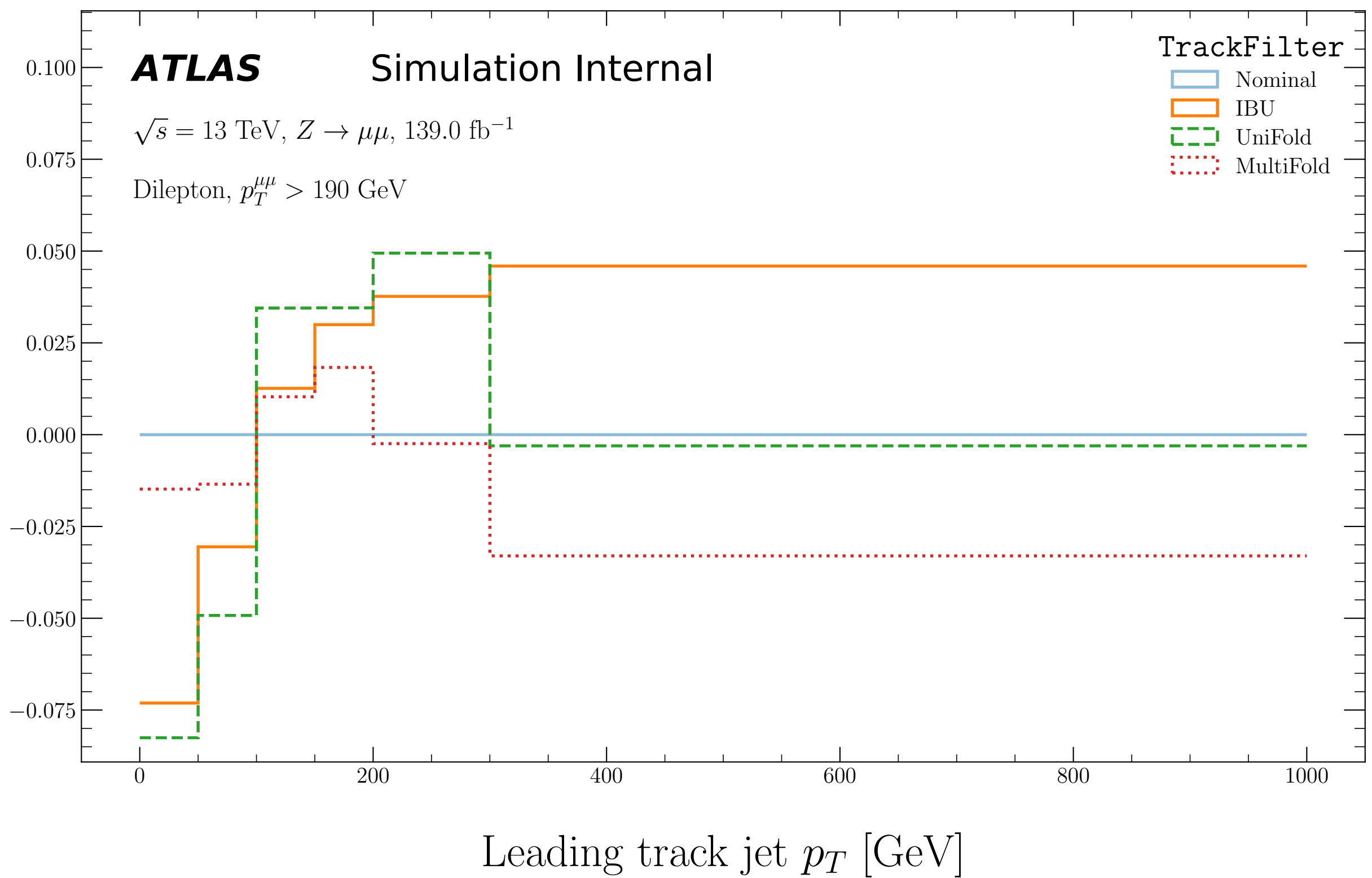
Fake

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $m$  [GeV]







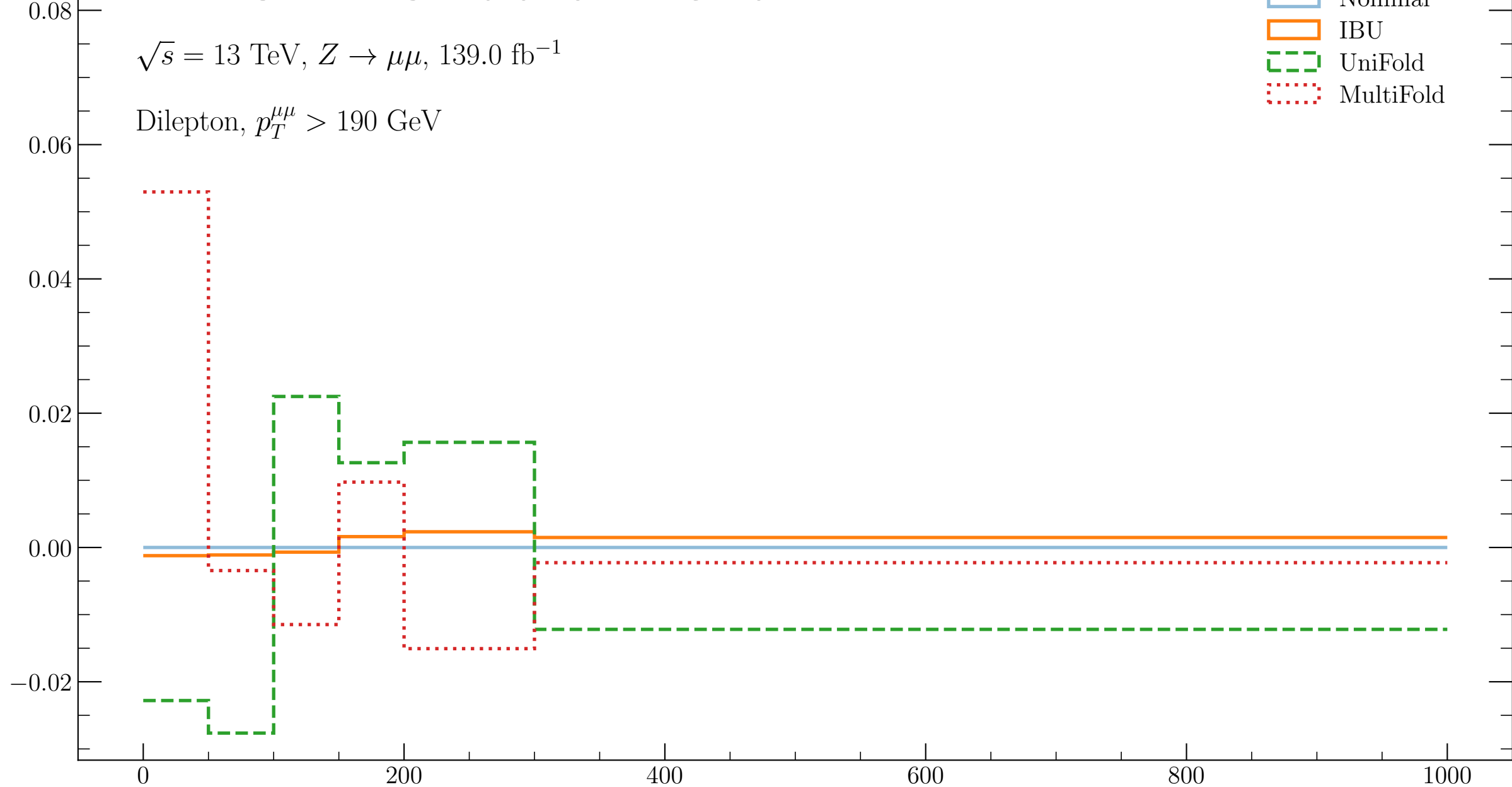
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

JetTrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $p_T$  [GeV]

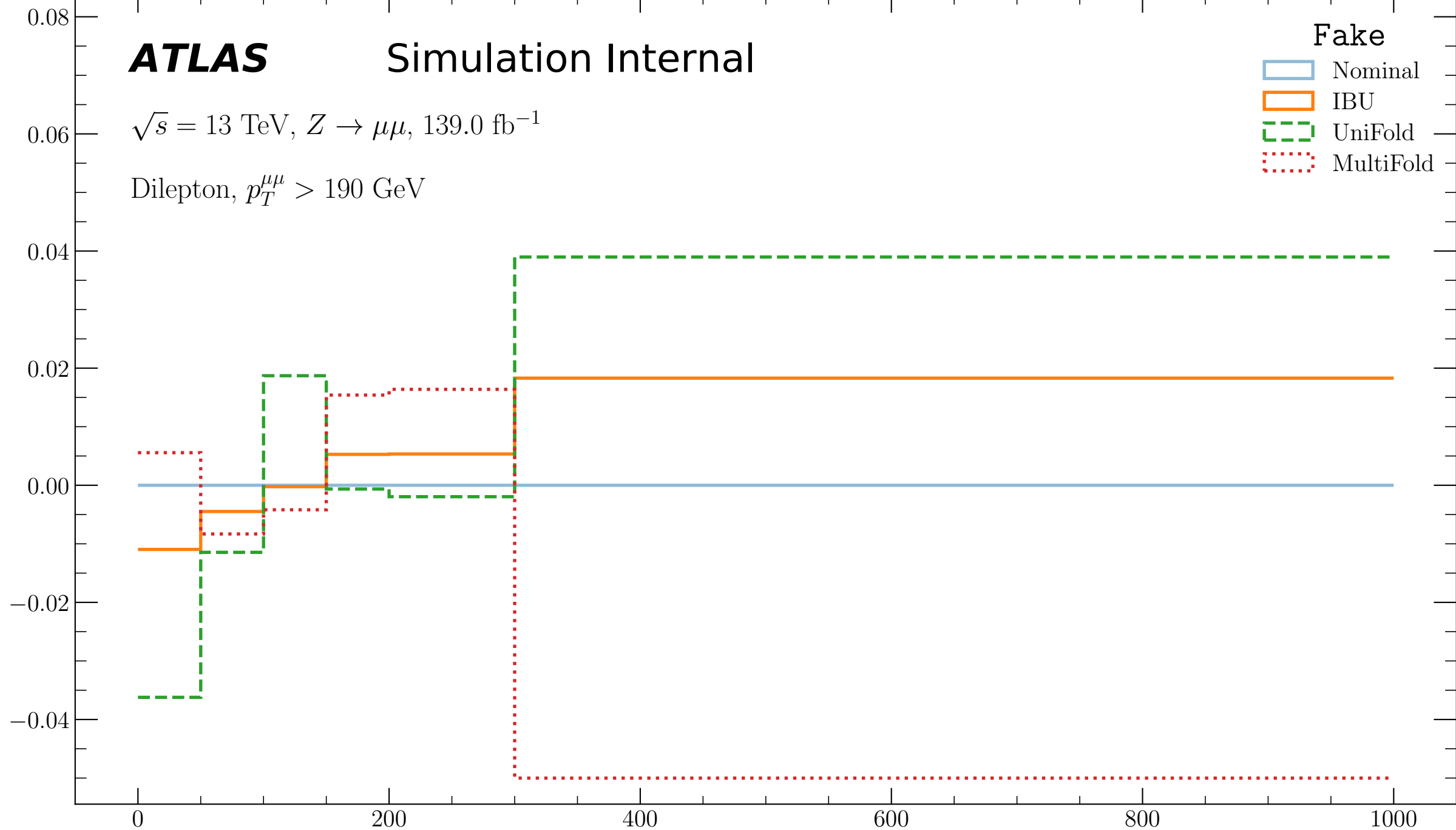
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $p_T$  [GeV]

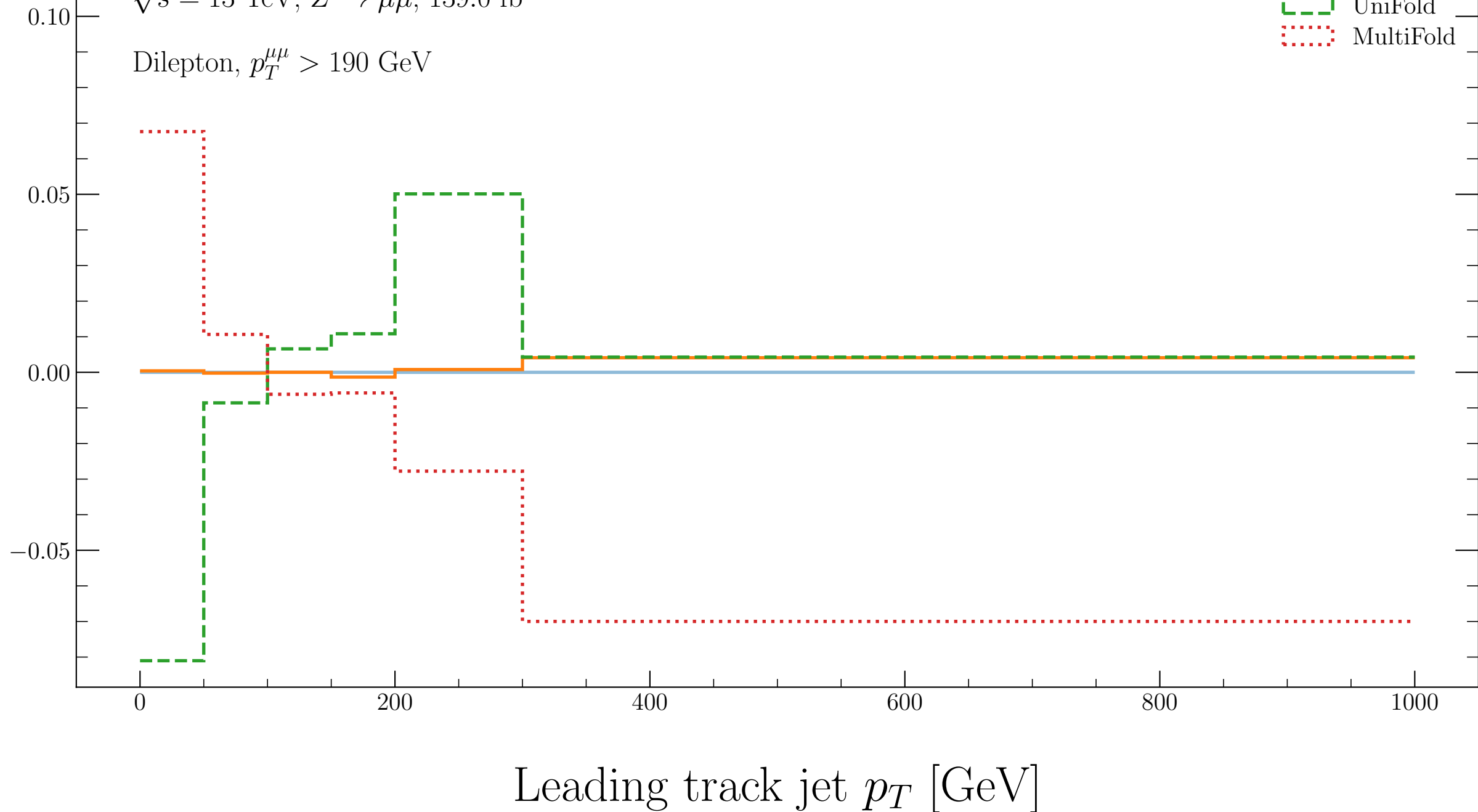
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

- Nominal
- IBU
- UniFold
- MultiFold



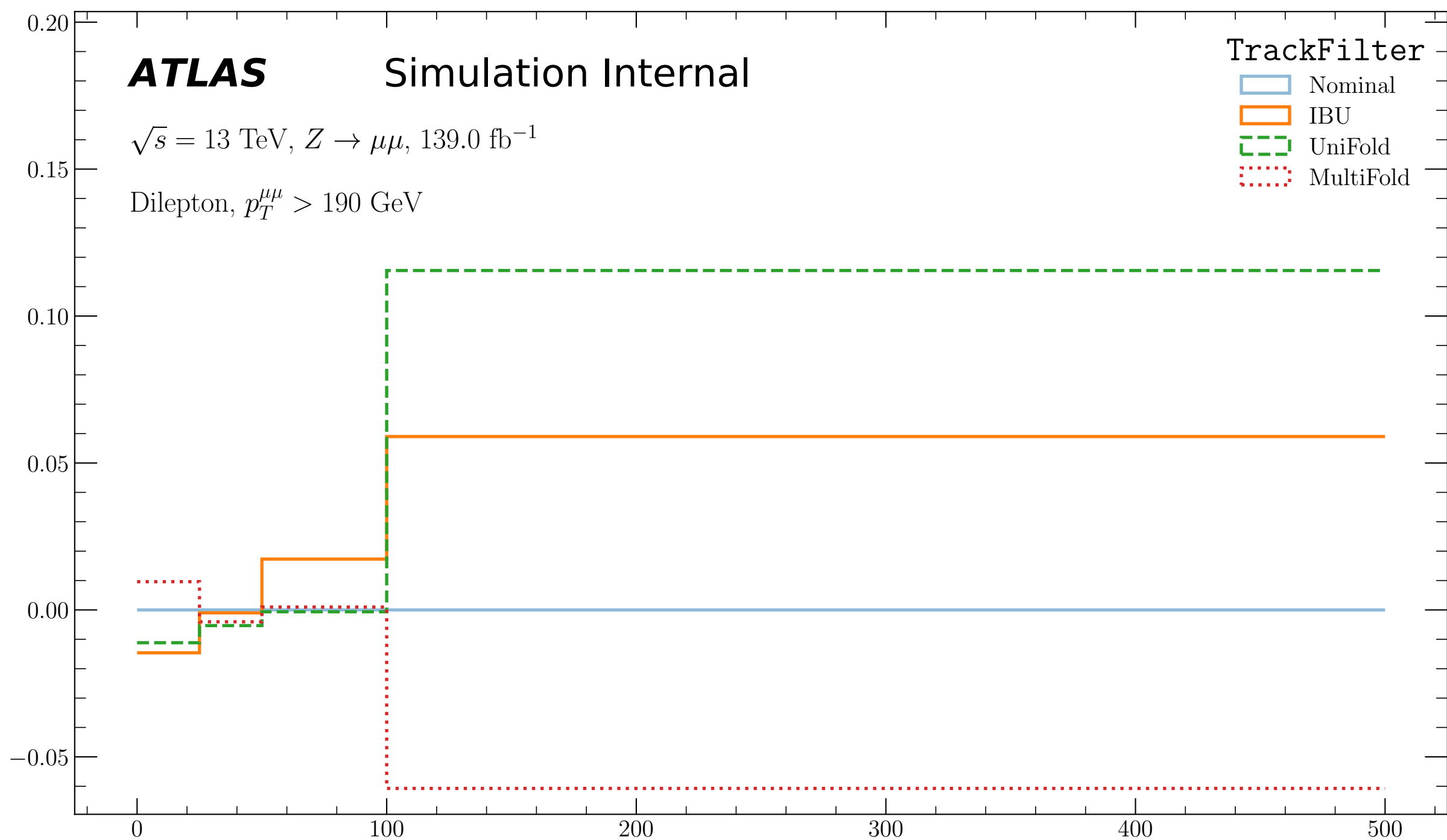
**ATLAS**

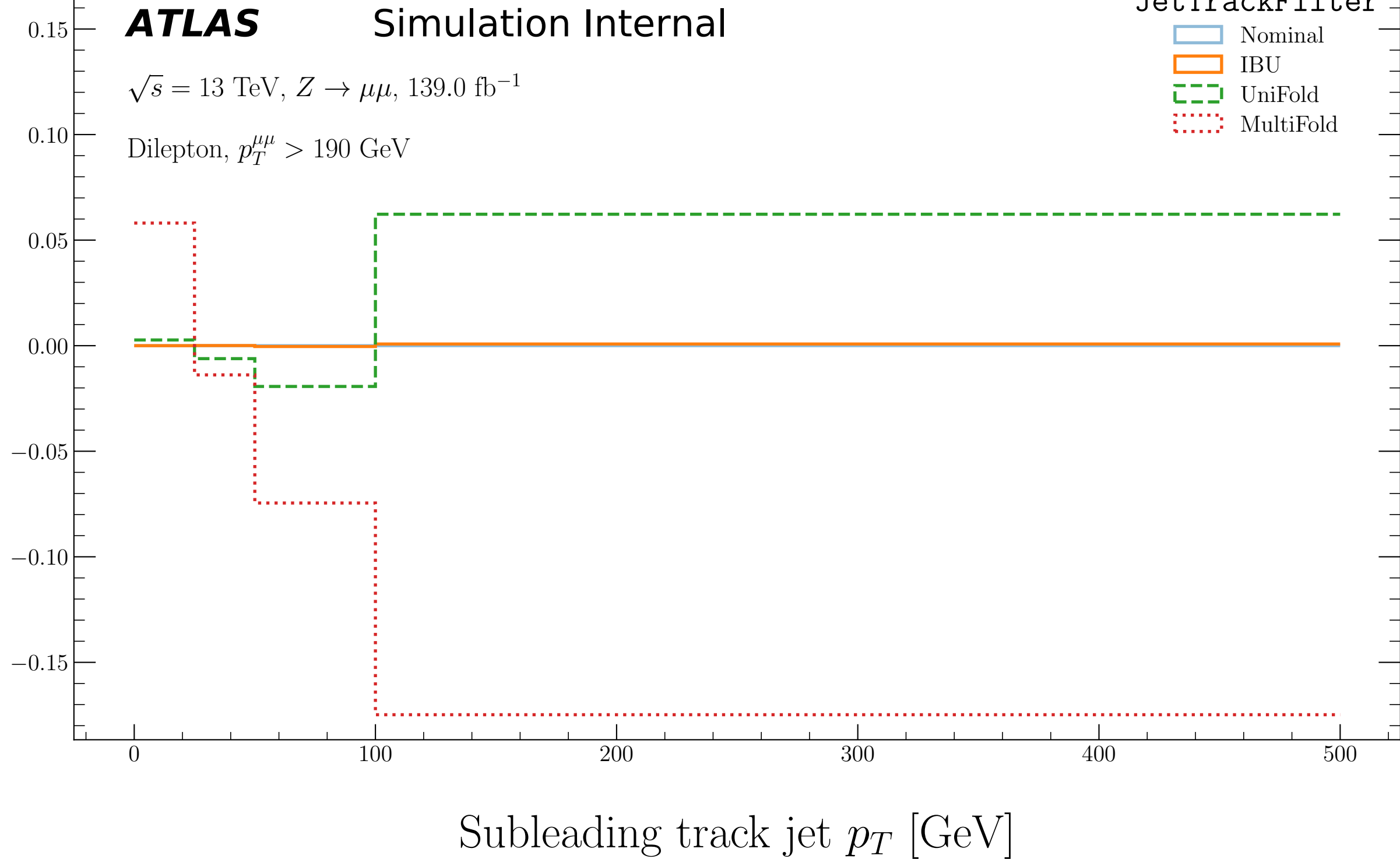
Simulation Internal

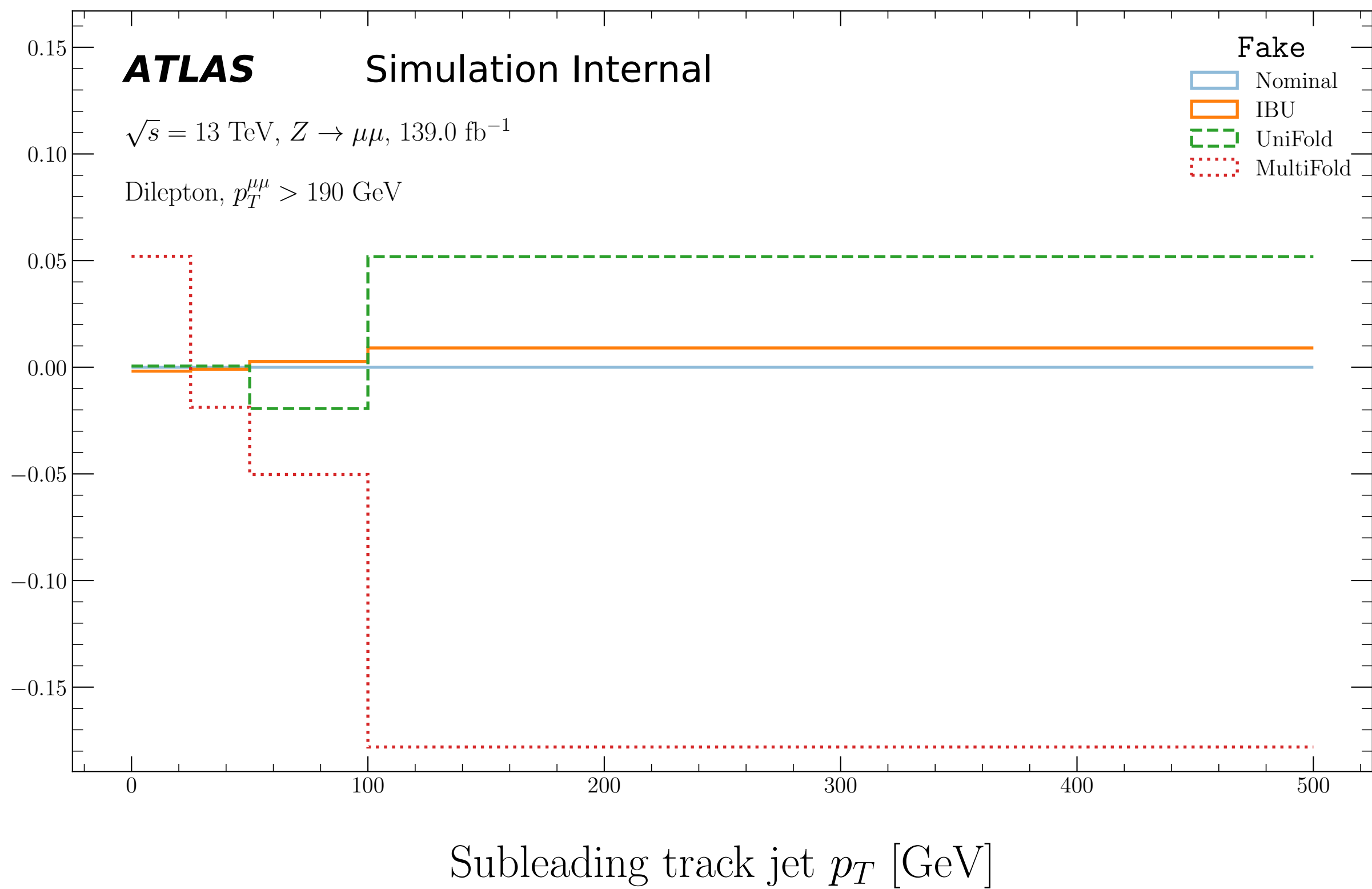
 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $p_T$  [GeV]





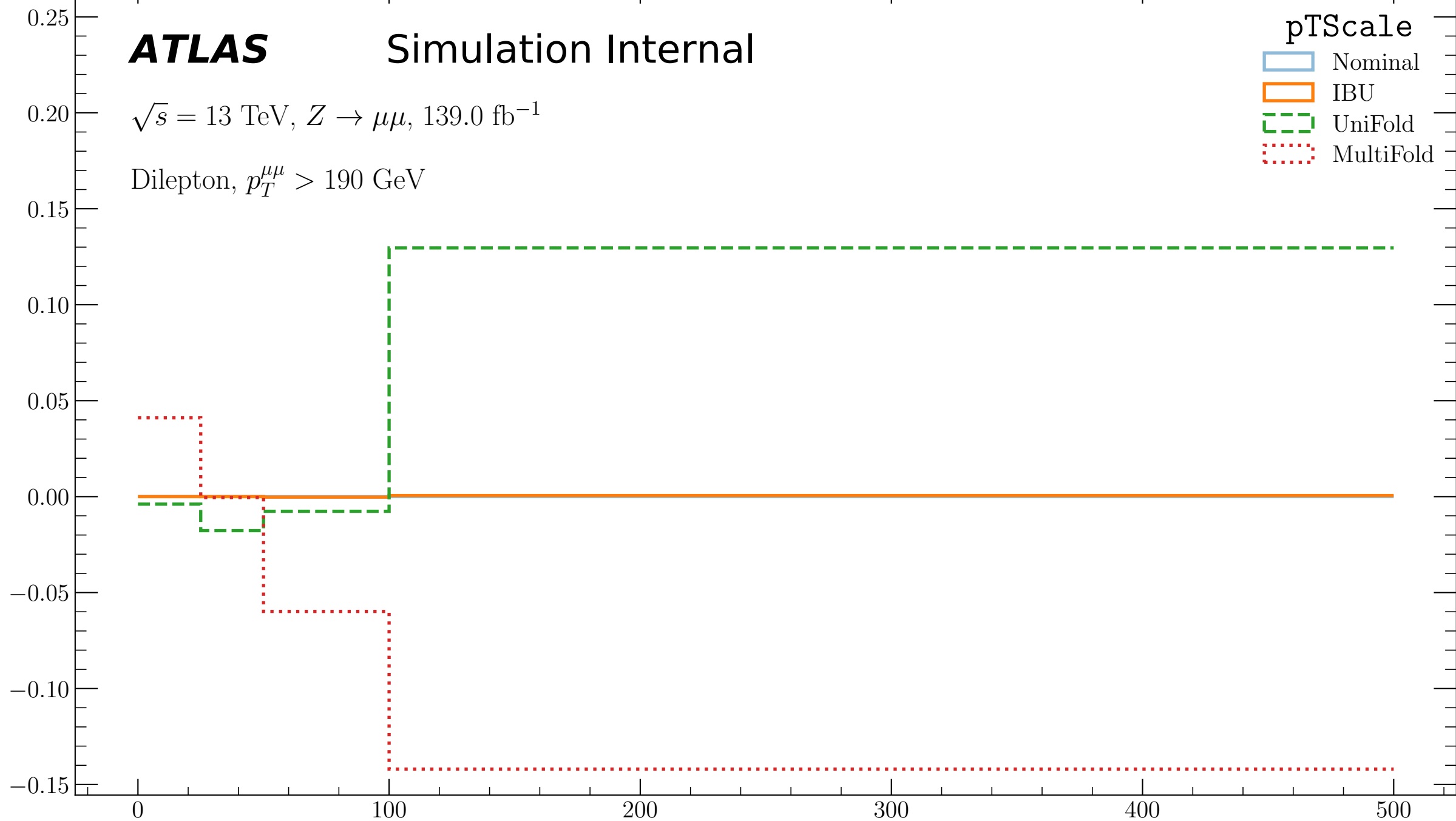
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $p_T$  [GeV]



**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

Nominal

IBU

UniFold

MultiFold

0.06

0.04

0.02

0.00

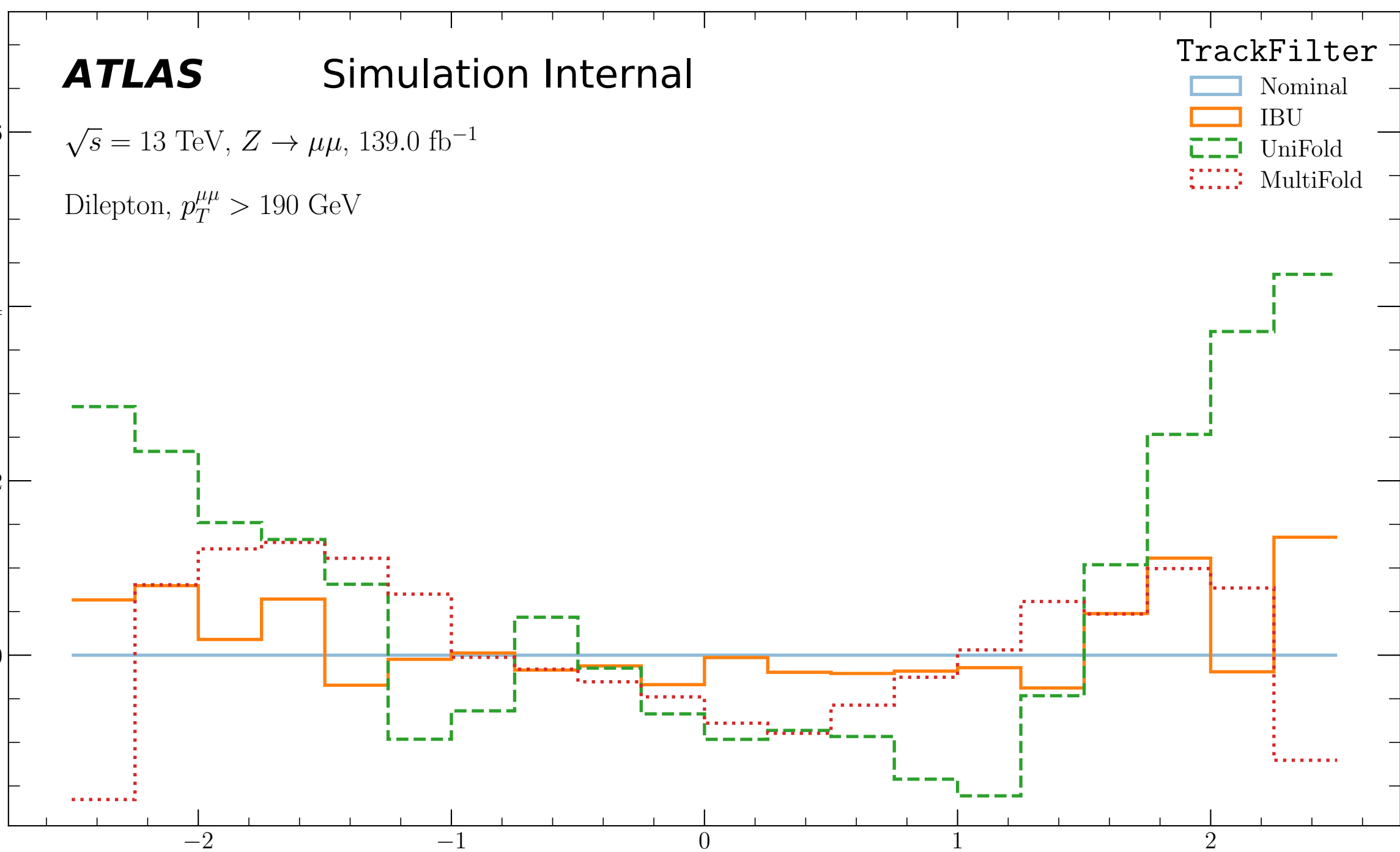
-2

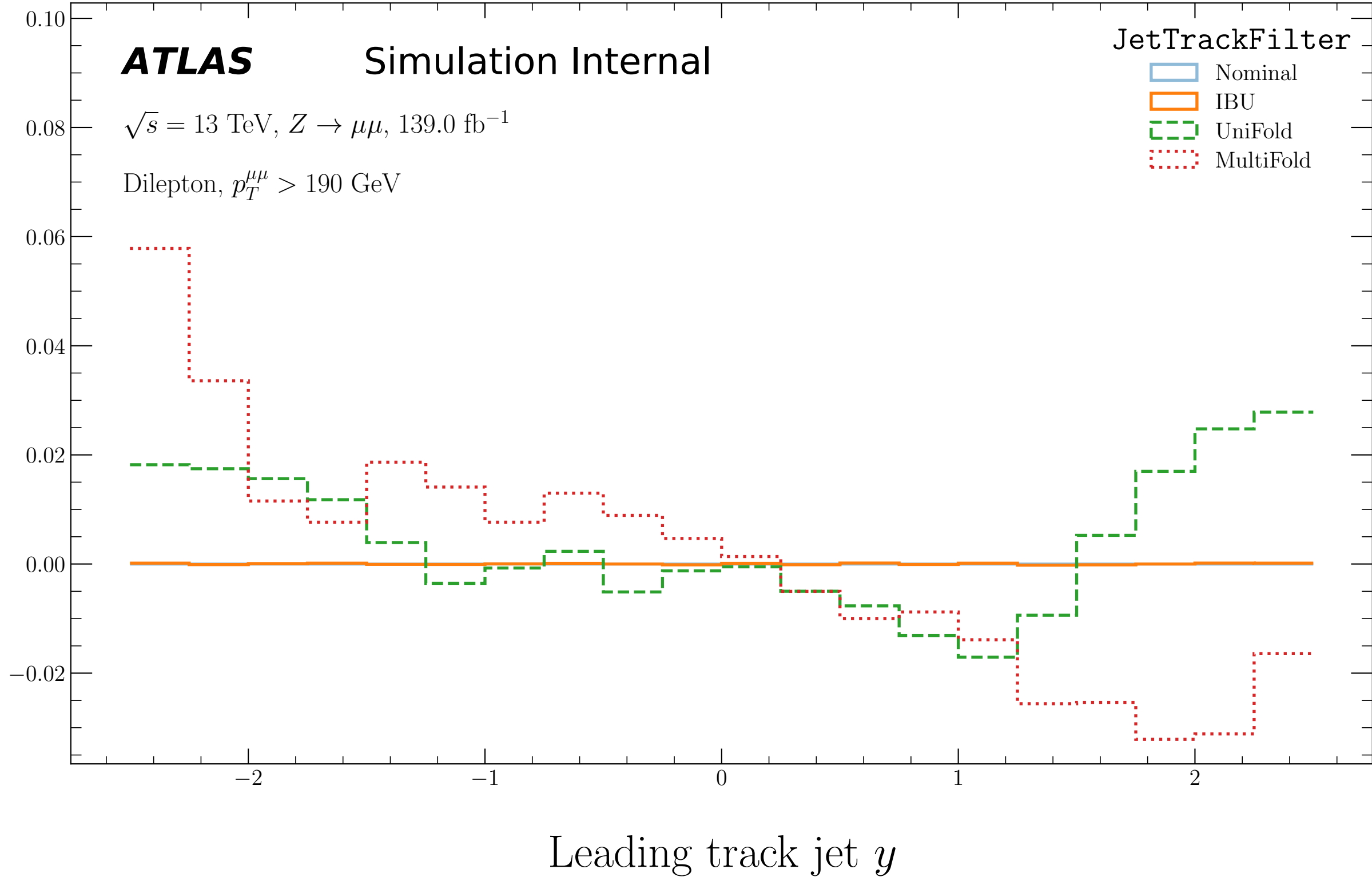
-1

0

1

2

Leading track jet  $y$ 



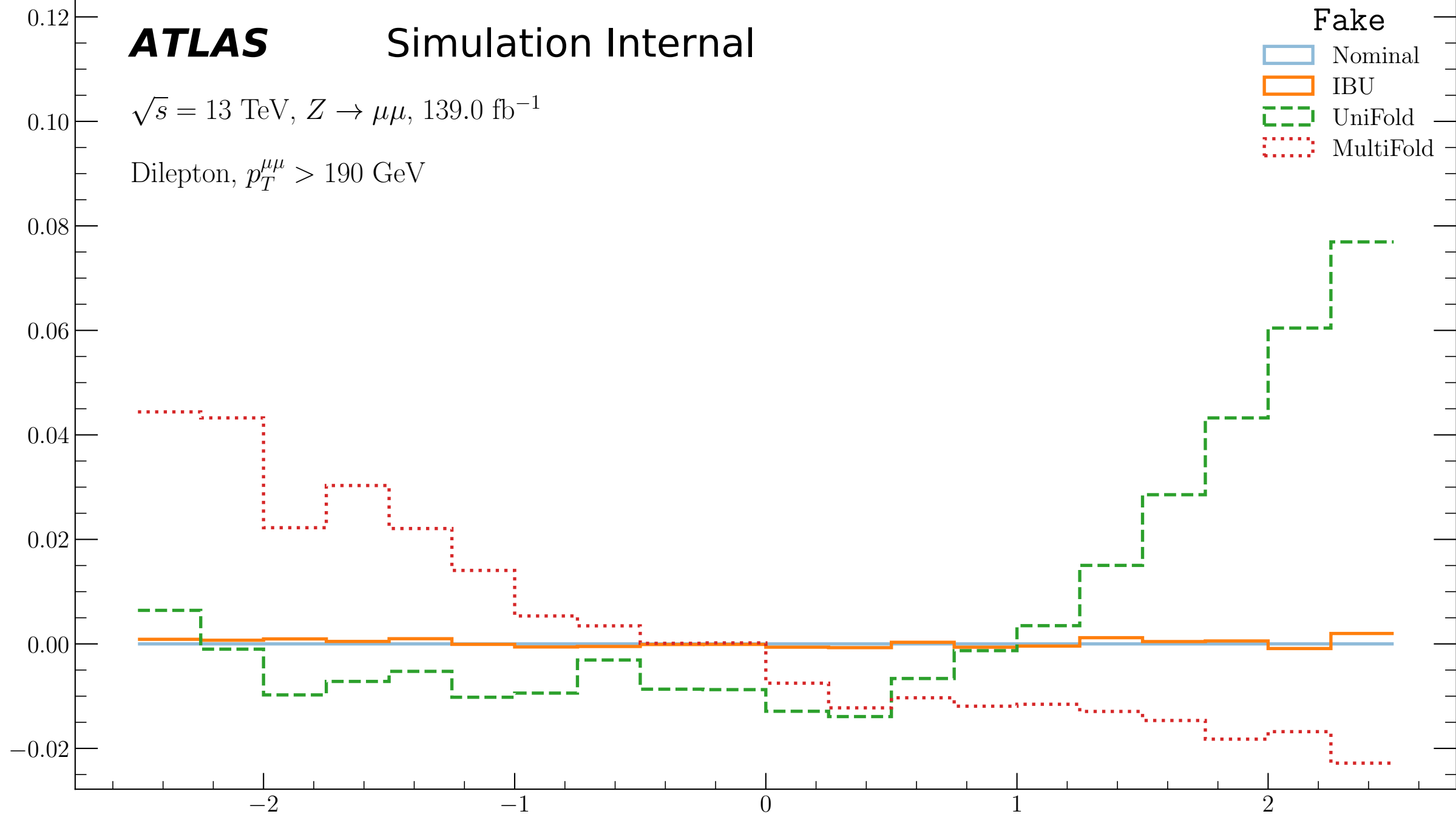
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $y$

