

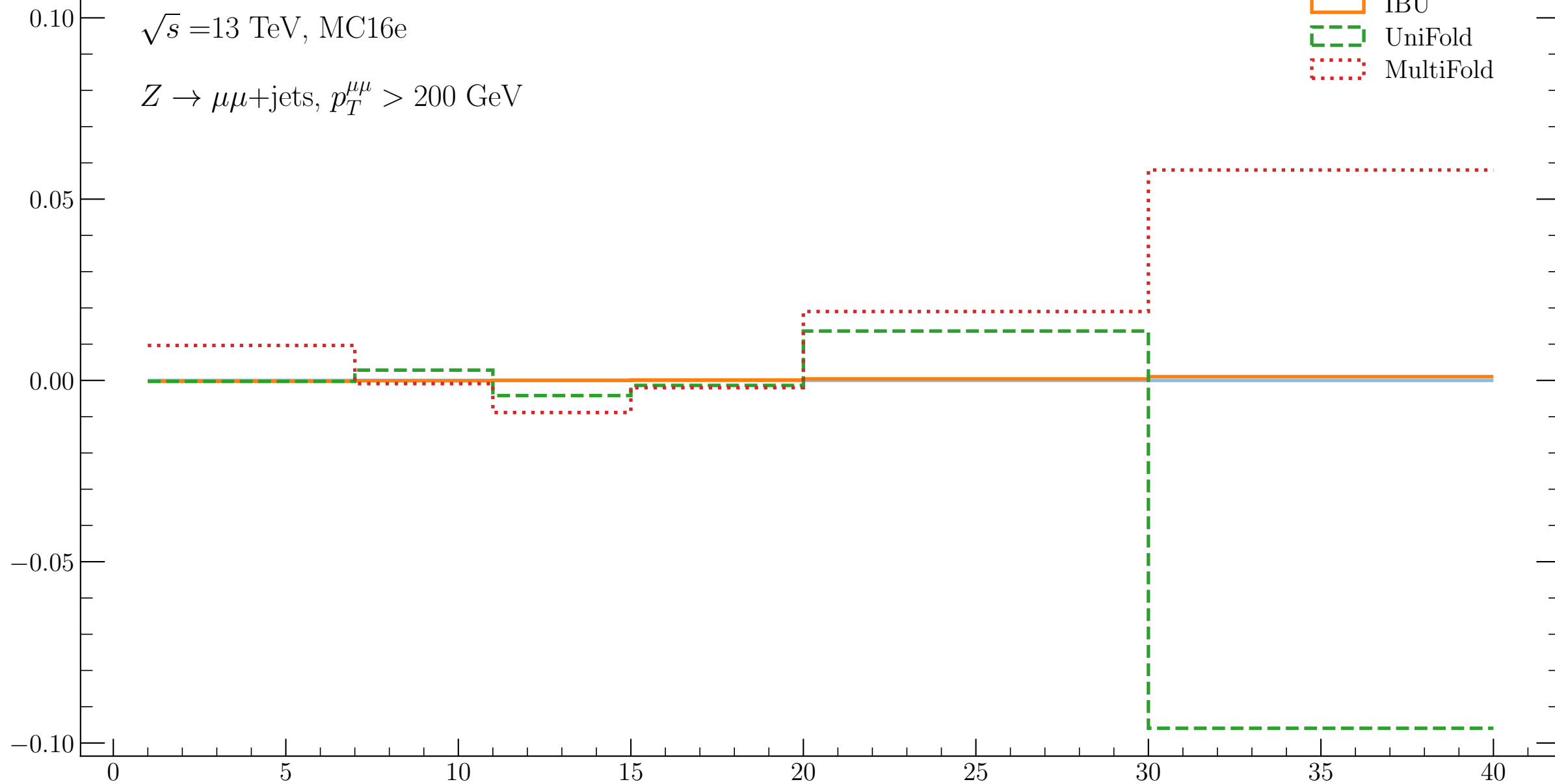
ATLAS

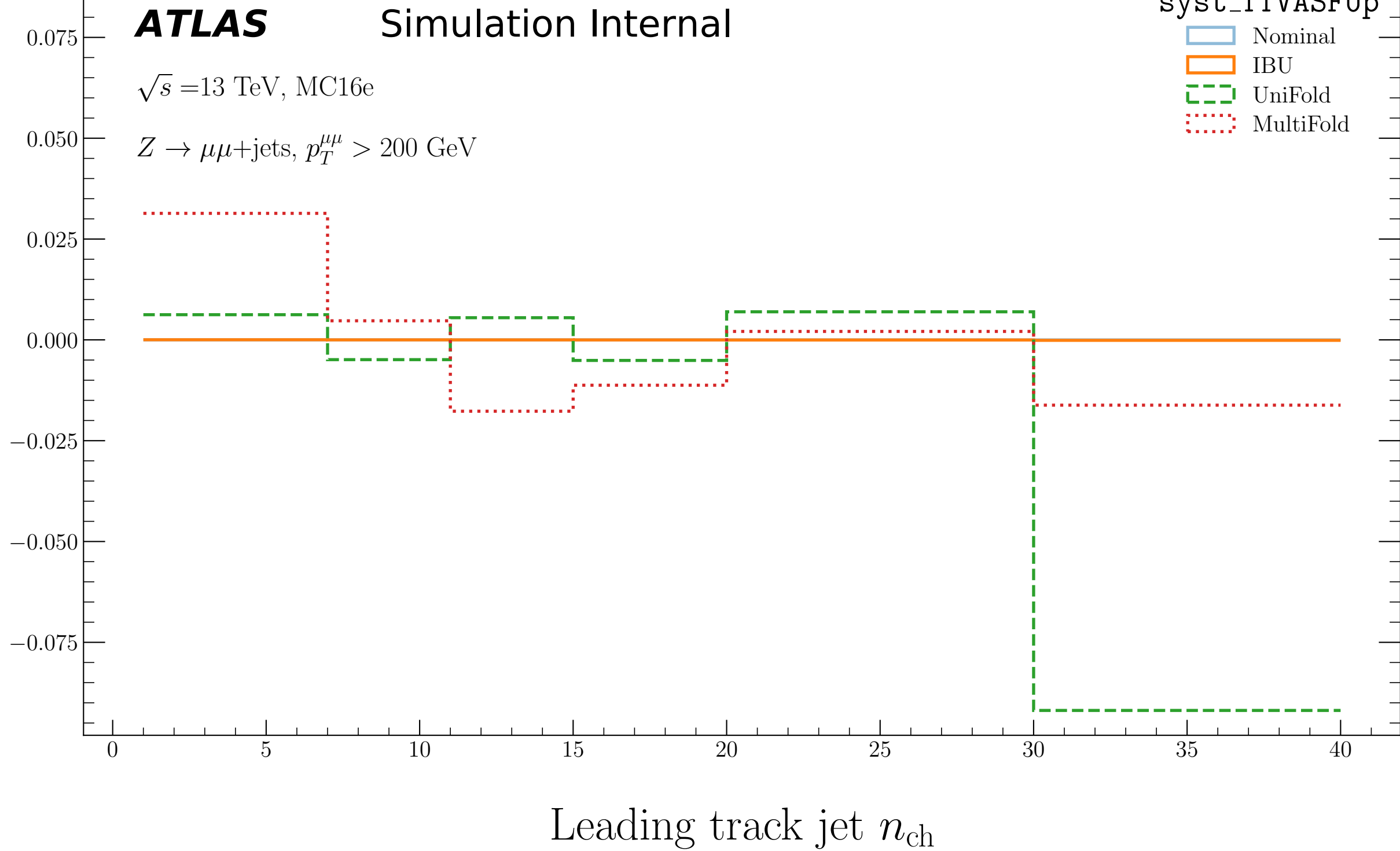
Simulation Internal

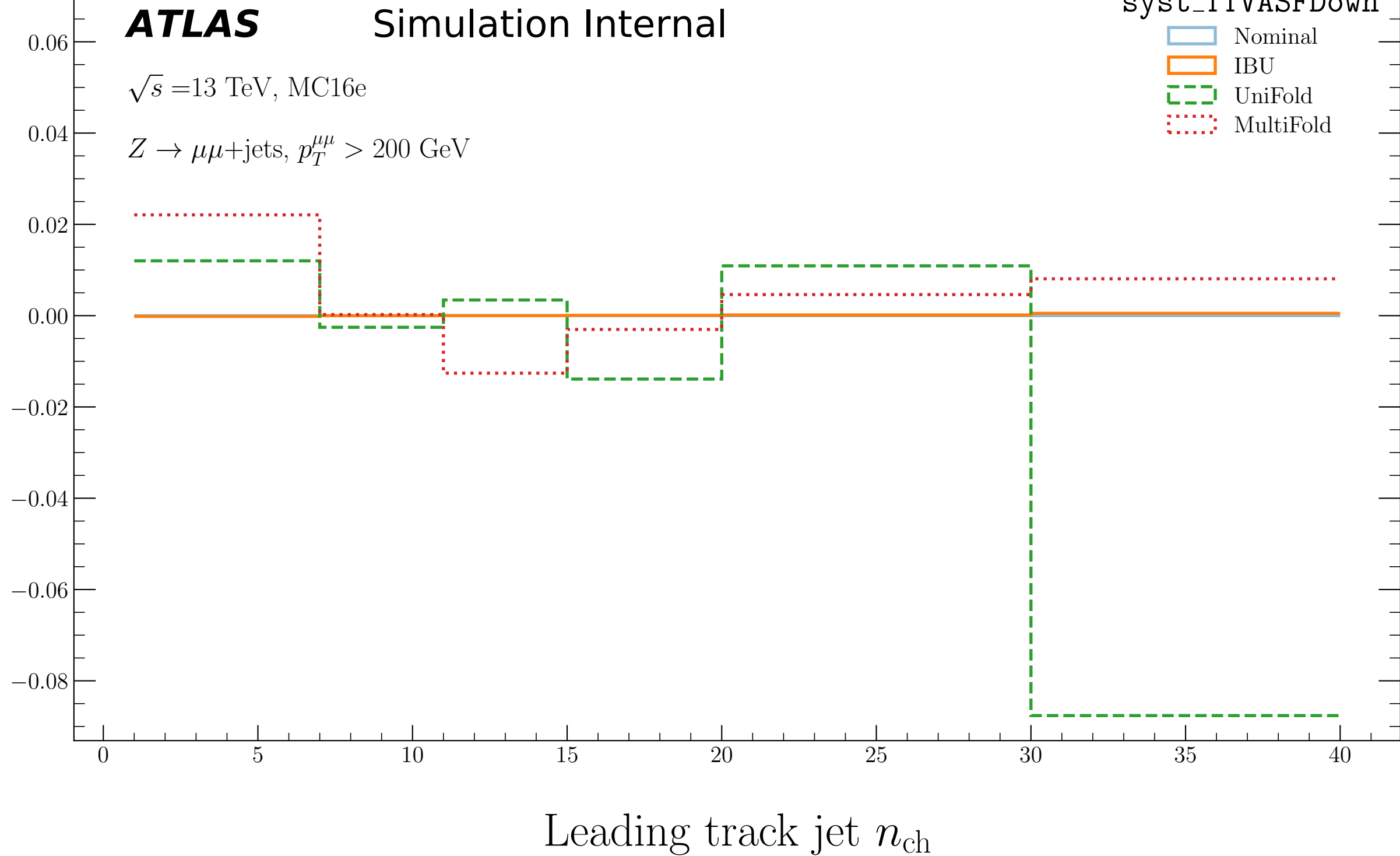
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