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

- Nominal
- IBU
- UniFold
- MultiFold

0.10  
0.08  
0.06  
0.04  
0.02  
0.00  
-0.02

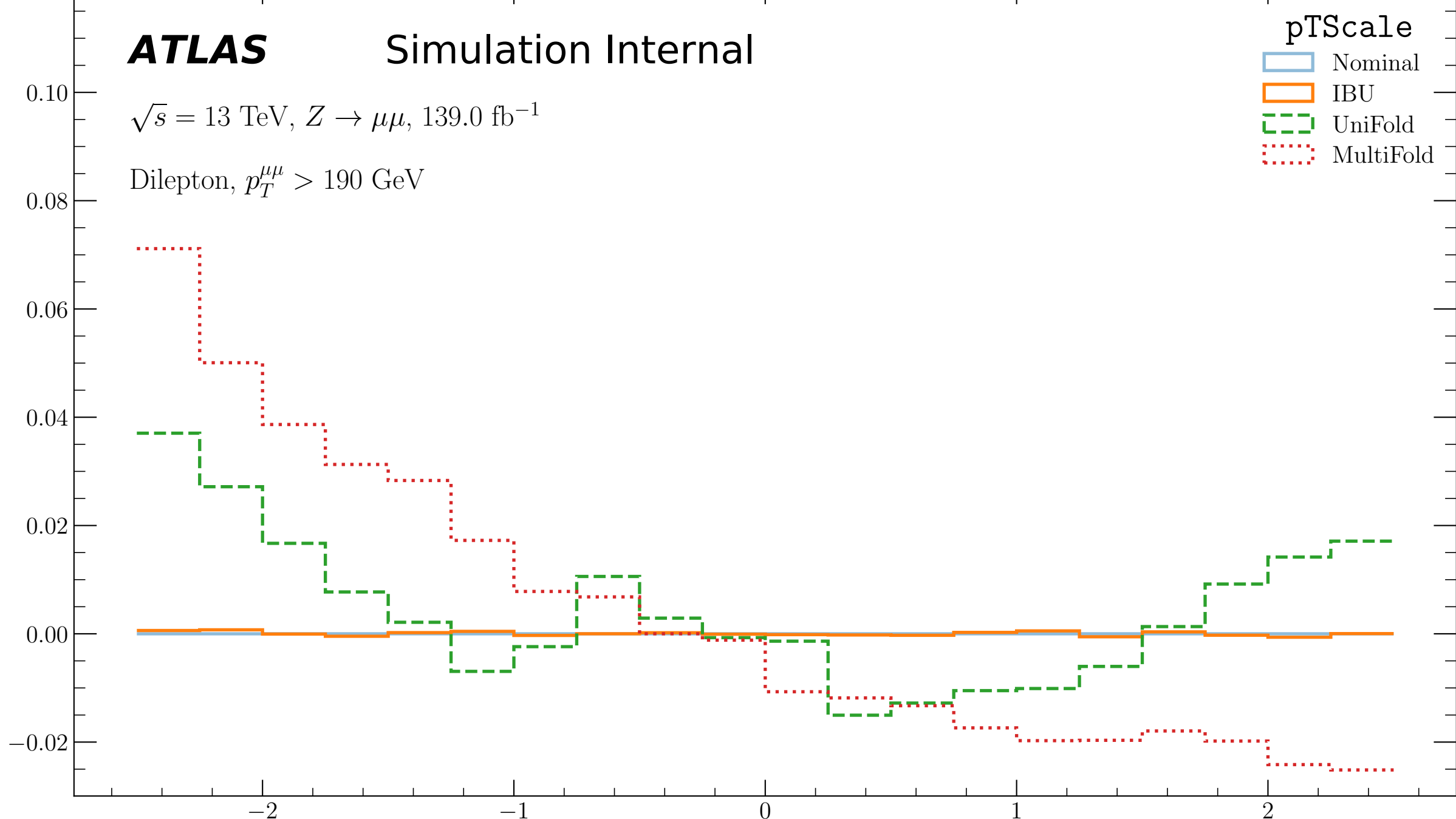
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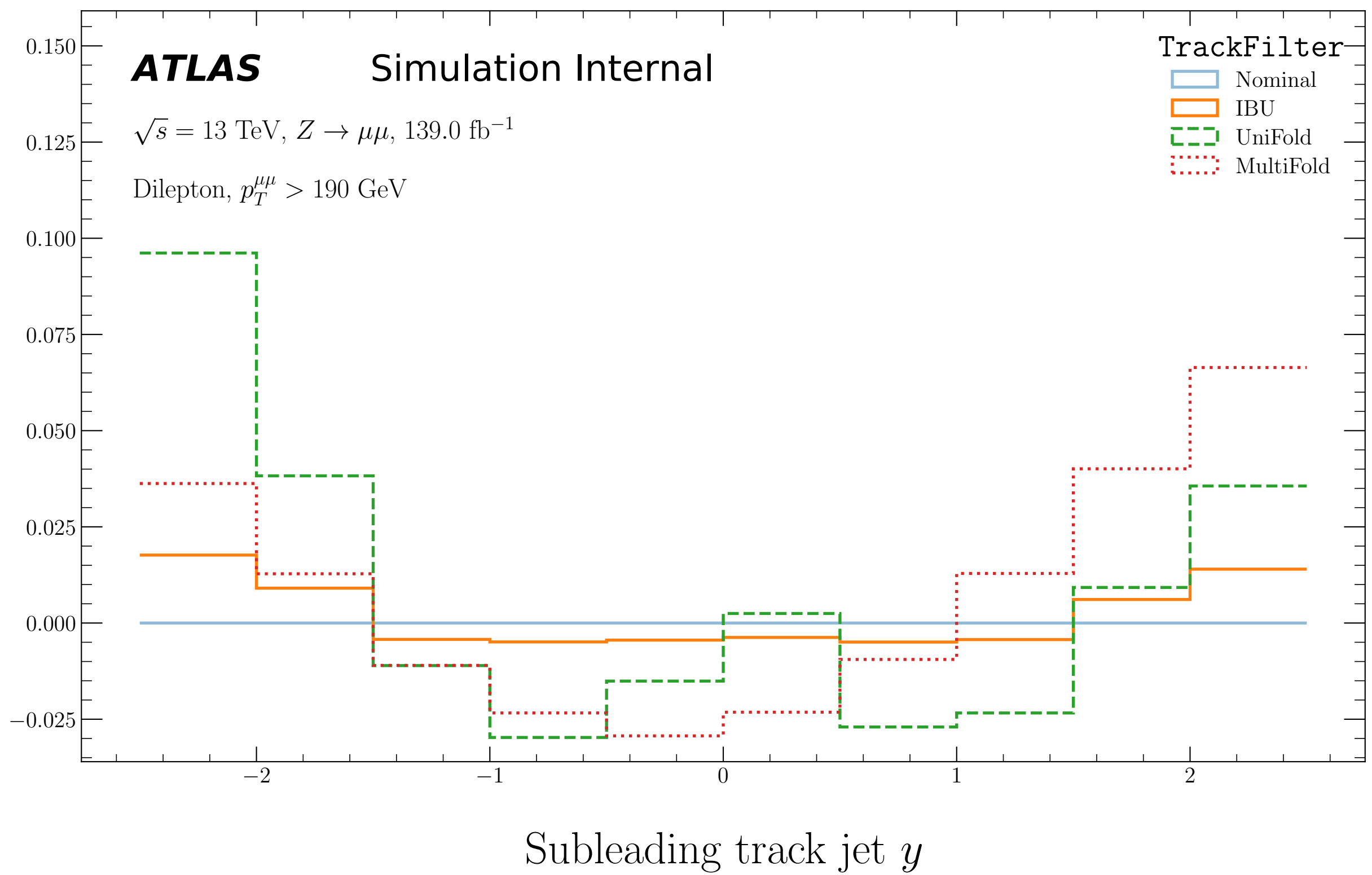
-1

0

1

2

Leading track jet  $y$ 



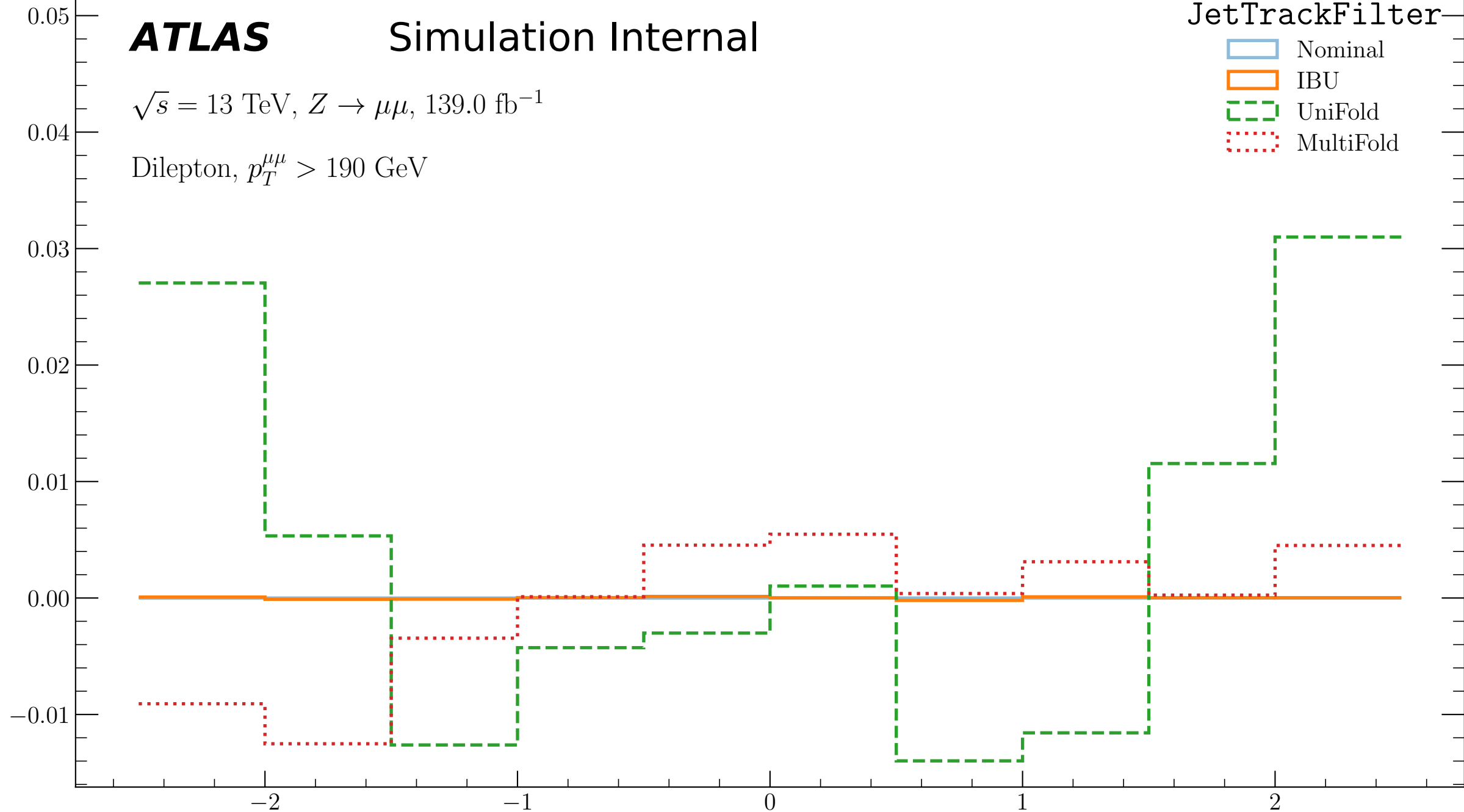
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

JetTrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $y$

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

- Nominal
- IBU
- UniFold
- MultiFold

0.08  
0.06  
0.04  
0.02  
0.00  
-0.02

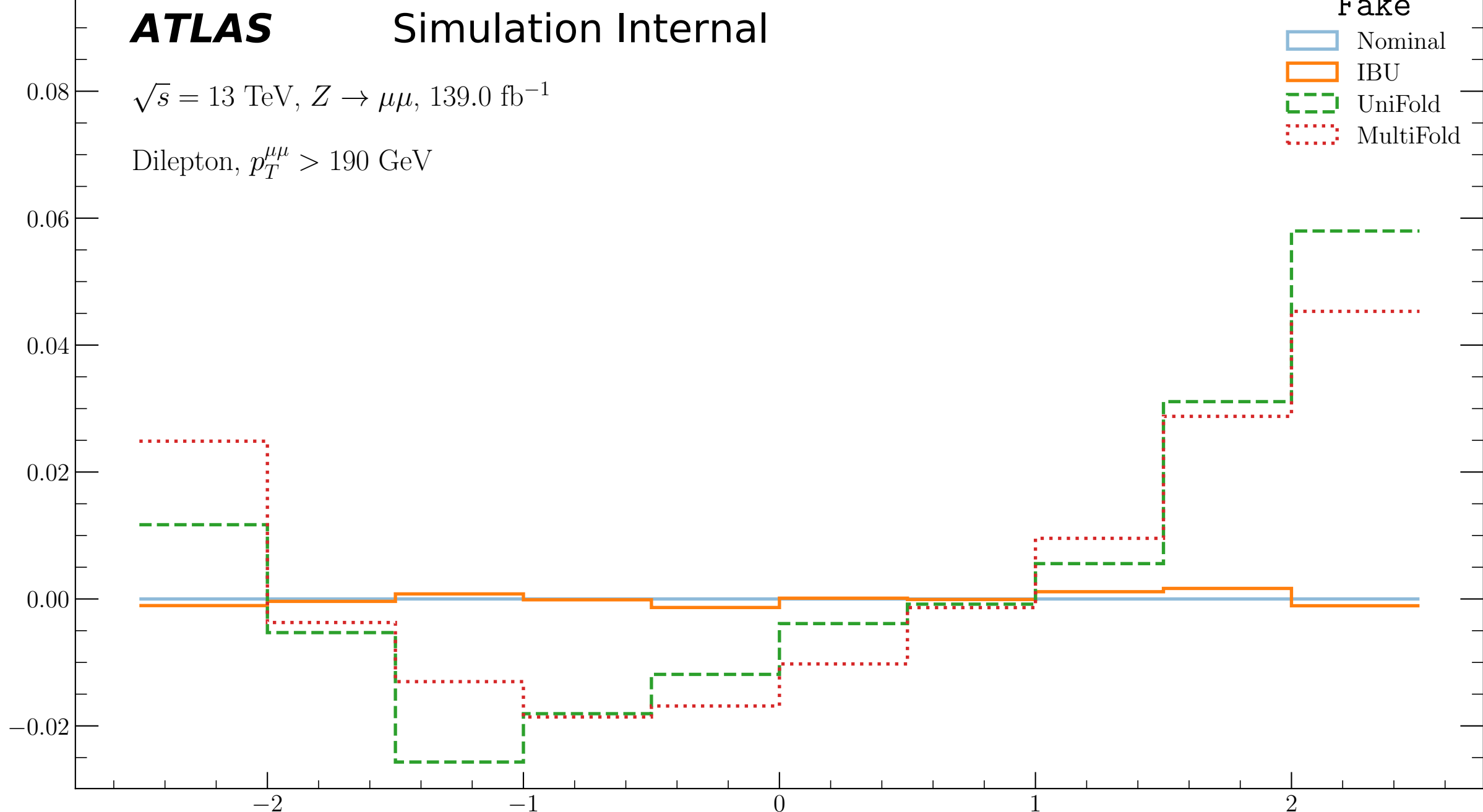
-2

-1

0

1

2

Subleading track jet  $y$ 

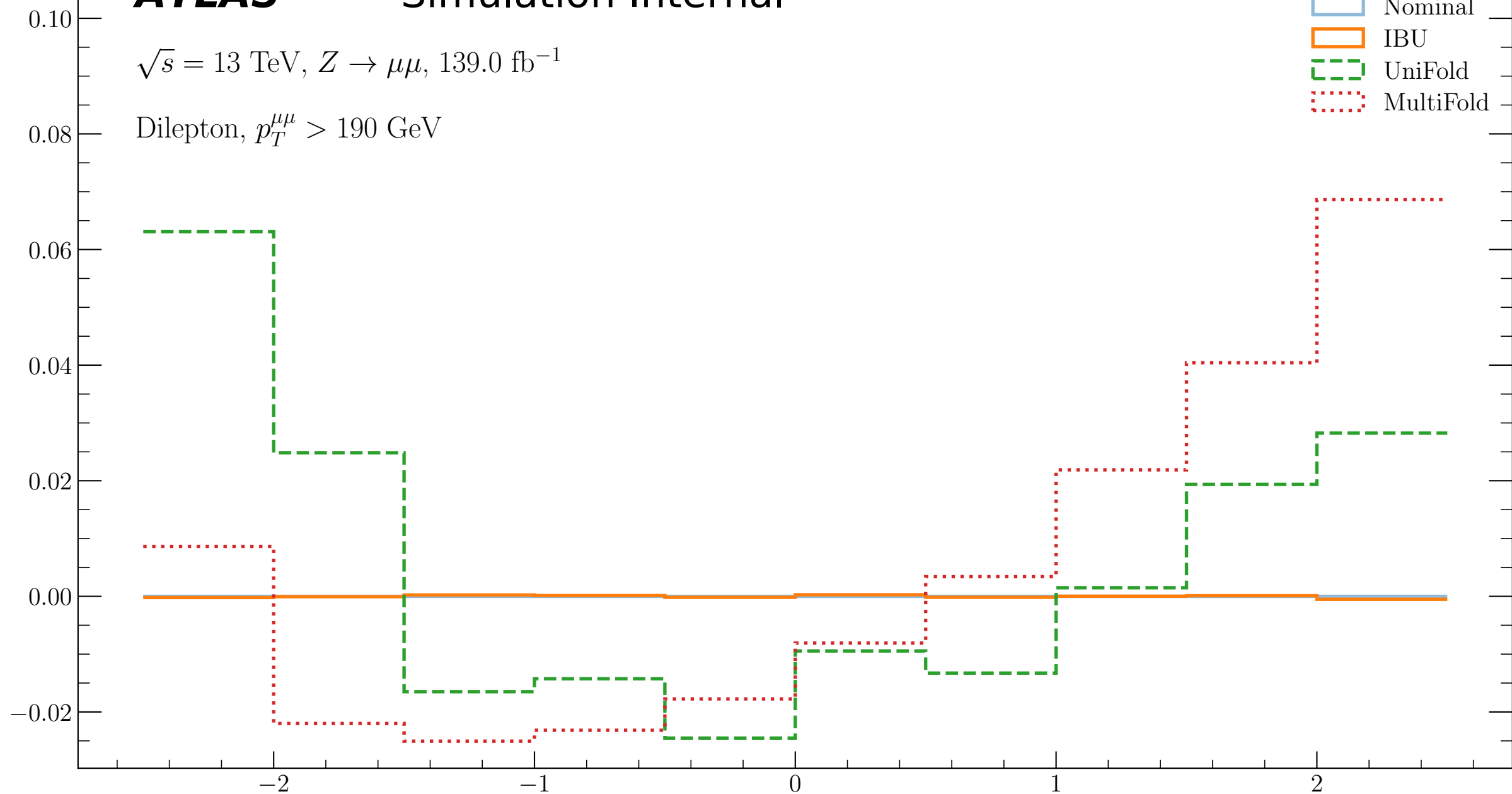
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $y$



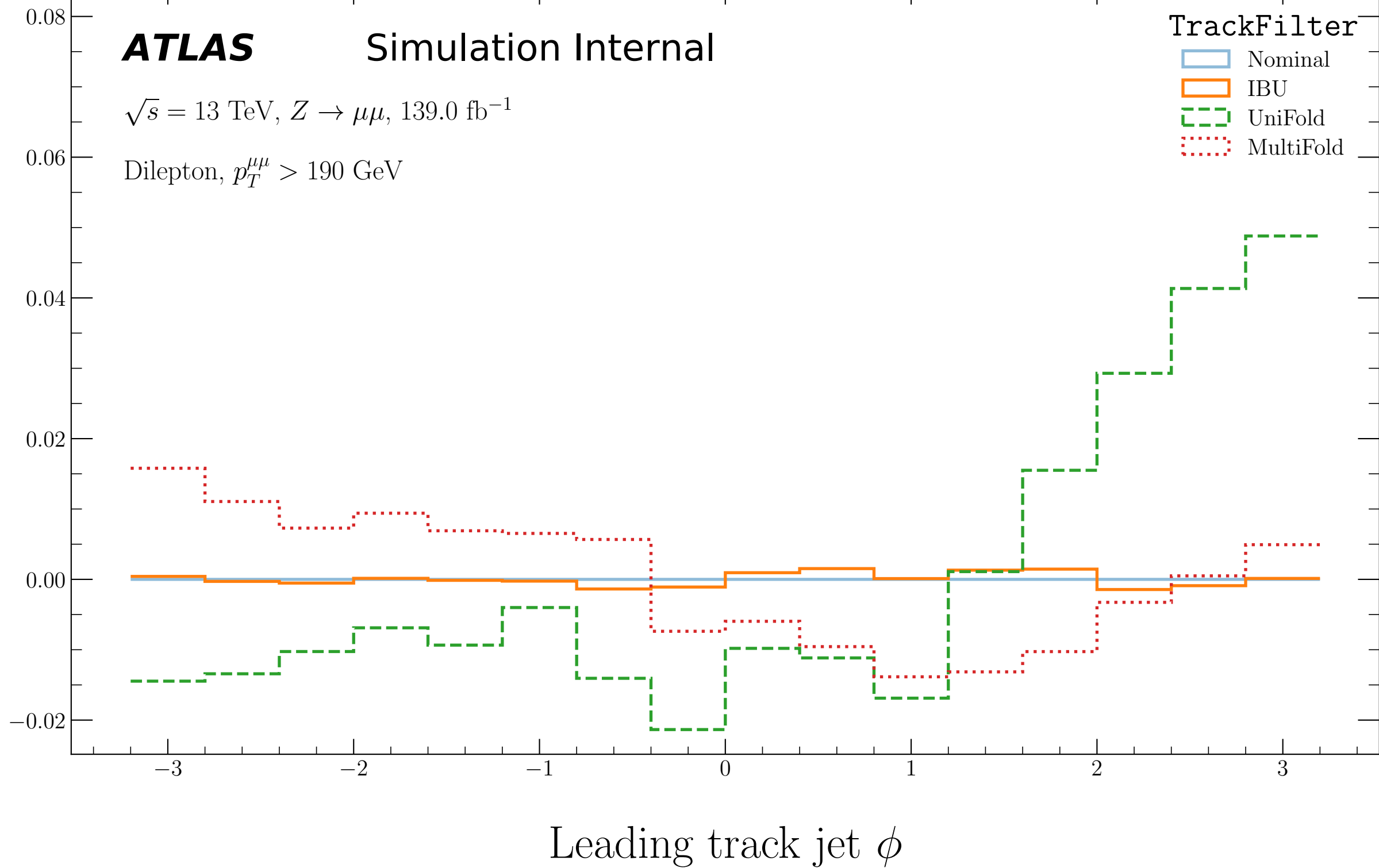
**ATLAS**

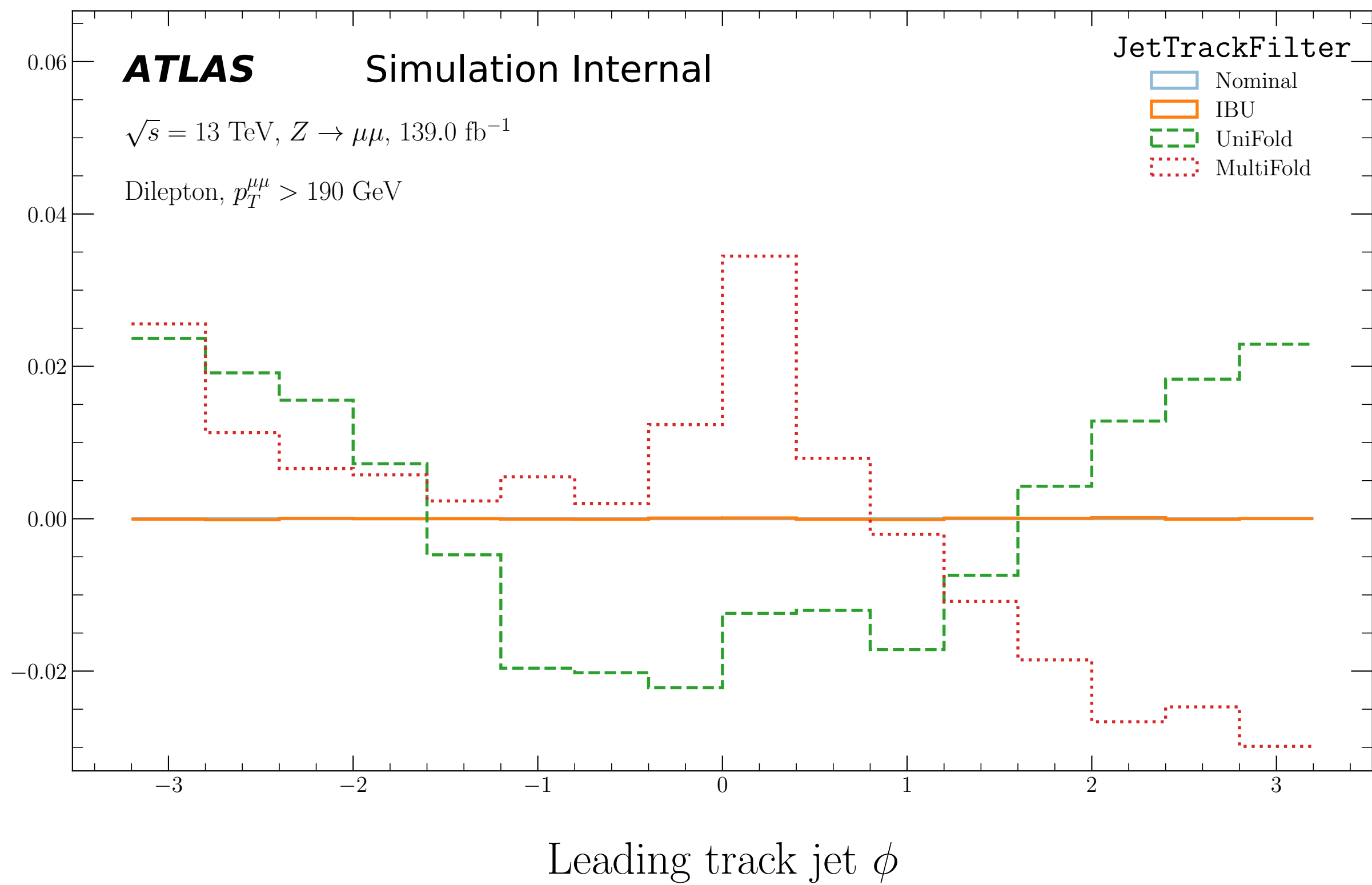
Simulation Internal

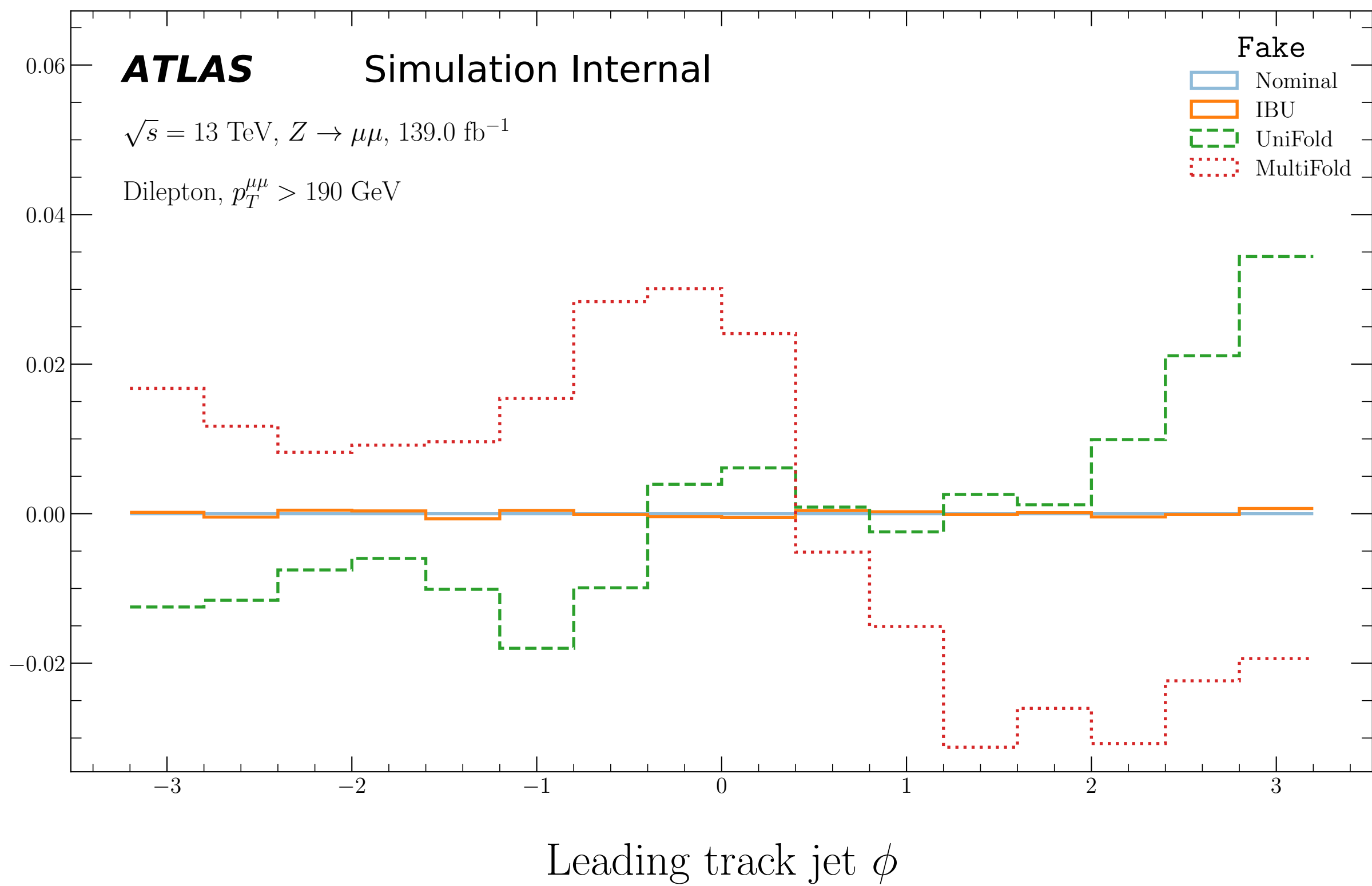
 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

- Nominal
- IBU
- UniFold
- MultiFold







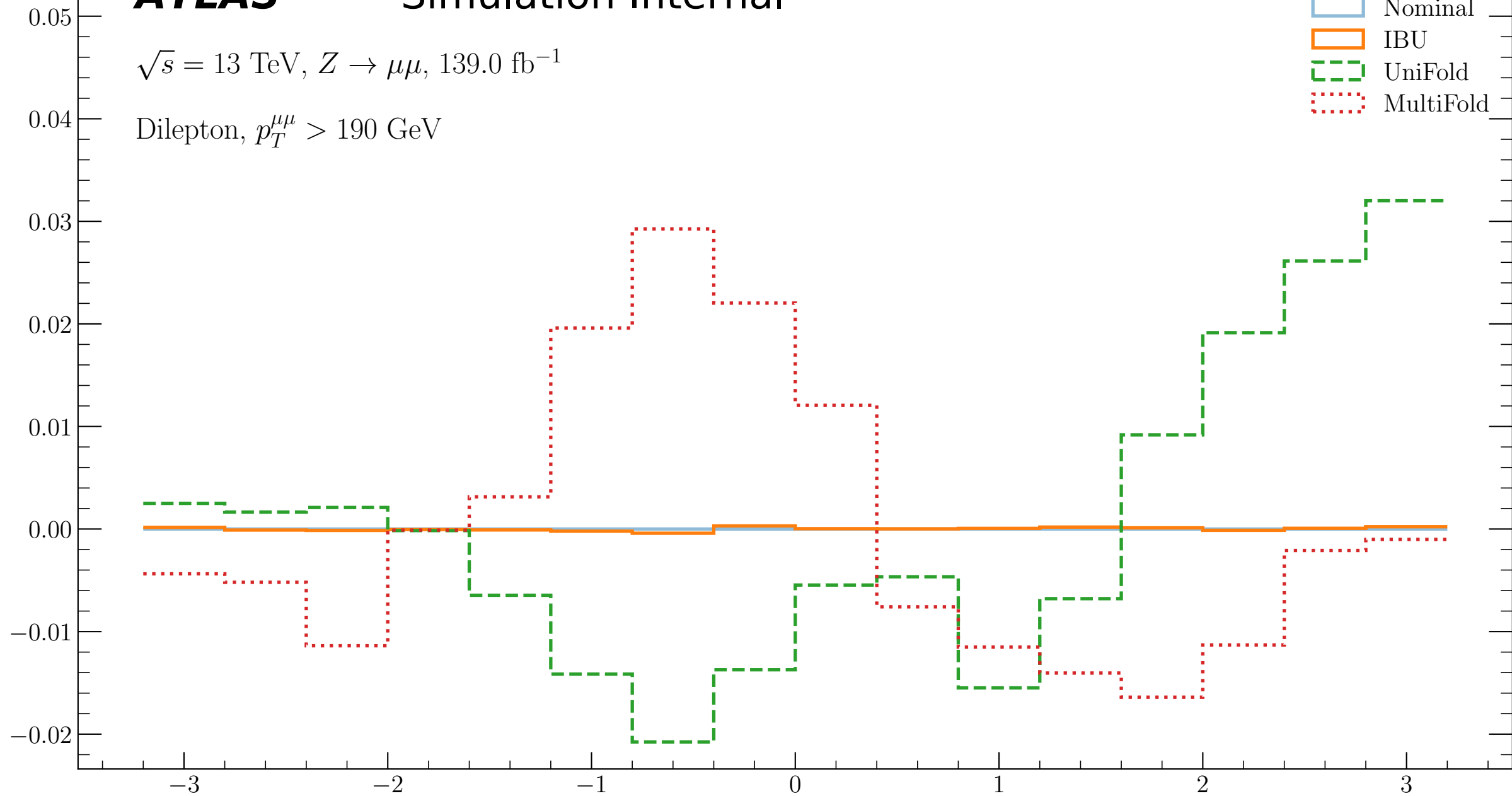
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $\phi$