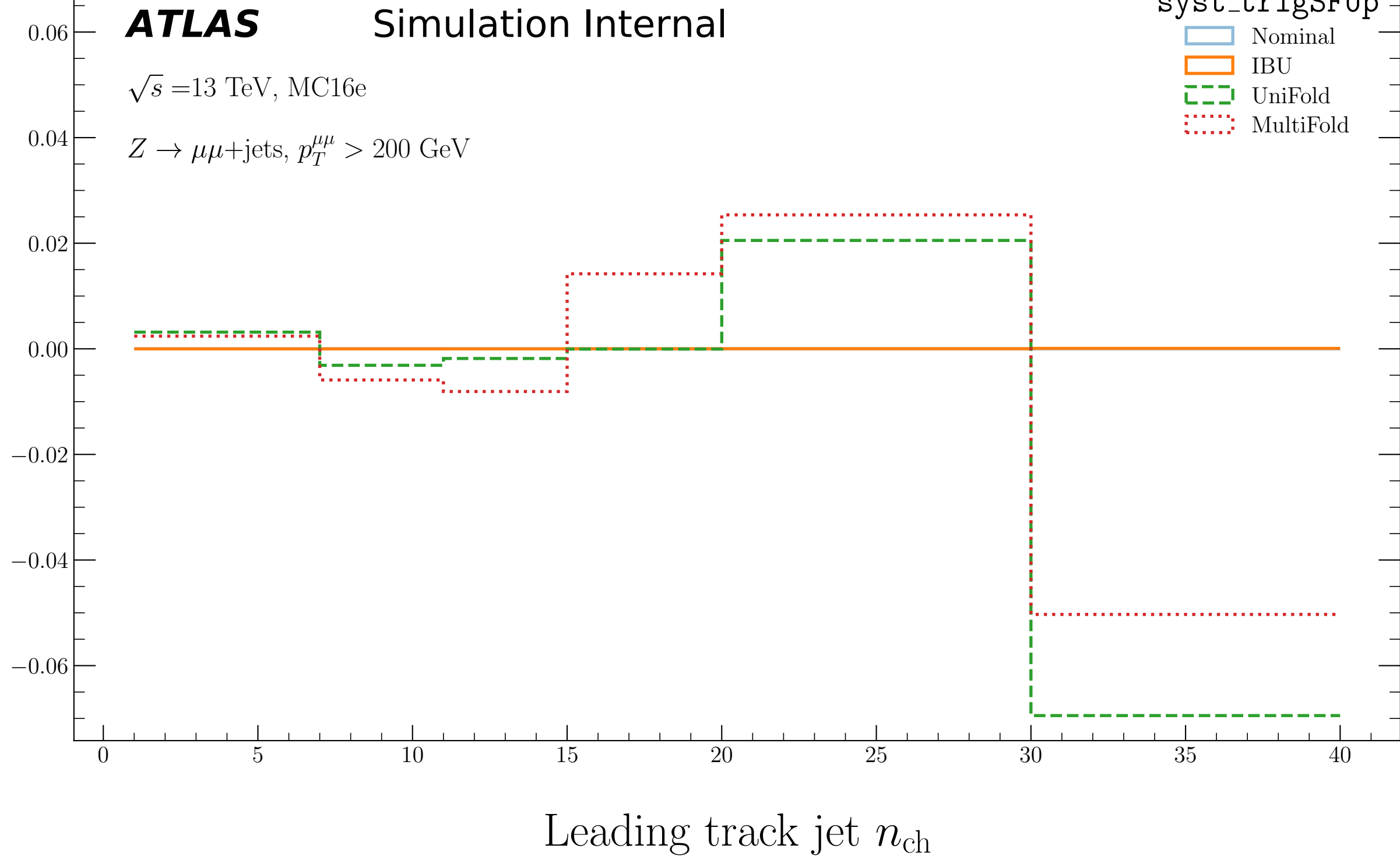
syst_isoSFDown

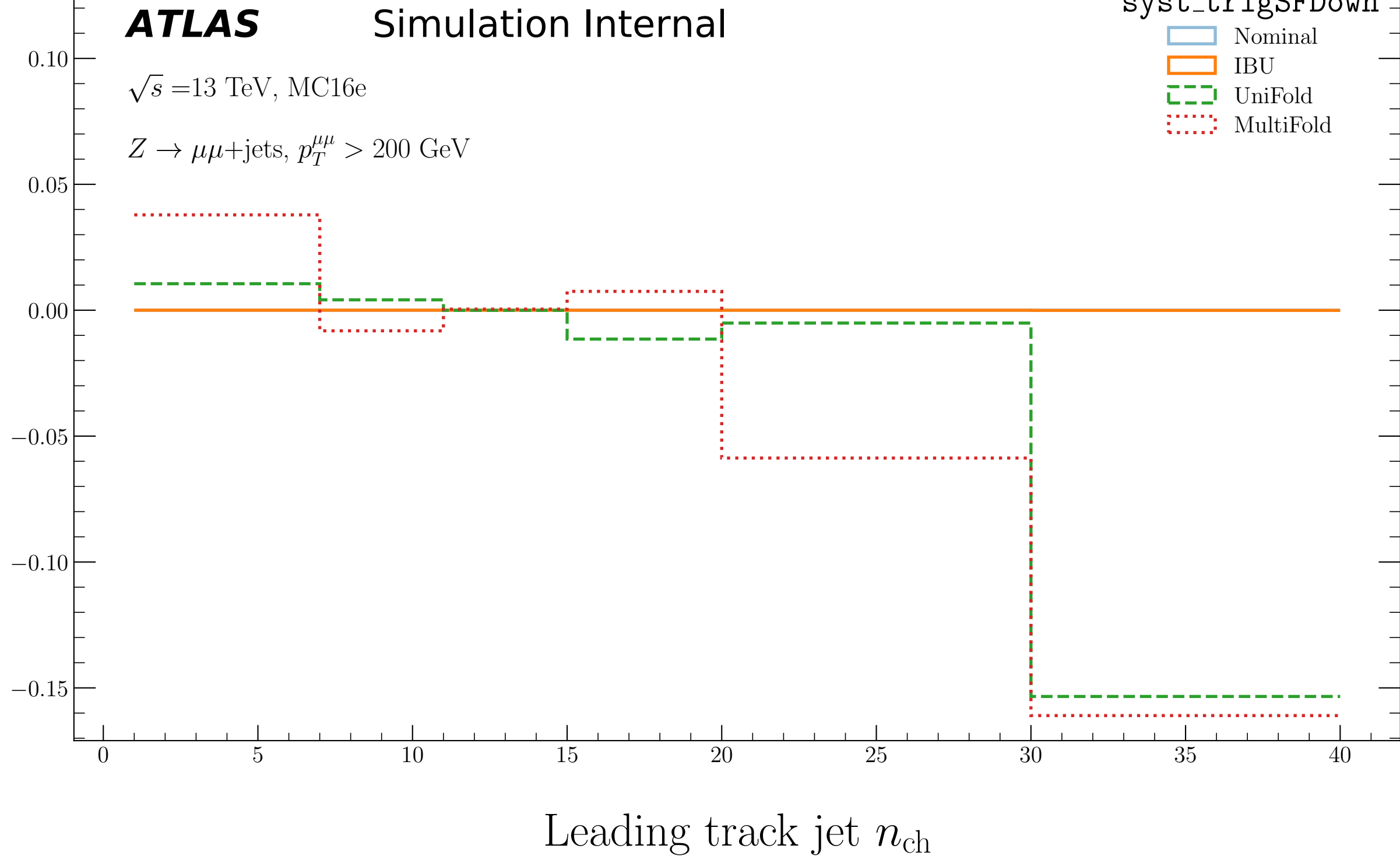
- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet n_{ch}









ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

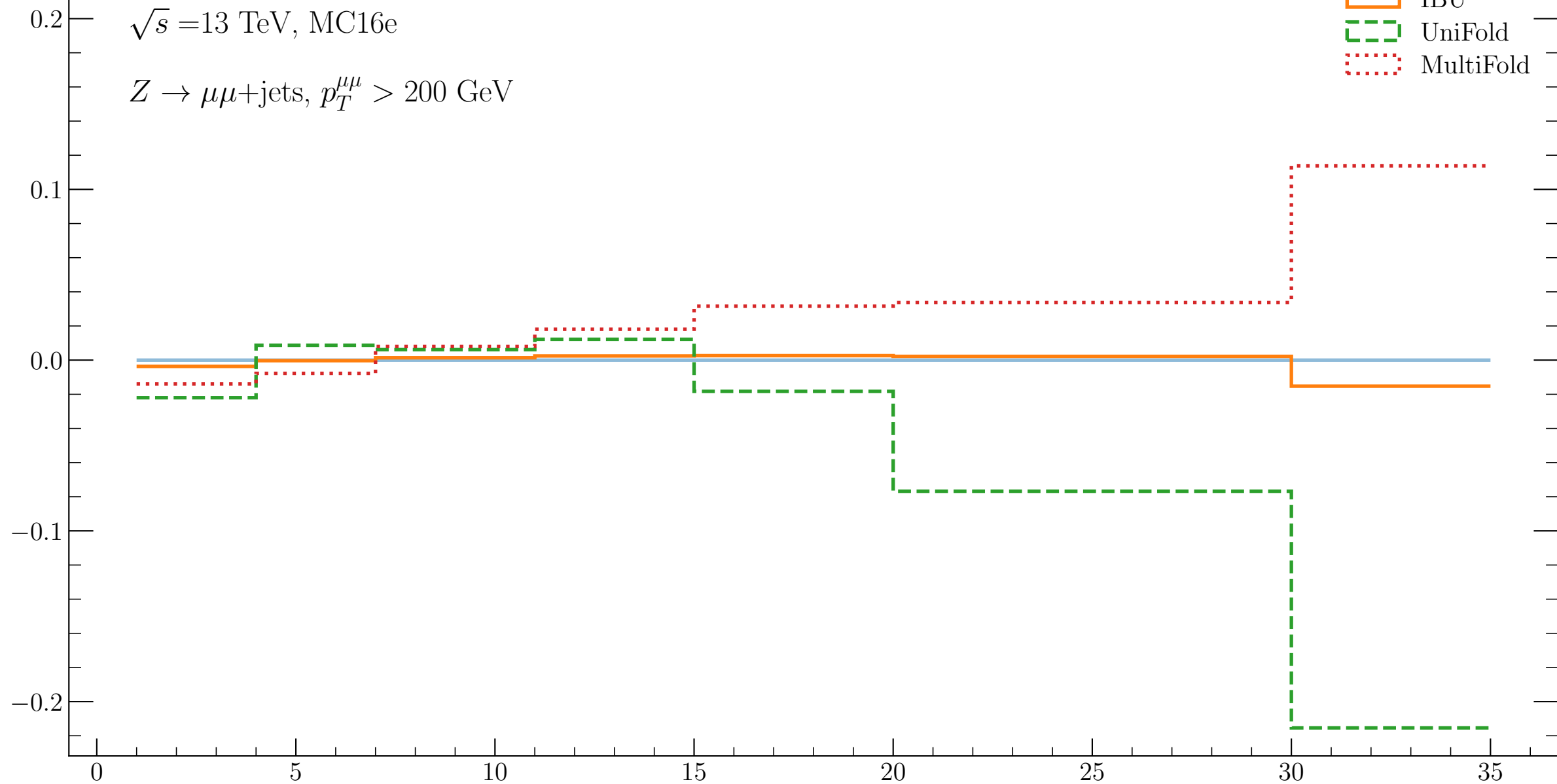
syst_prwUp

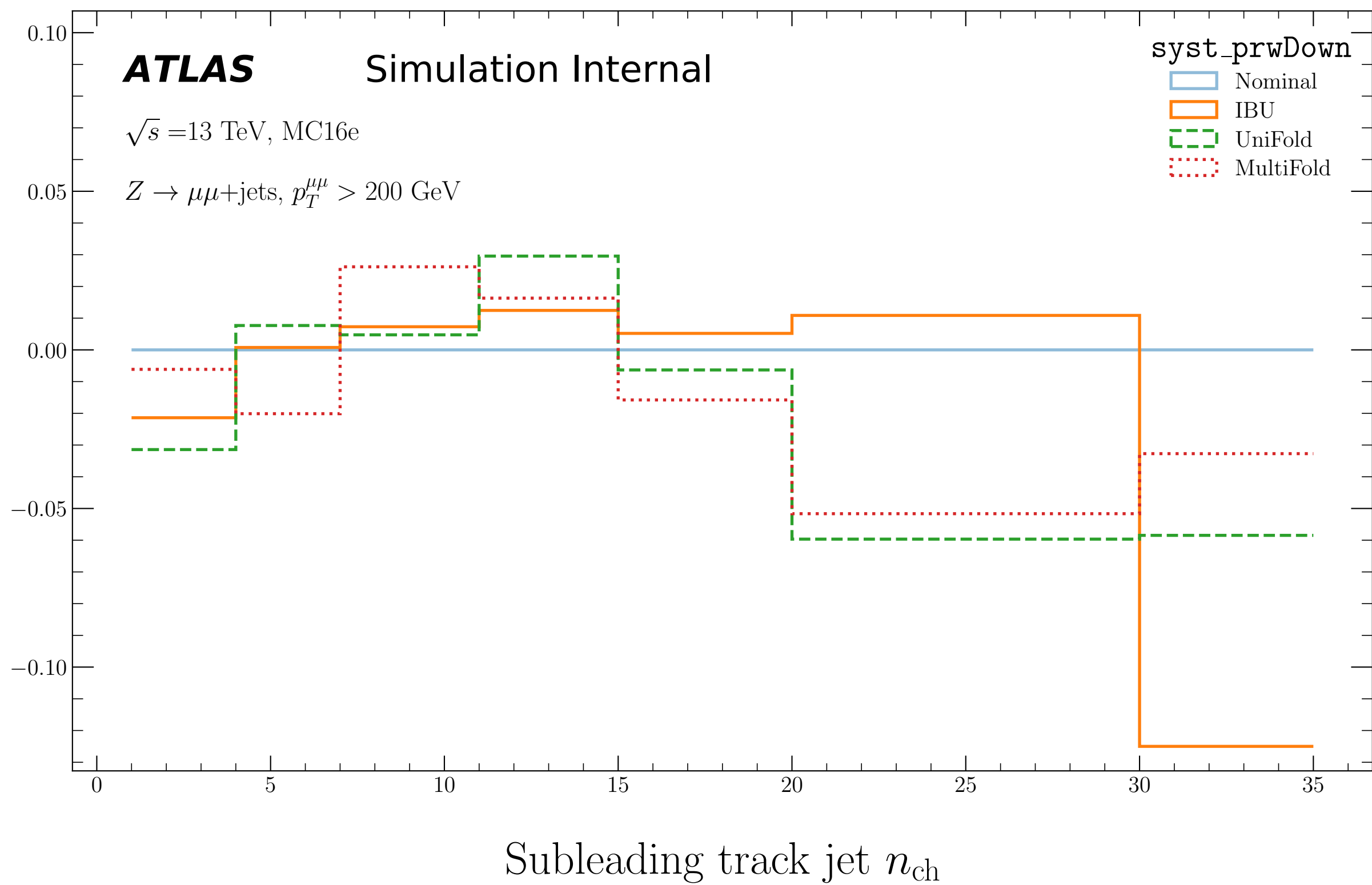
Nominal

IBU

UniFold

MultiFold

Subleading track jet n_{ch}



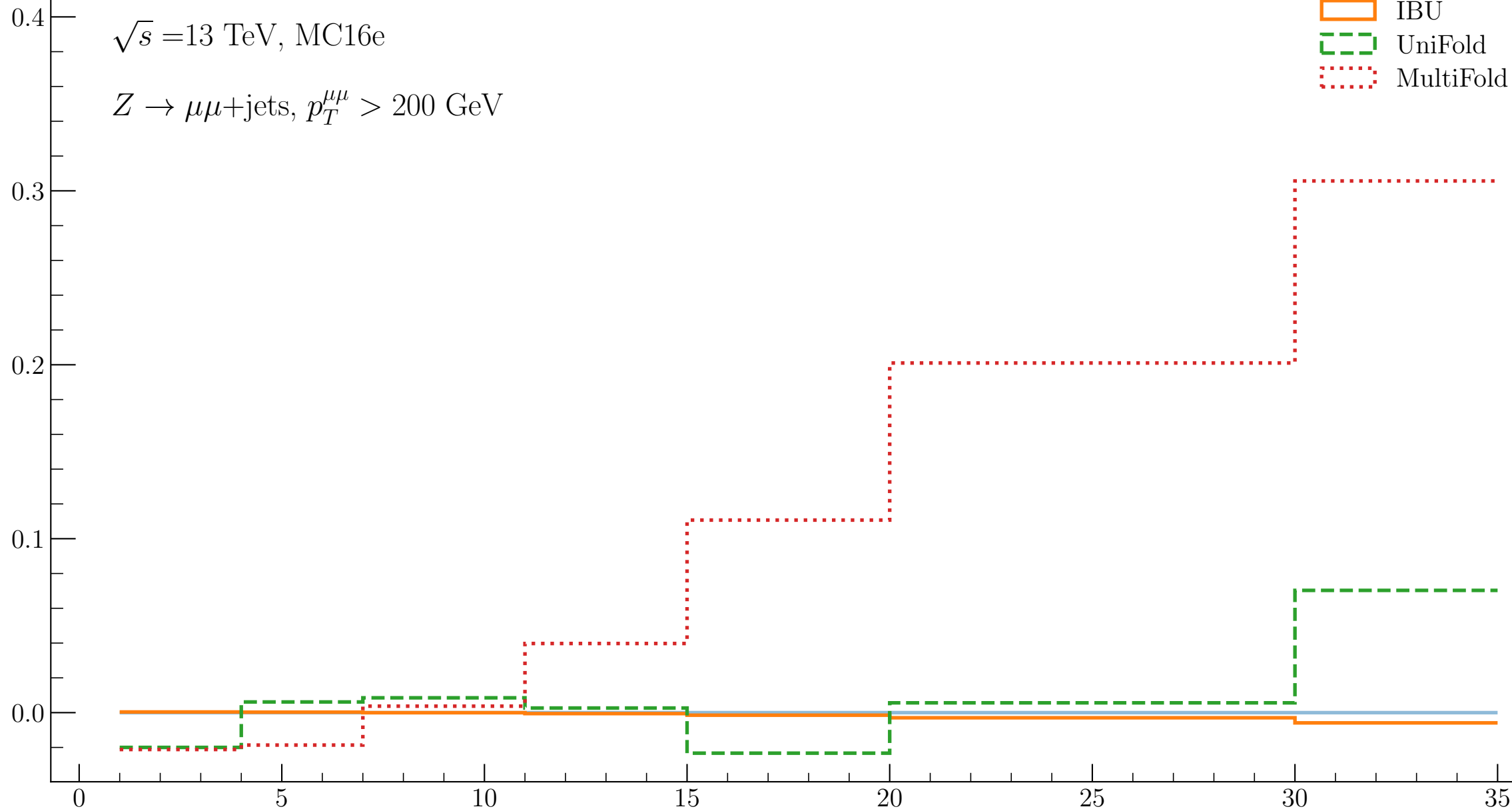
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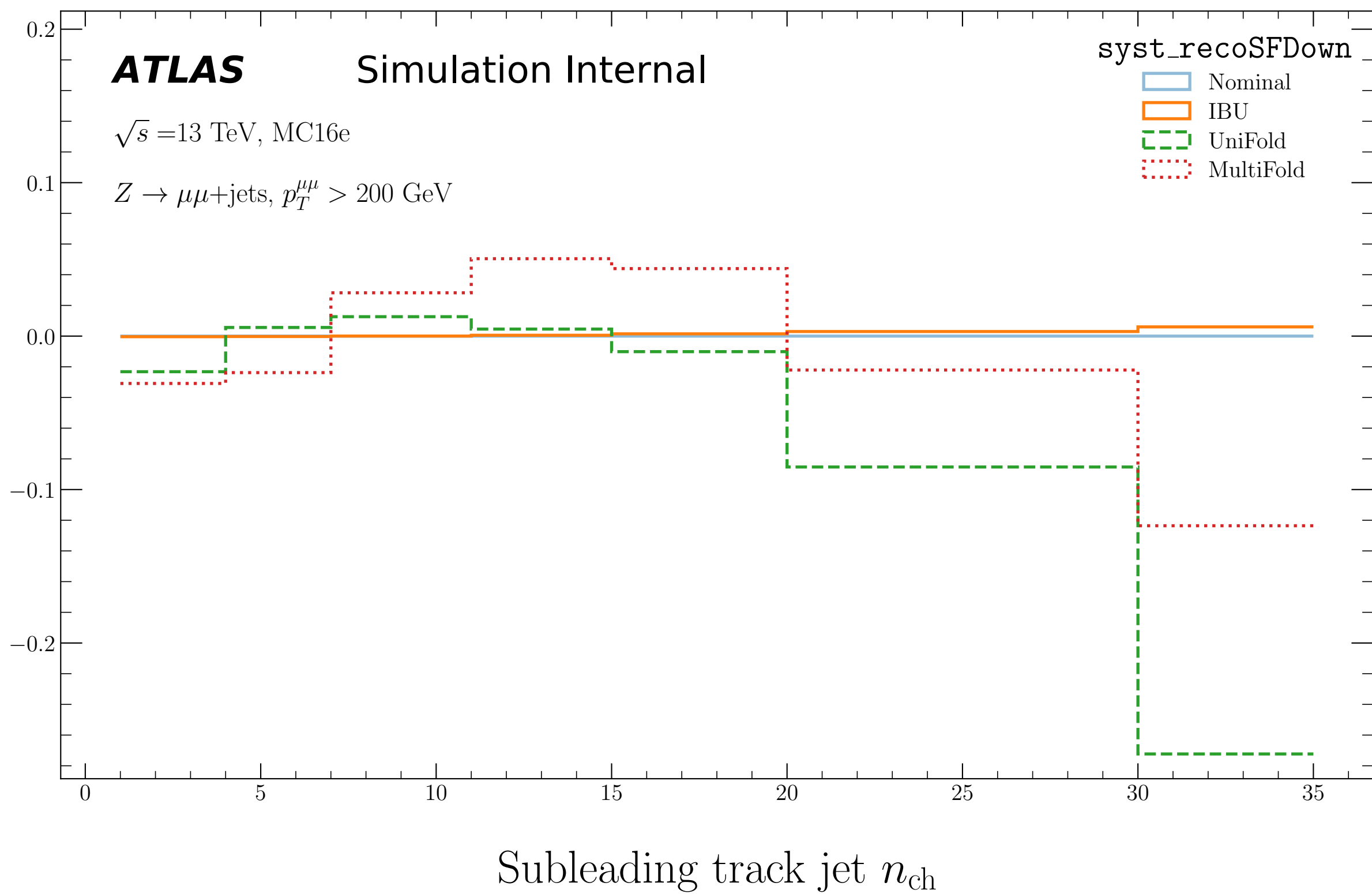
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet n_{ch}



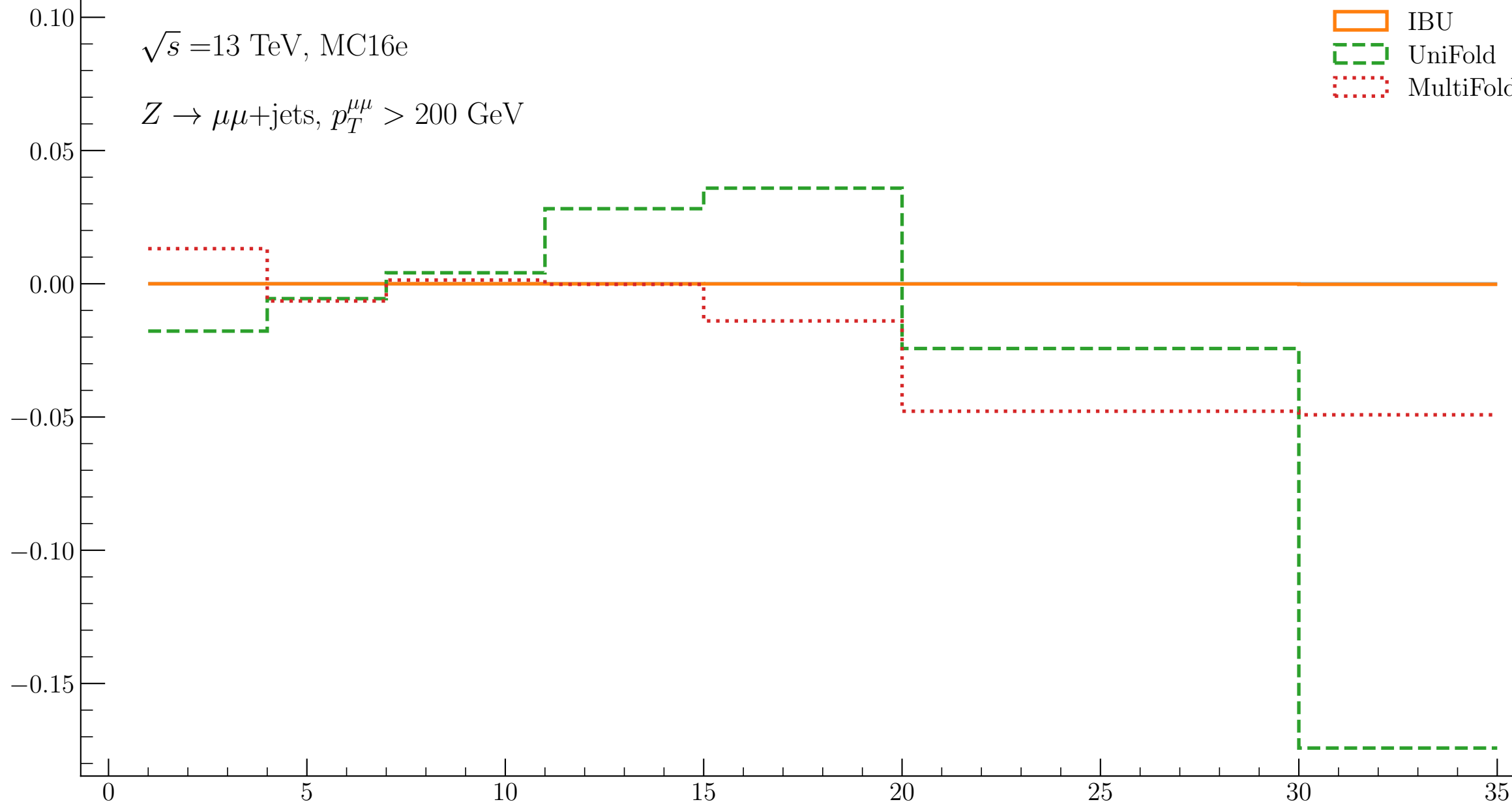
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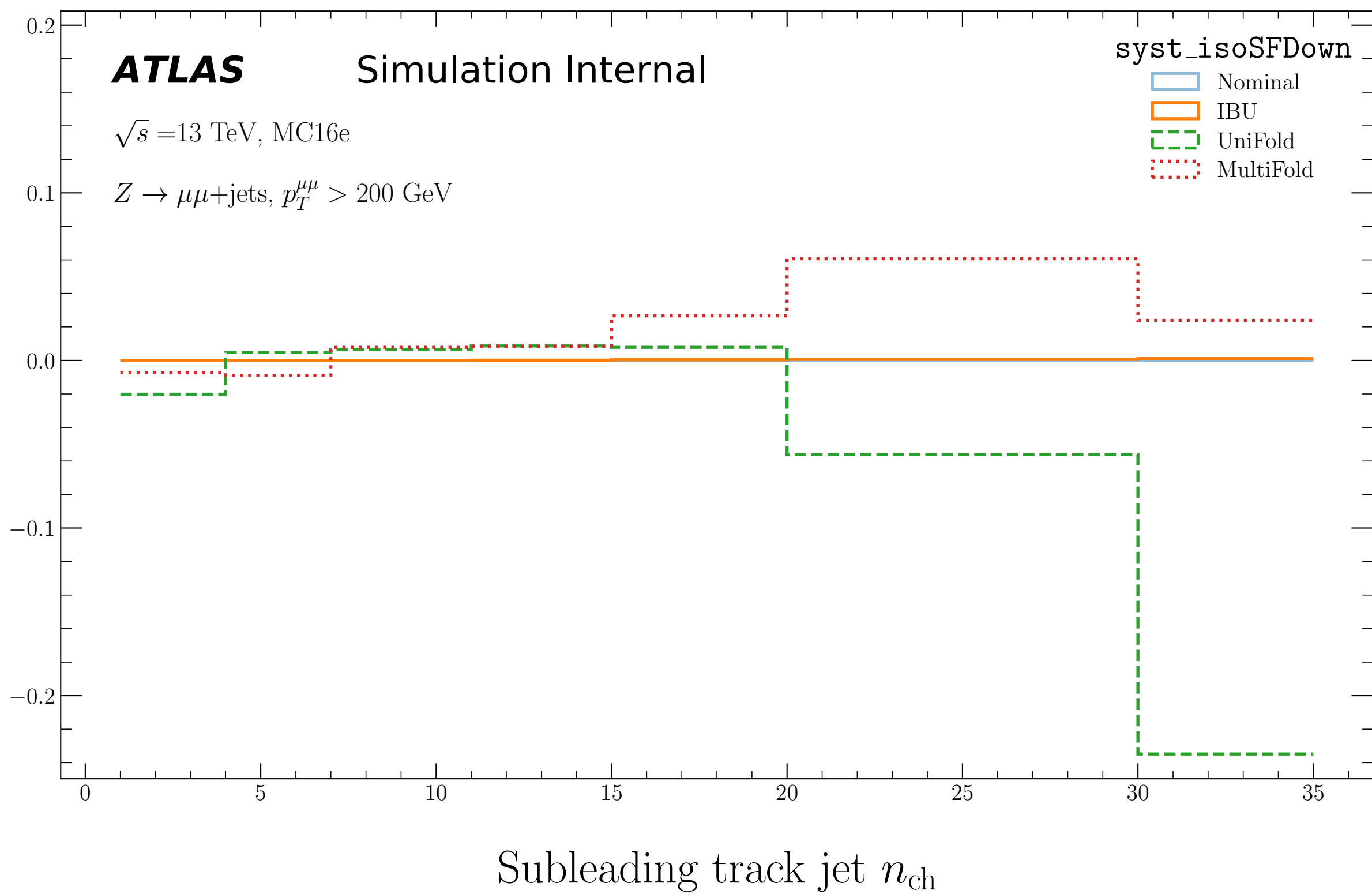
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet n_{ch}