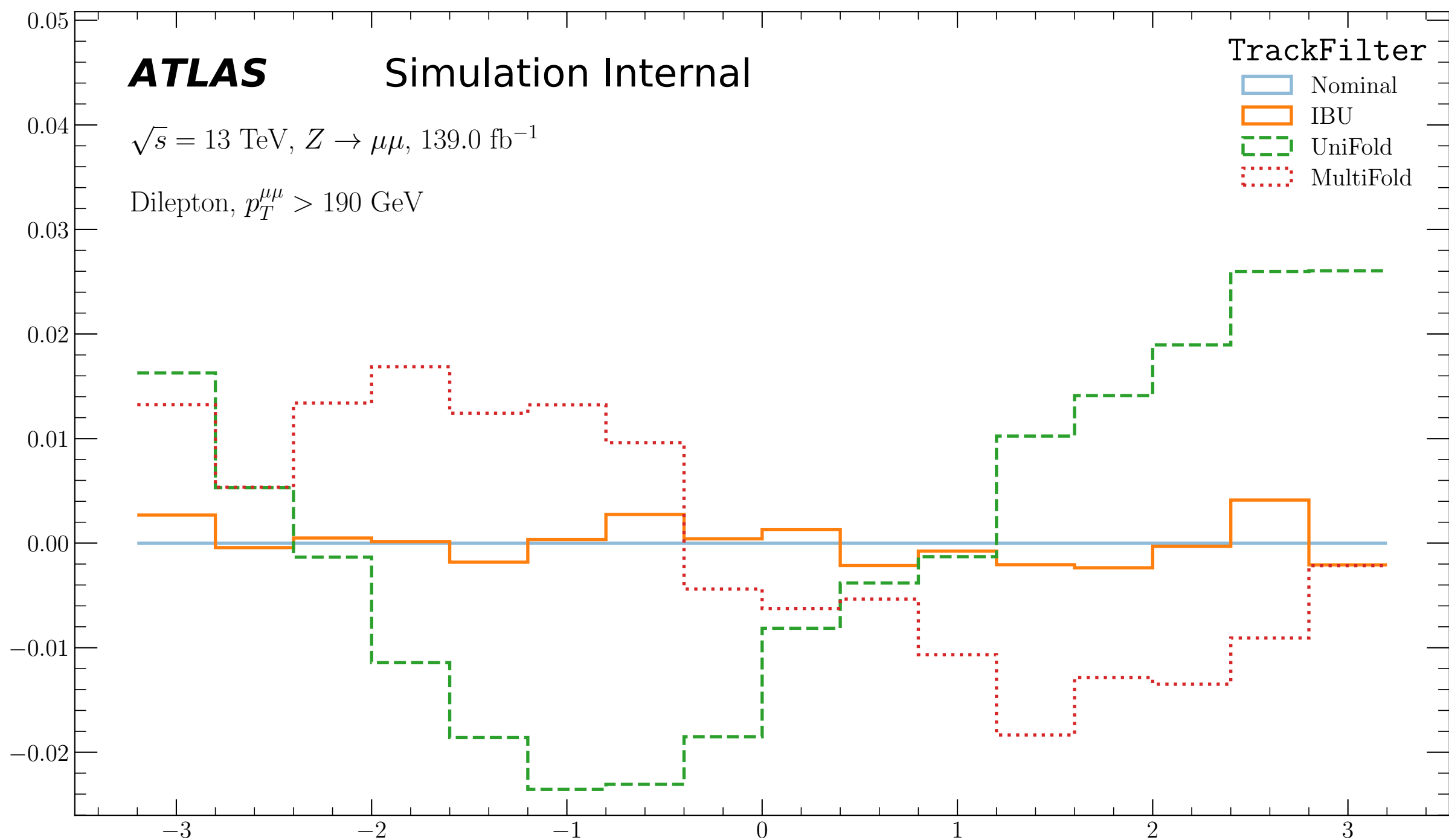
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $\phi$

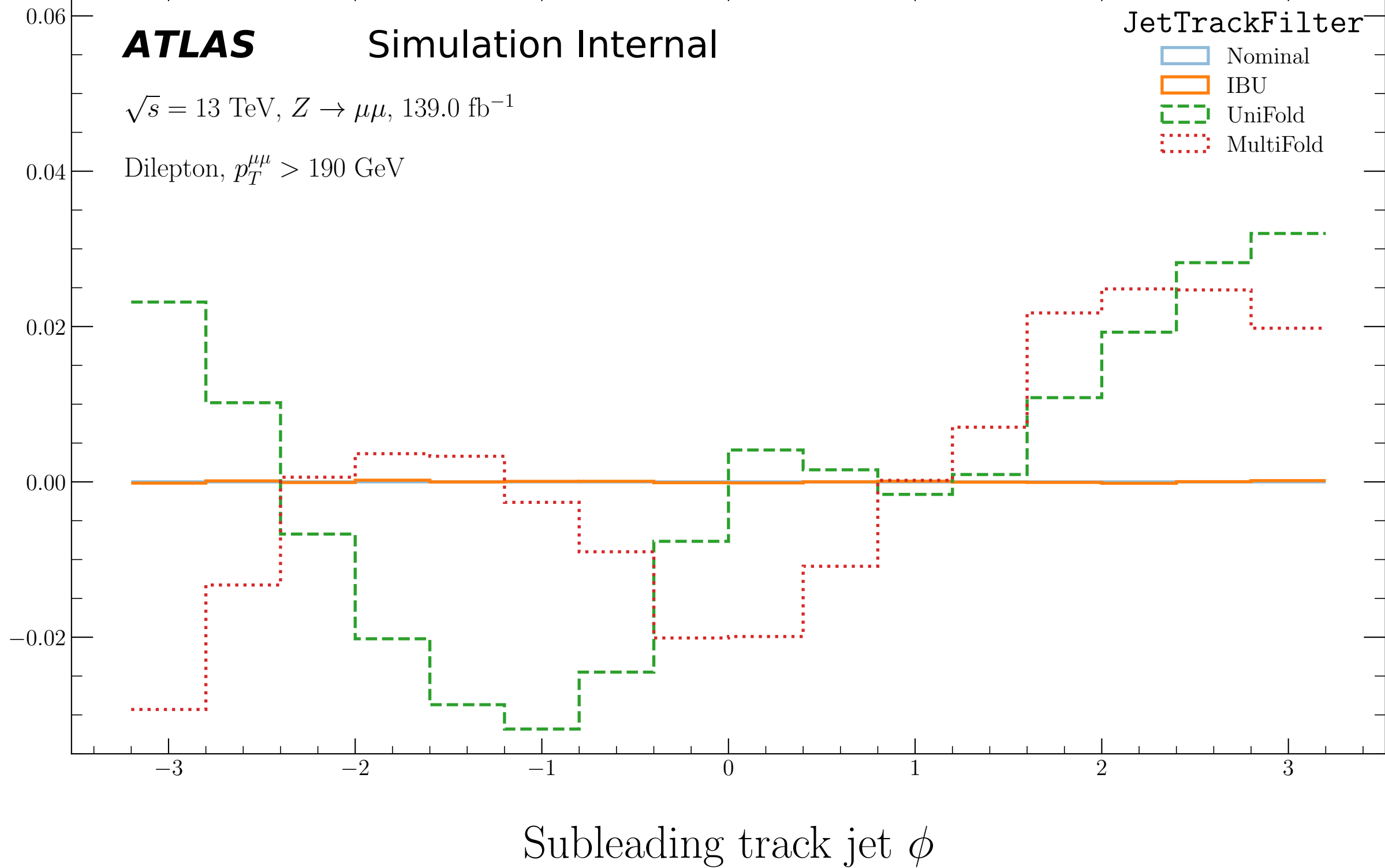
**ATLAS**

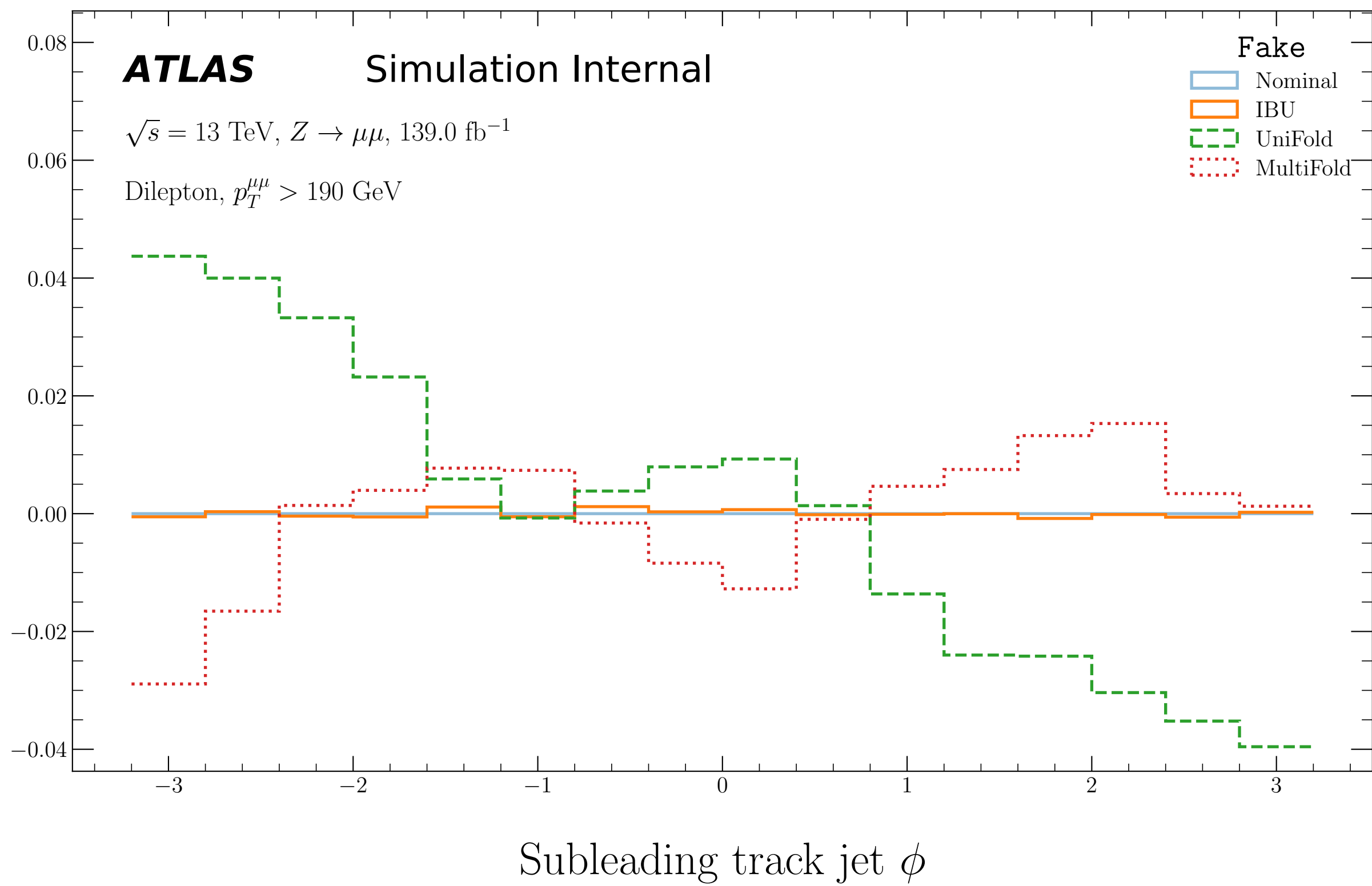
Simulation Internal

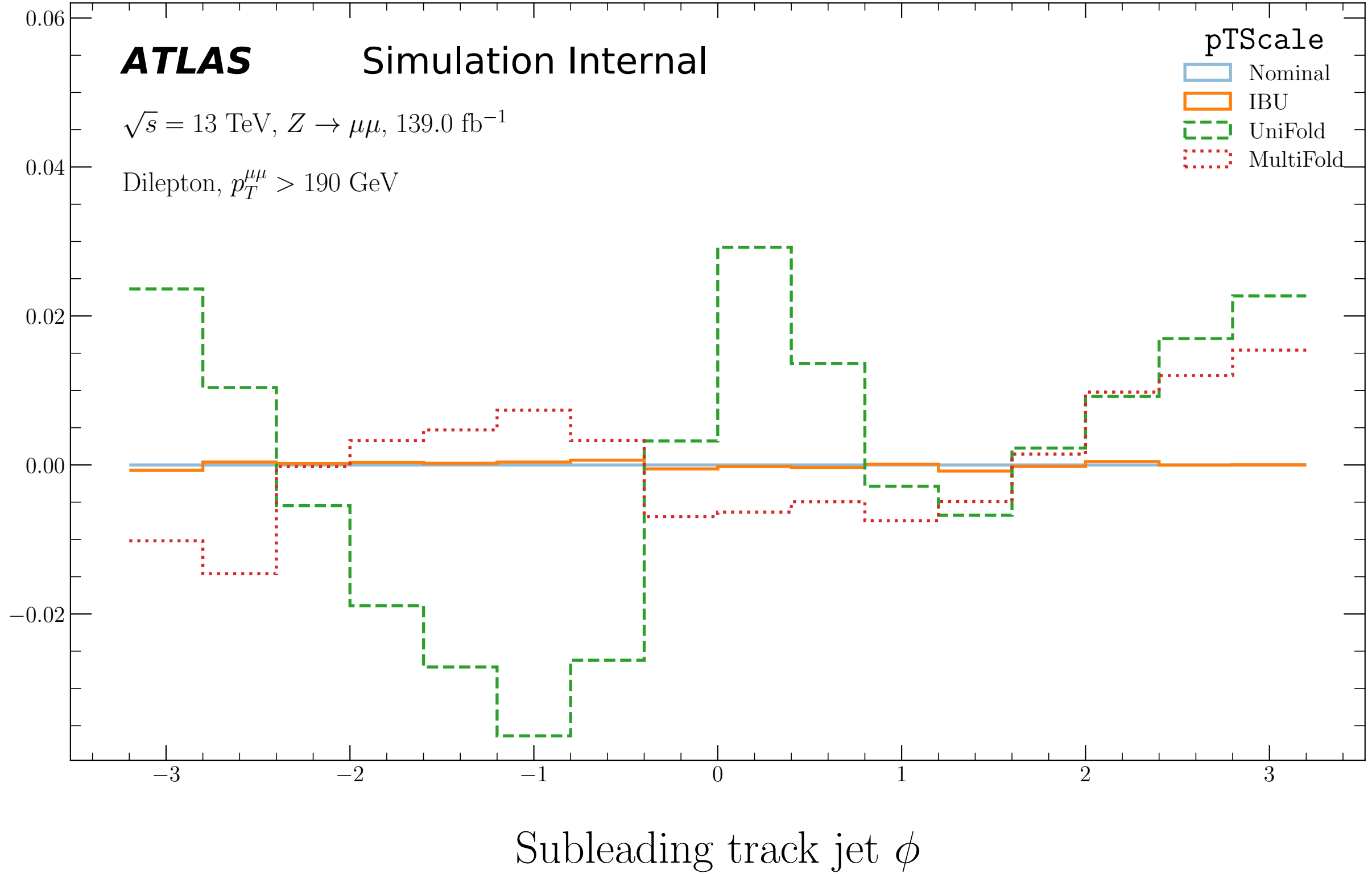
 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

JetTrackFilter

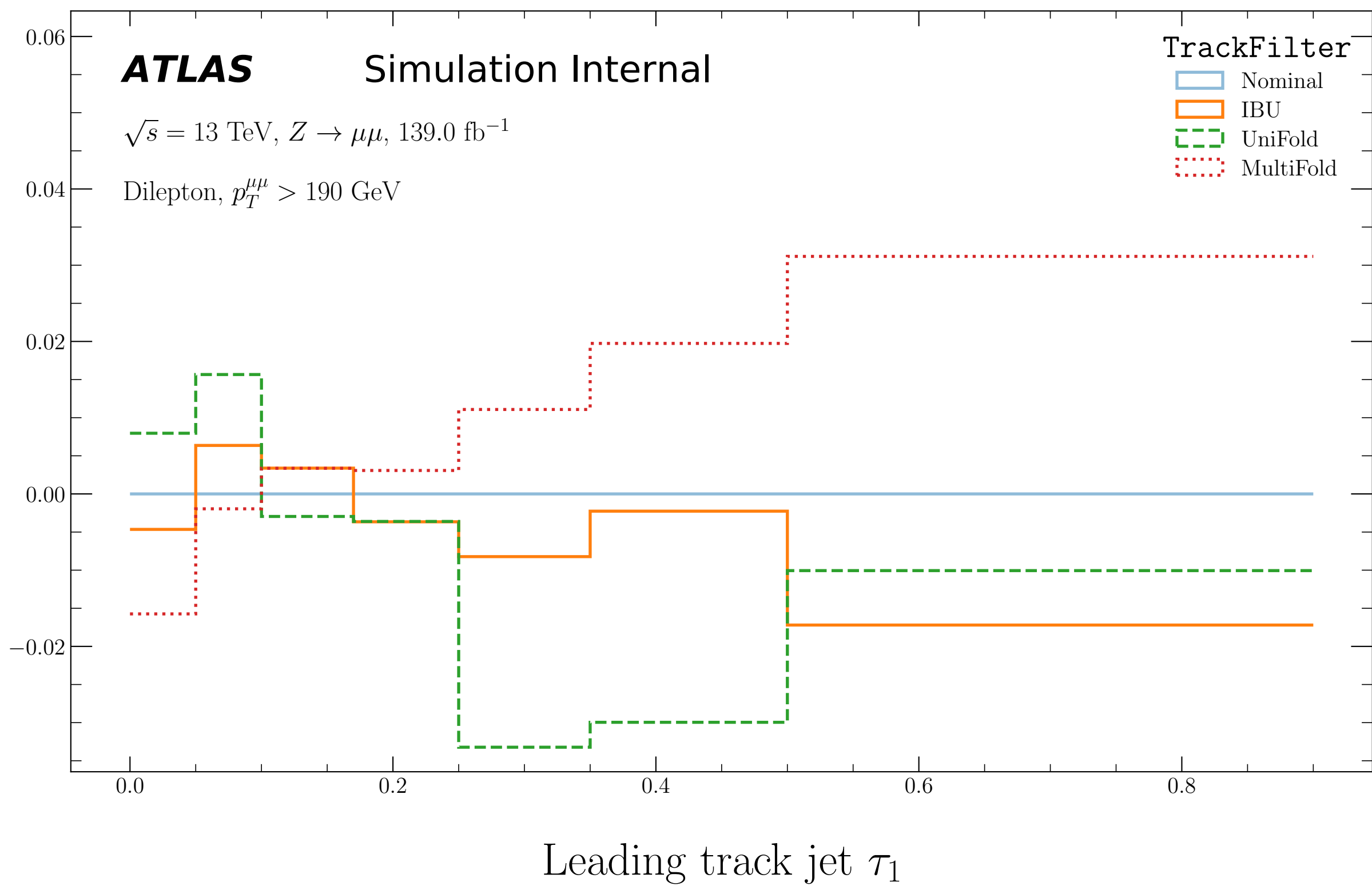
- Nominal
- IBU
- UniFold
- MultiFold











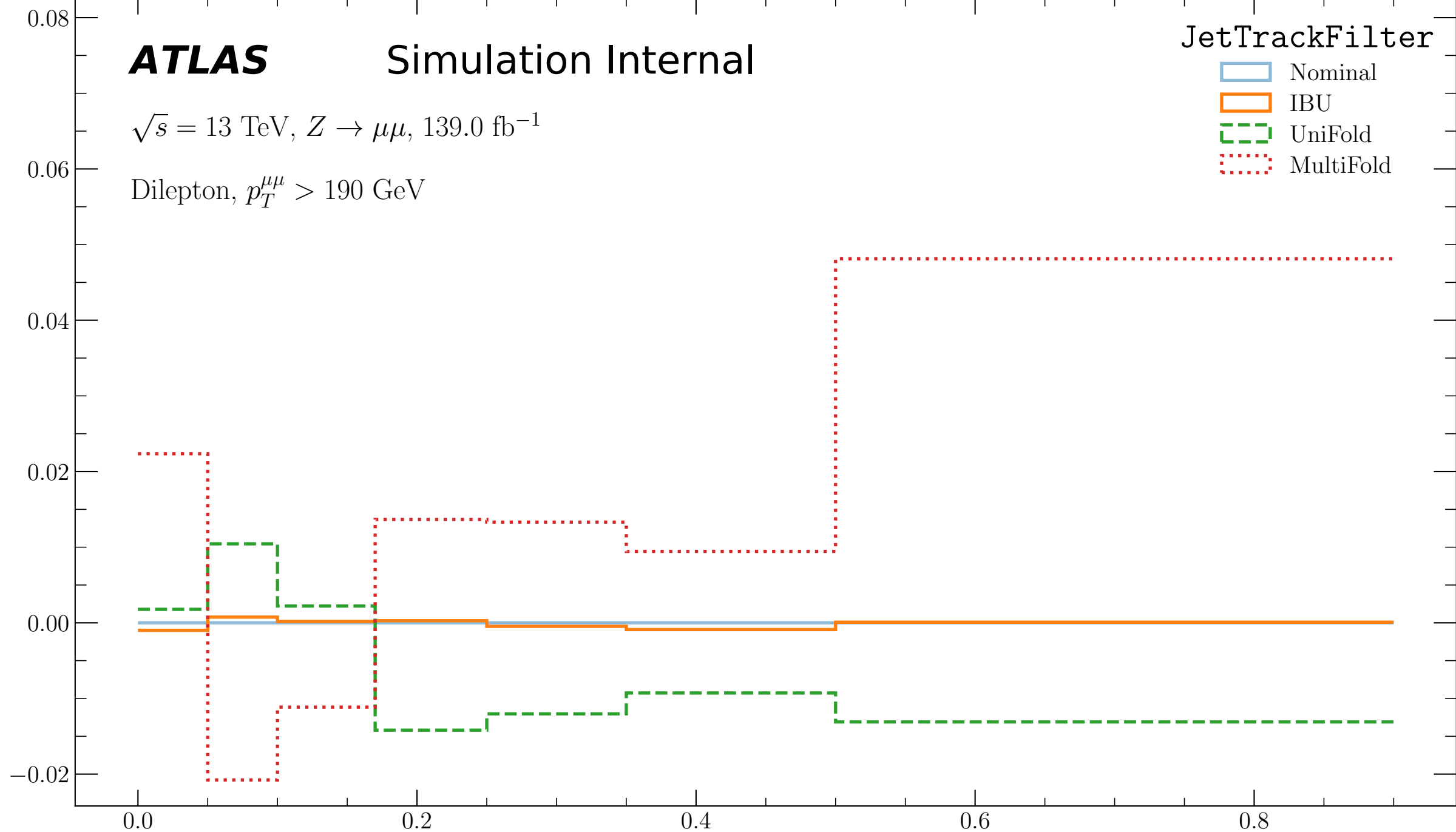
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

JetTrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $\tau_1$

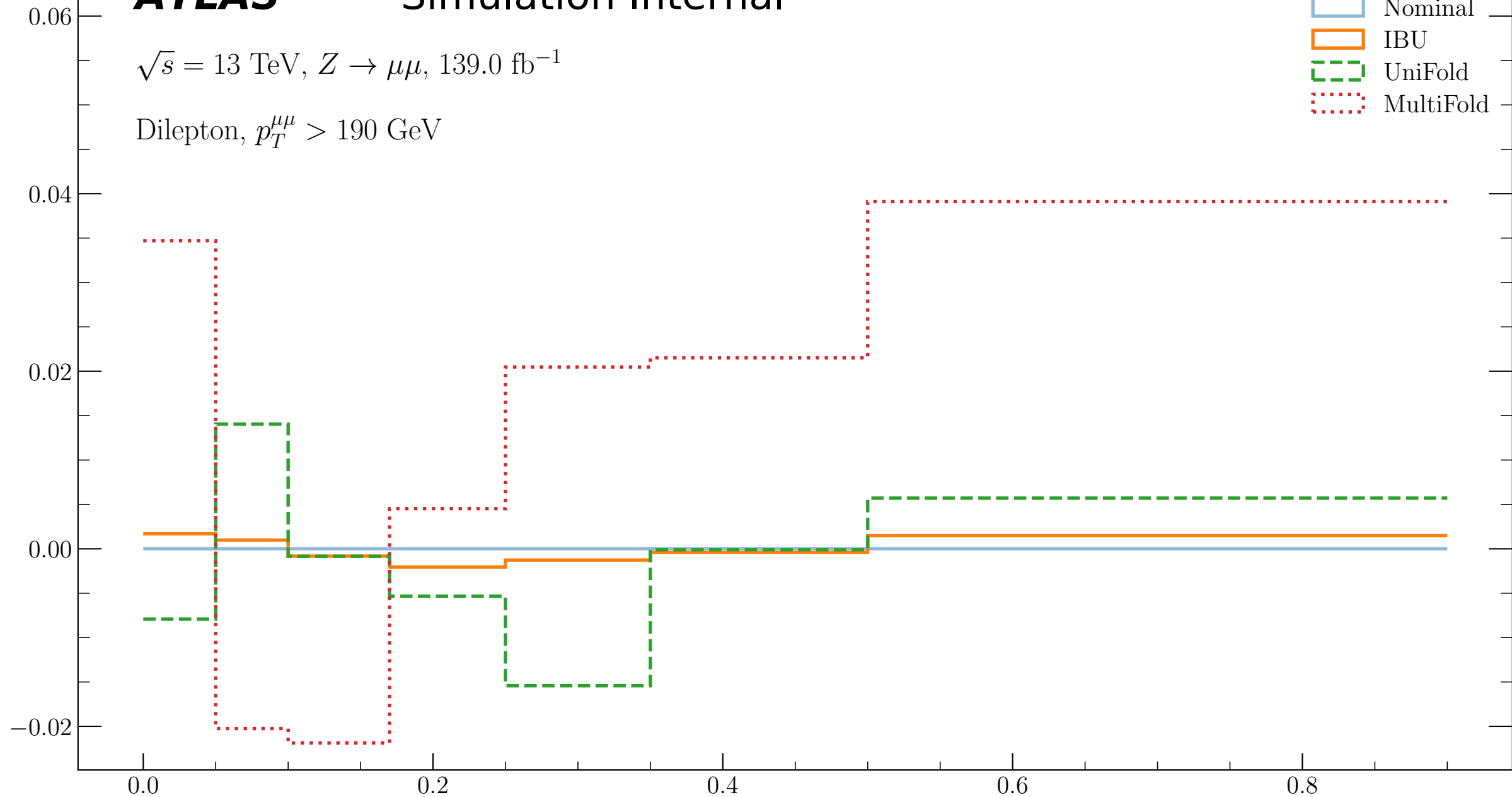
**ATLAS**

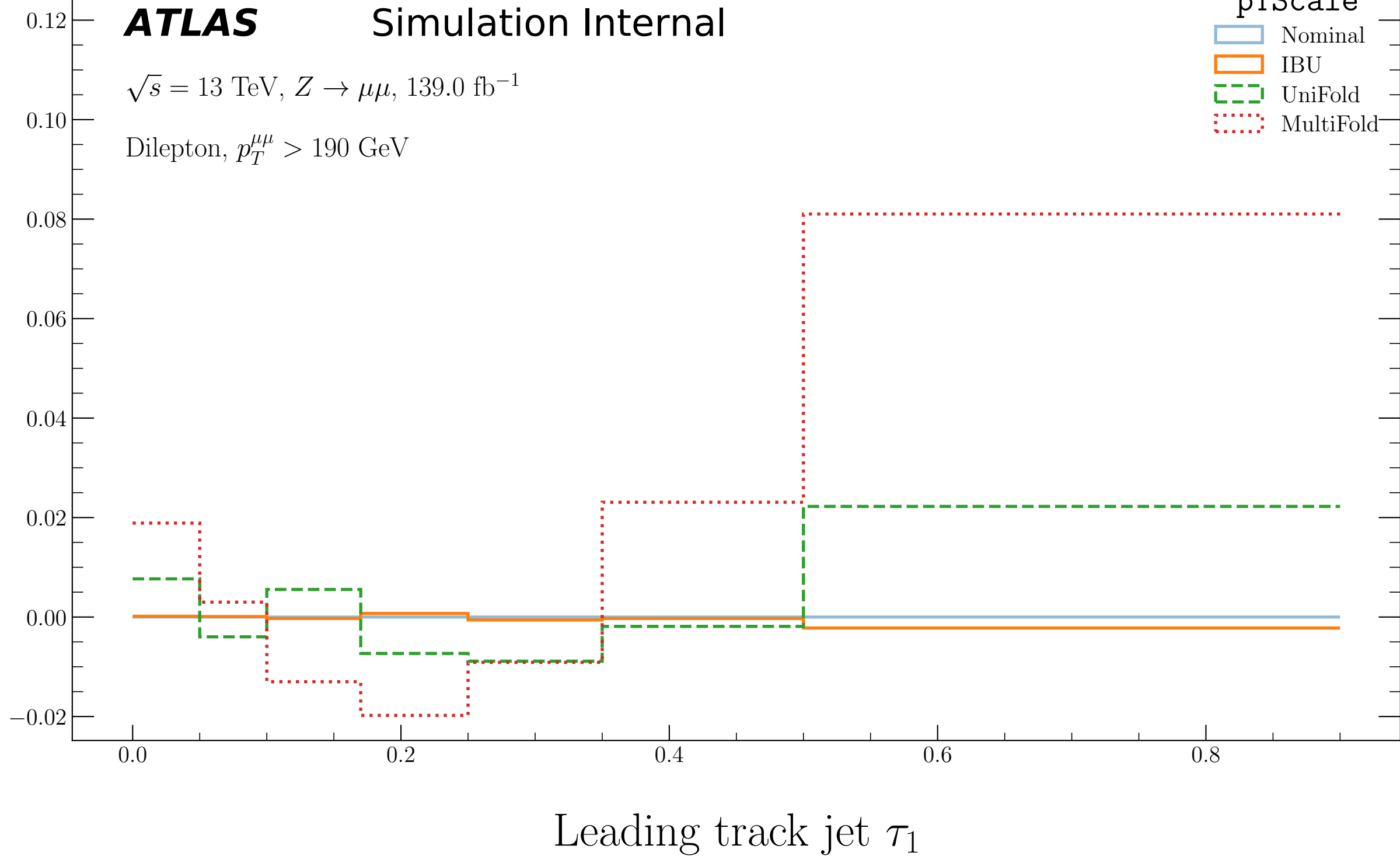
Simulation Internal

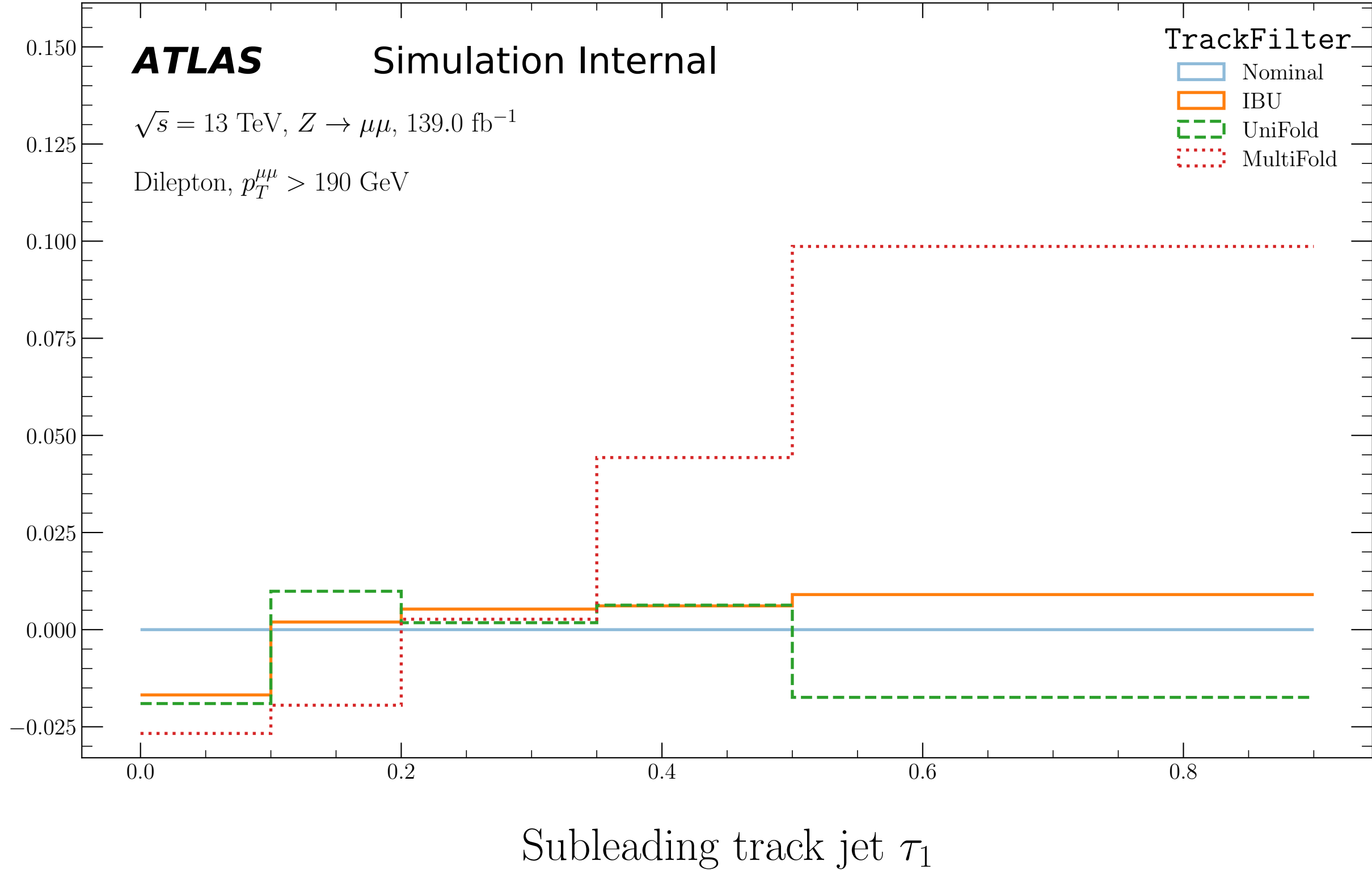
 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $\tau_1$