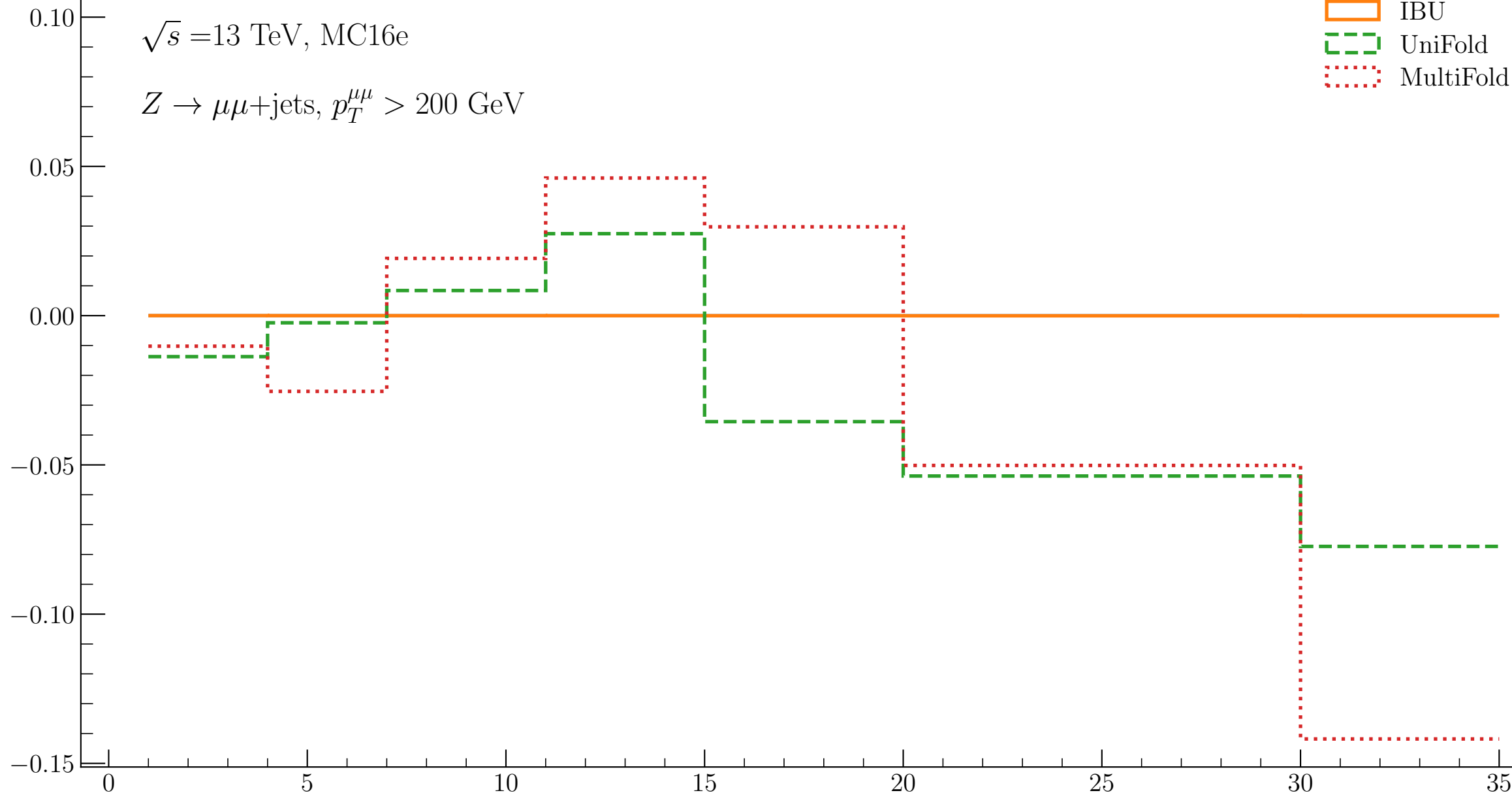
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

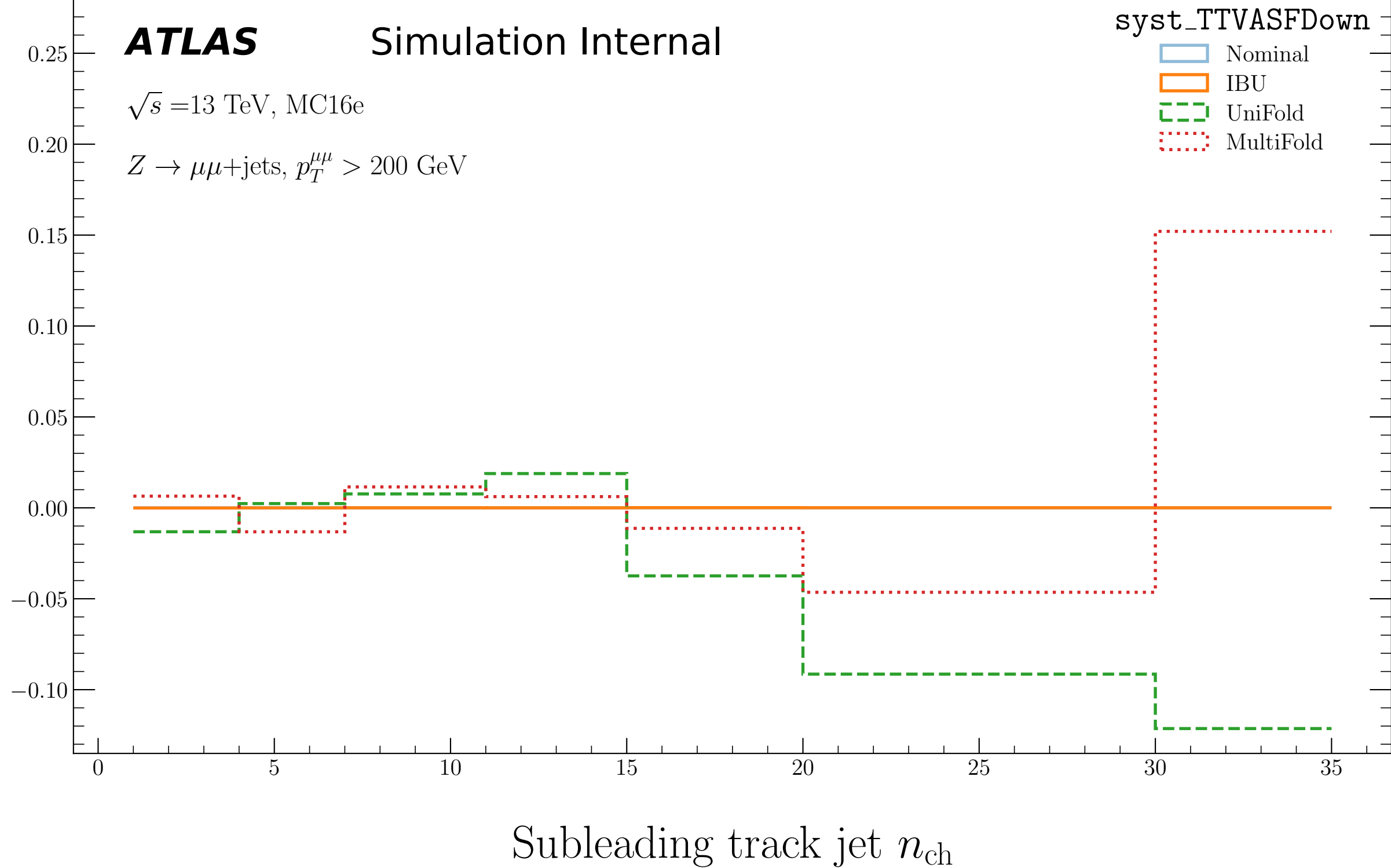
syst_TTVASFUp

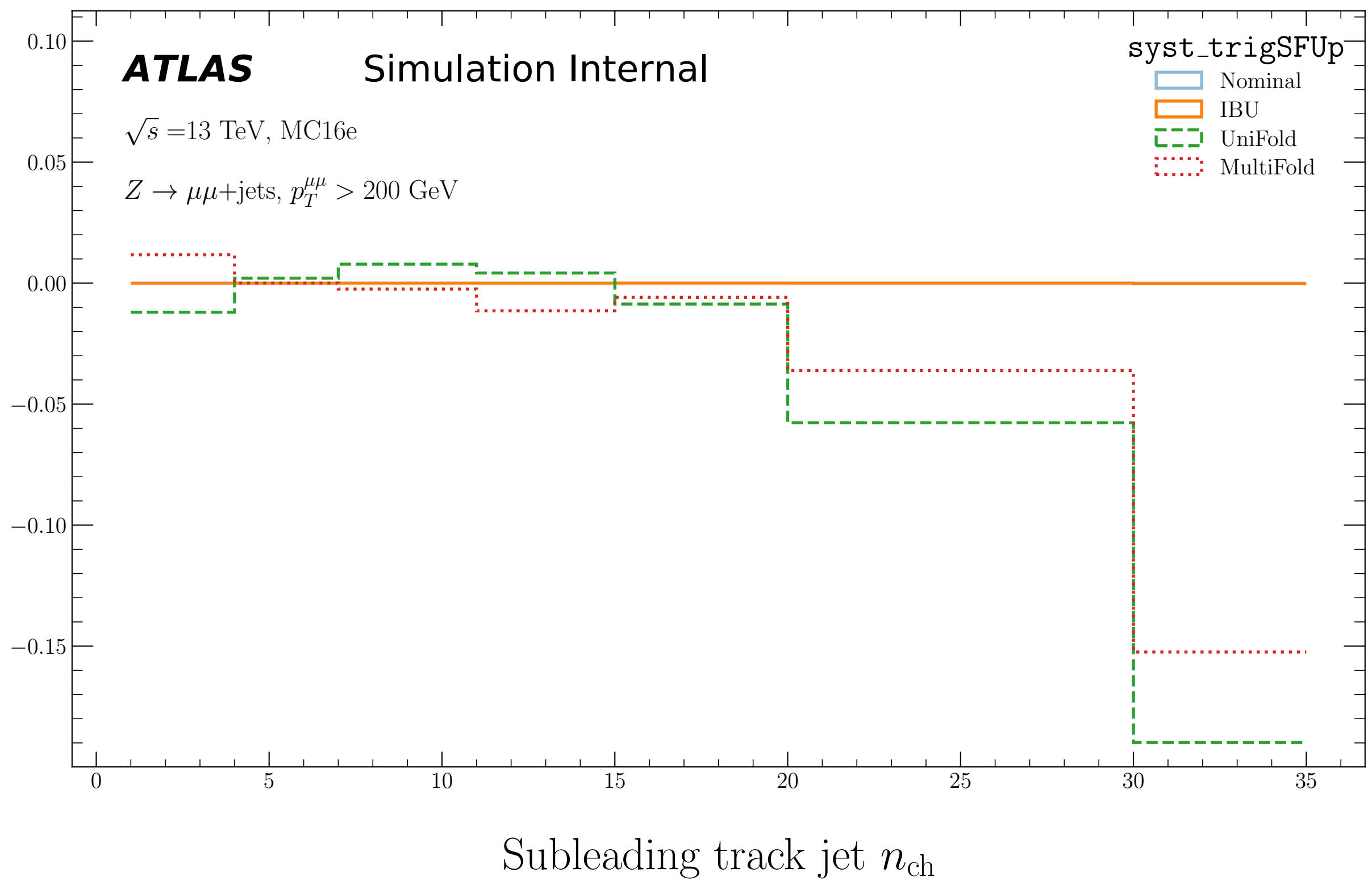
- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet n_{ch}

ATLAS

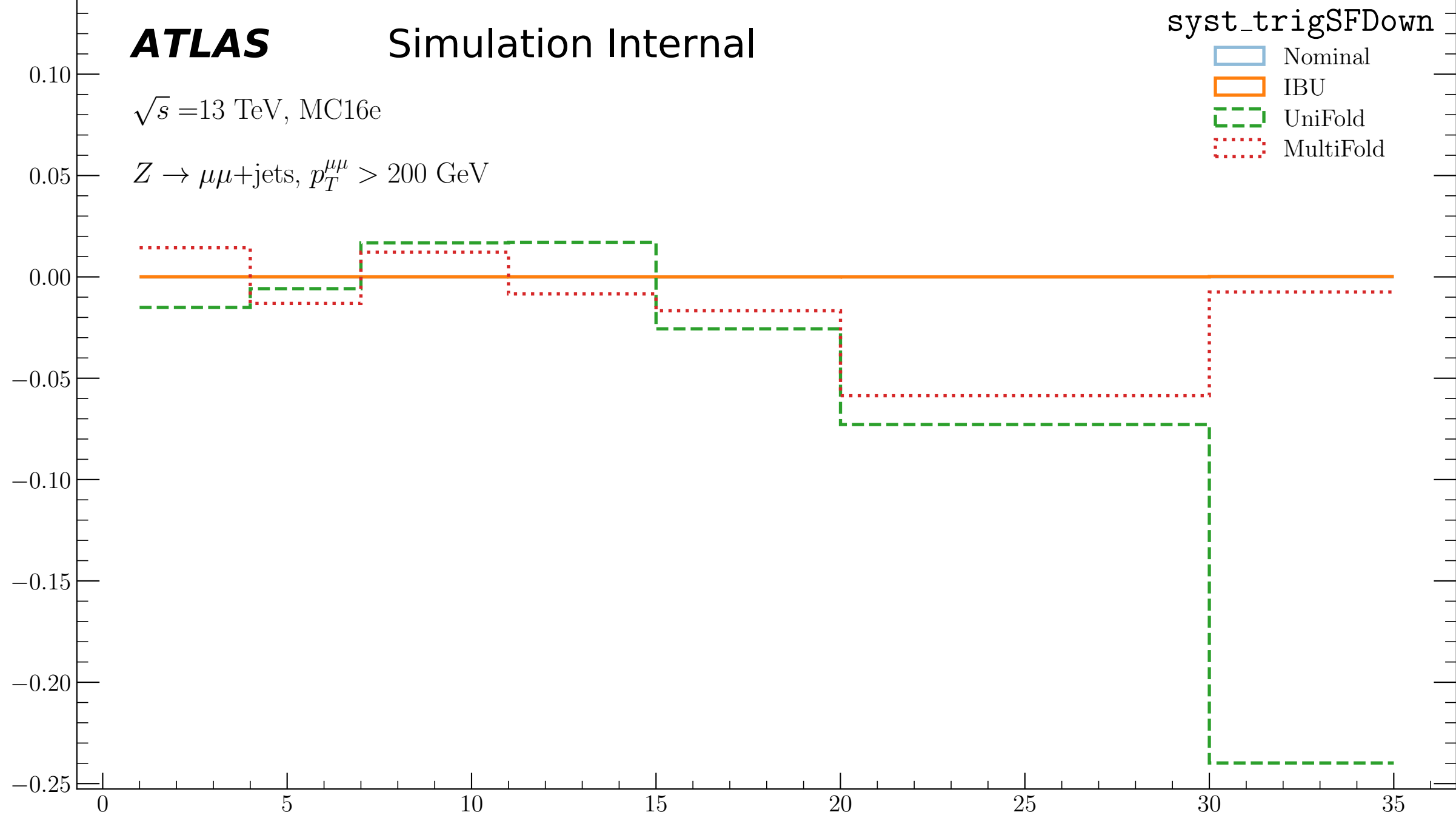
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeVSubleading track jet n_{ch}

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwUp

Nominal

IBU

UniFold

MultiFold

0.15

0.10

0.05

0.00

0

10

20

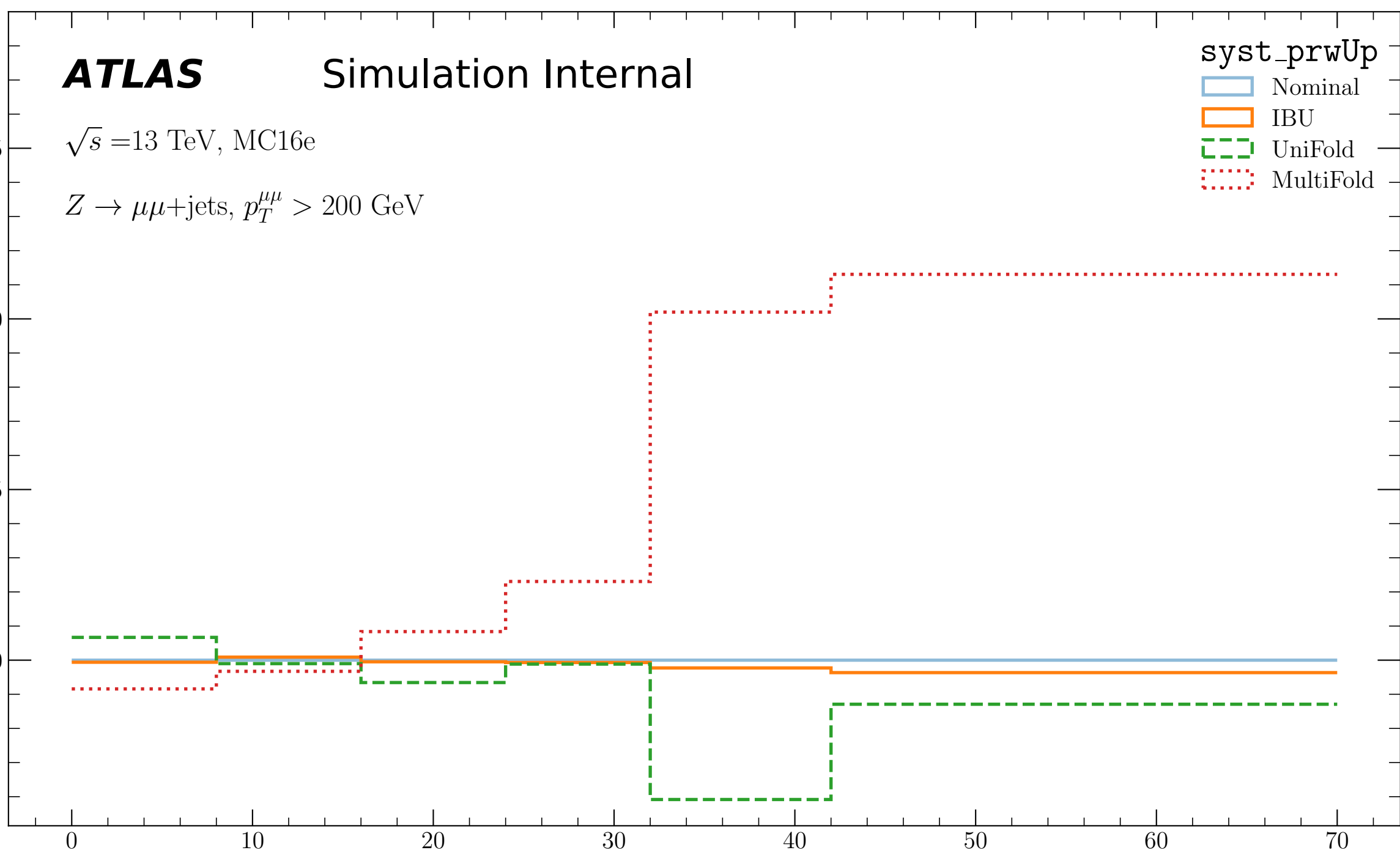
30

40

50

60

70

Leading track jet m [GeV]