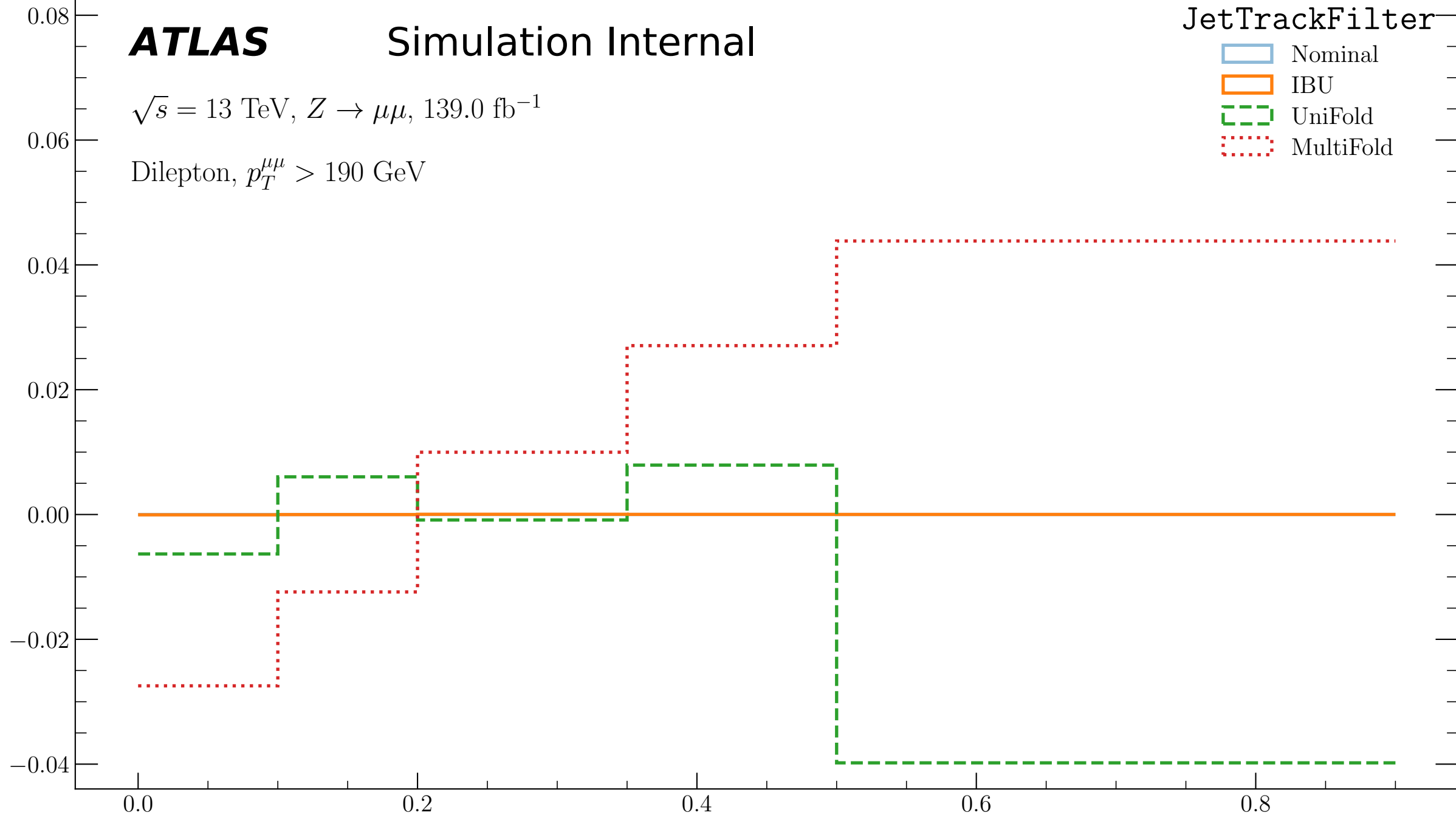
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

JetTrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $\tau_1$

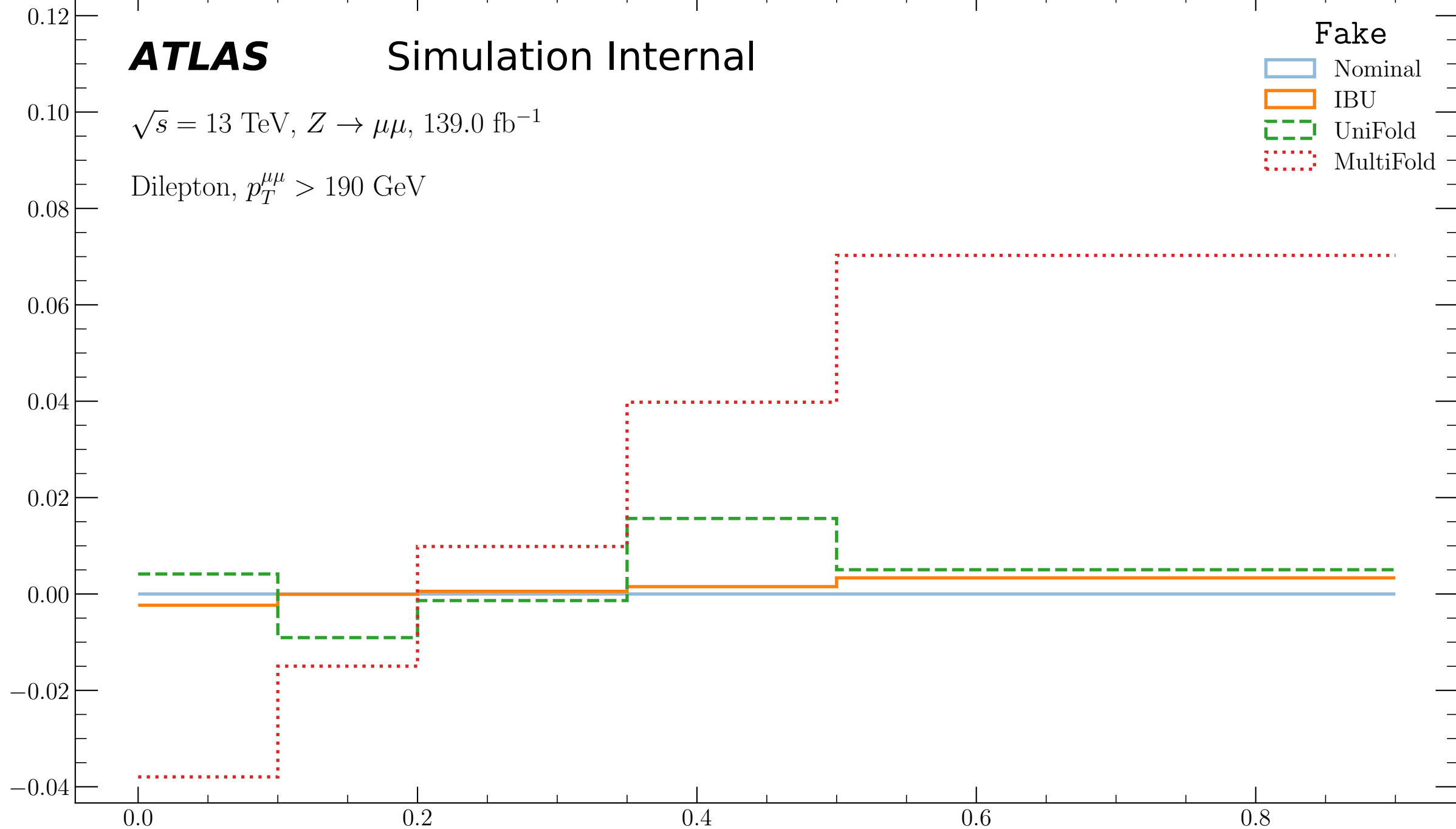
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $\tau_1$

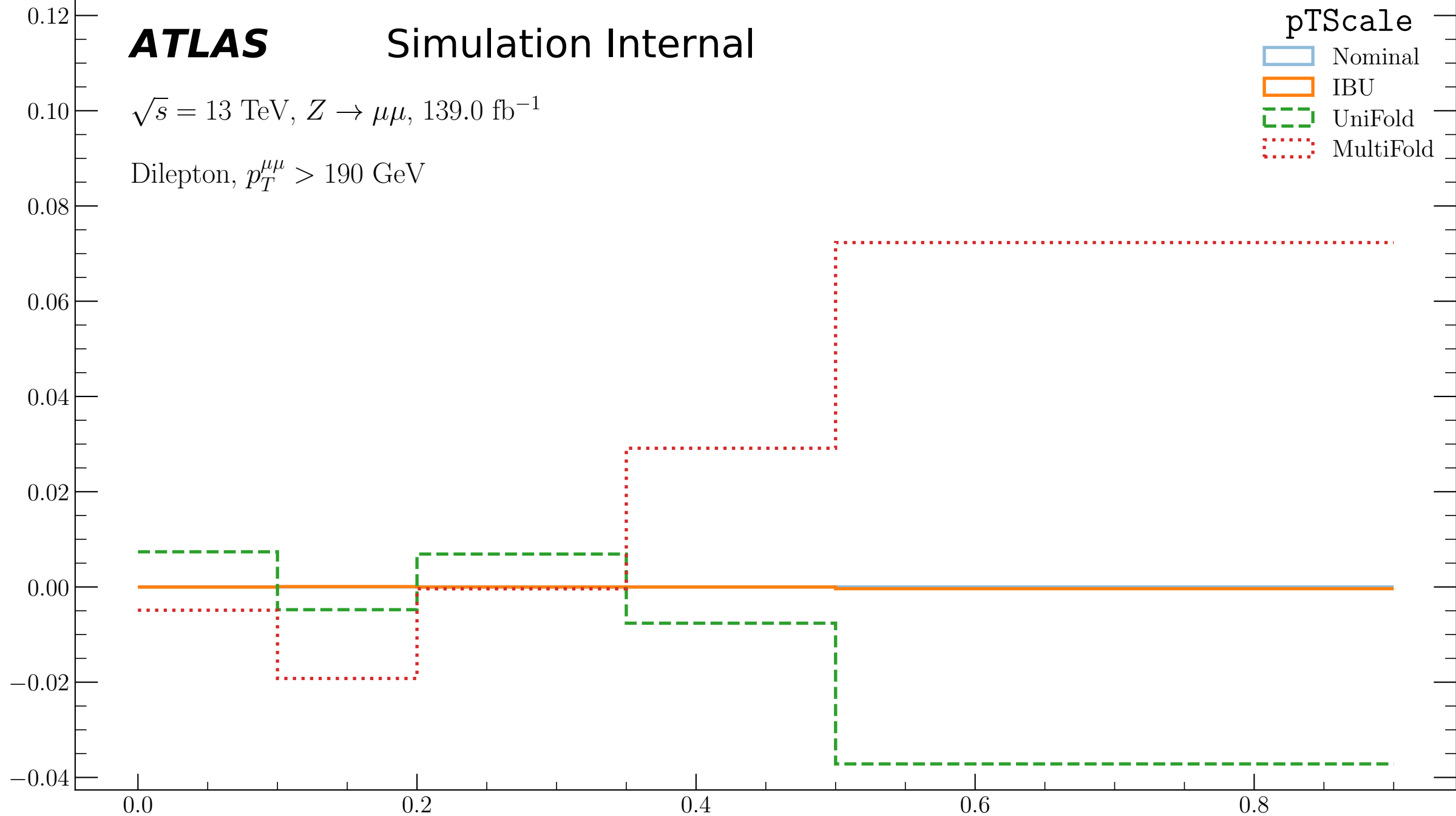
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $\tau_1$



**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

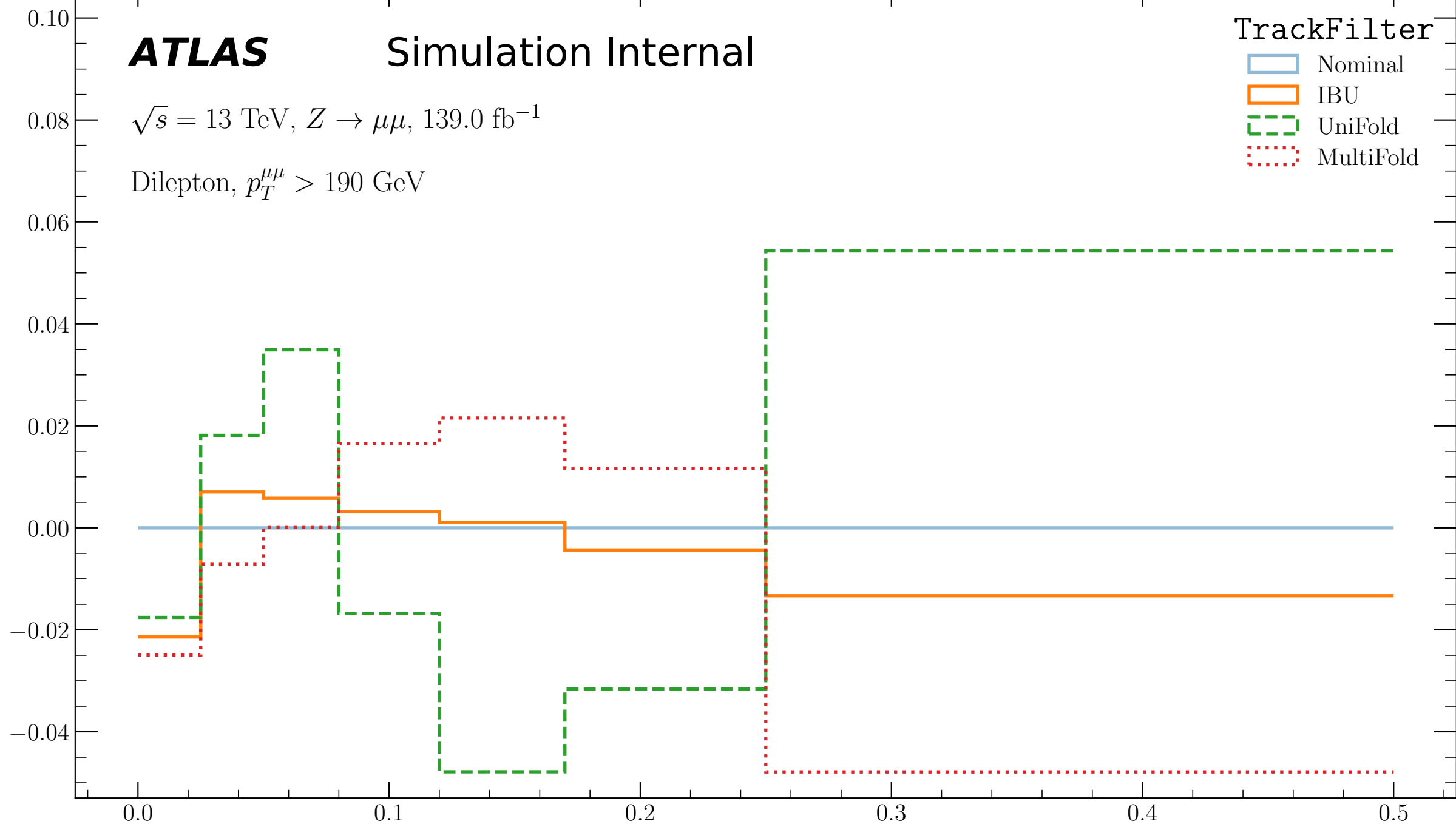
TrackFilter

Nominal

IBU

UniFold

MultiFold



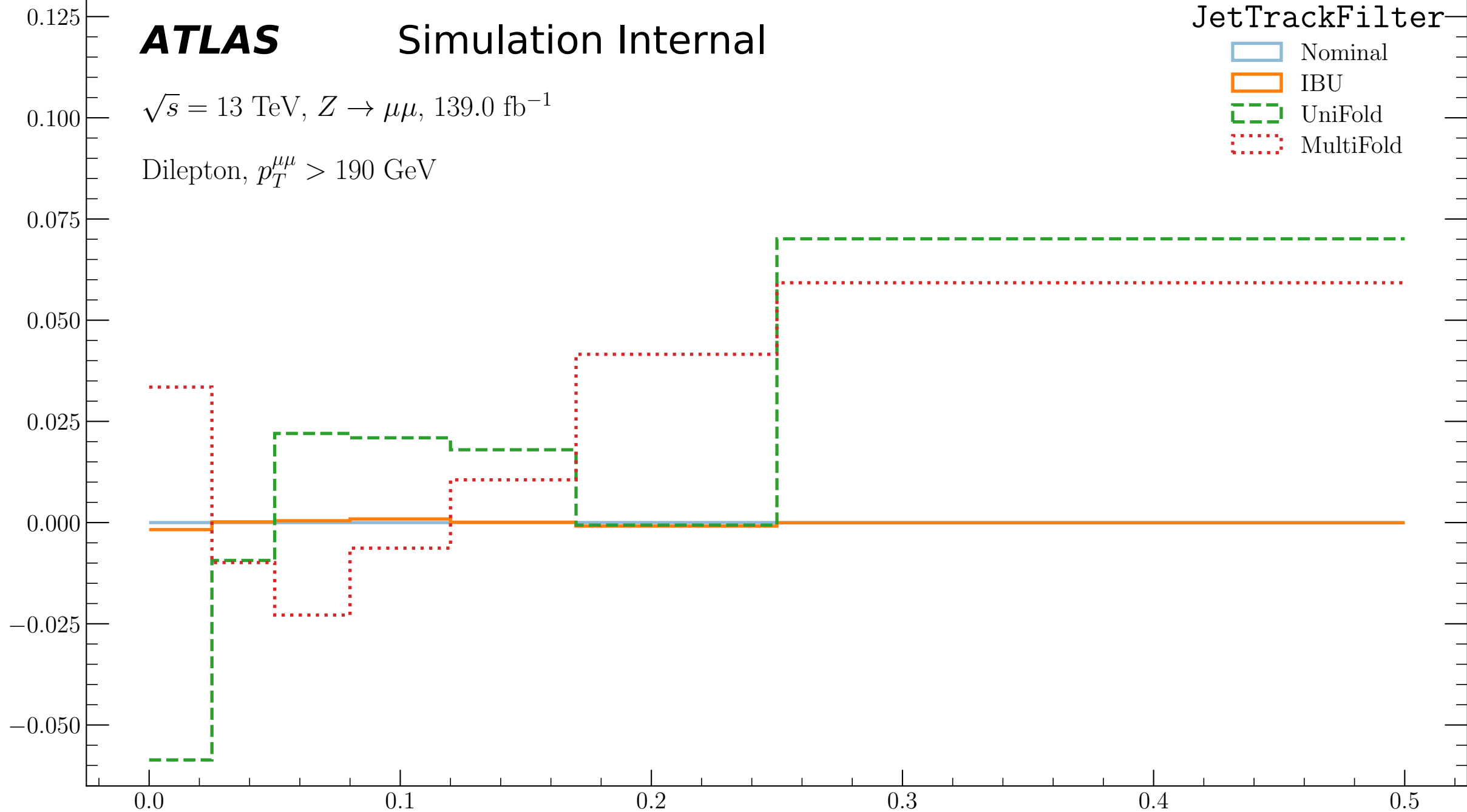
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

JetTrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $\tau_2$

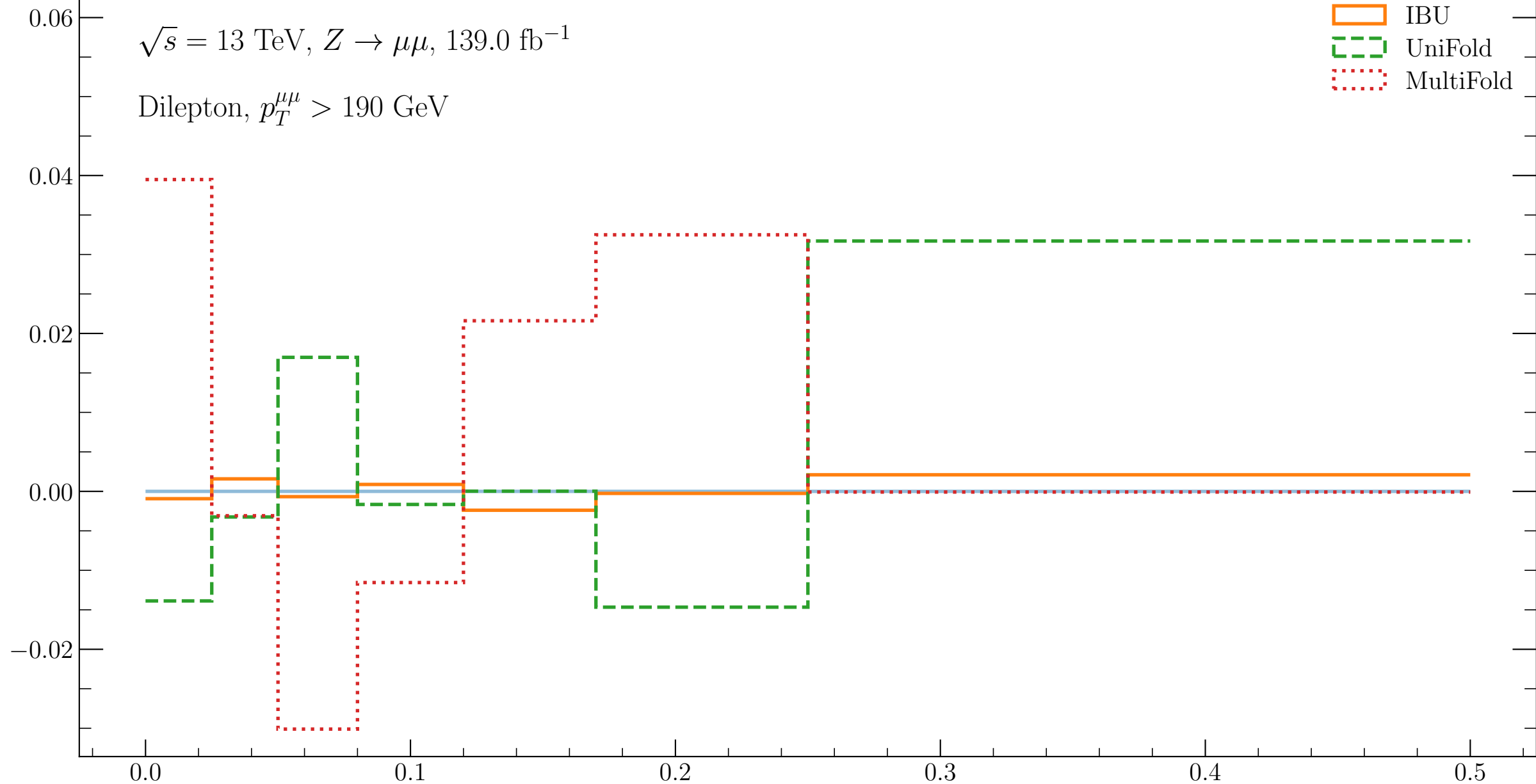
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $\tau_2$

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

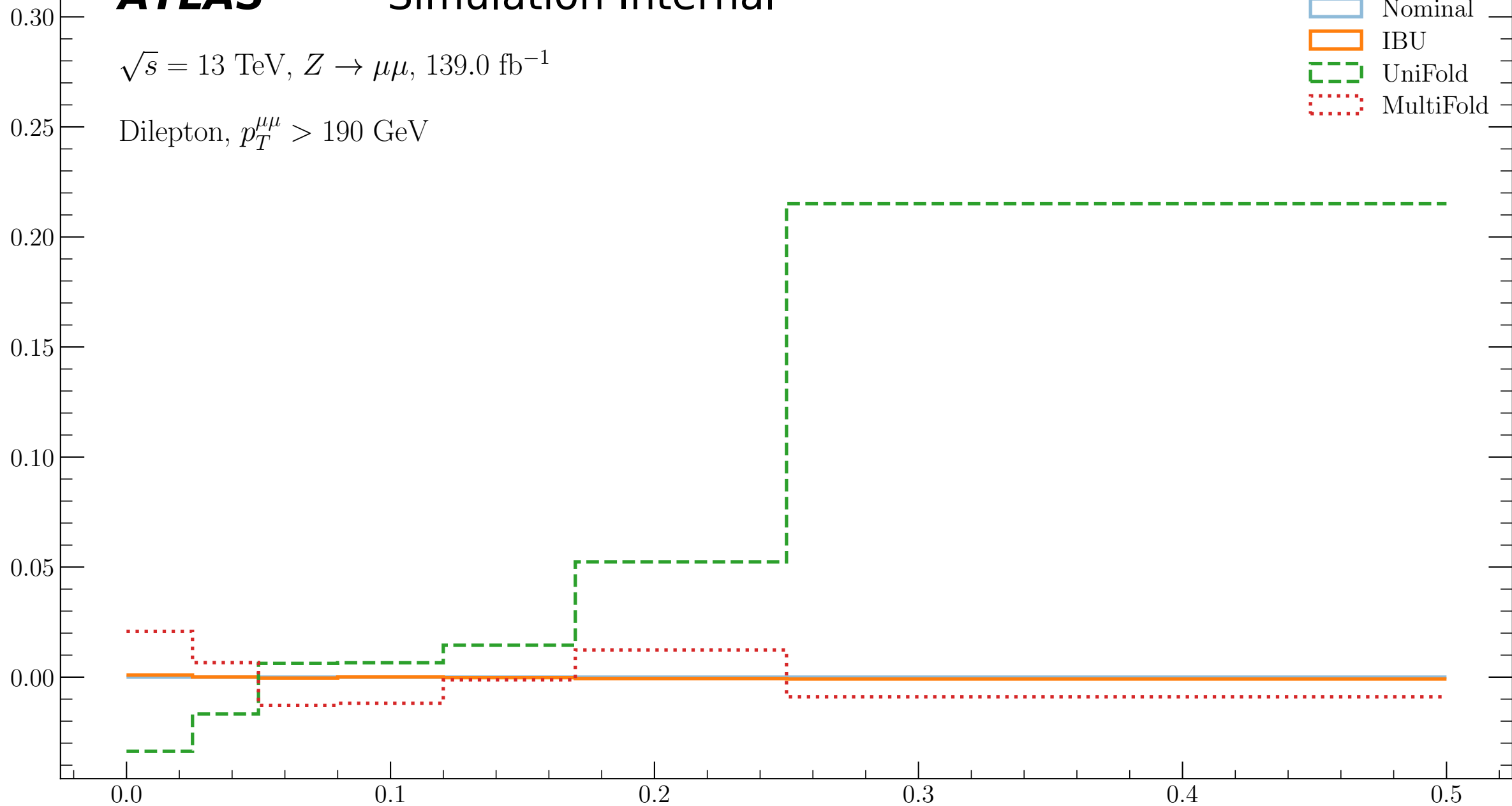
pTScale

Nominal

IBU

UniFold

MultiFold

Leading track jet  $\tau_2$

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

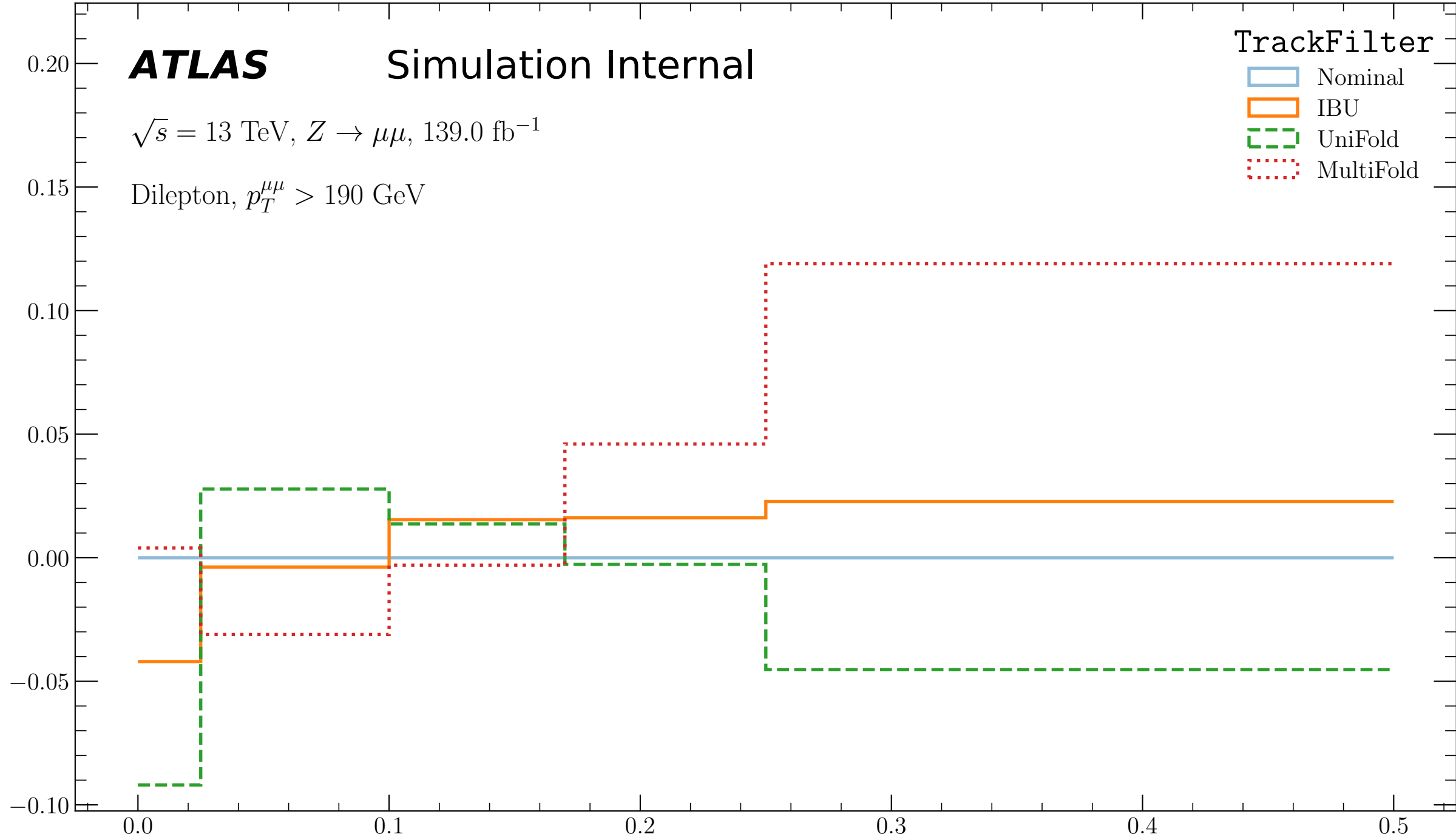
TrackFilter

Nominal

IBU

UniFold

MultiFold

Subleading track jet  $\tau_2$

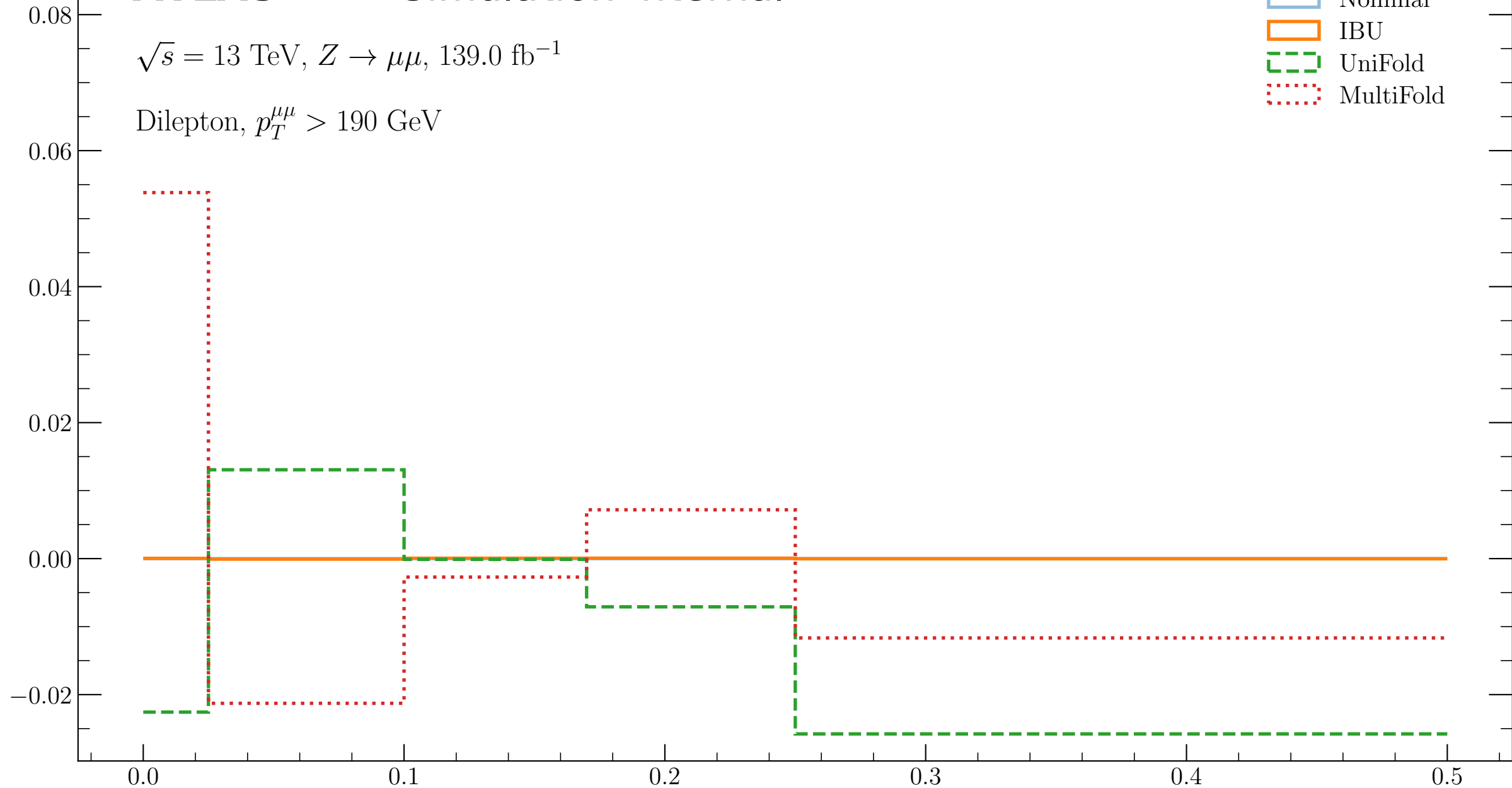
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

JetTrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $\tau_2$

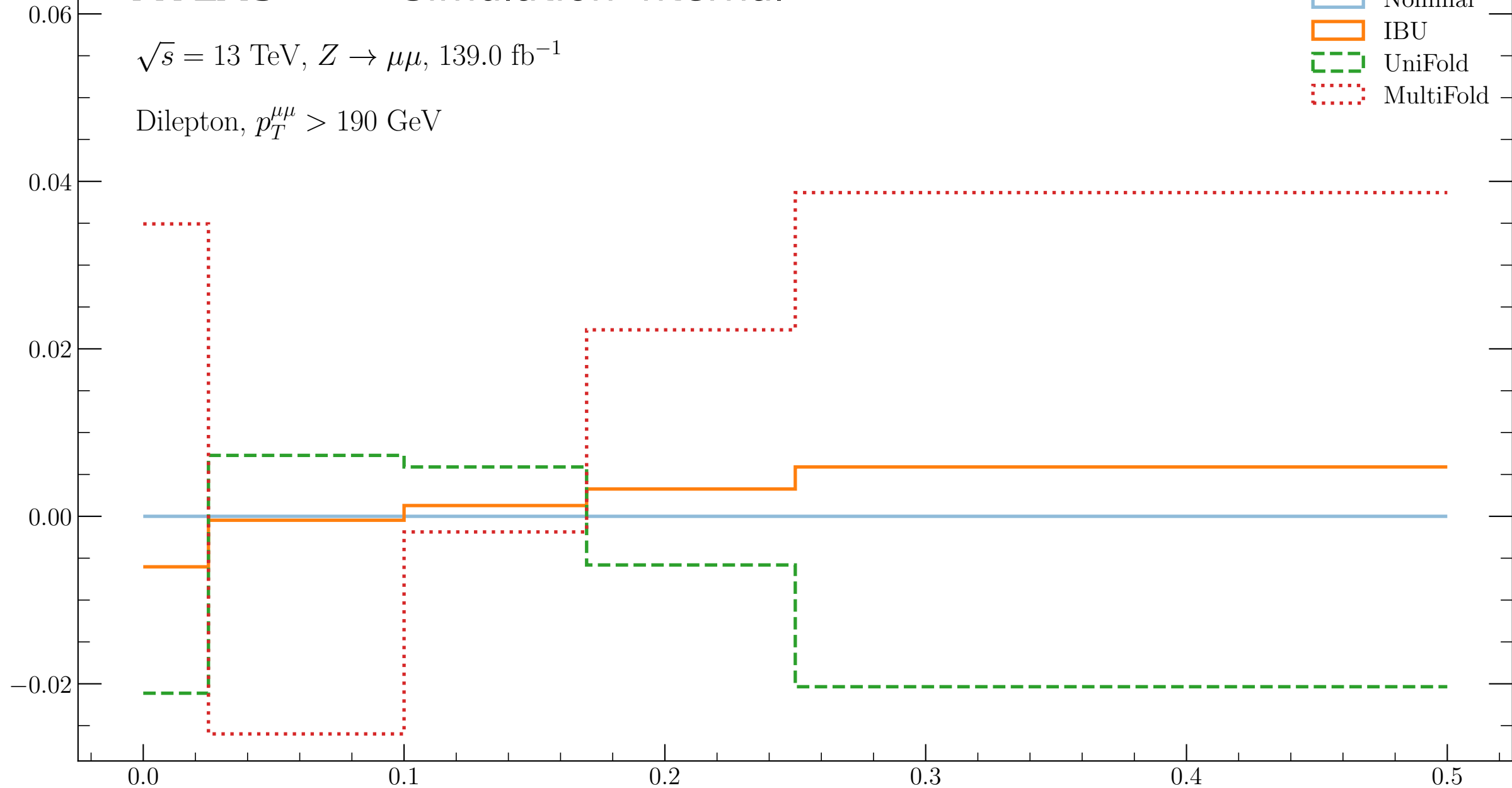
**ATLAS**

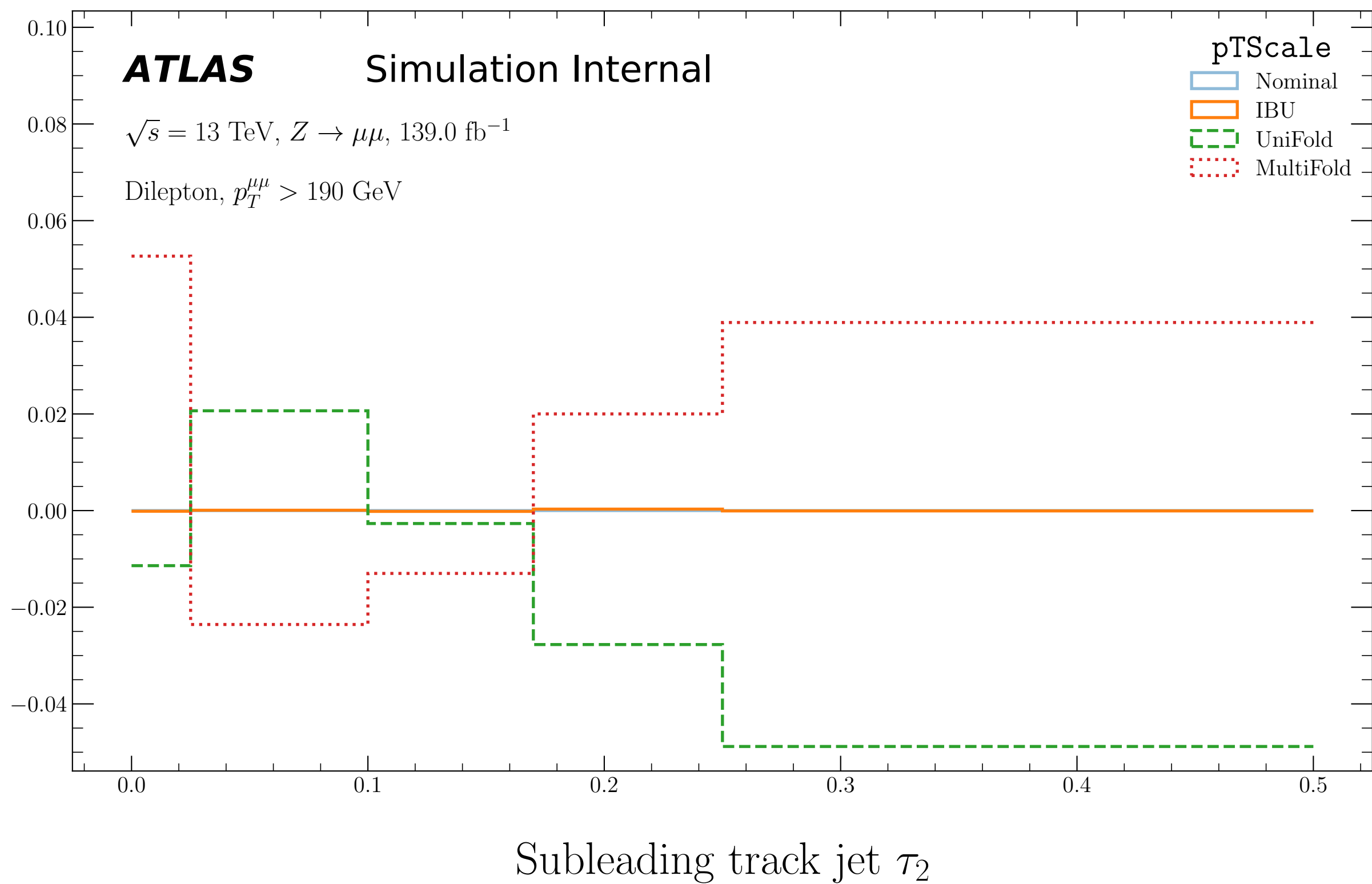
Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