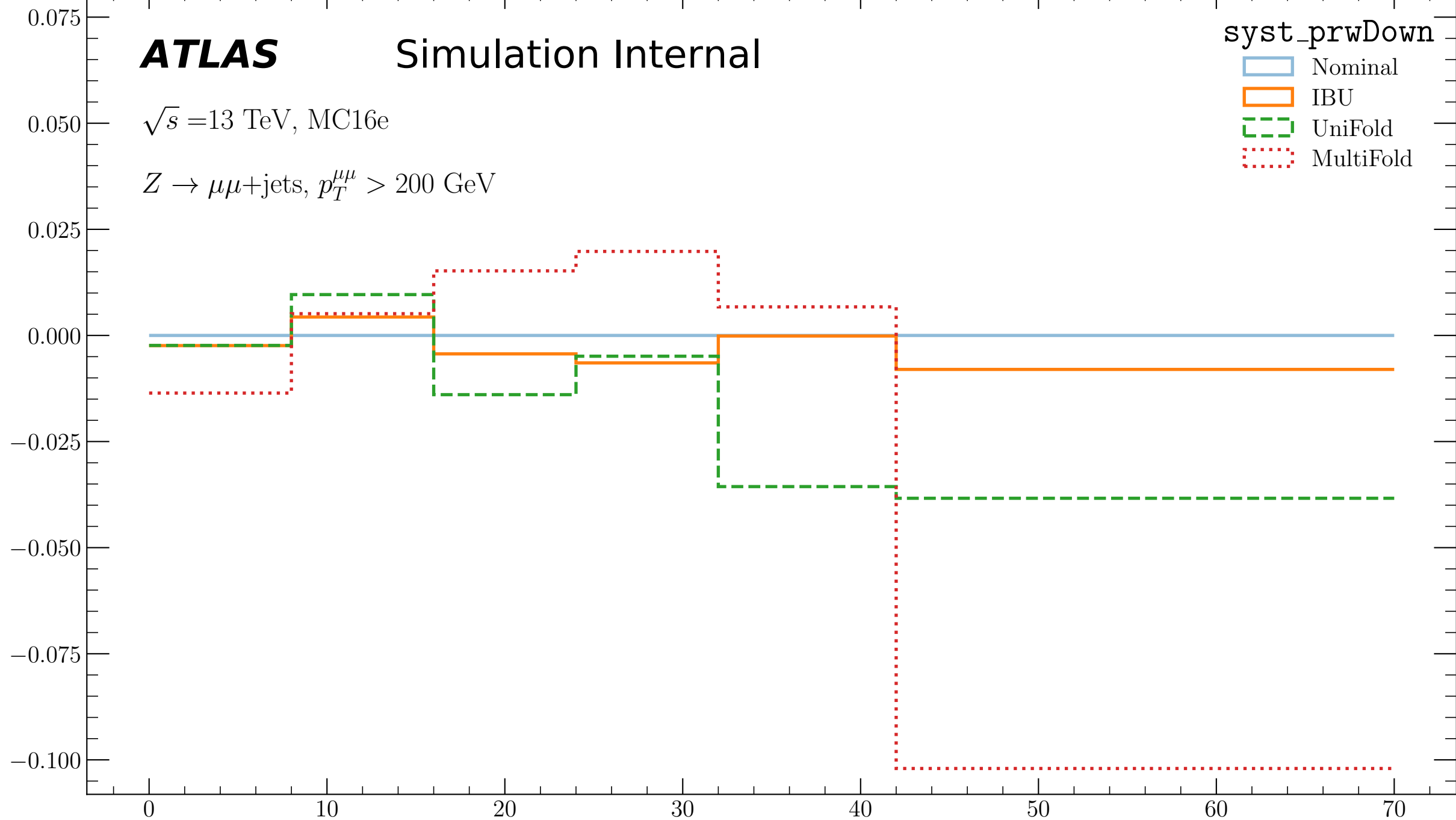
ATLAS

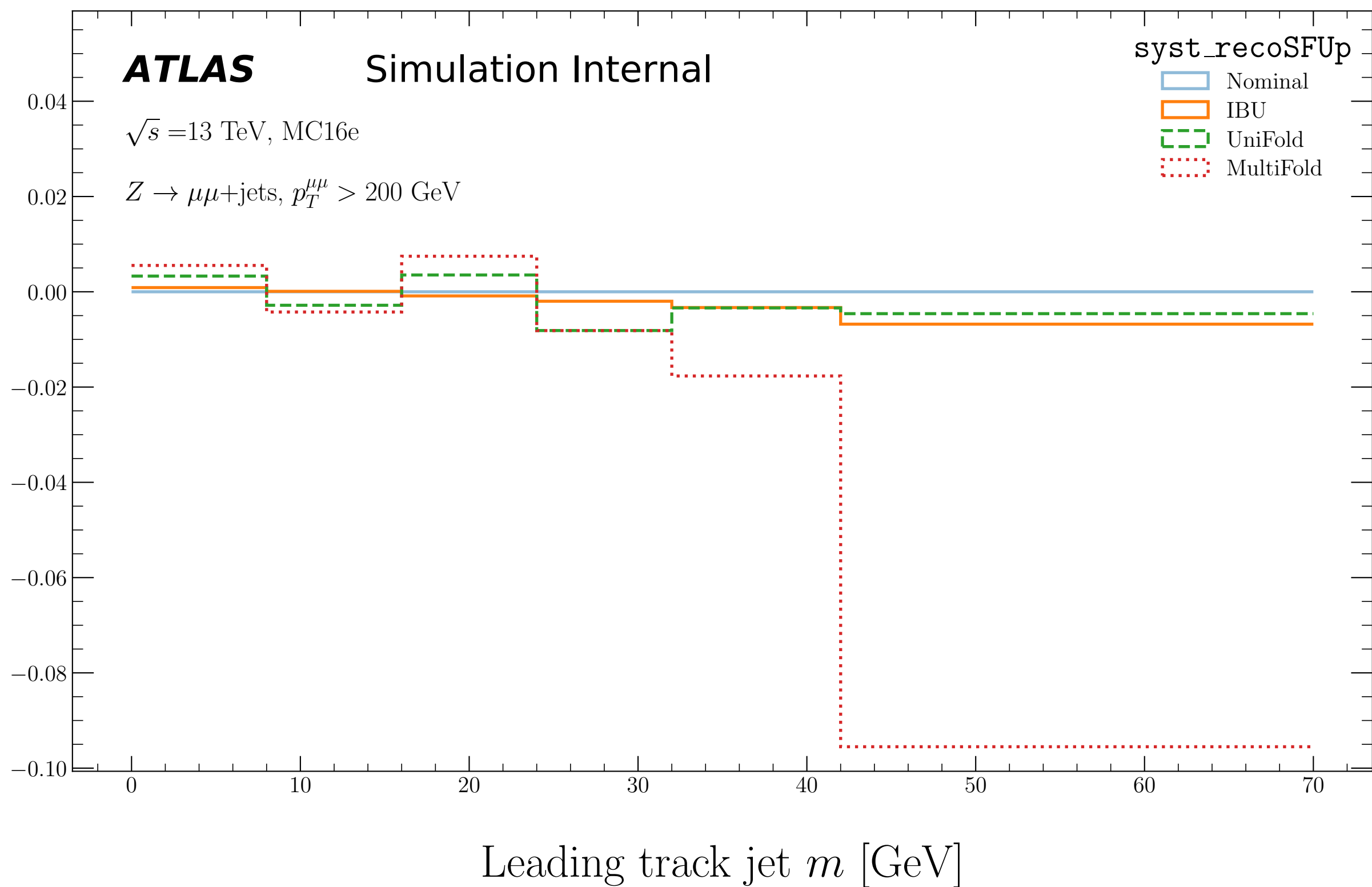
Simulation Internal

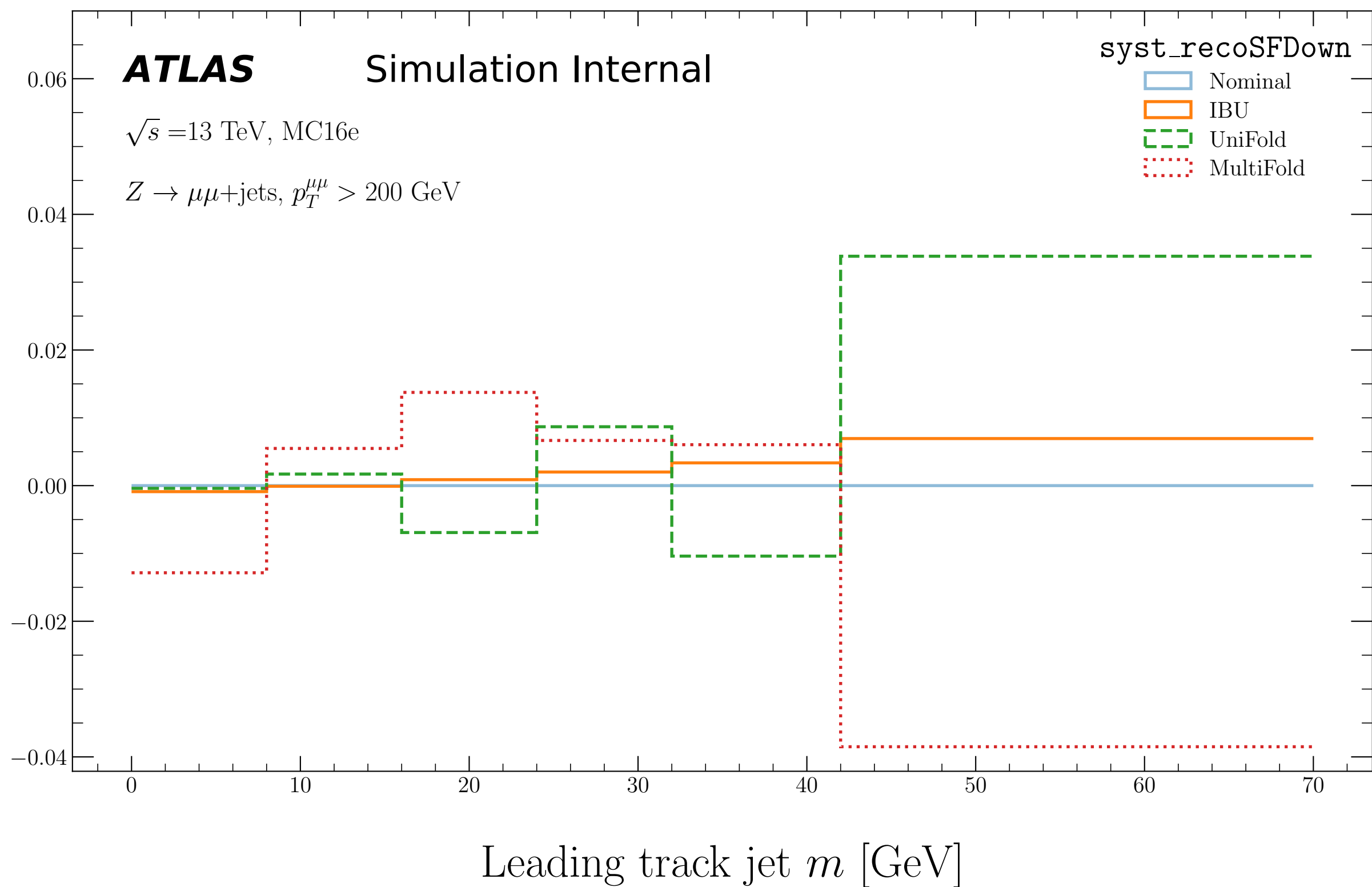
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet m [GeV]





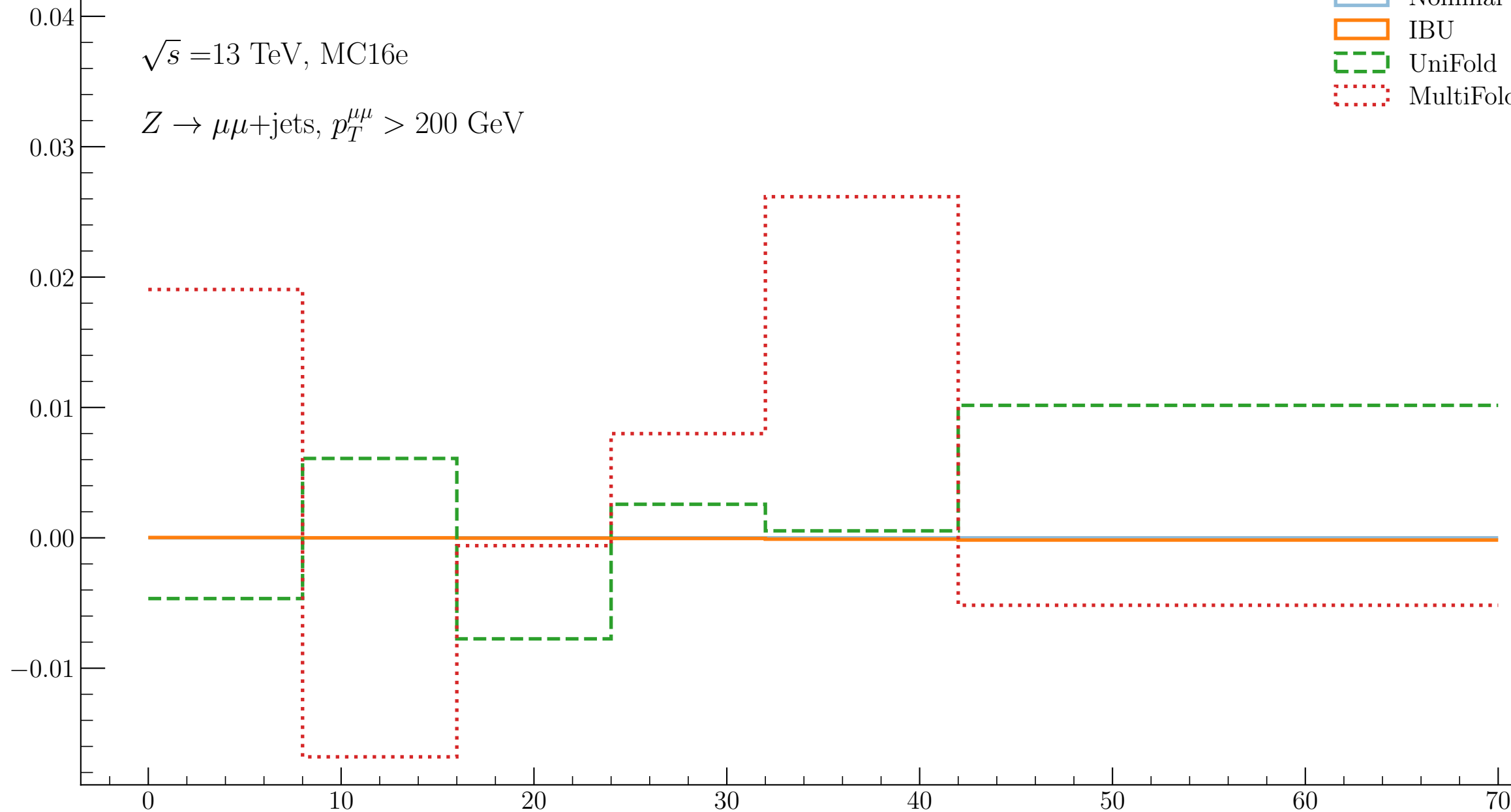
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet m [GeV]

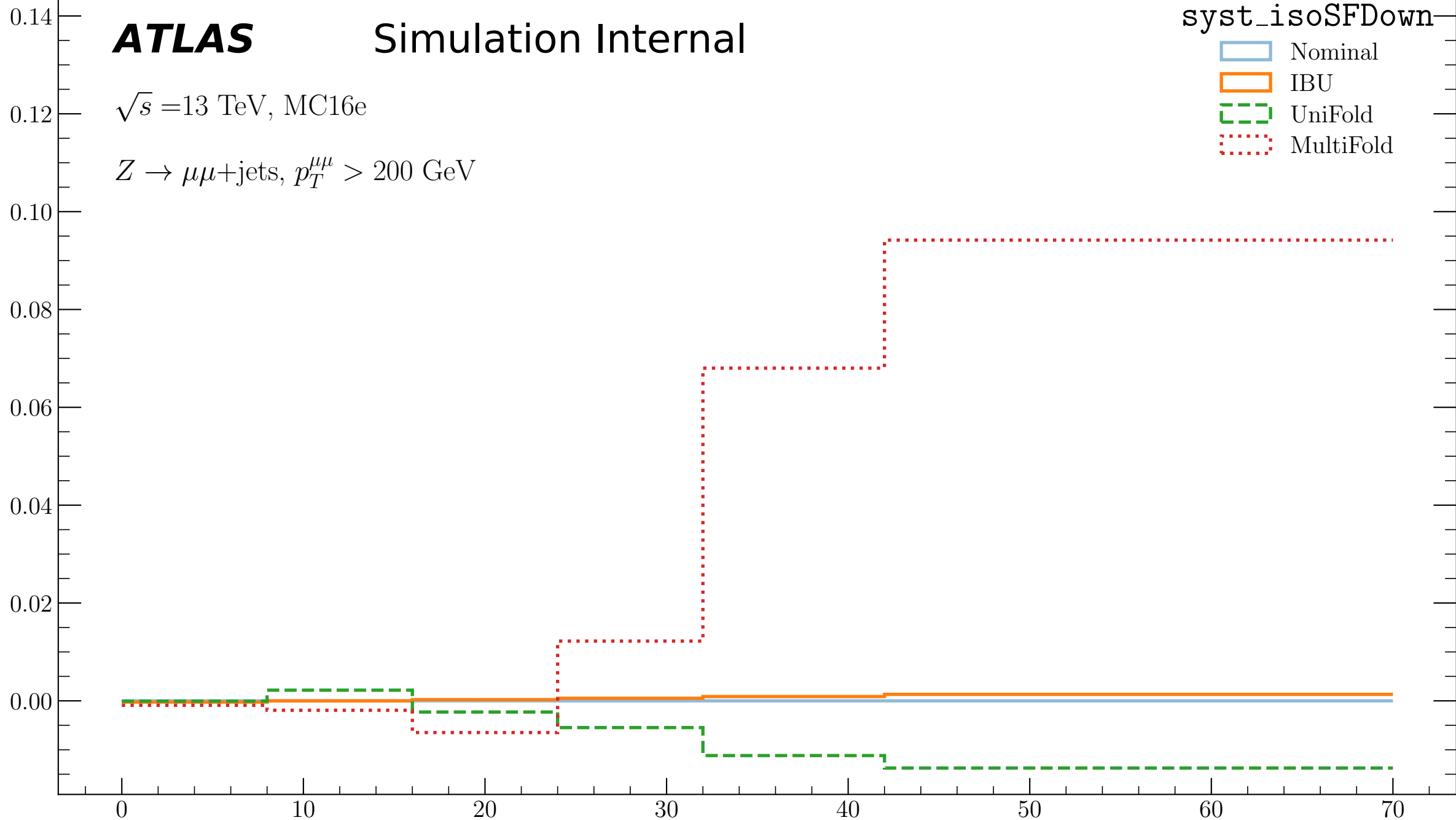
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet m [GeV]

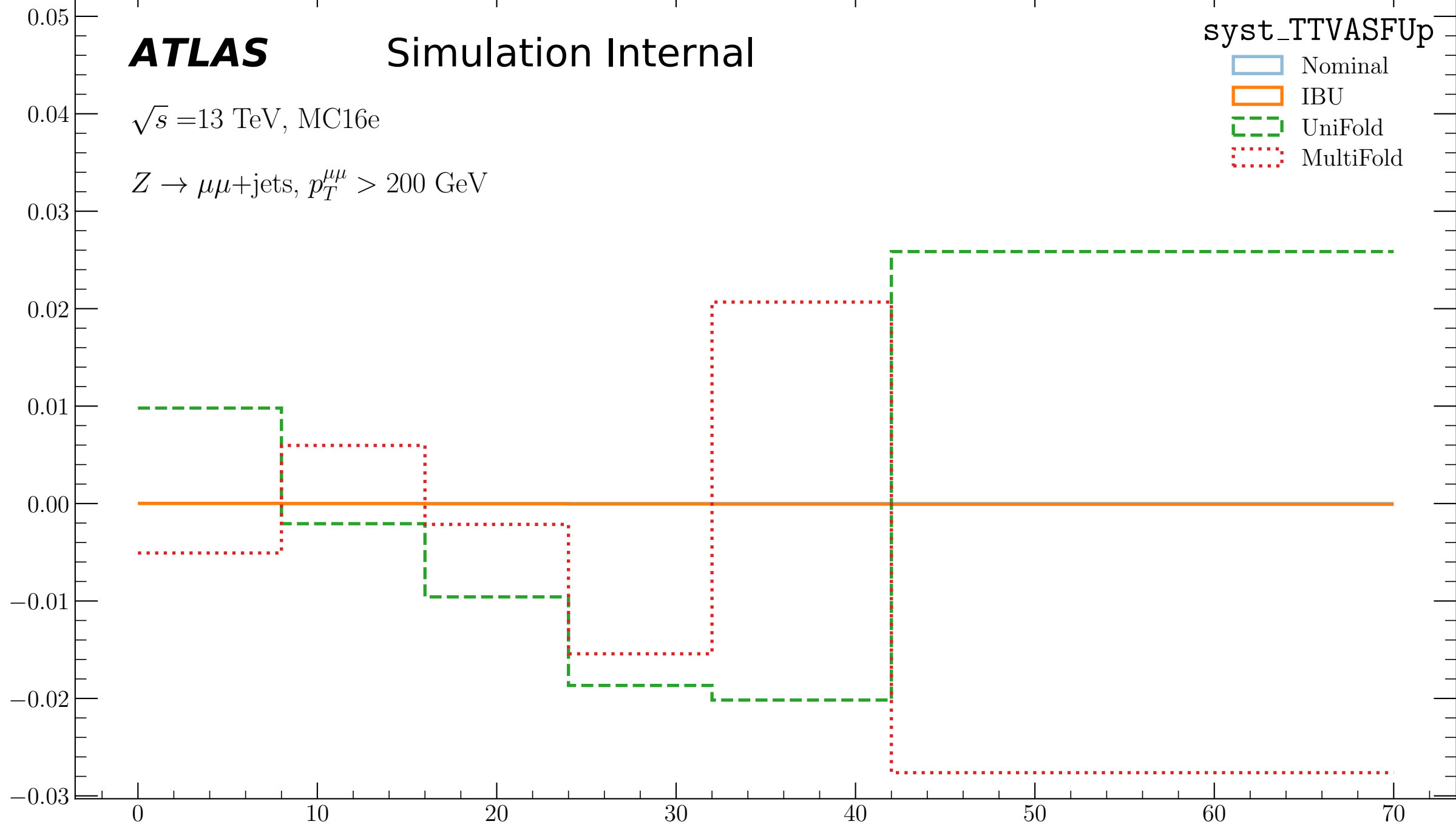
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet m [GeV]

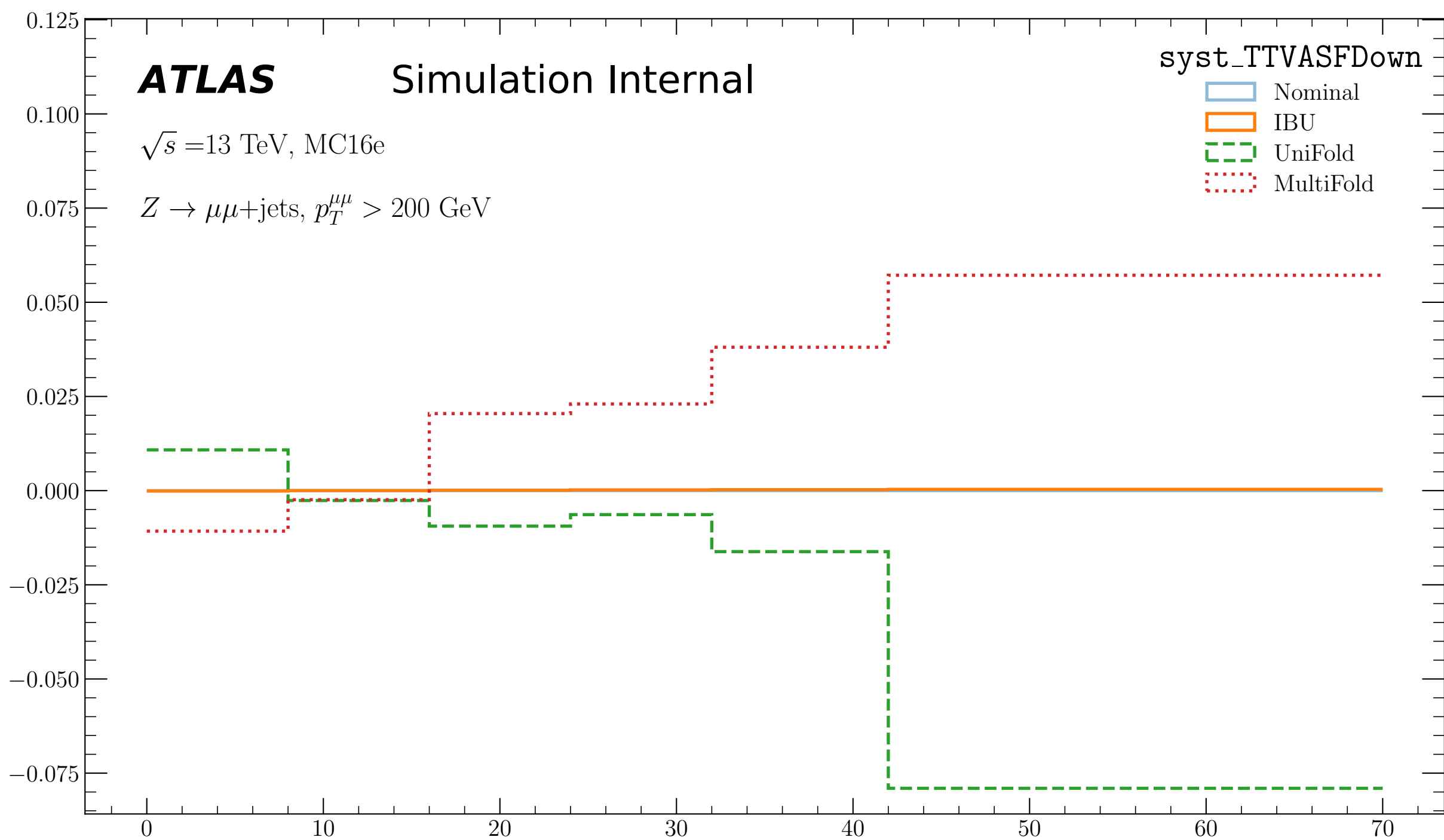
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet m [GeV]