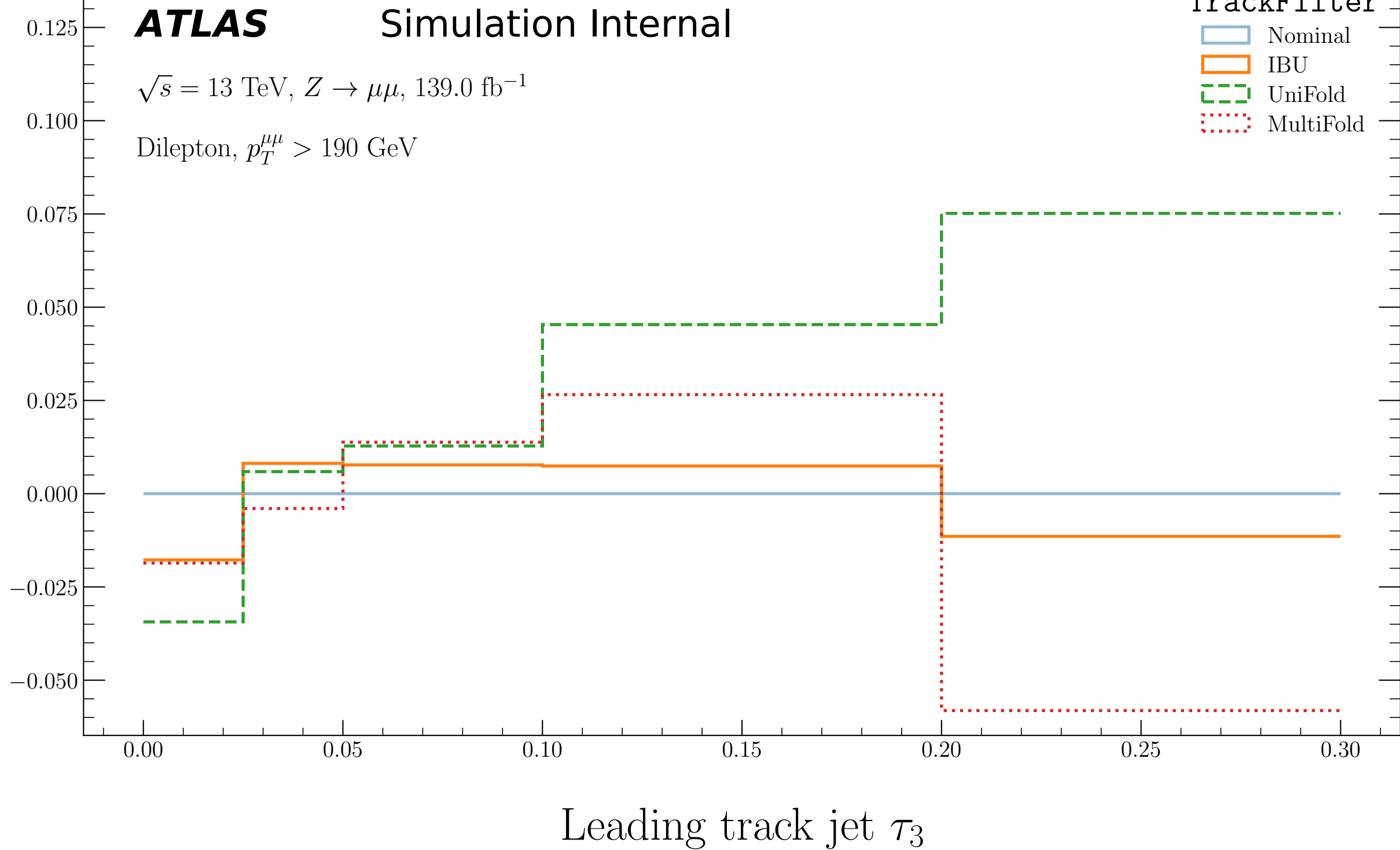
Fake

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $\tau_2$







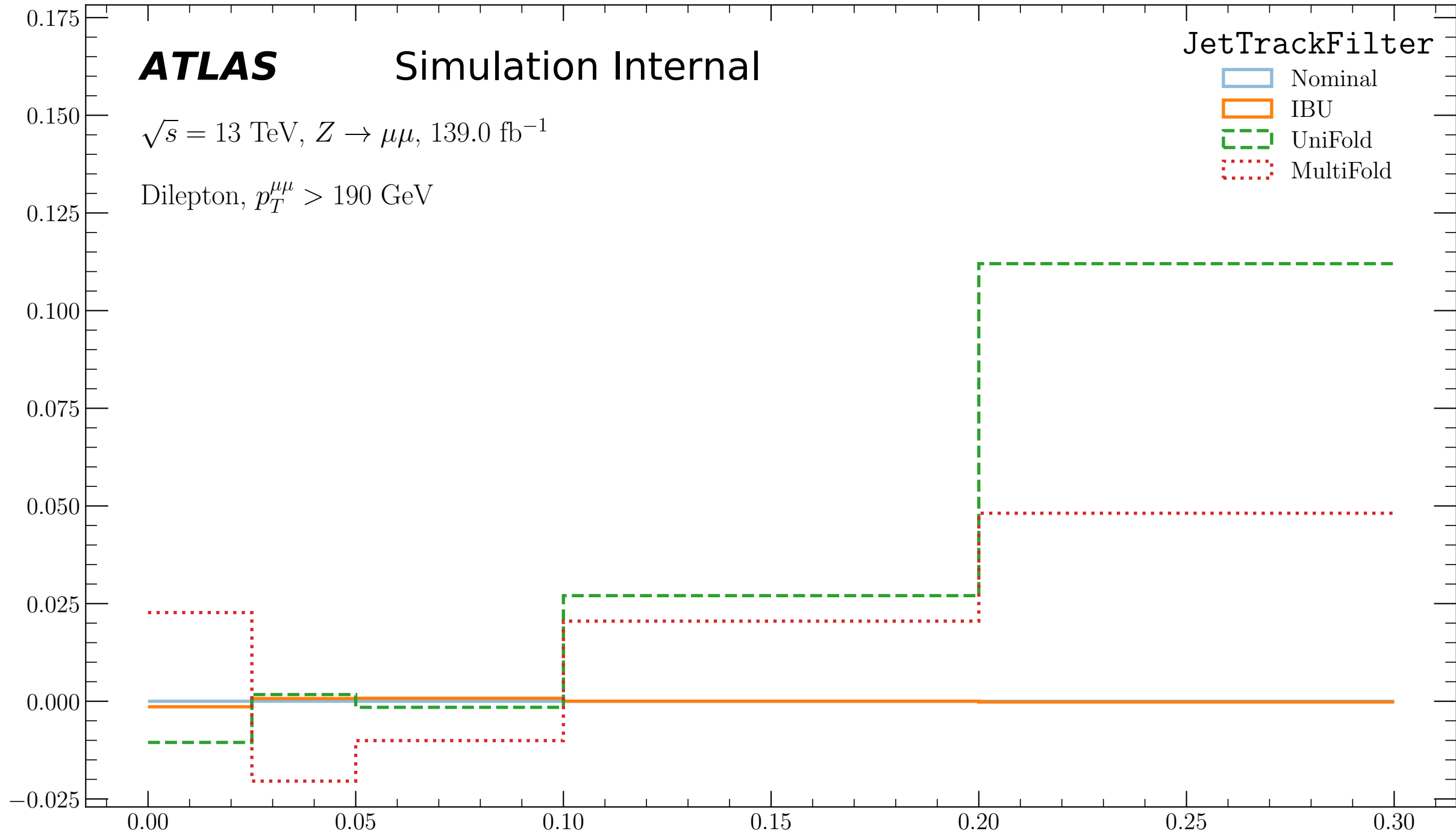
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

JetTrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $\tau_3$

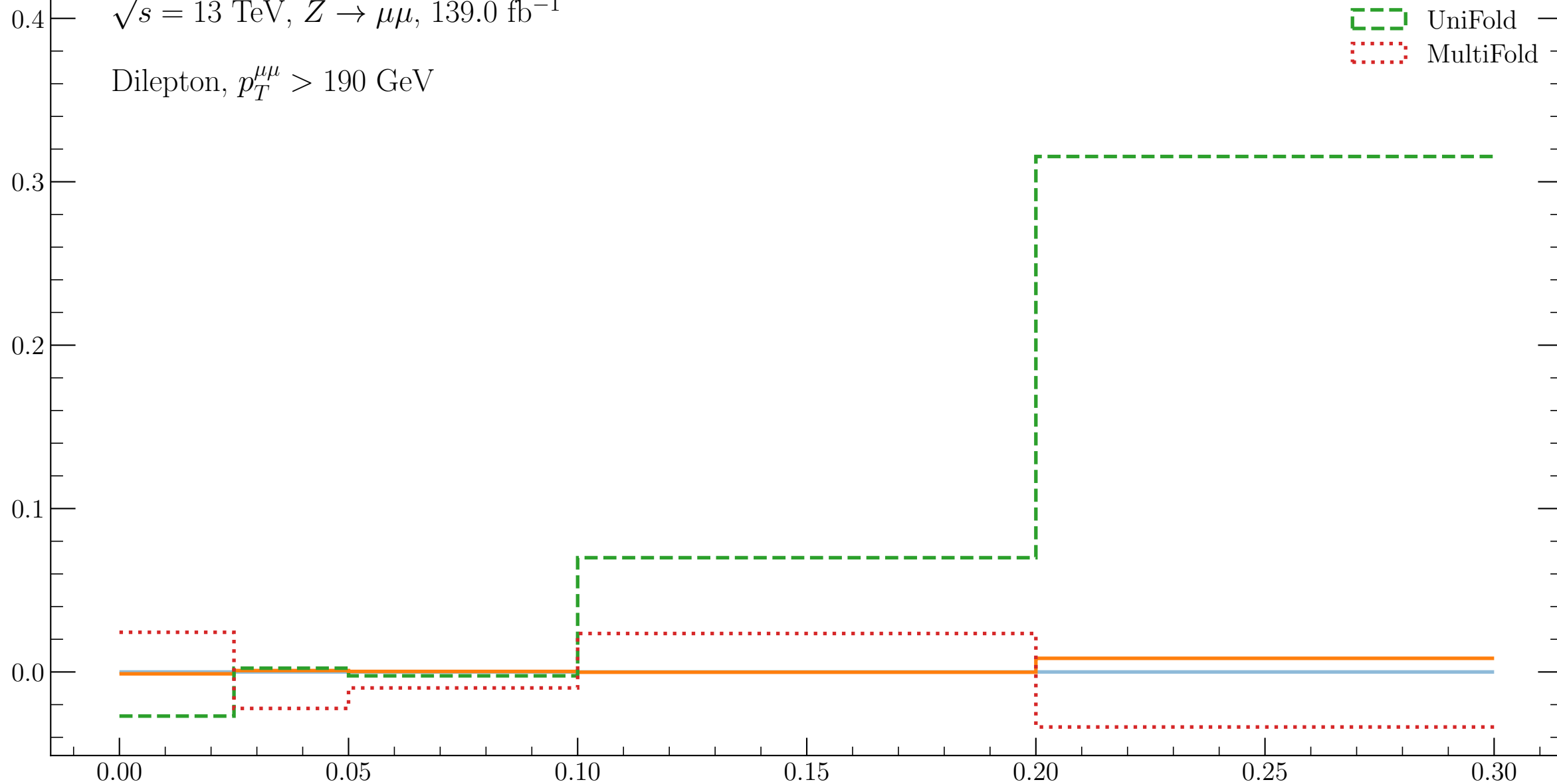
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $\tau_3$

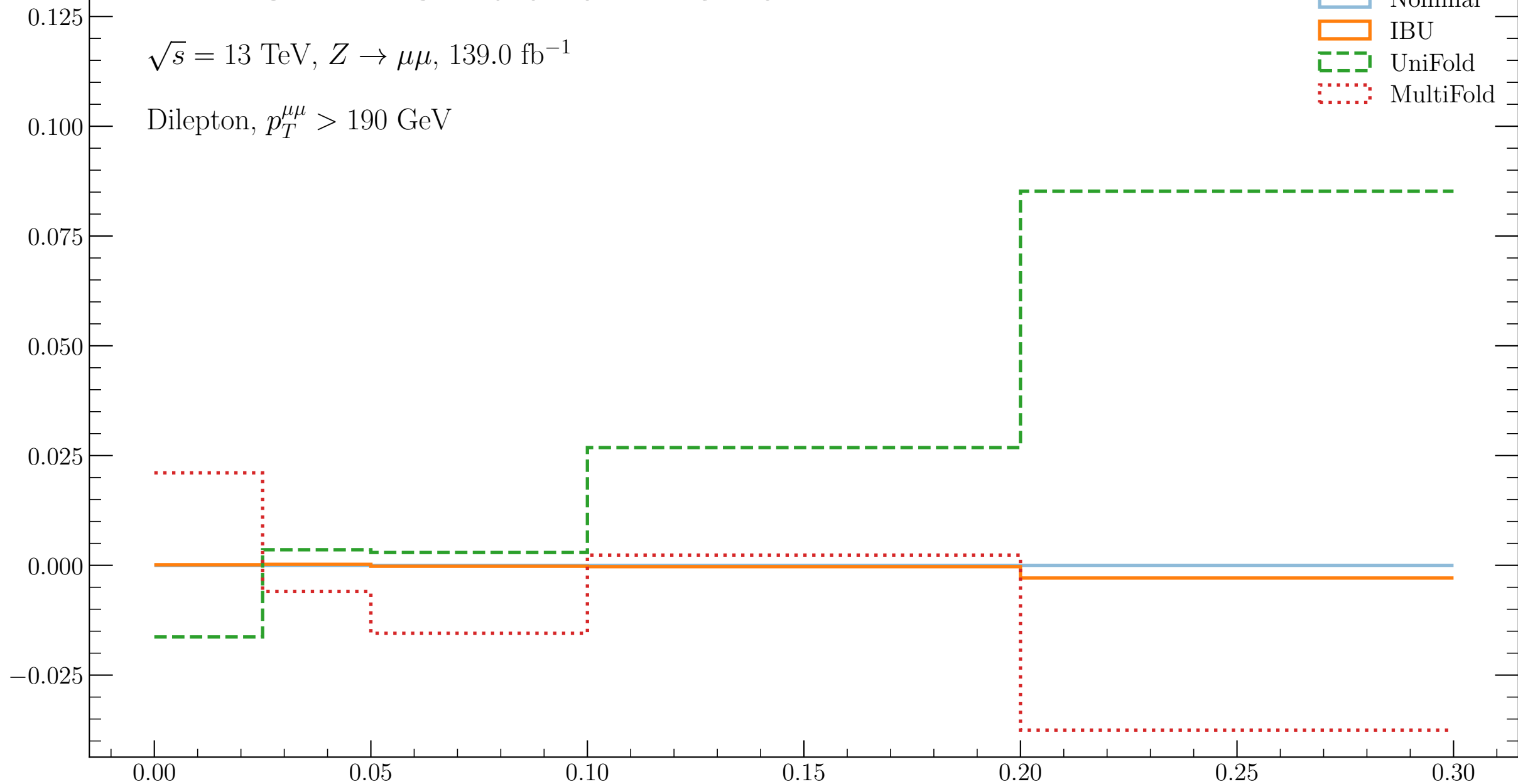
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet  $\tau_3$

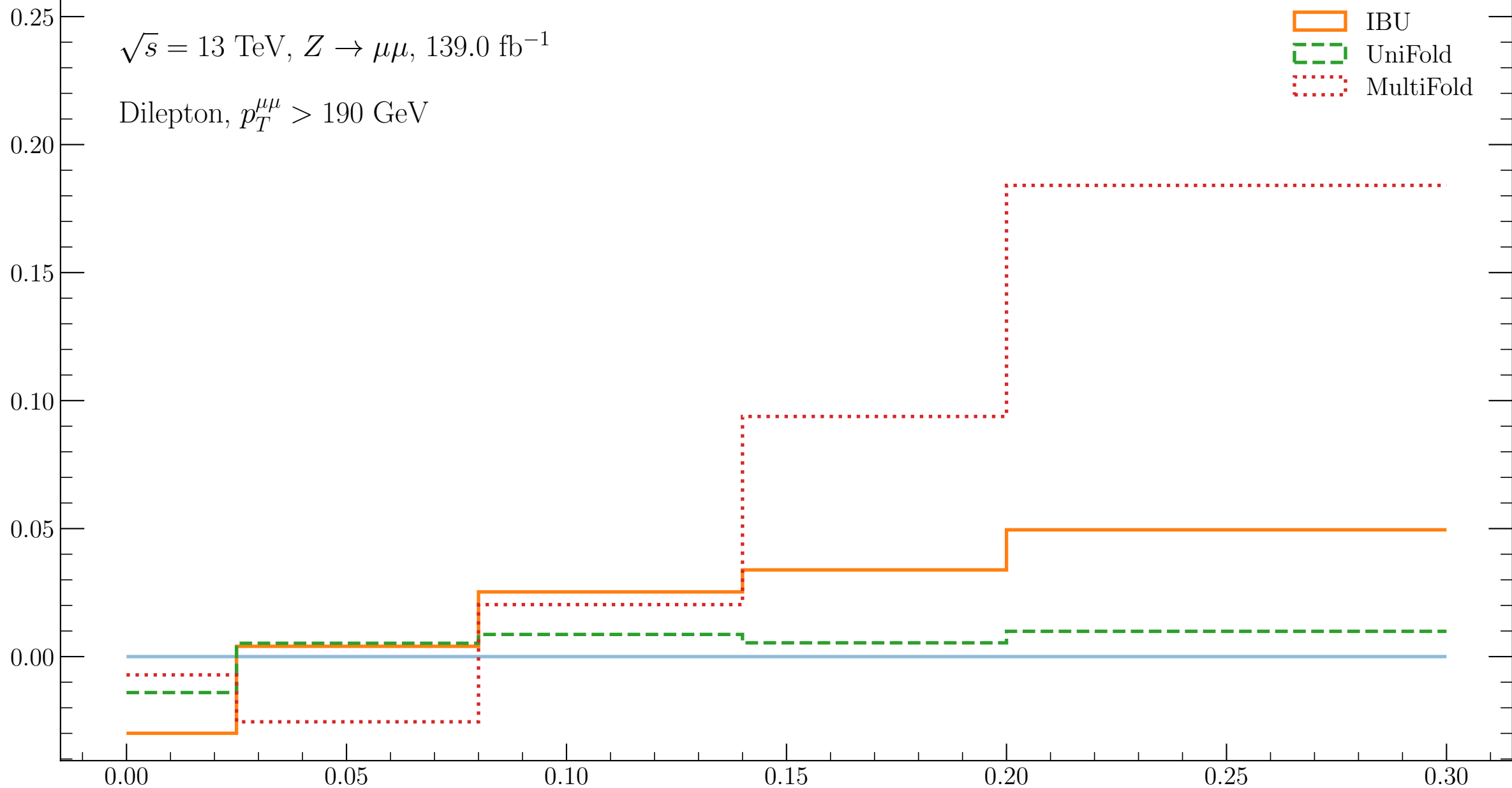
**ATLAS**

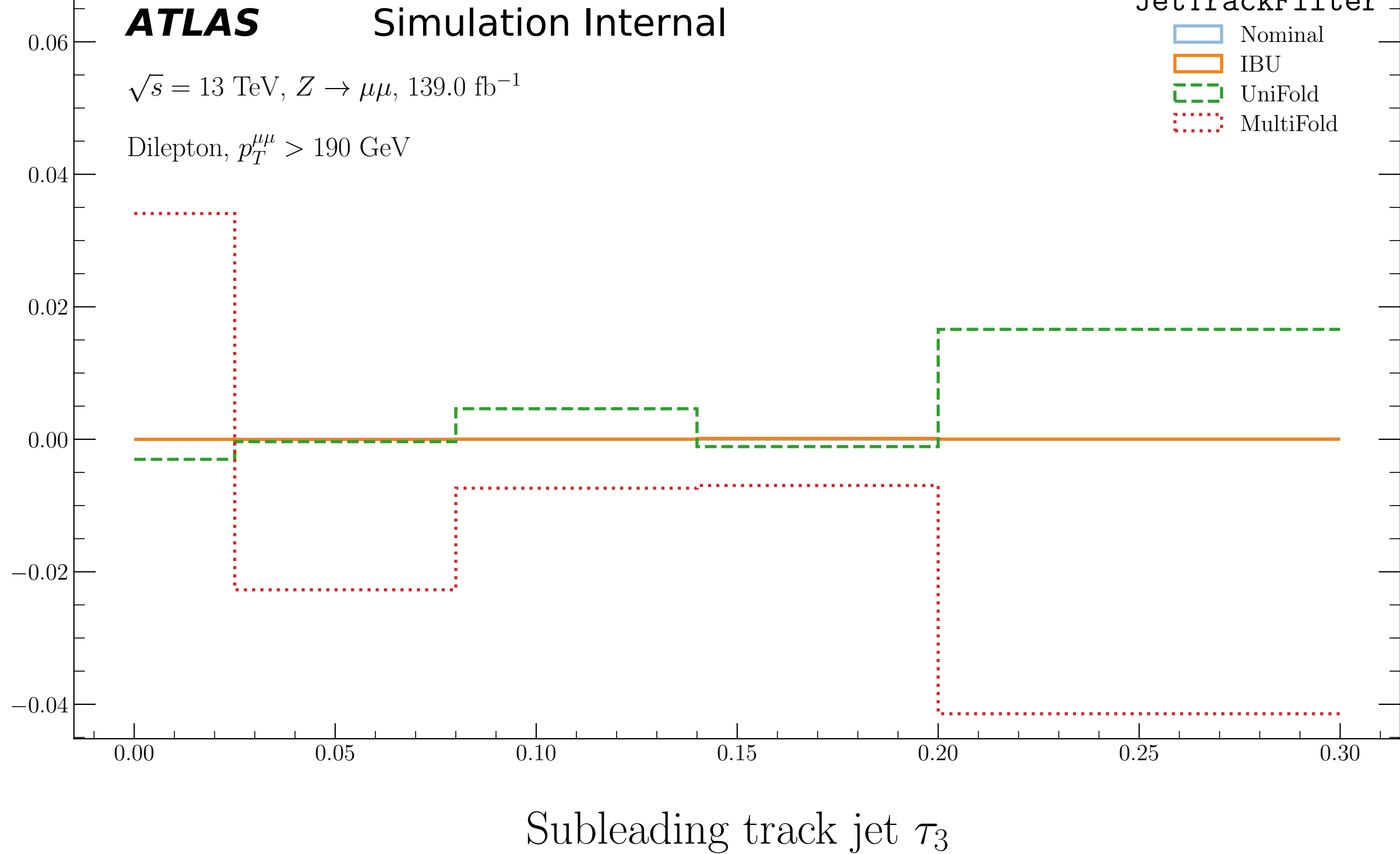
Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $\tau_3$



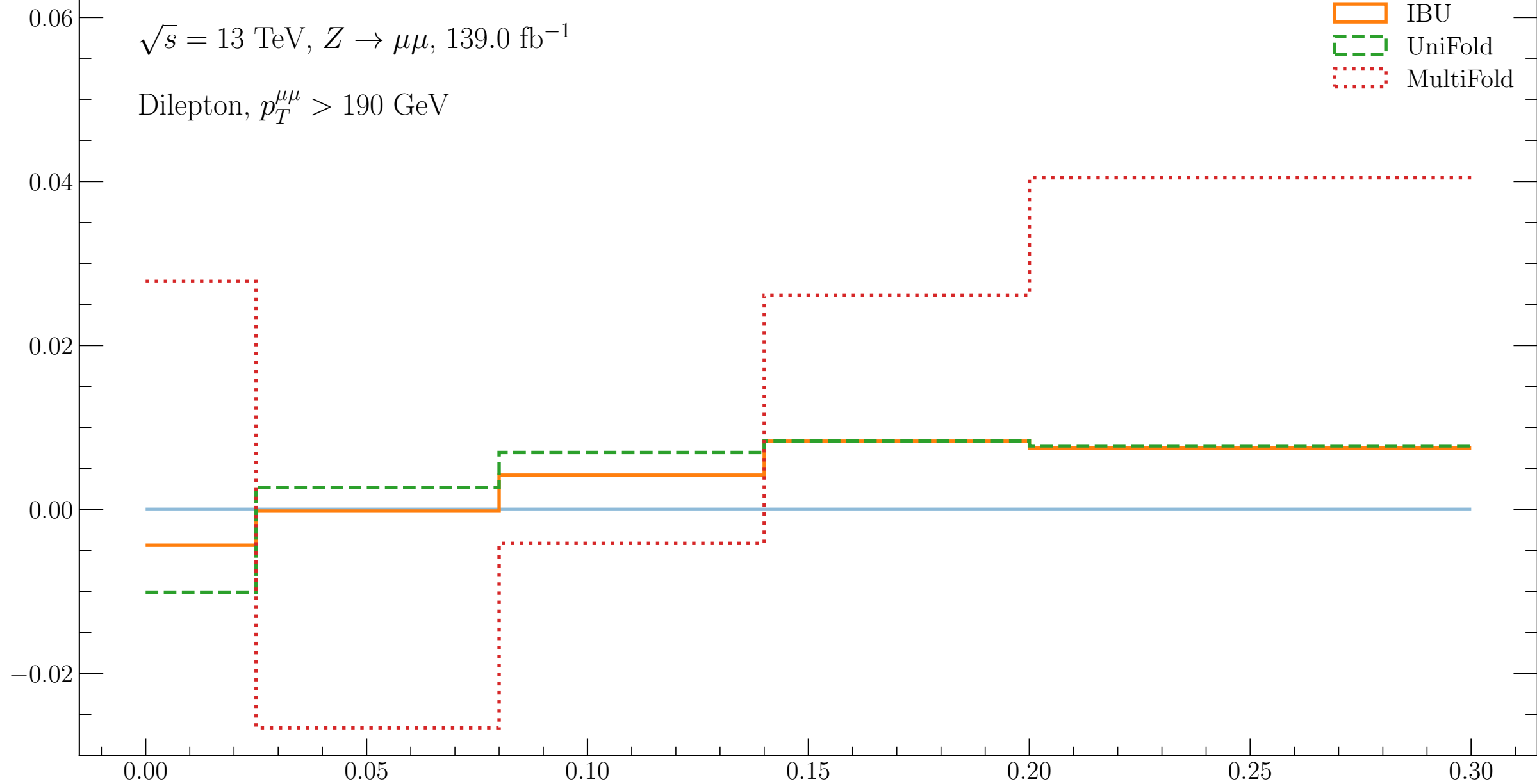
**ATLAS**

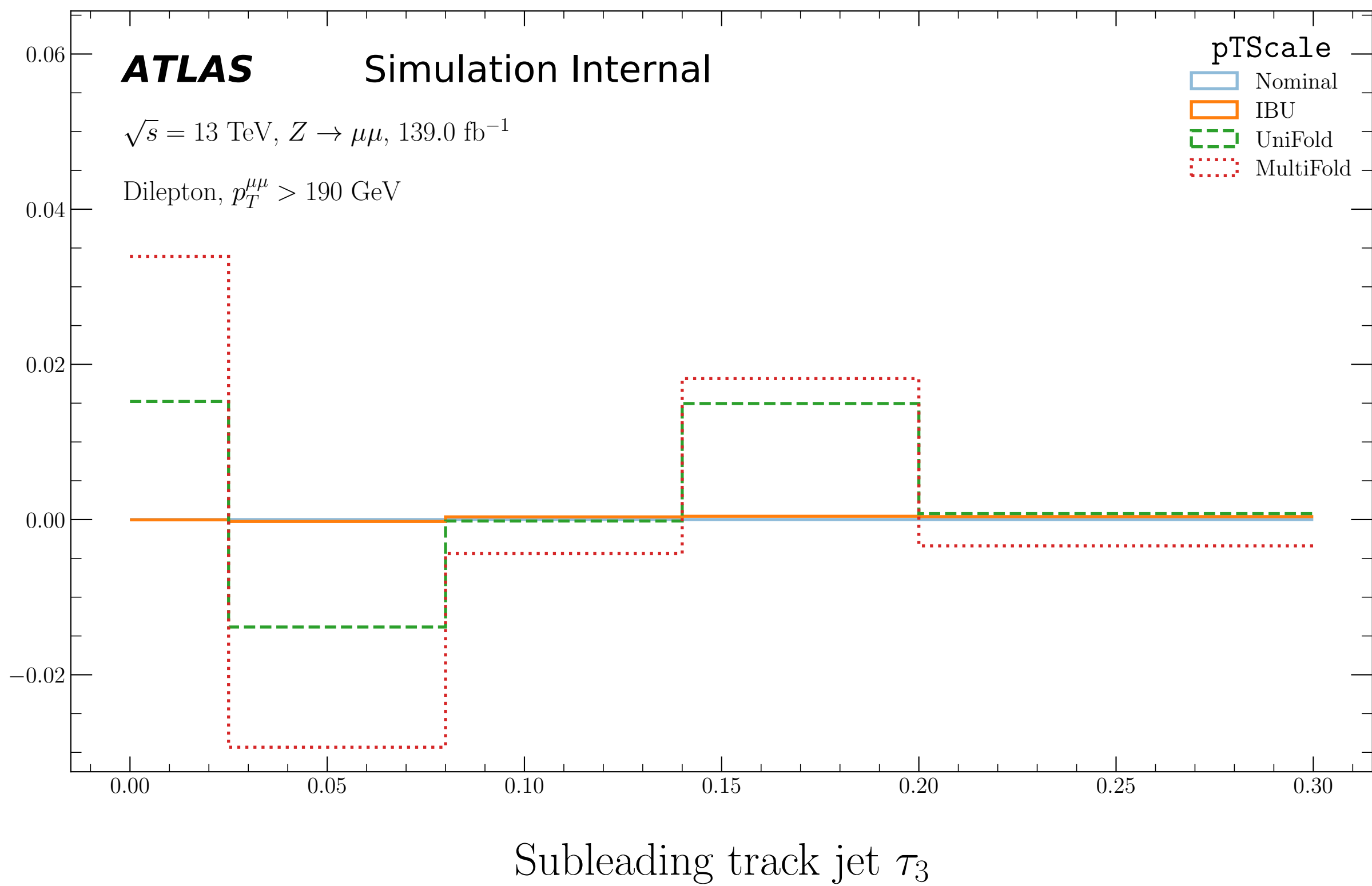
Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet  $\tau_3$





**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

Nominal  
MultiFold

0.035

0.030

0.025

0.020

0.015

0.010

0.005

0.000

200

300

400

500

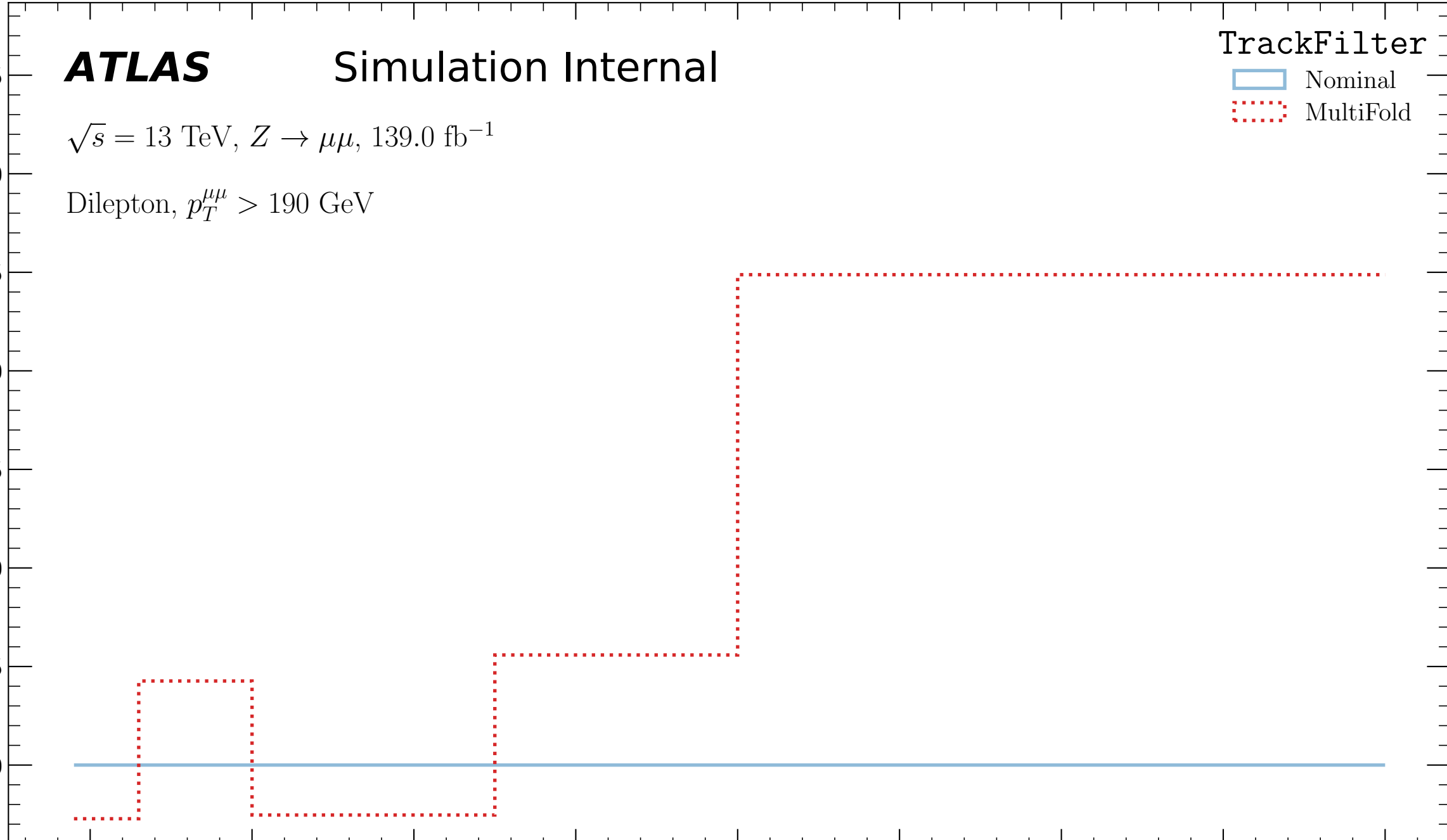
600

700

800

900

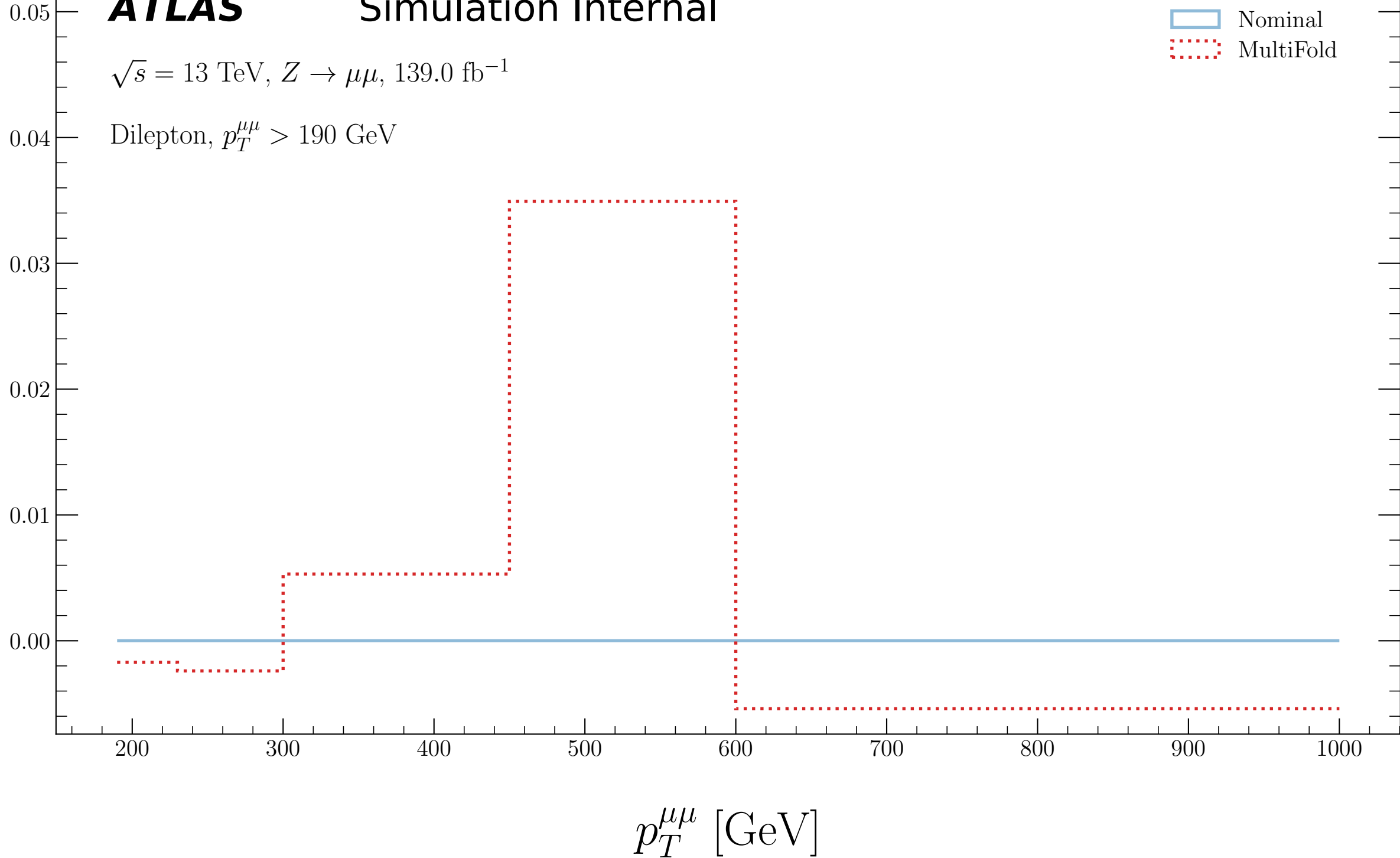
1000

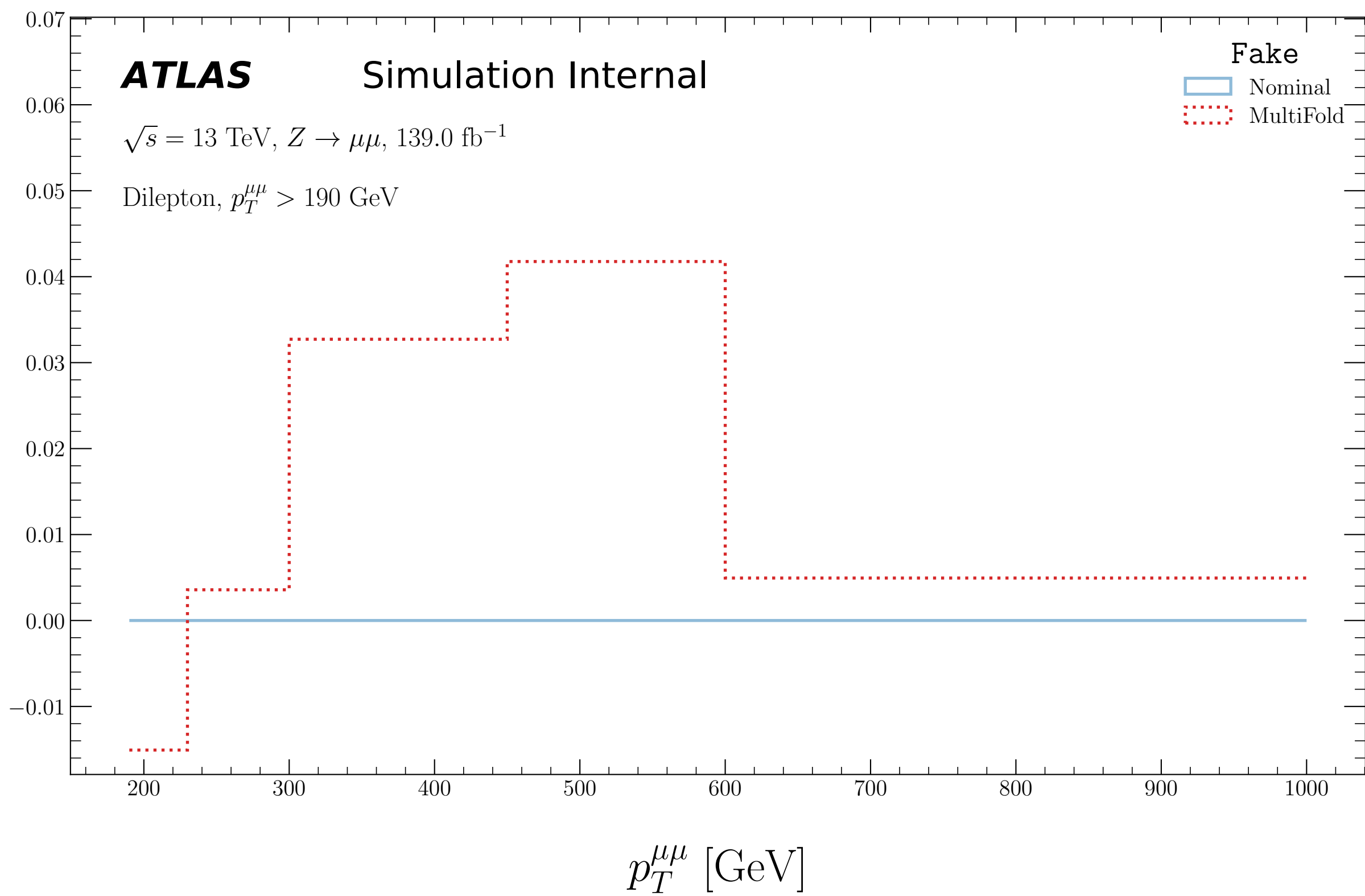
 $p_T^{\mu\mu} [\text{GeV}]$ 

**ATLAS**

Simulation Internal

JetTrackFilter

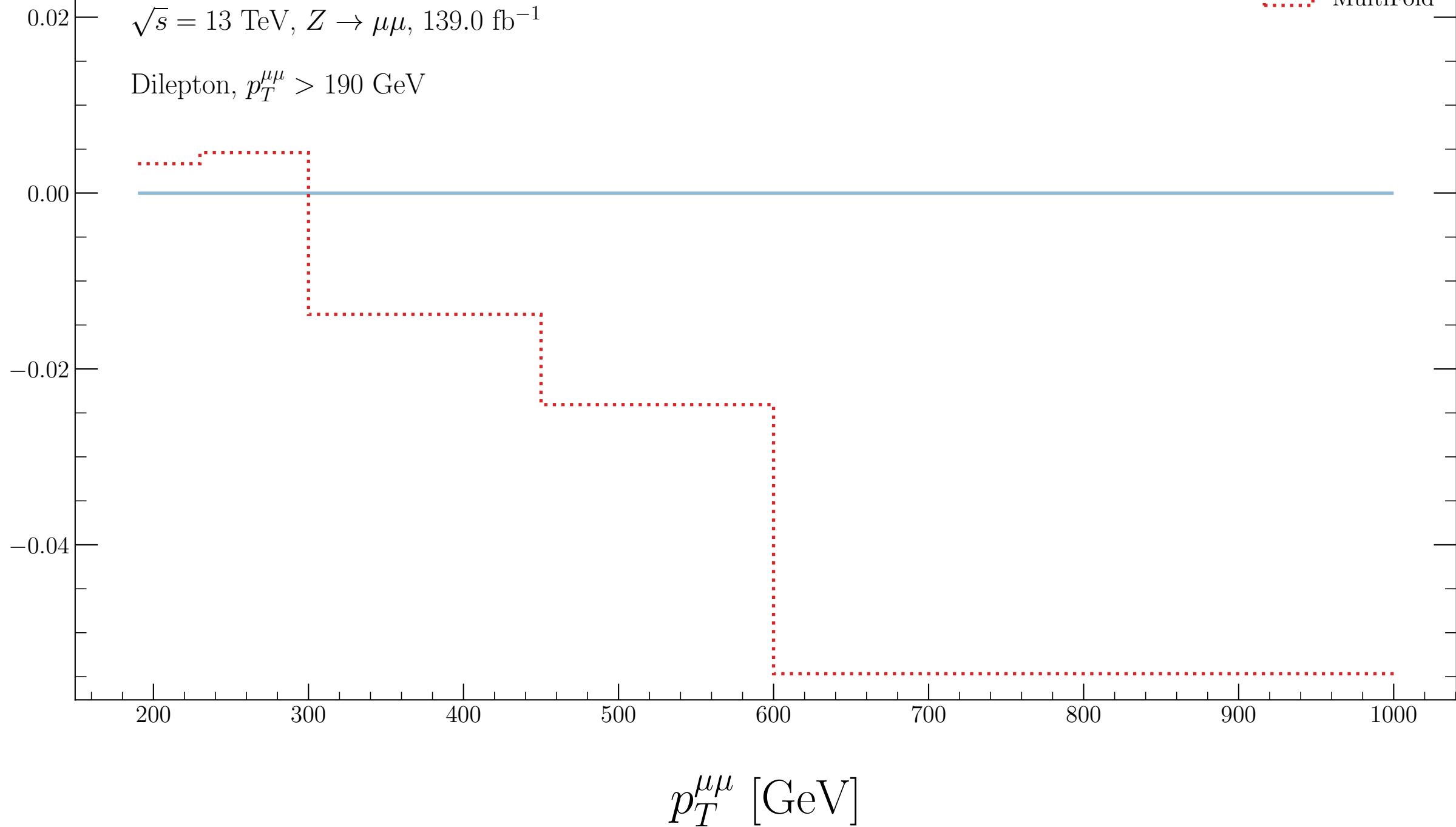
 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ Nominal  
MultiFold



**ATLAS**

Simulation Internal

pTScale

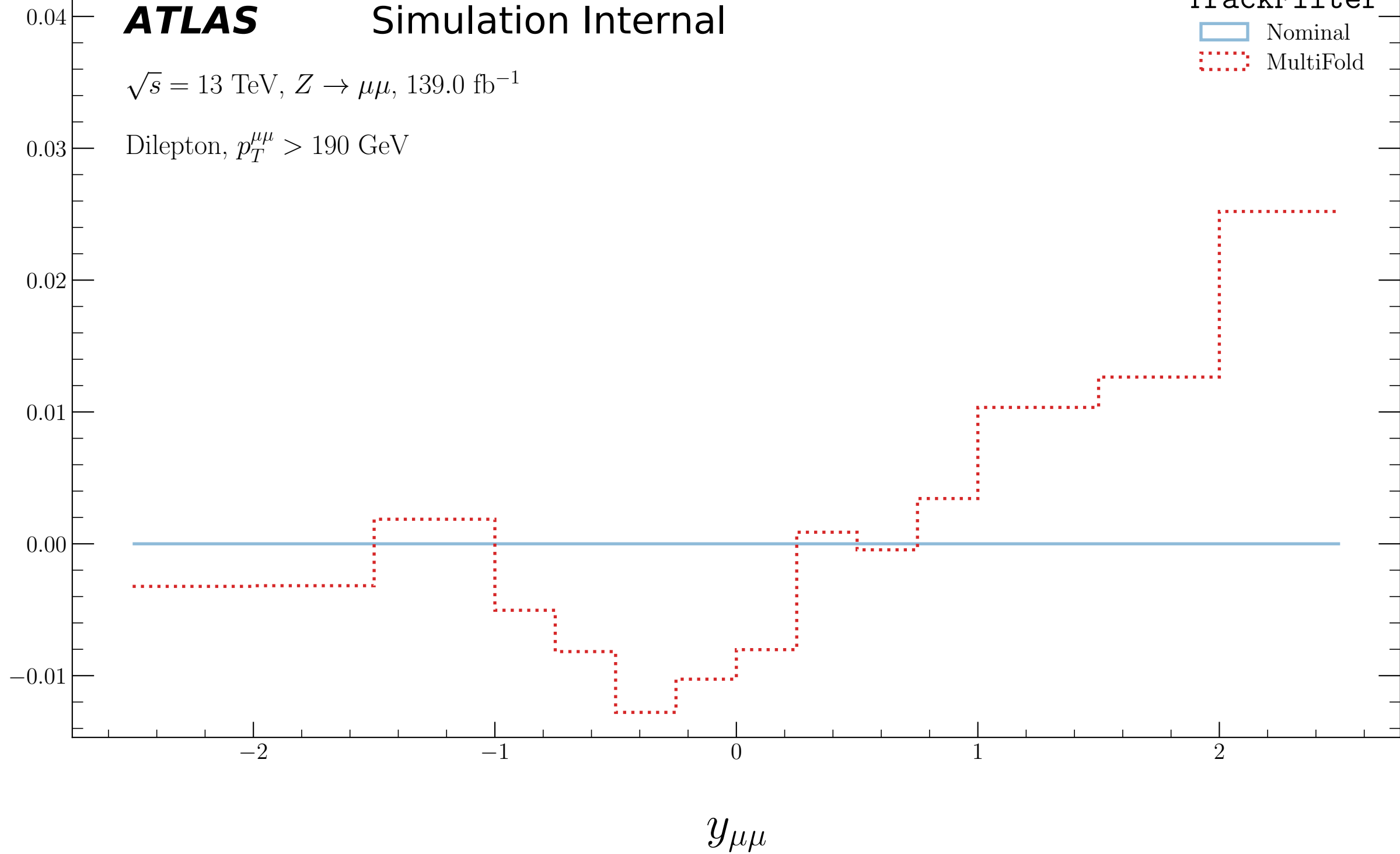
  
Nominal  
MultiFold $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

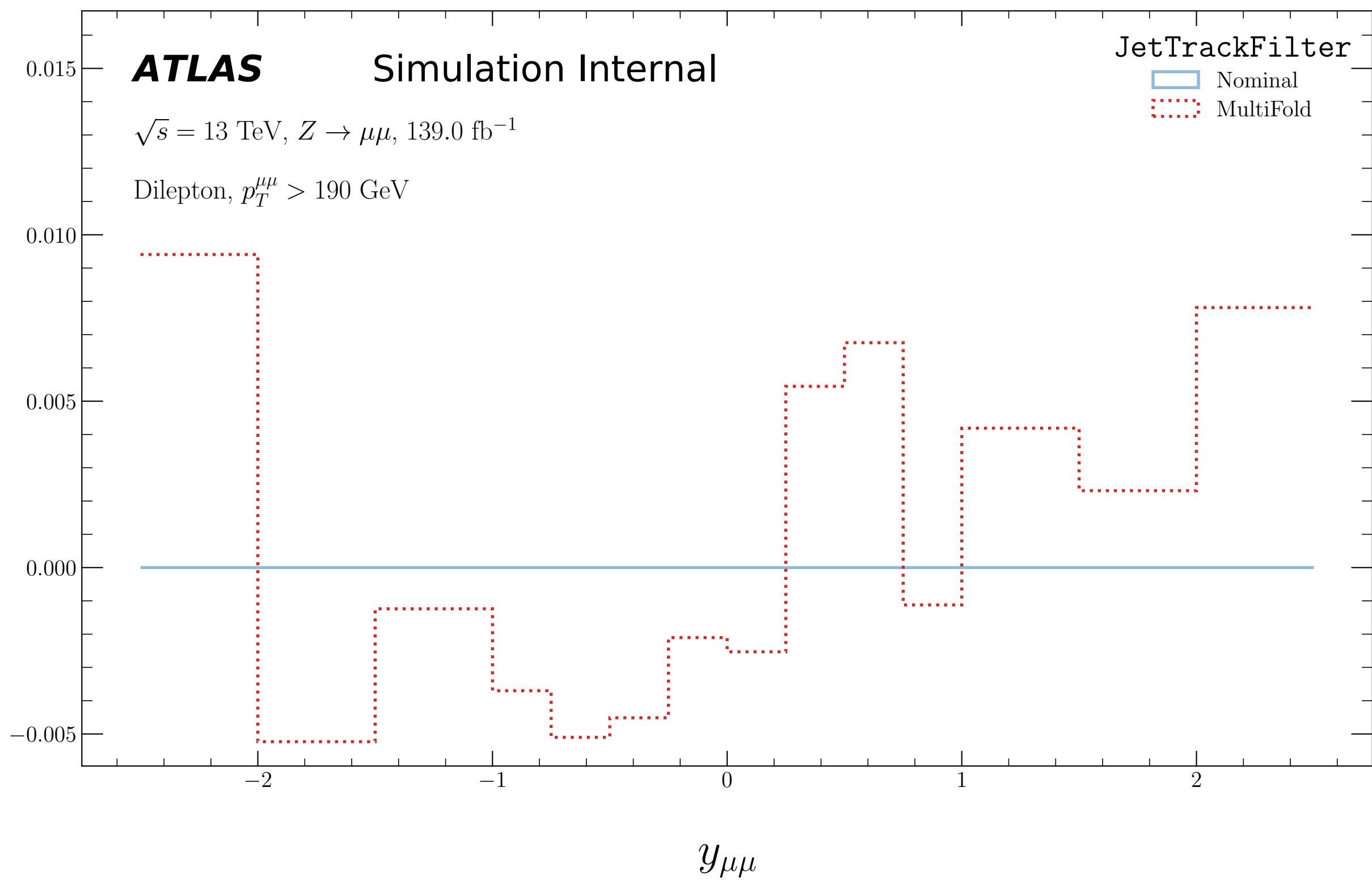
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

Nominal  
MultiFold



**ATLAS**

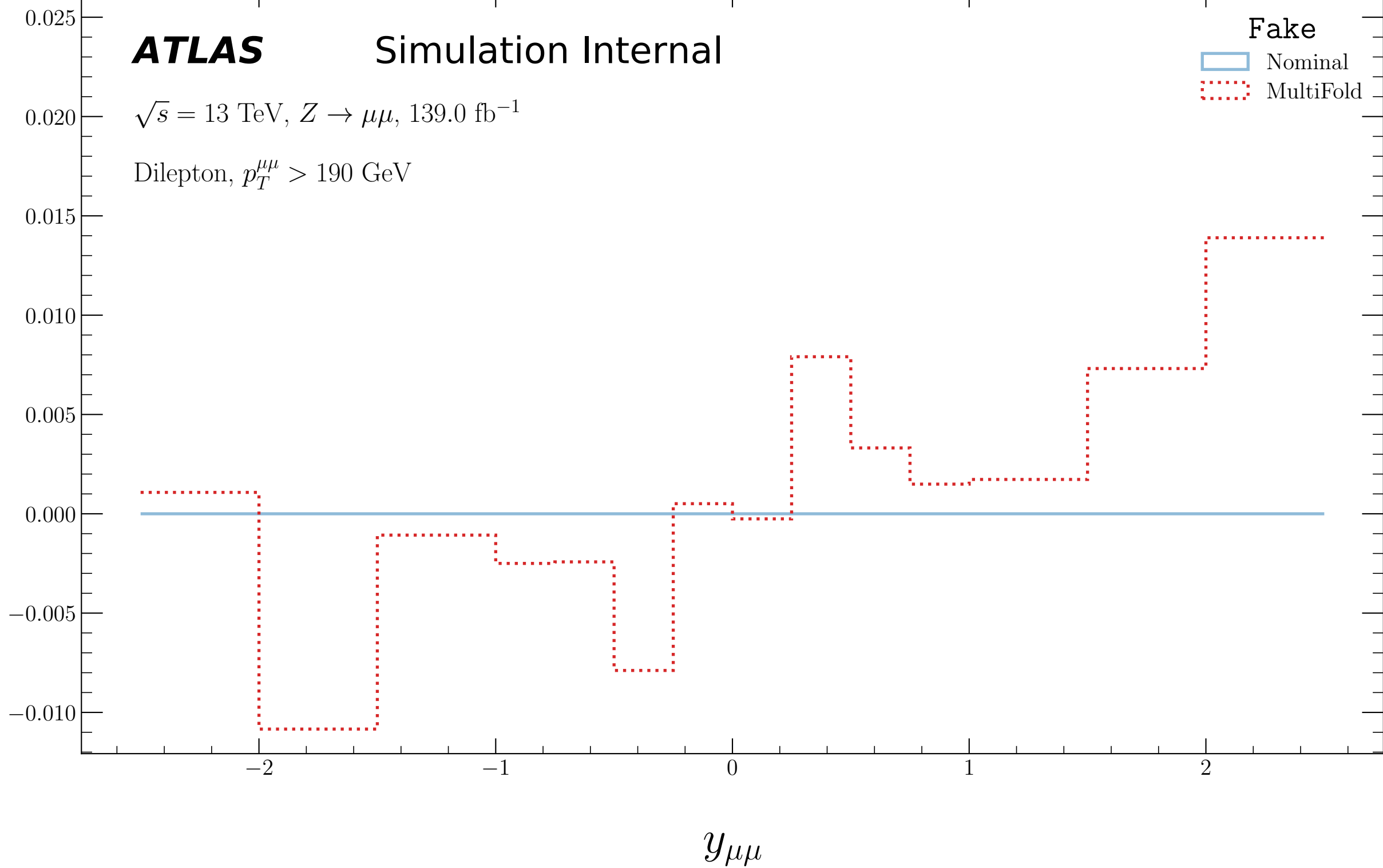
Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

Nominal

MultiFold



**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

Nominal  
MultiFold0.10  
0.08  
0.06  
0.04  
0.02  
0.00

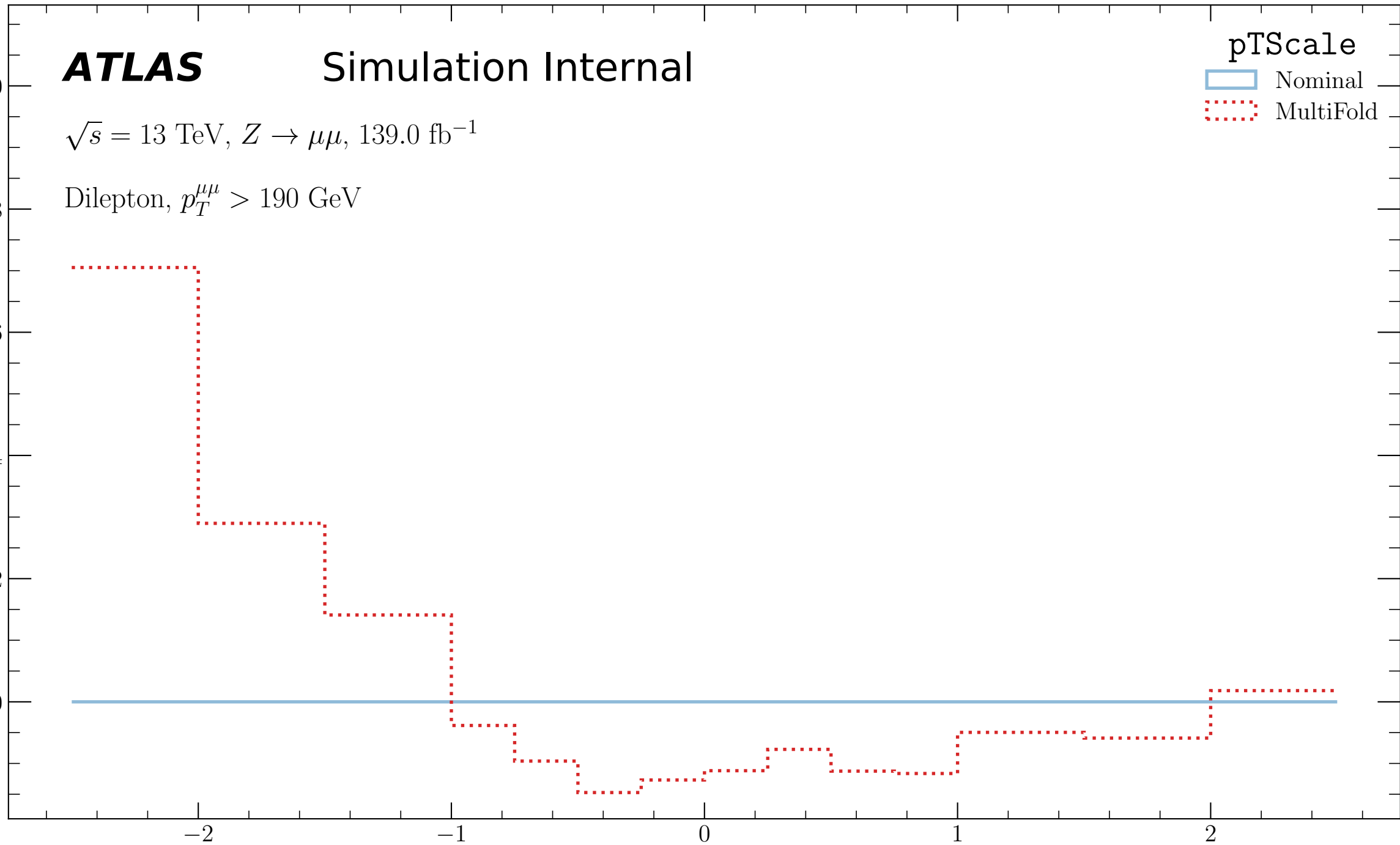
-2

-1

0

1

2

 $y_{\mu\mu}$ 

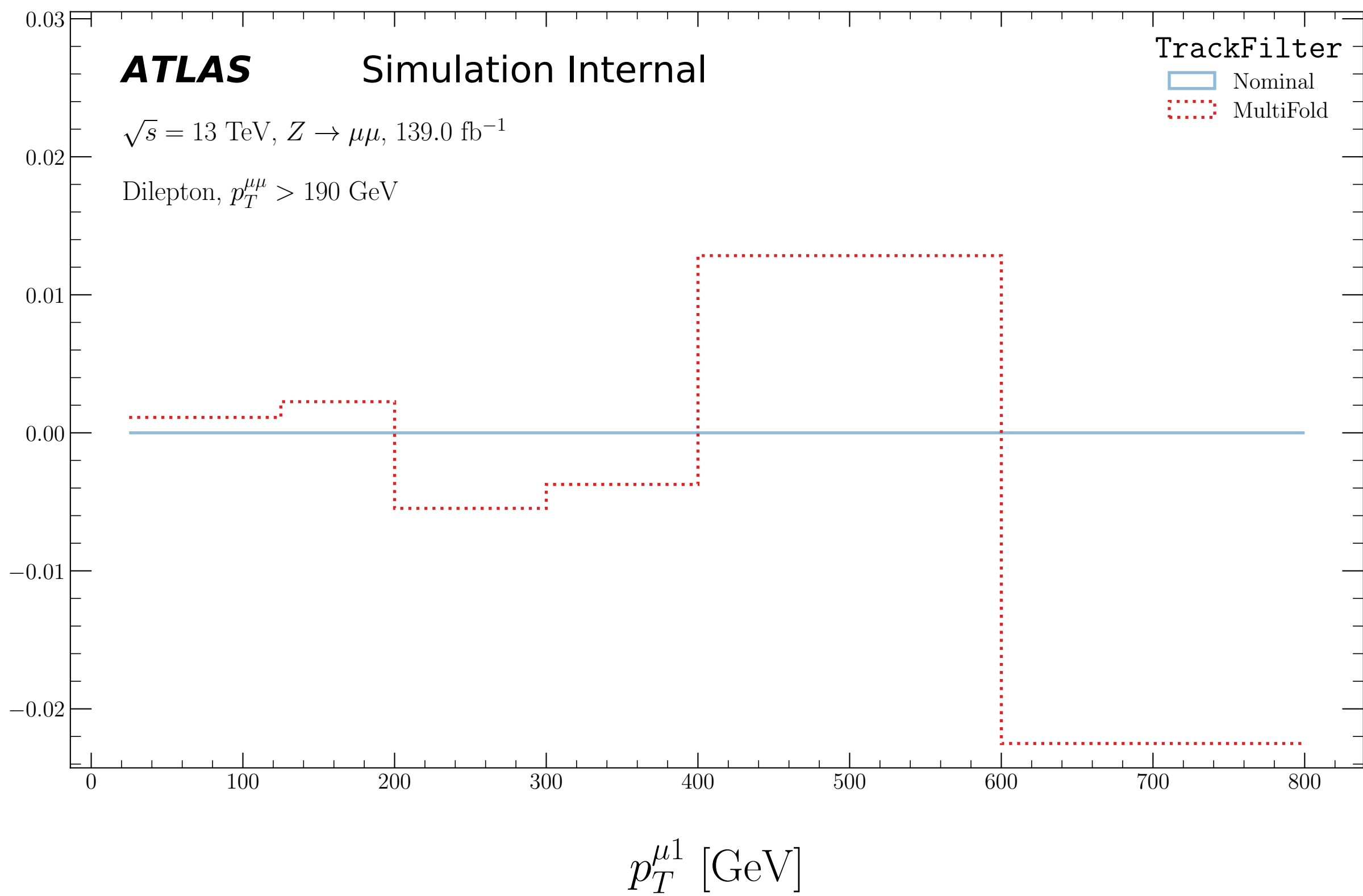


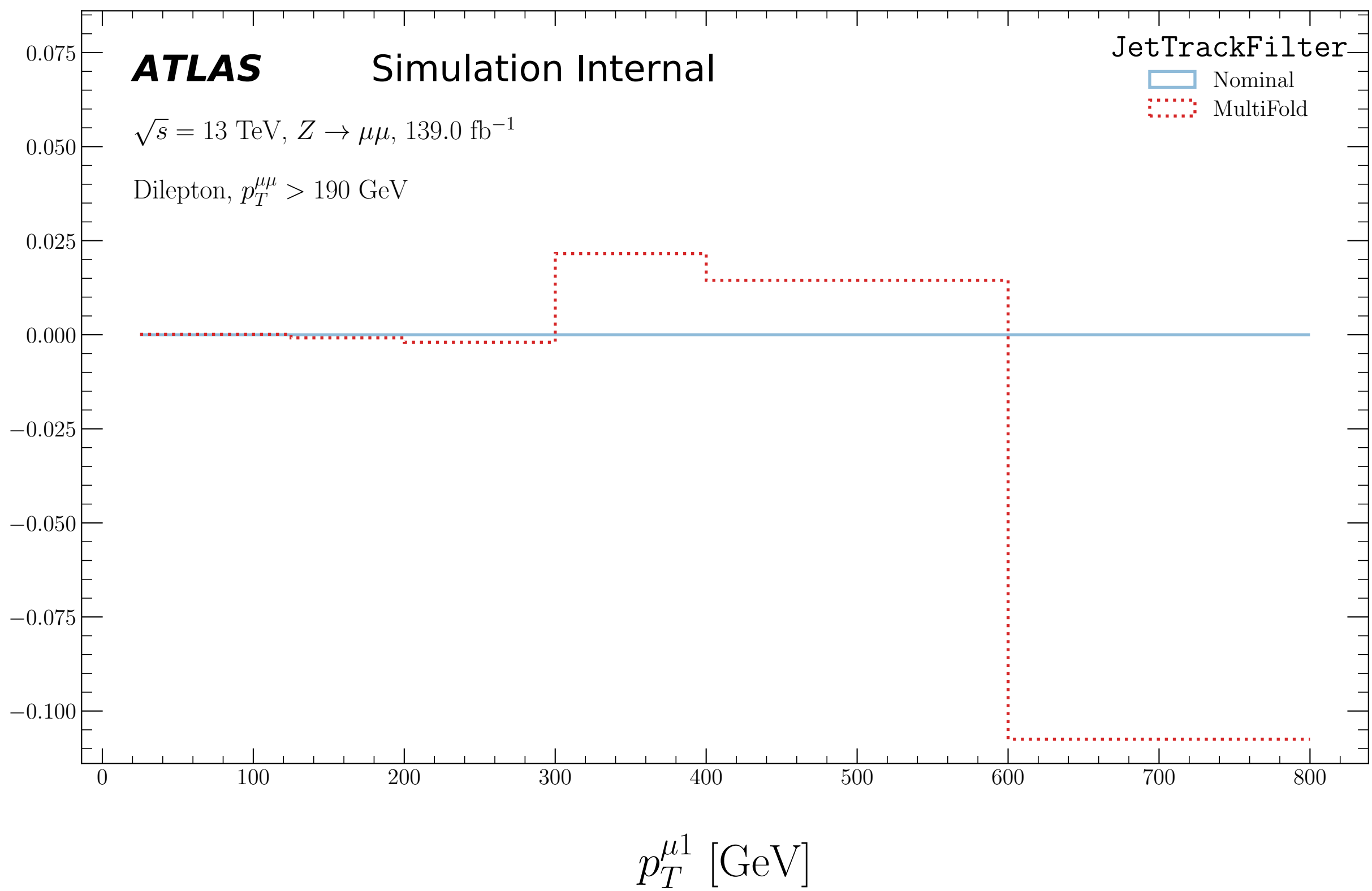
**ATLAS**

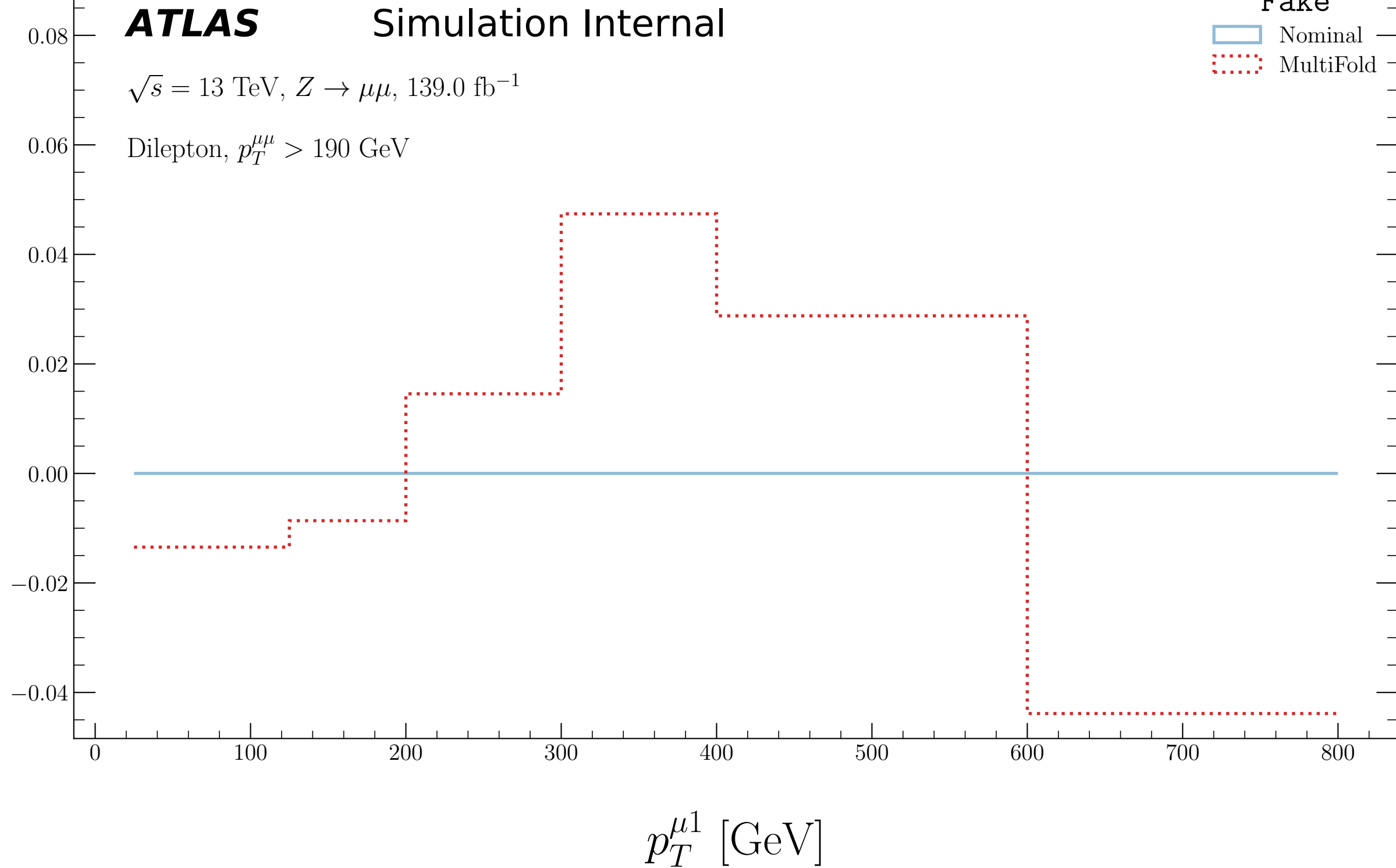
Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

Nominal  
MultiFold

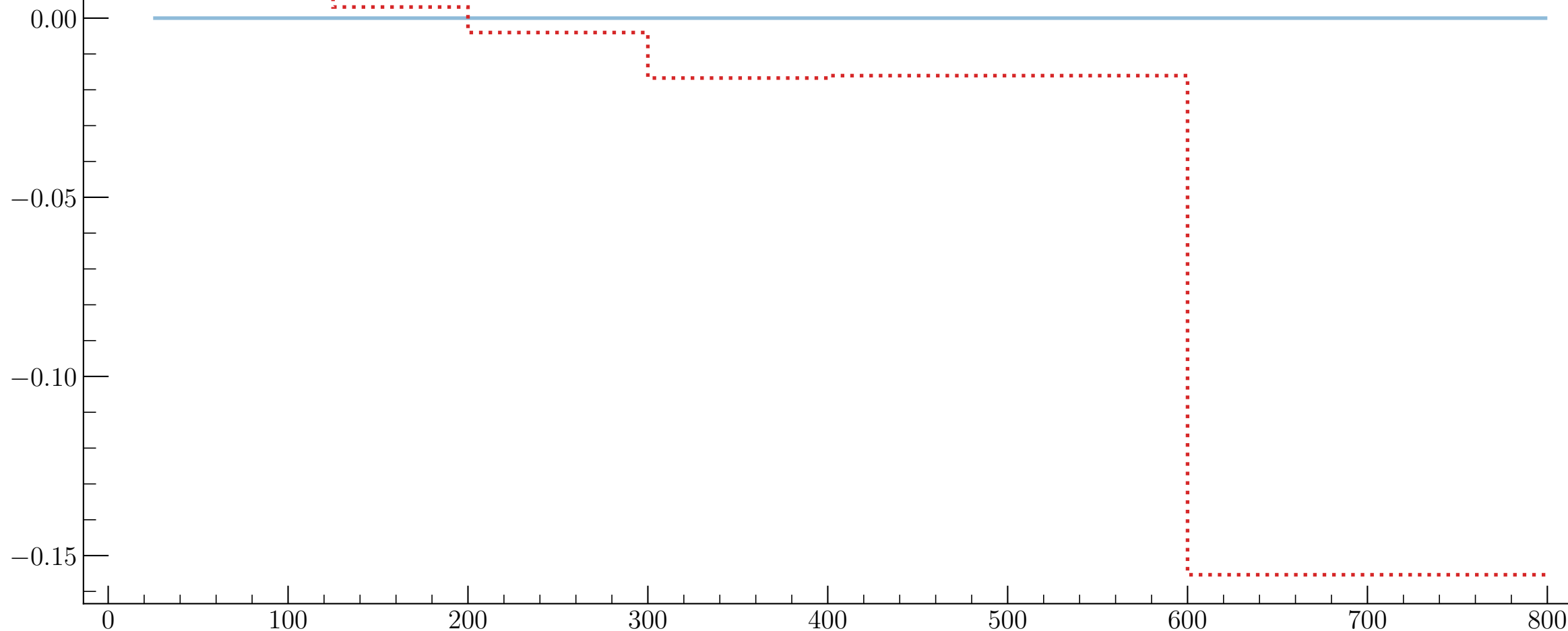




**ATLAS**

Simulation Internal

pTScale

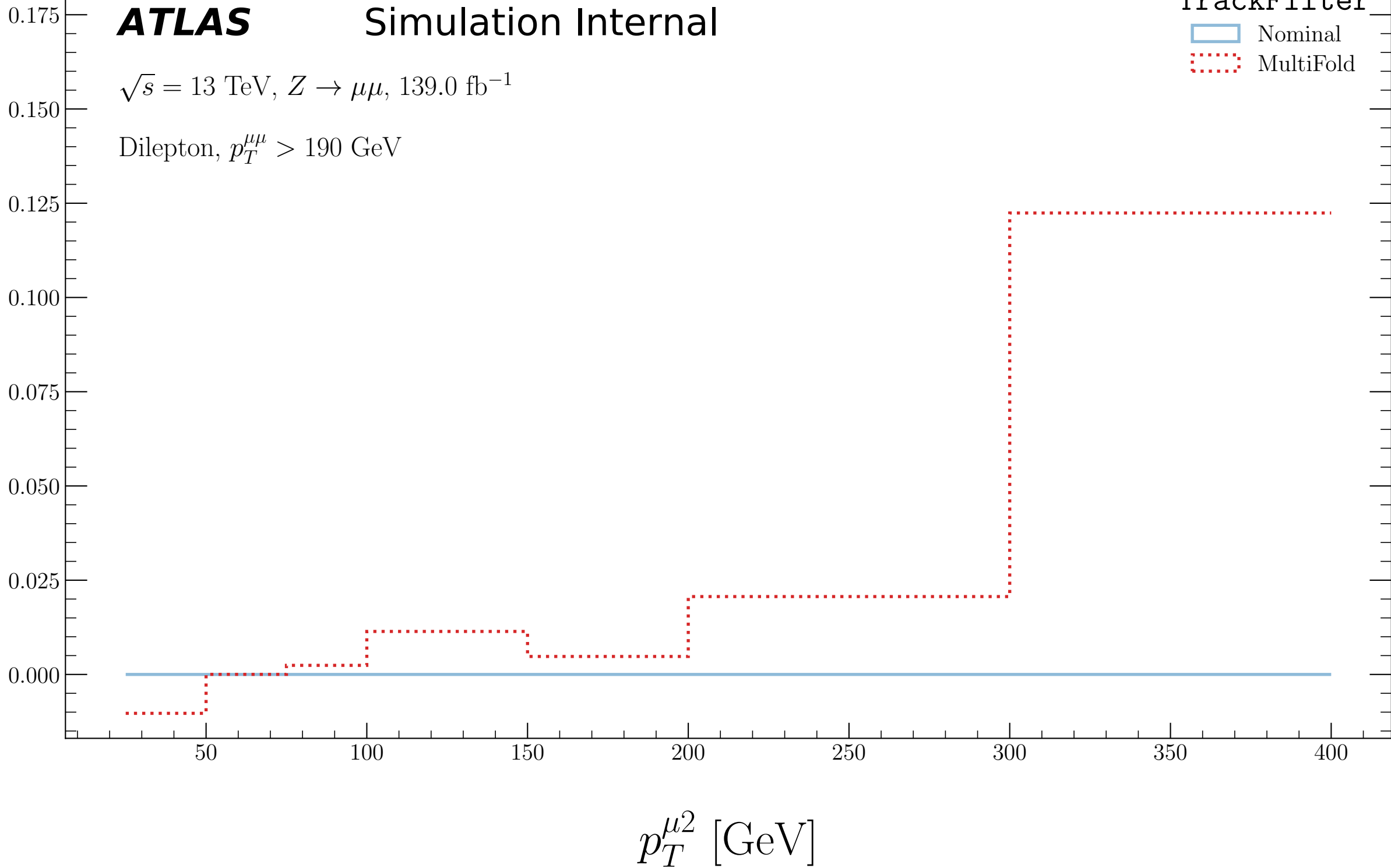
Nominal  
MultiFold $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$  $p_T^{\mu 1}$  [GeV]

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

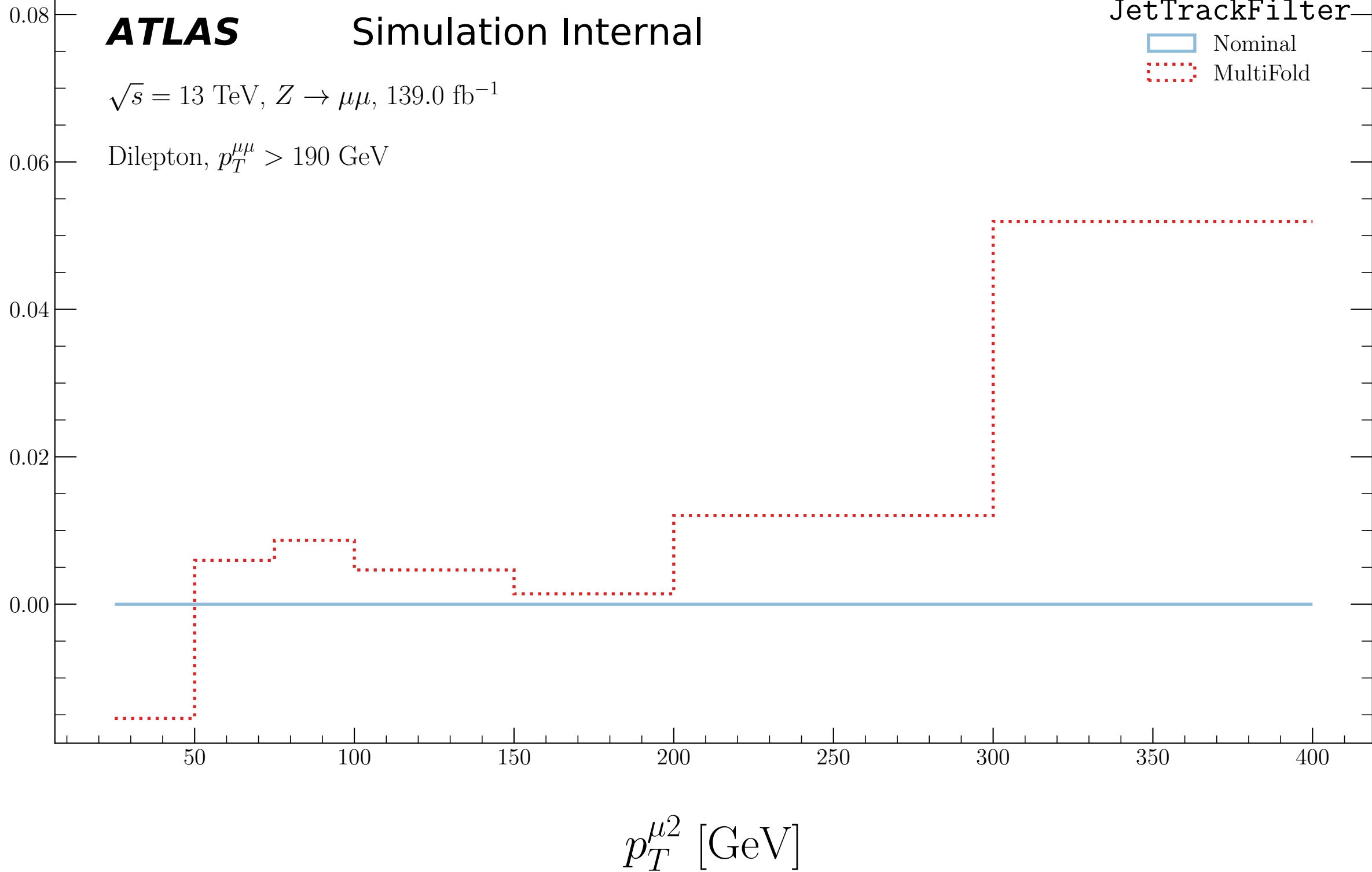
TrackFilter

Nominal  
MultiFold

**ATLAS**

Simulation Internal

JetTrackFilter

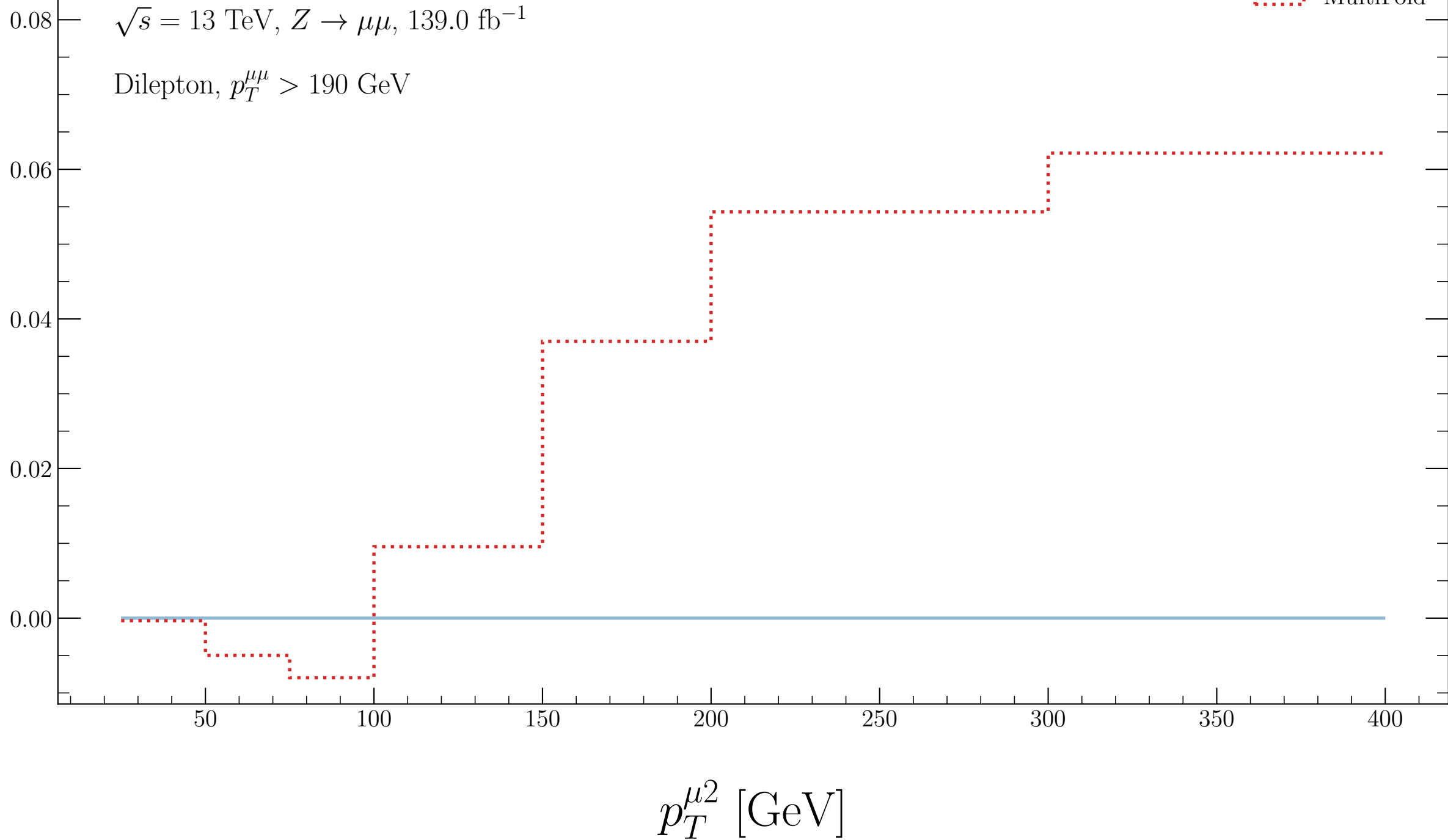
 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ Nominal  
MultiFold

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

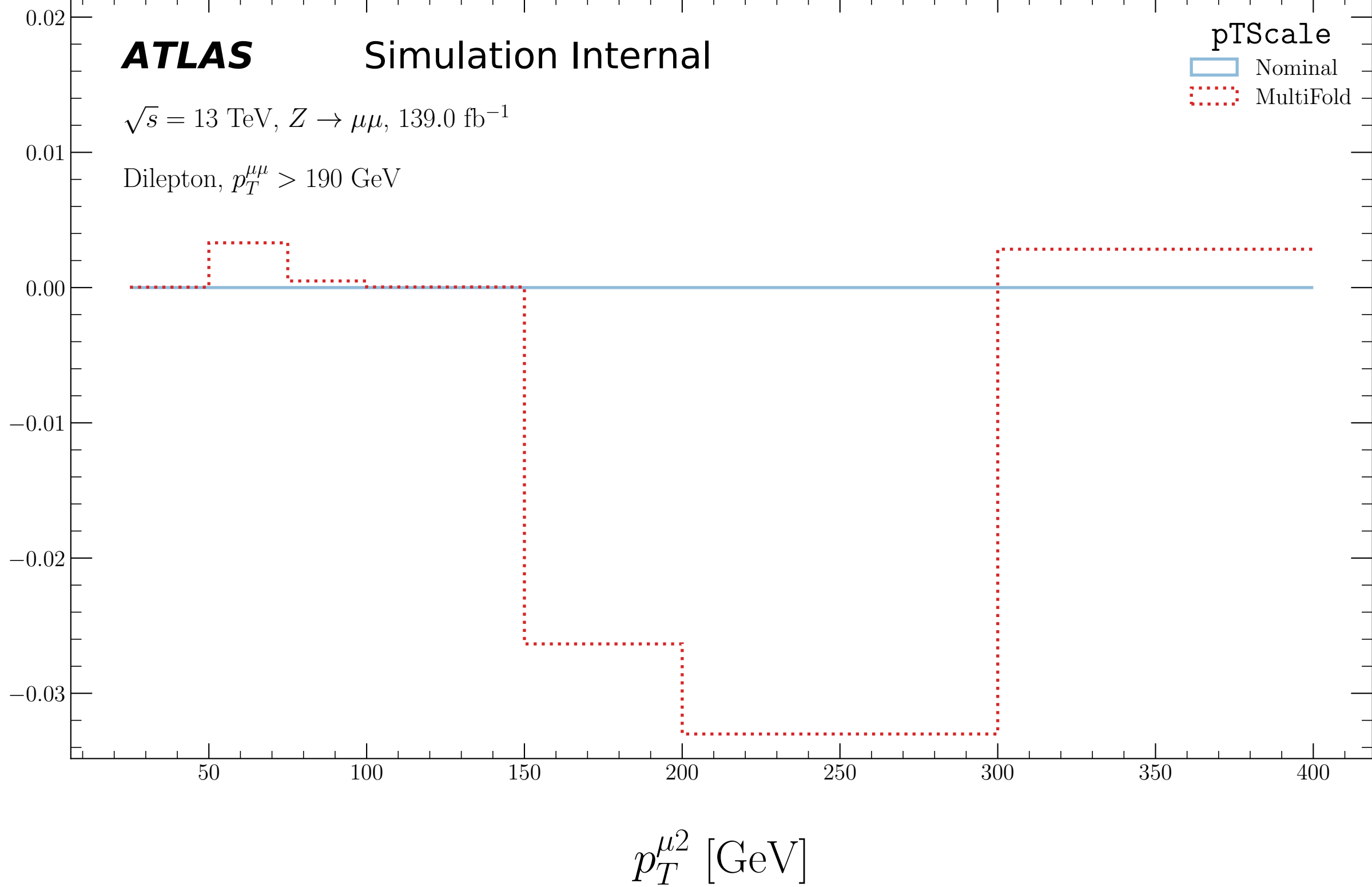
Nominal  
MultiFold

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

Nominal  
MultiFold

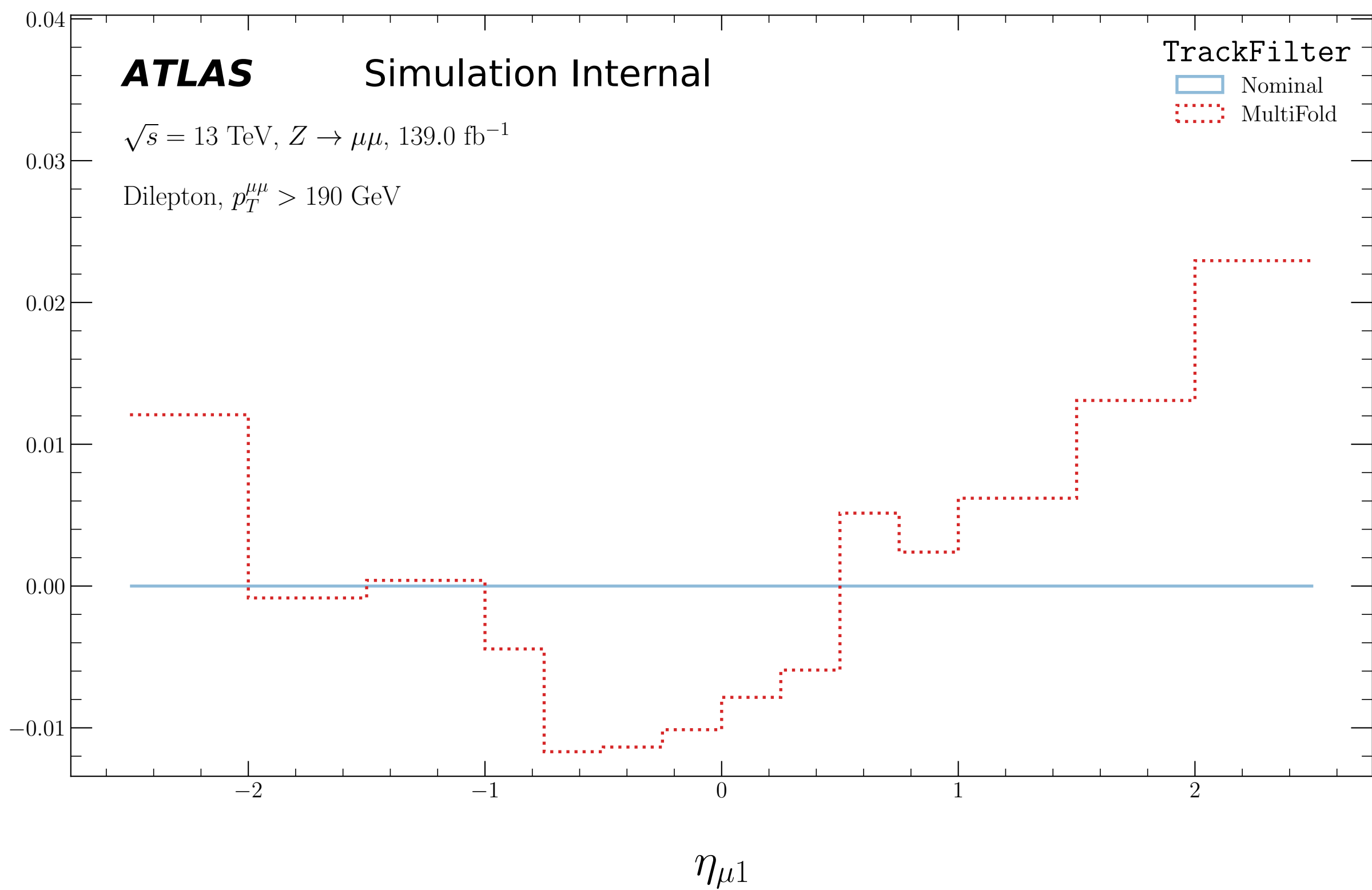


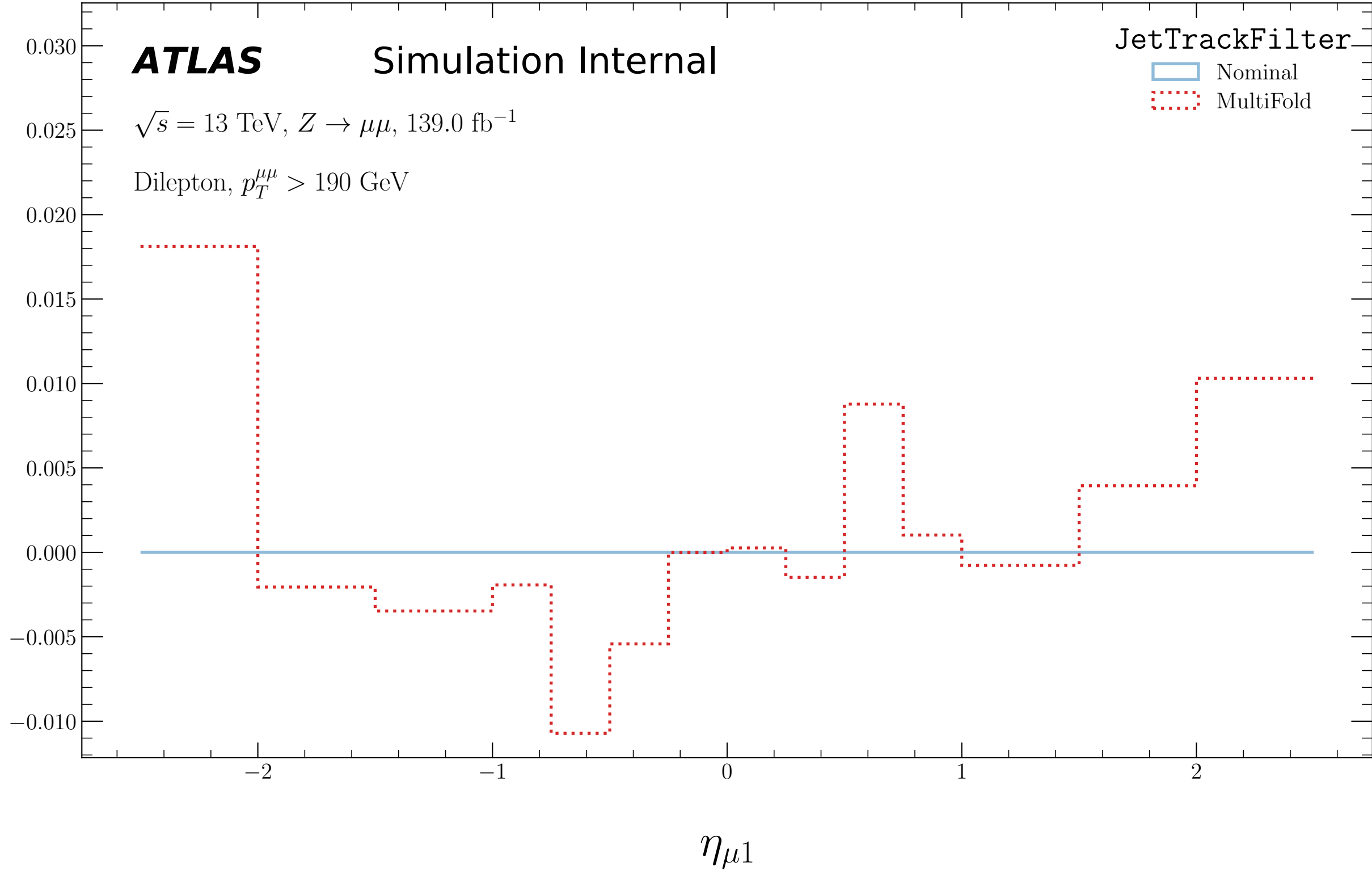
**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

Nominal  
MultiFold



**ATLAS**

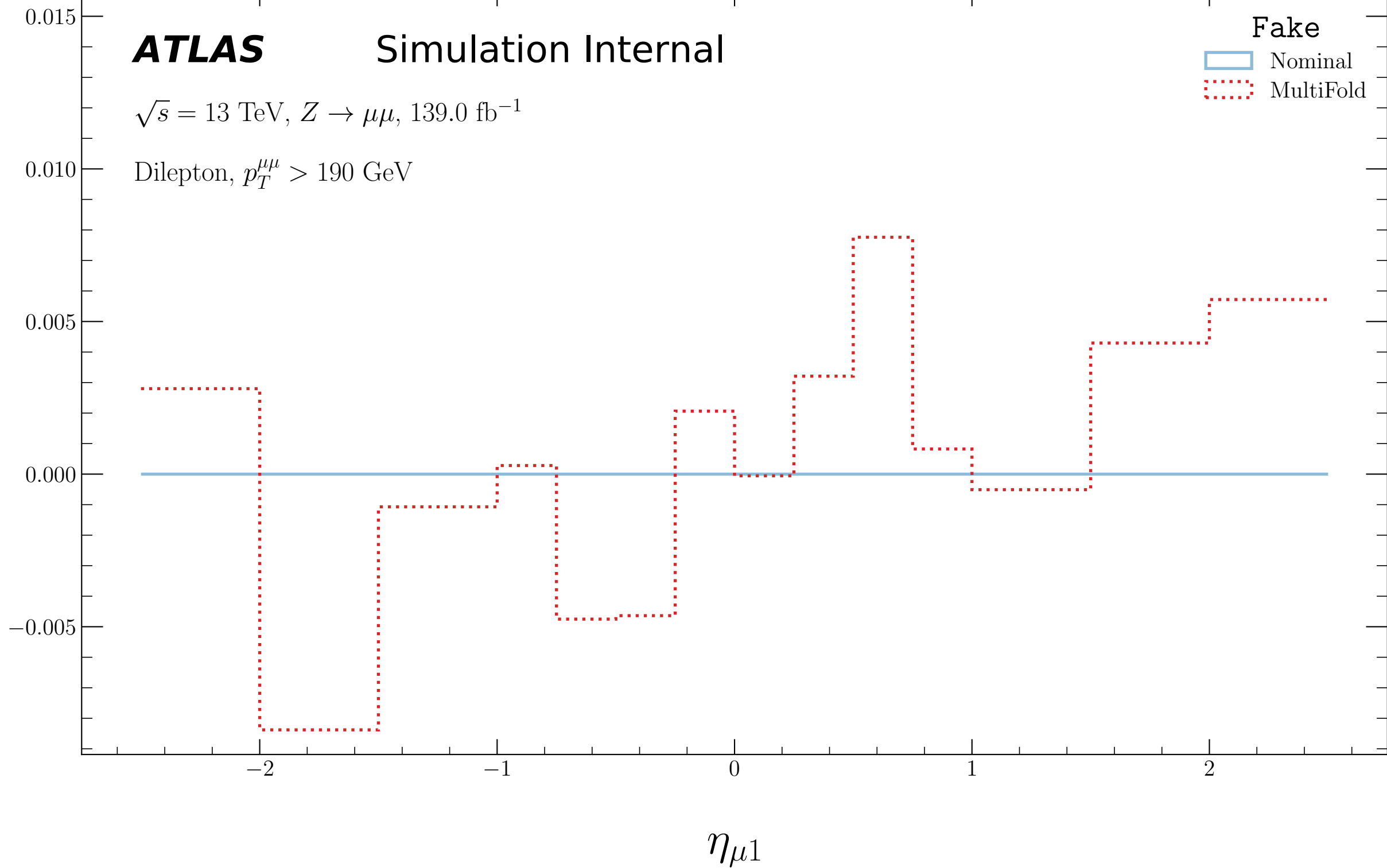
Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

Nominal

MultiFold



**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

Nominal  
MultiFold0.10  
0.08  
0.06  
0.04  
0.02  
0.00

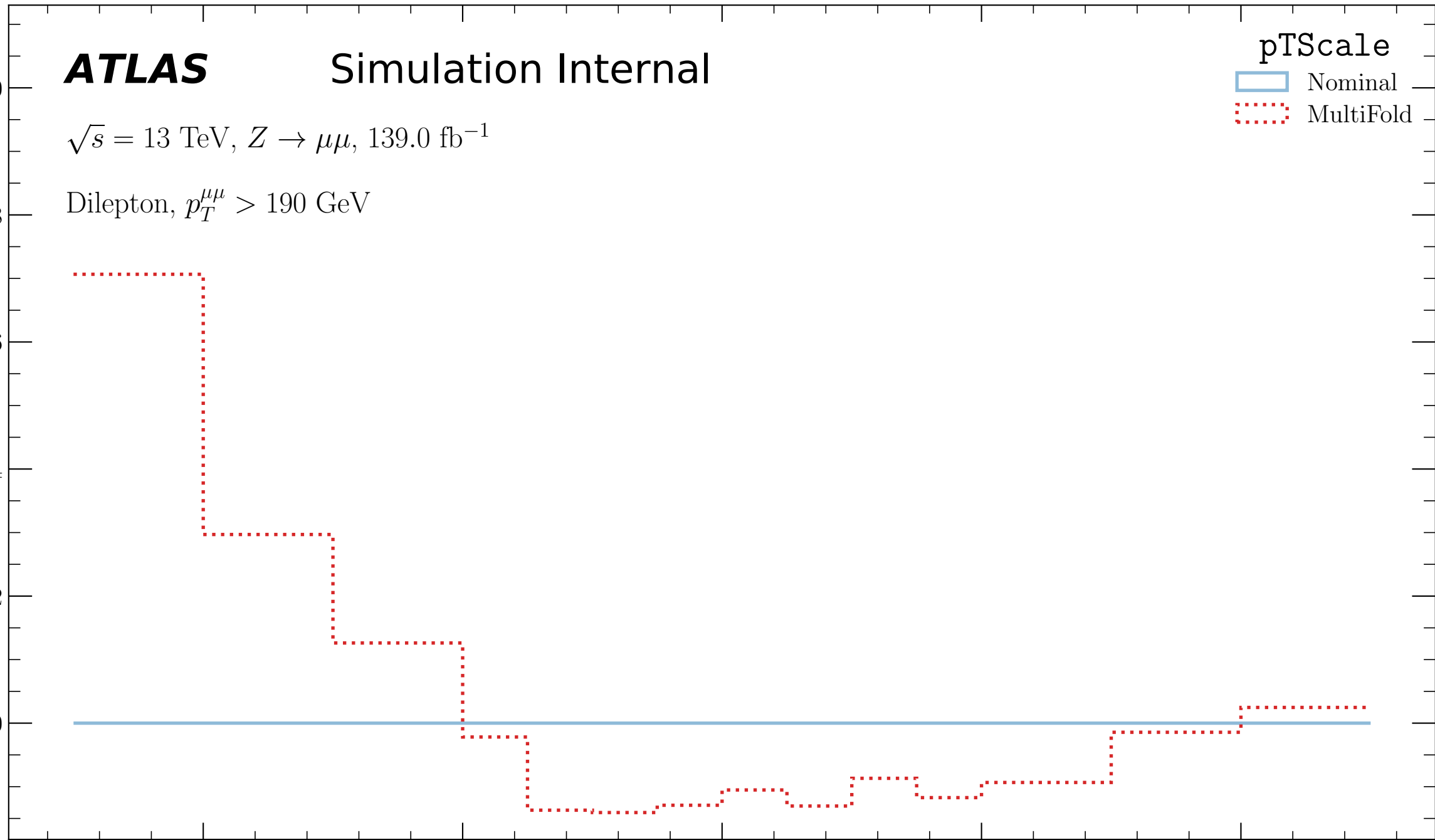
-2

-1

0

1

2

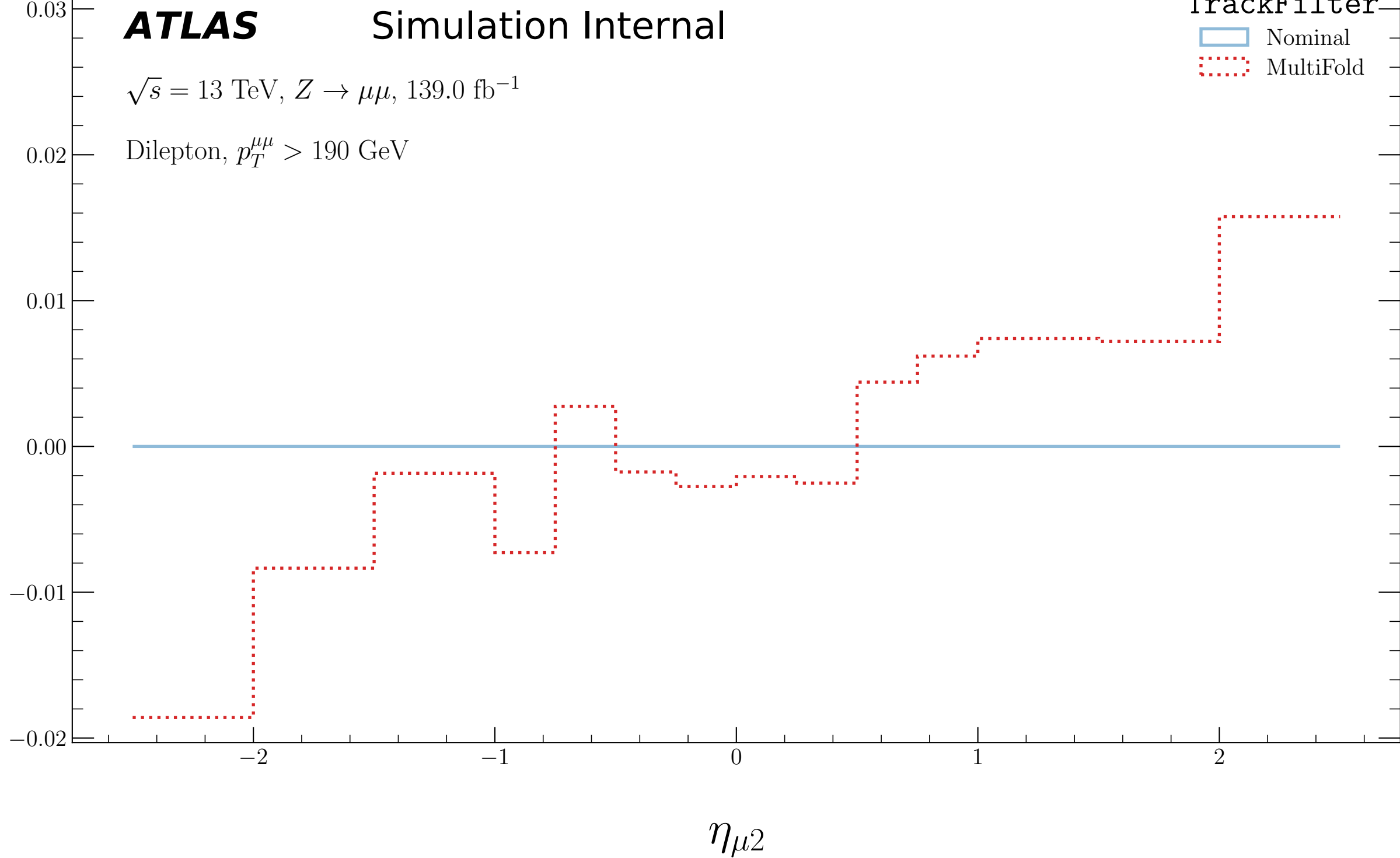
 $\eta_{\mu 1}$ 

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

Nominal  
MultiFold

**ATLAS**

Simulation Internal

JetTrackFilter

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ Nominal  
MultiFold0.015  
0.010  
0.005  
0.000  
-0.005  
-0.010

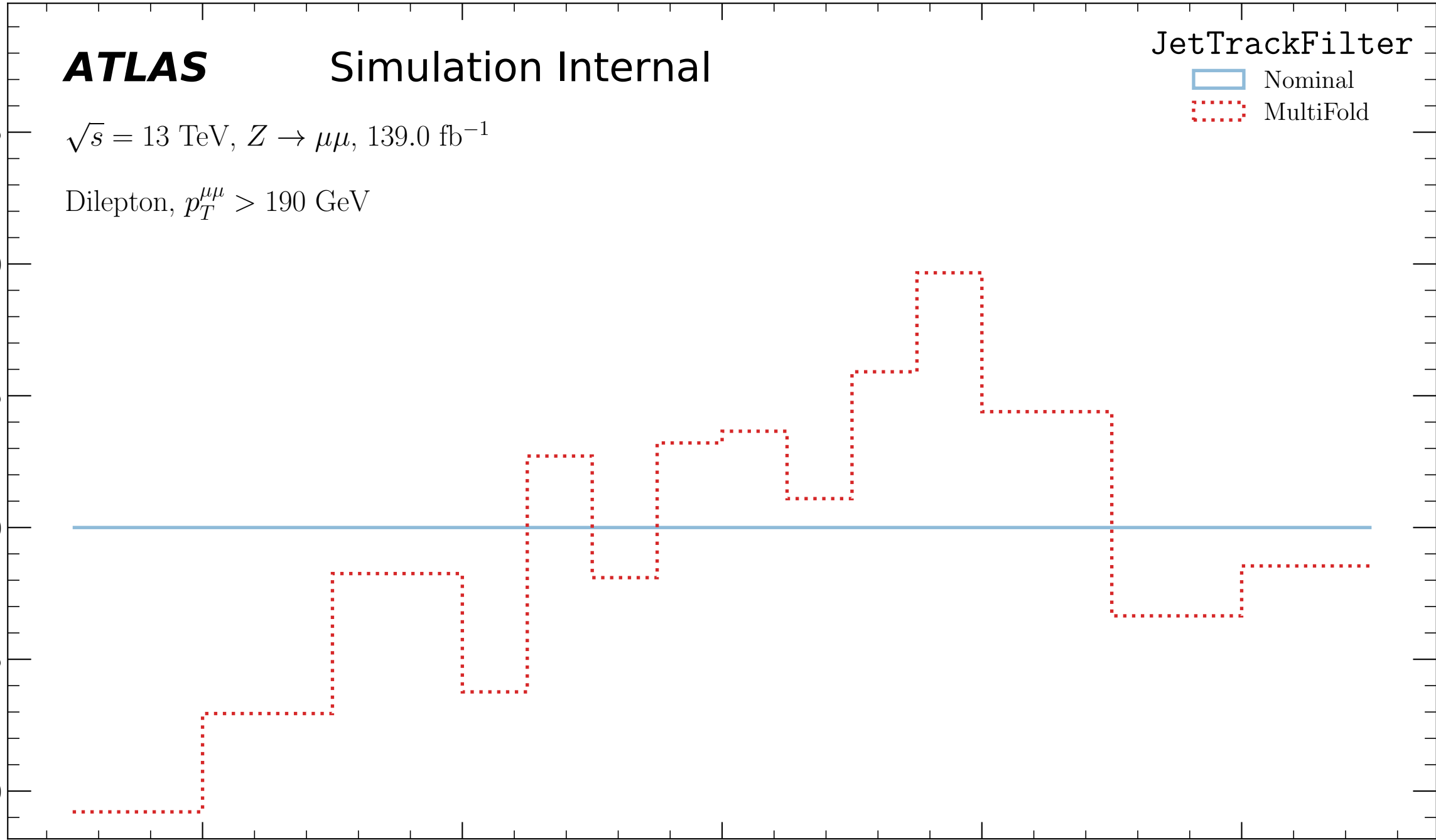
-2

-1

0

1

2

 $\eta_{\mu 2}$ 

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

Nominal

MultiFold

0.025  
0.020  
0.015  
0.010  
0.005  
0.000  
-0.005  
-0.010

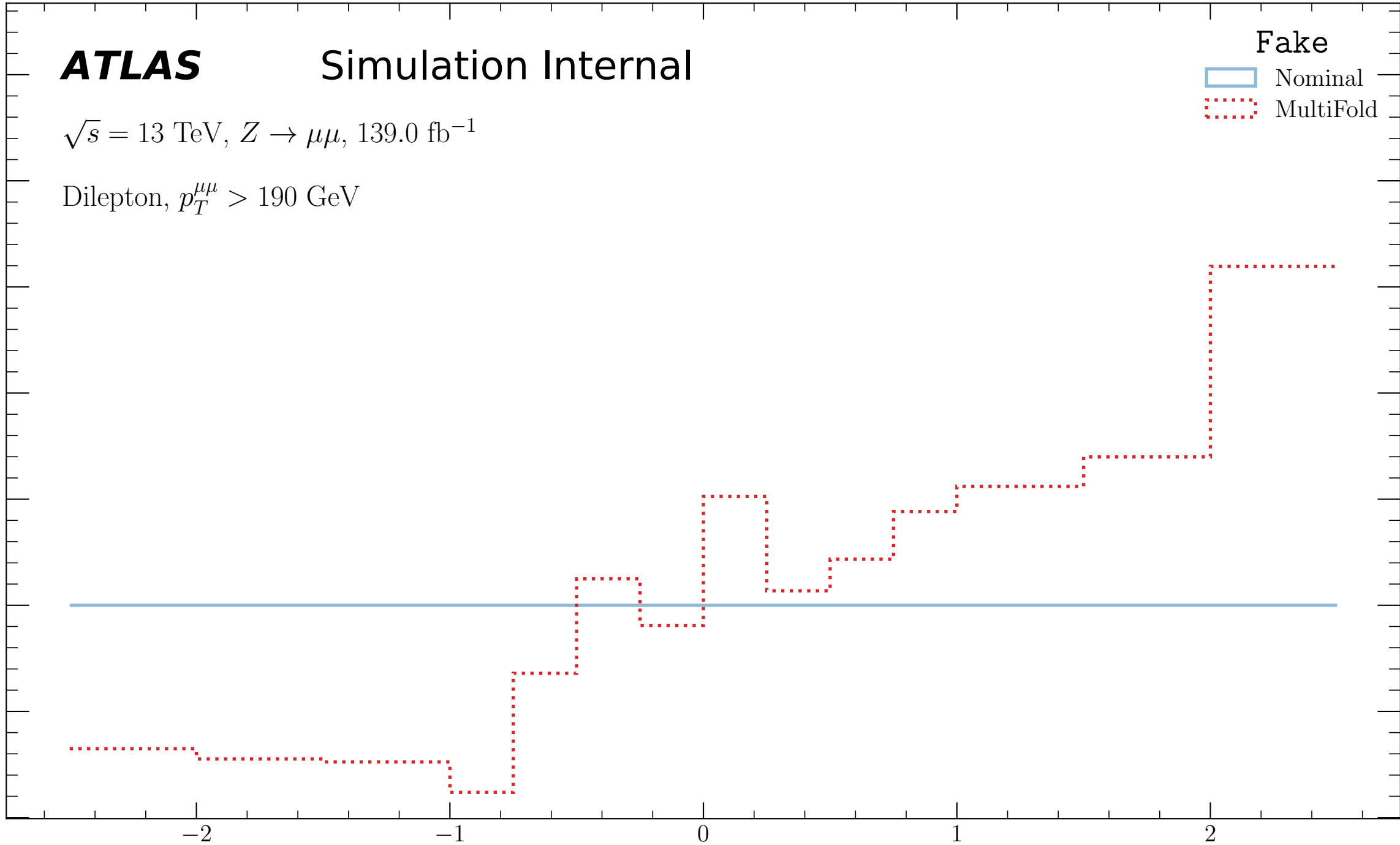
-2

-1

0

1

2

 $\eta_{\mu 2}$ 

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

Nominal  
MultiFold0.05  
0.04  
0.03  
0.02  
0.01  
0.00  
-0.01

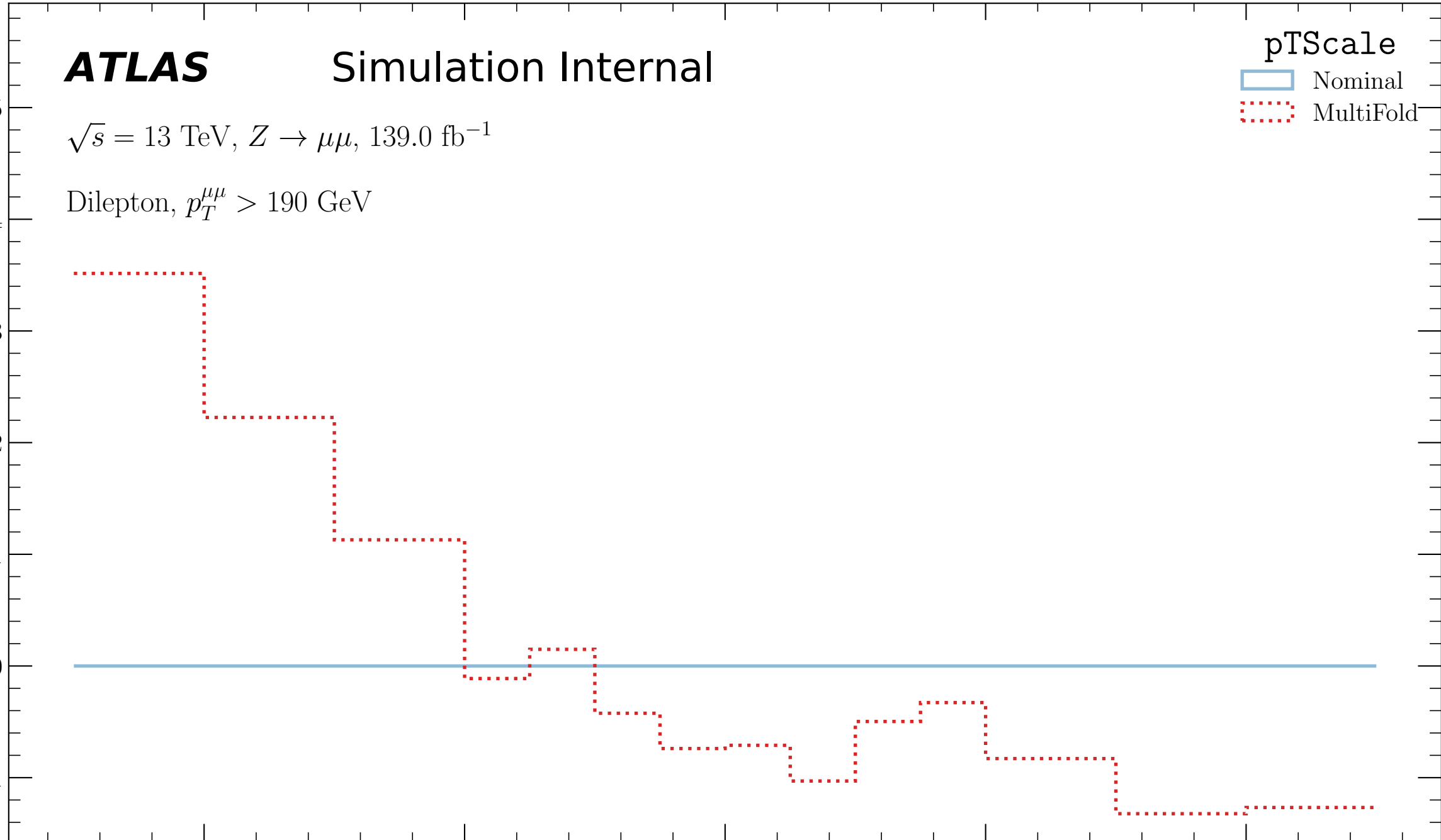
-2

-1

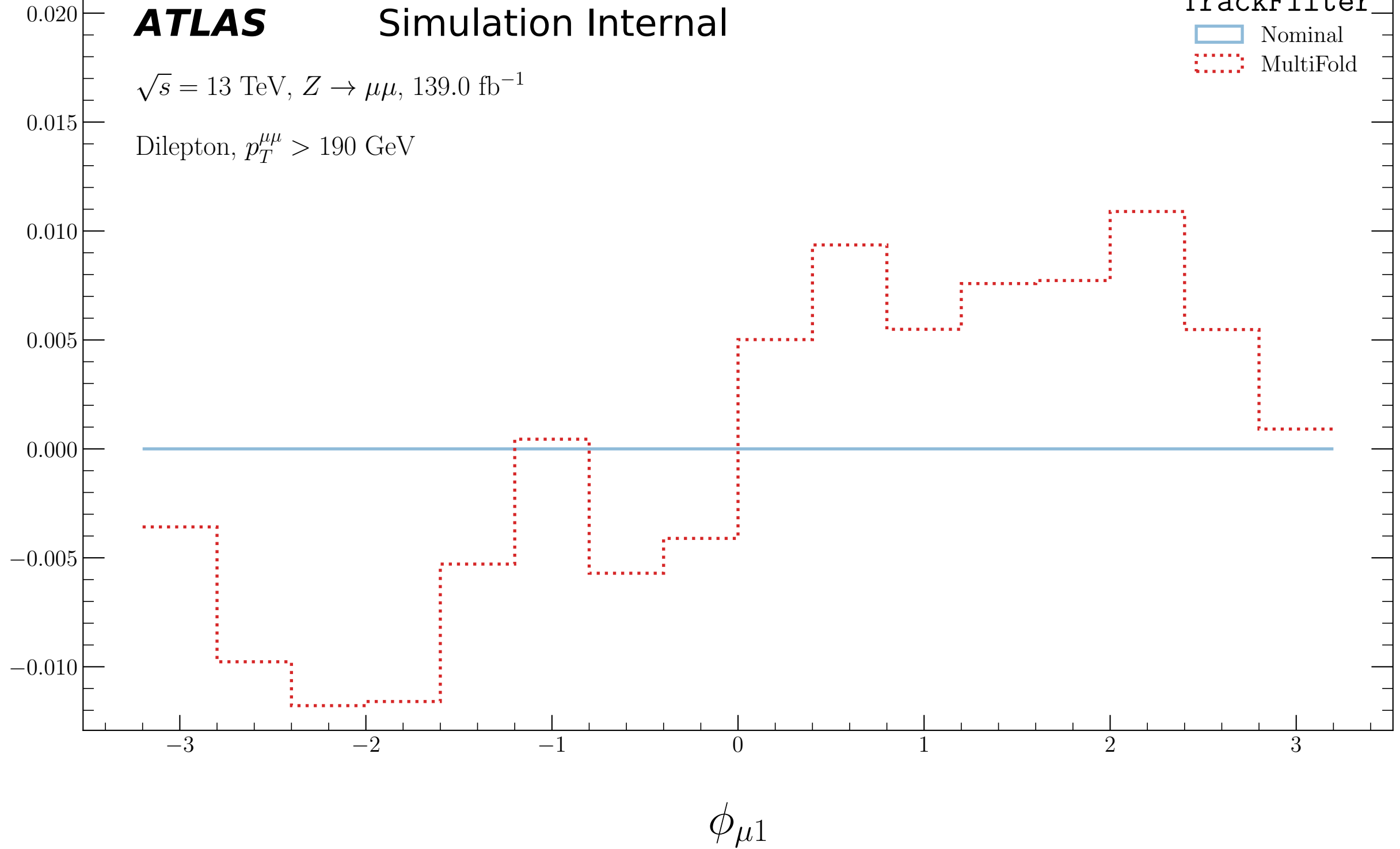
0

1

2

 $\eta_{\mu 2}$ 





**ATLAS**

Simulation Internal

JetTrackFilter

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ Nominal  
MultiFold0.03  
0.02  
0.01  
0.00  
-0.01  
-0.02

-3

-2

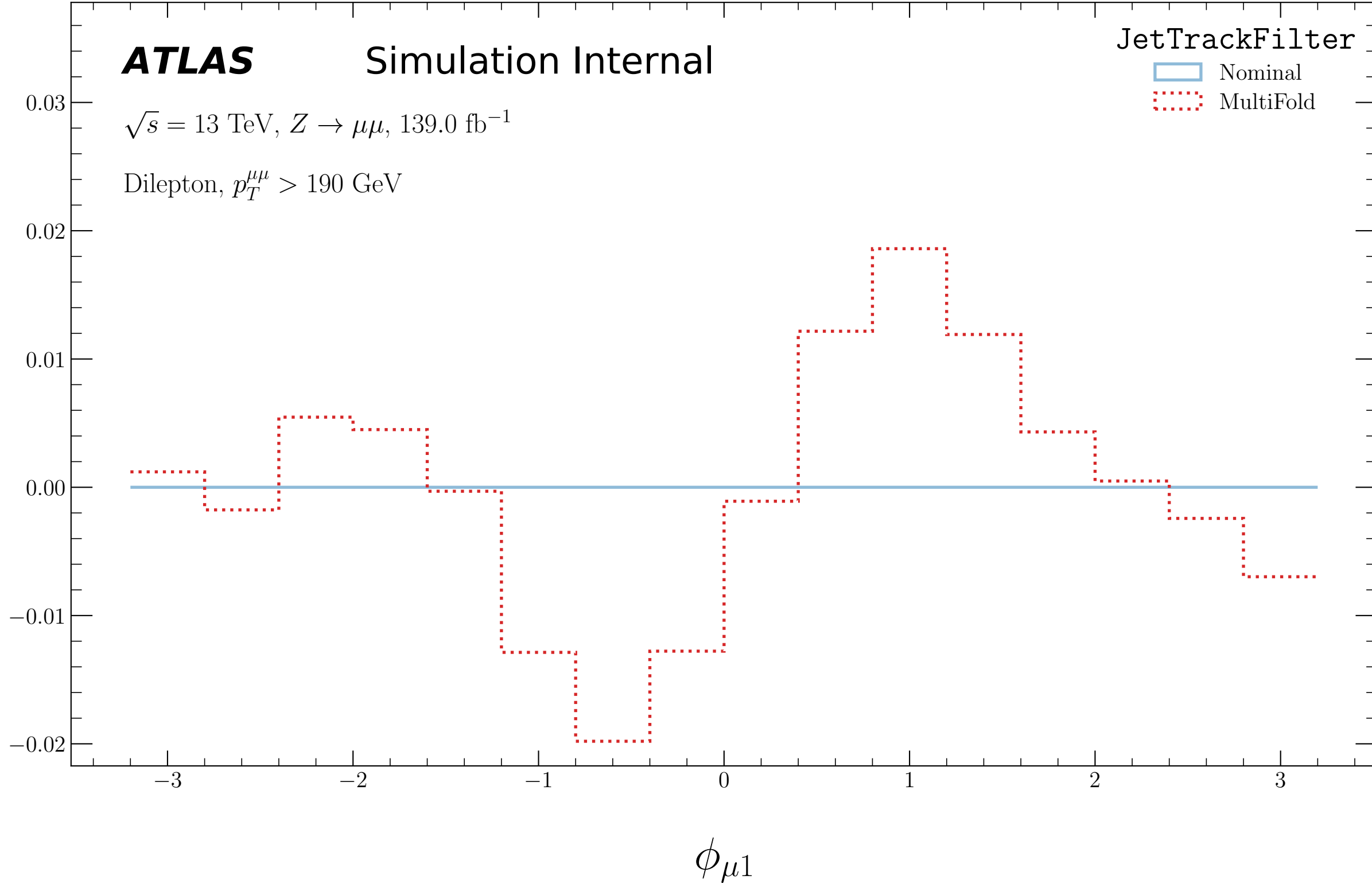
-1

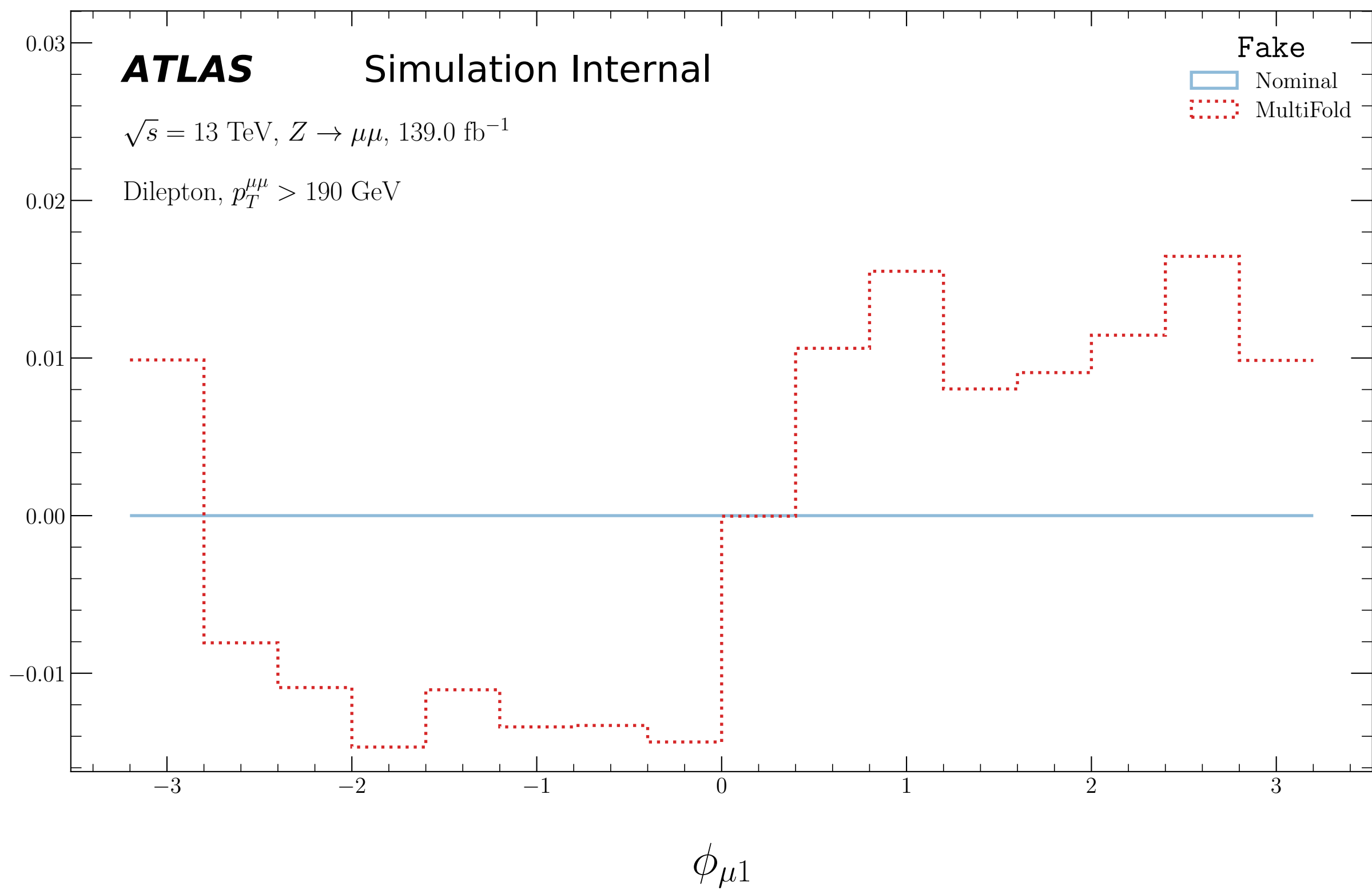
0

1

2

3

 $\phi_{\mu 1}$ 

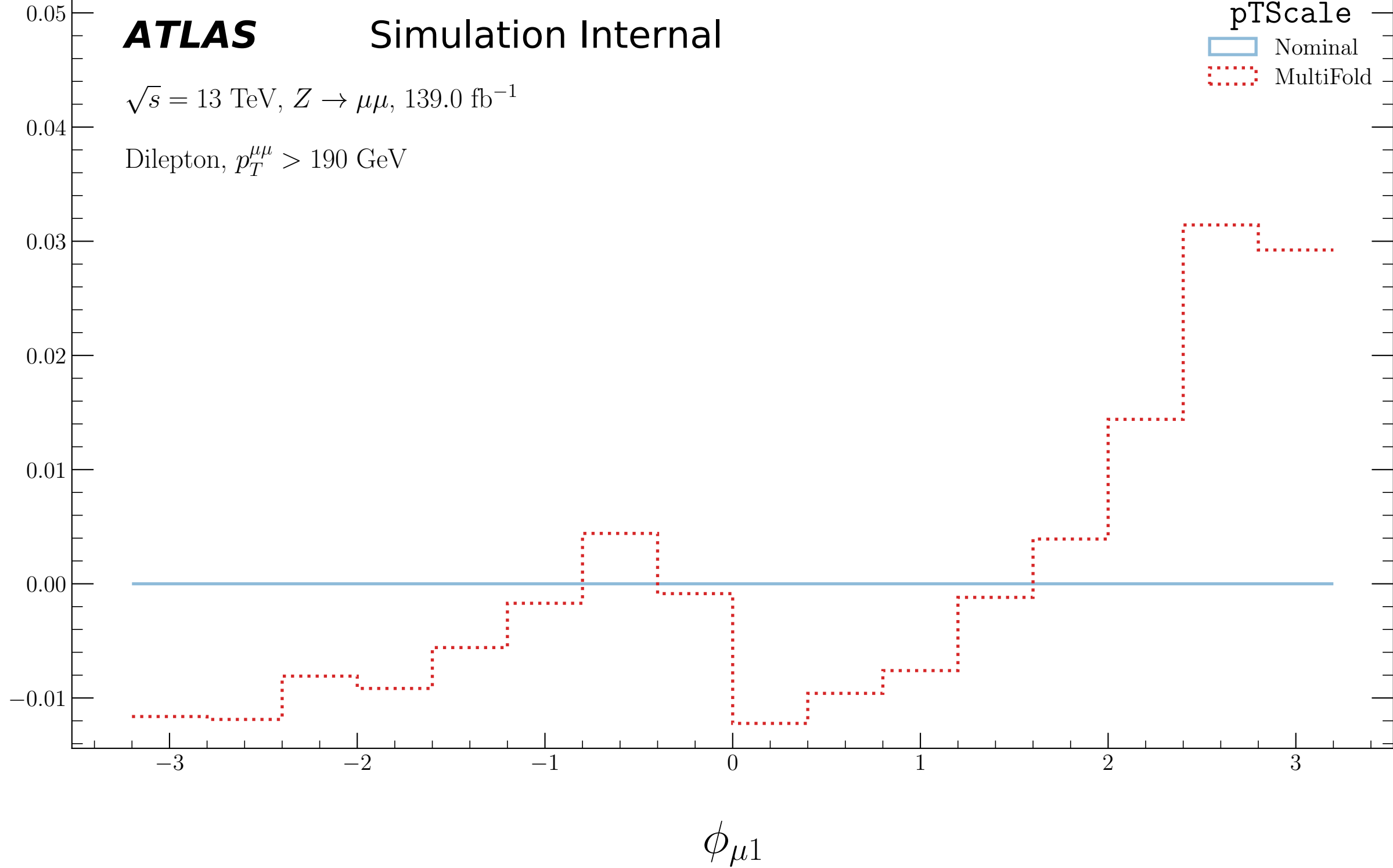


**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

pTScale

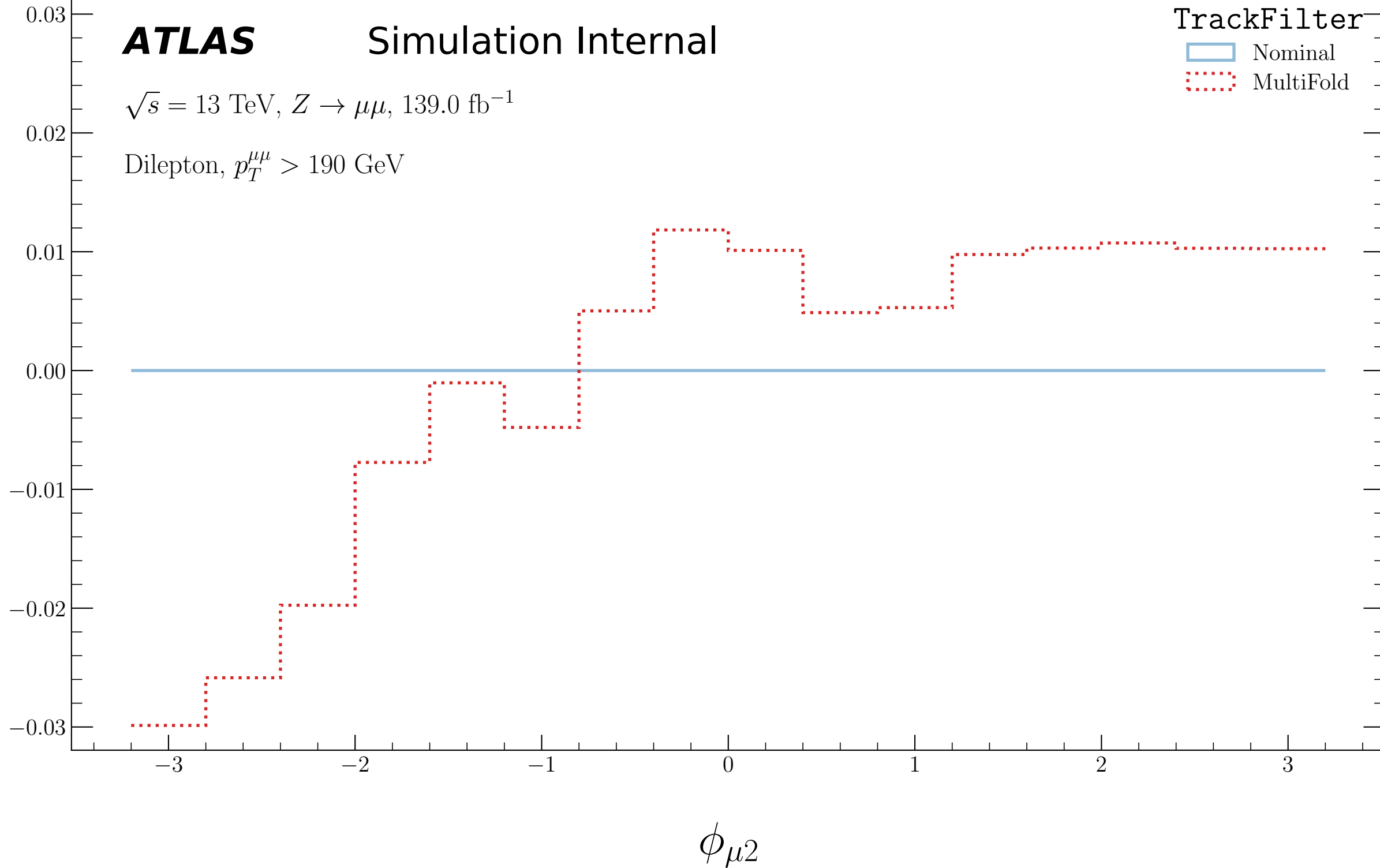
Nominal  
MultiFold

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

TrackFilter

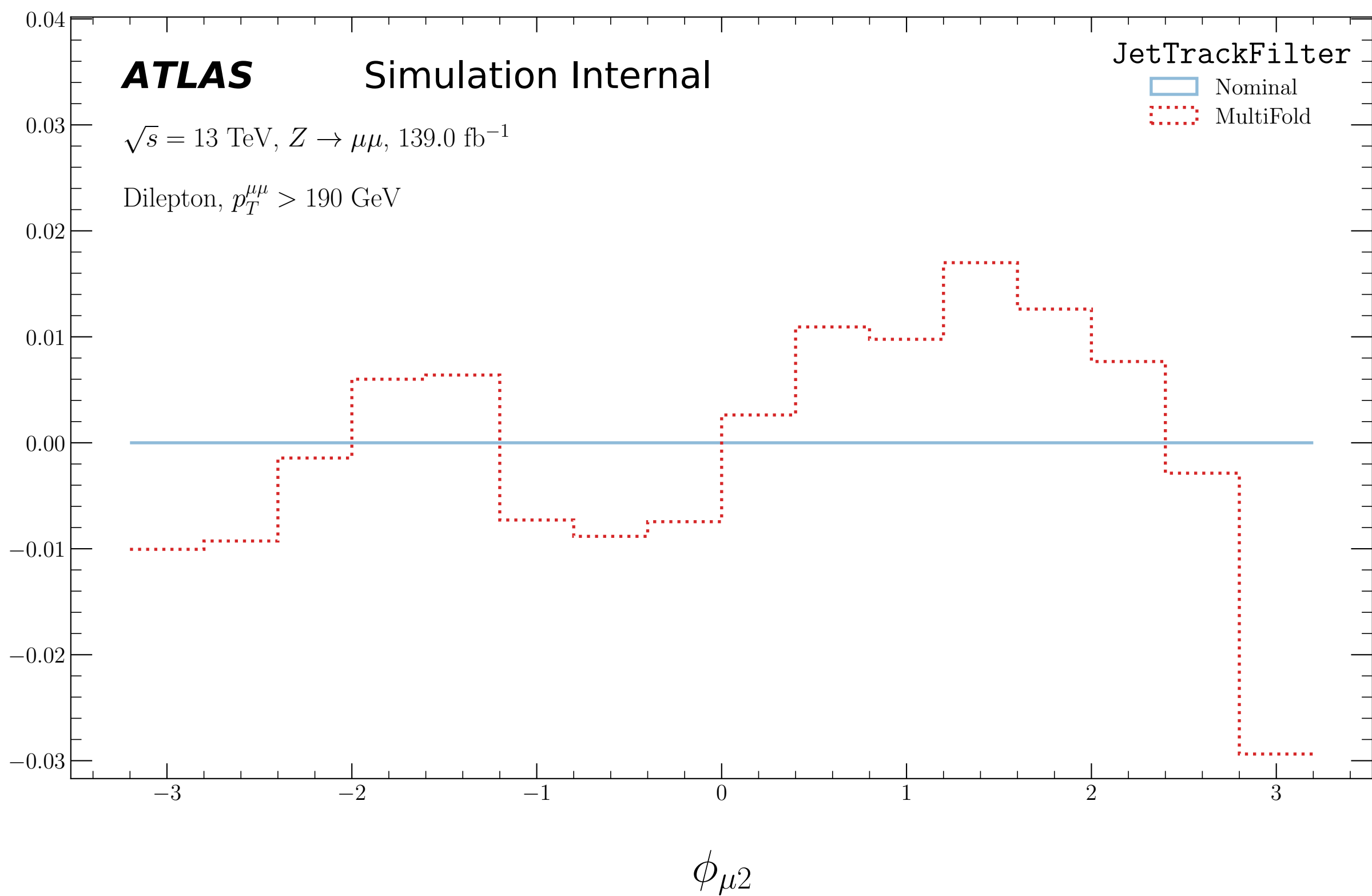
Nominal  
MultiFold

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

JetTrackFilter

Nominal  
MultiFold

**ATLAS**

Simulation Internal

 $\sqrt{s} = 13 \text{ TeV}, Z \rightarrow \mu\mu, 139.0 \text{ fb}^{-1}$ Dilepton,  $p_T^{\mu\mu} > 190 \text{ GeV}$ 

Fake

Nominal  
MultiFold