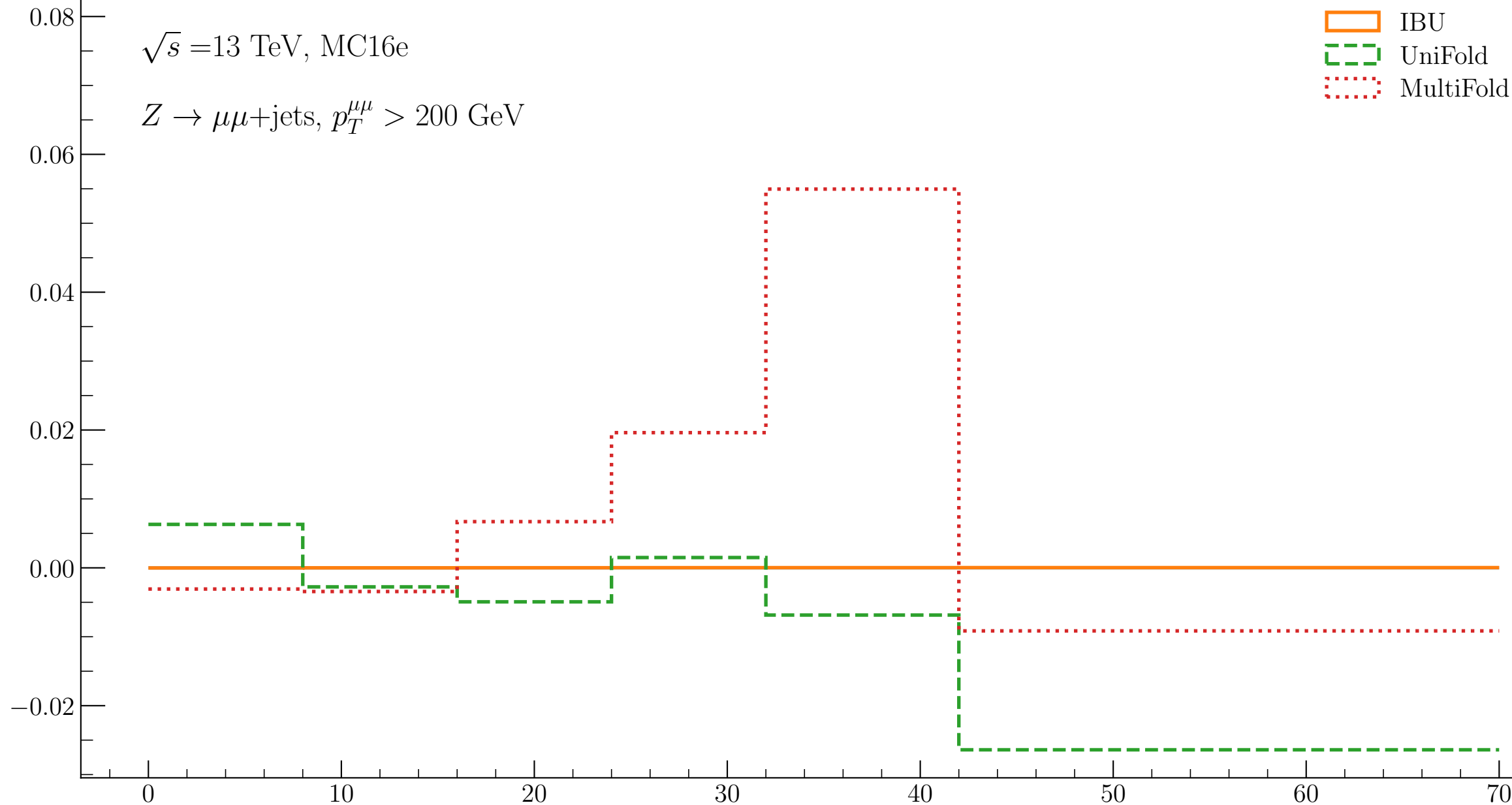
ATLAS

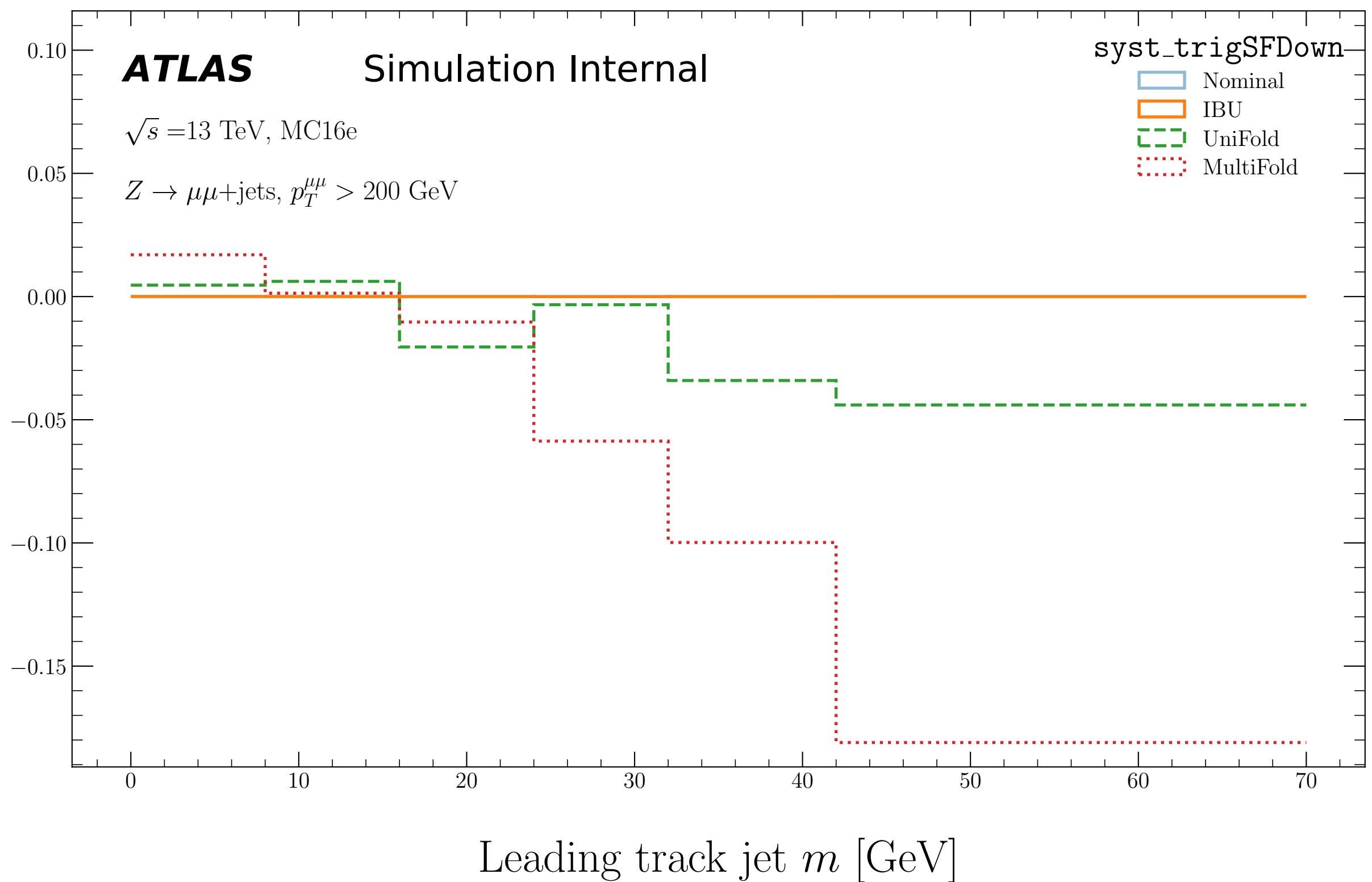
Simulation Internal

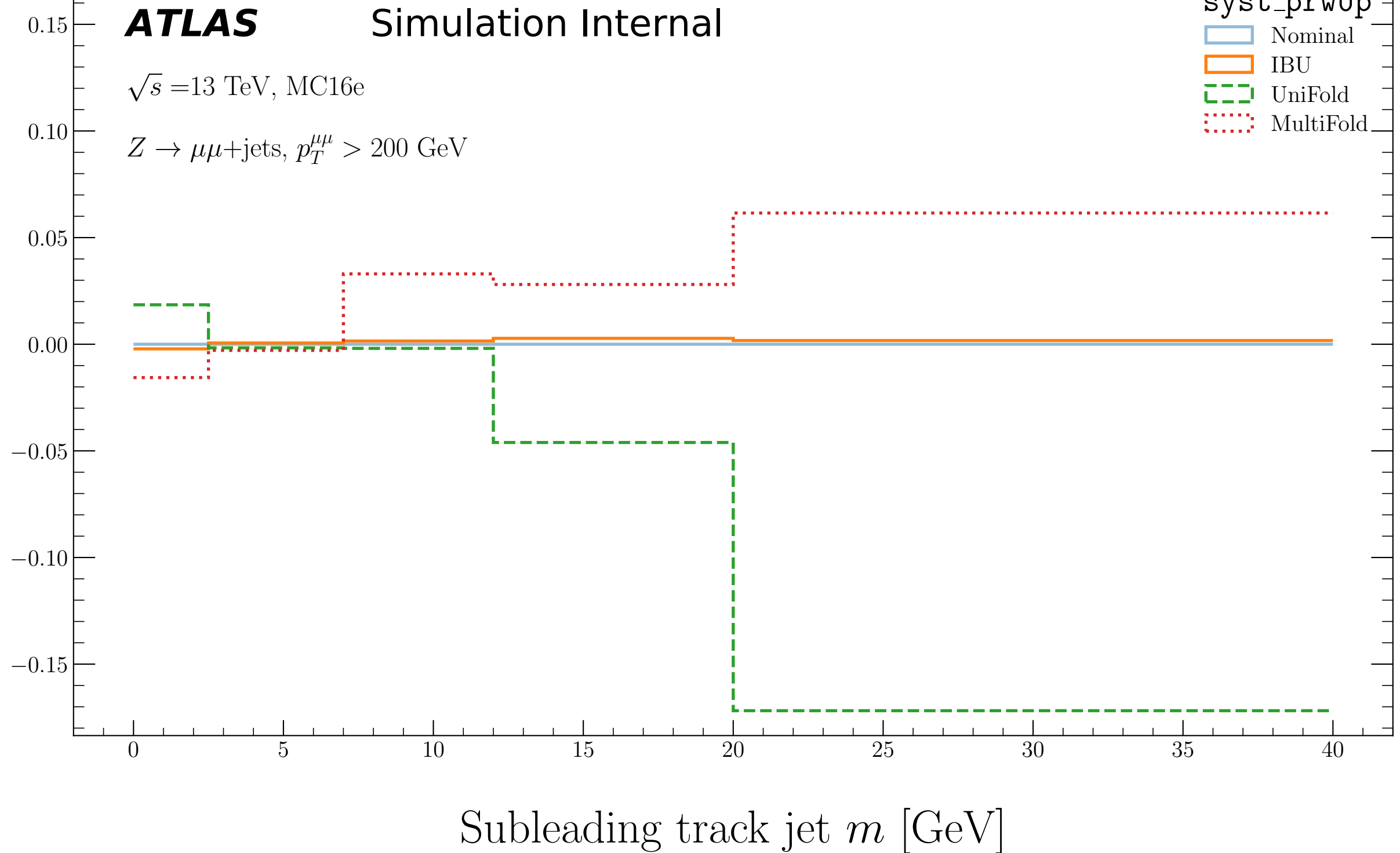
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

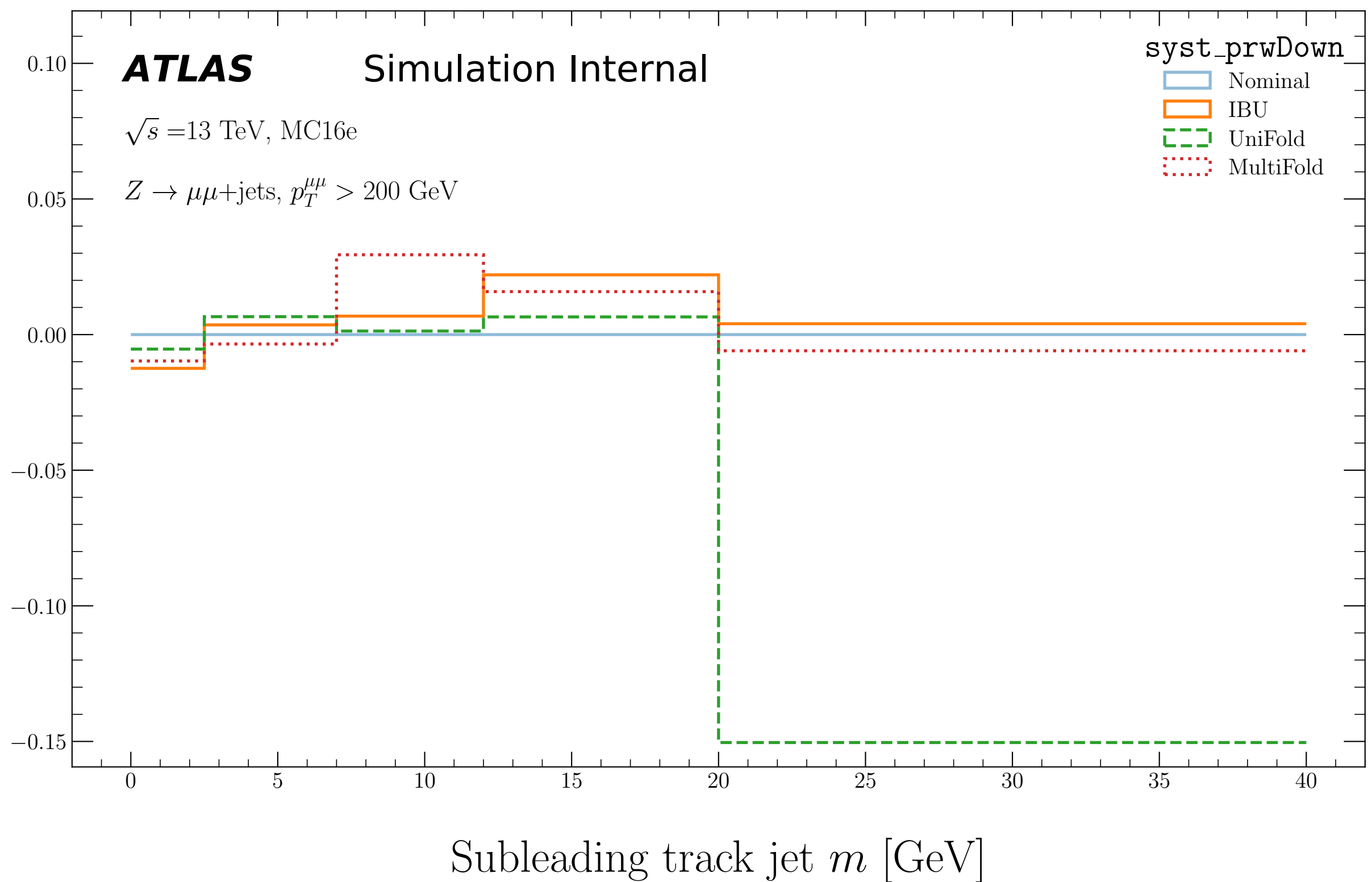
syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet m [GeV]







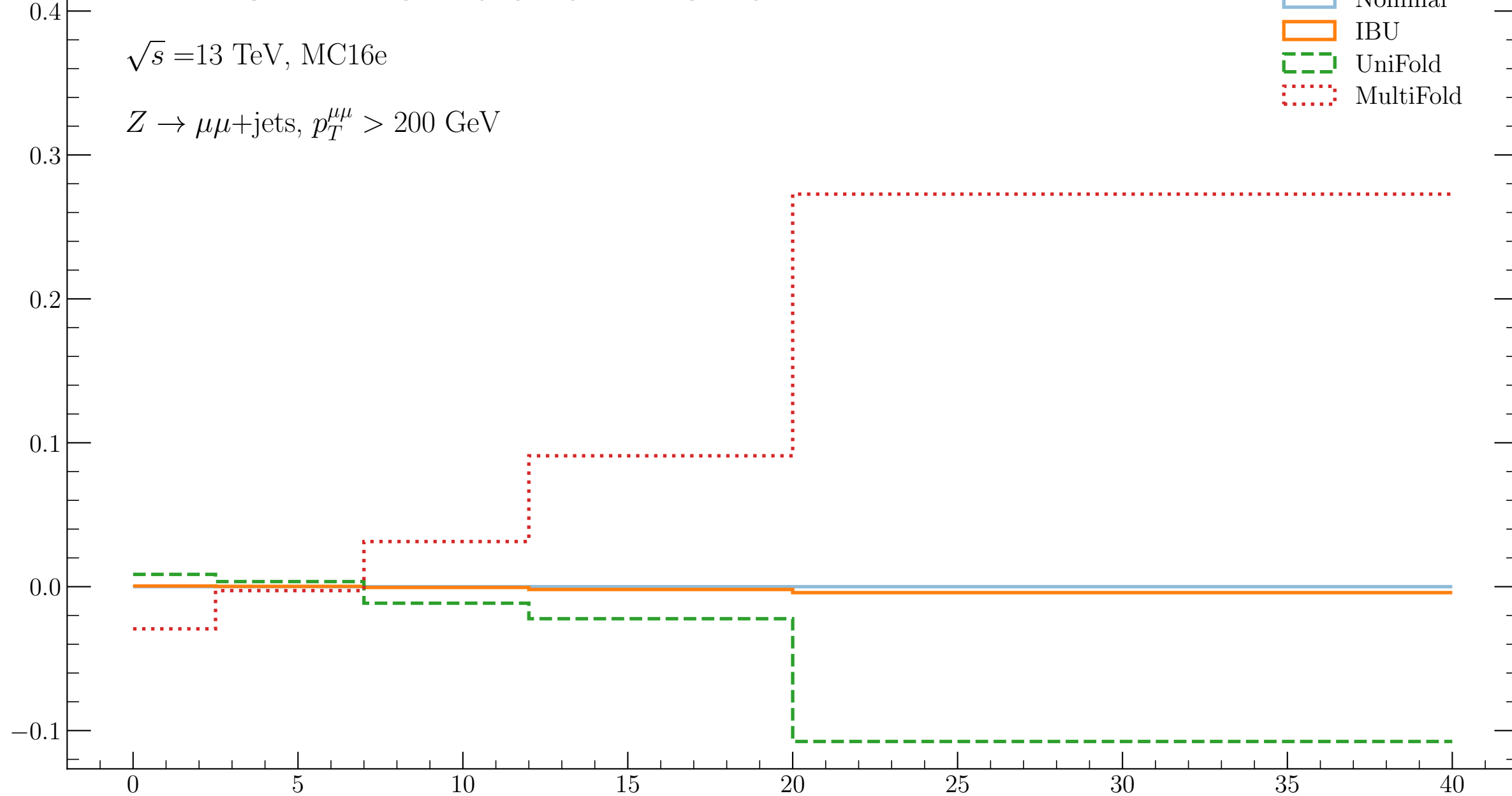
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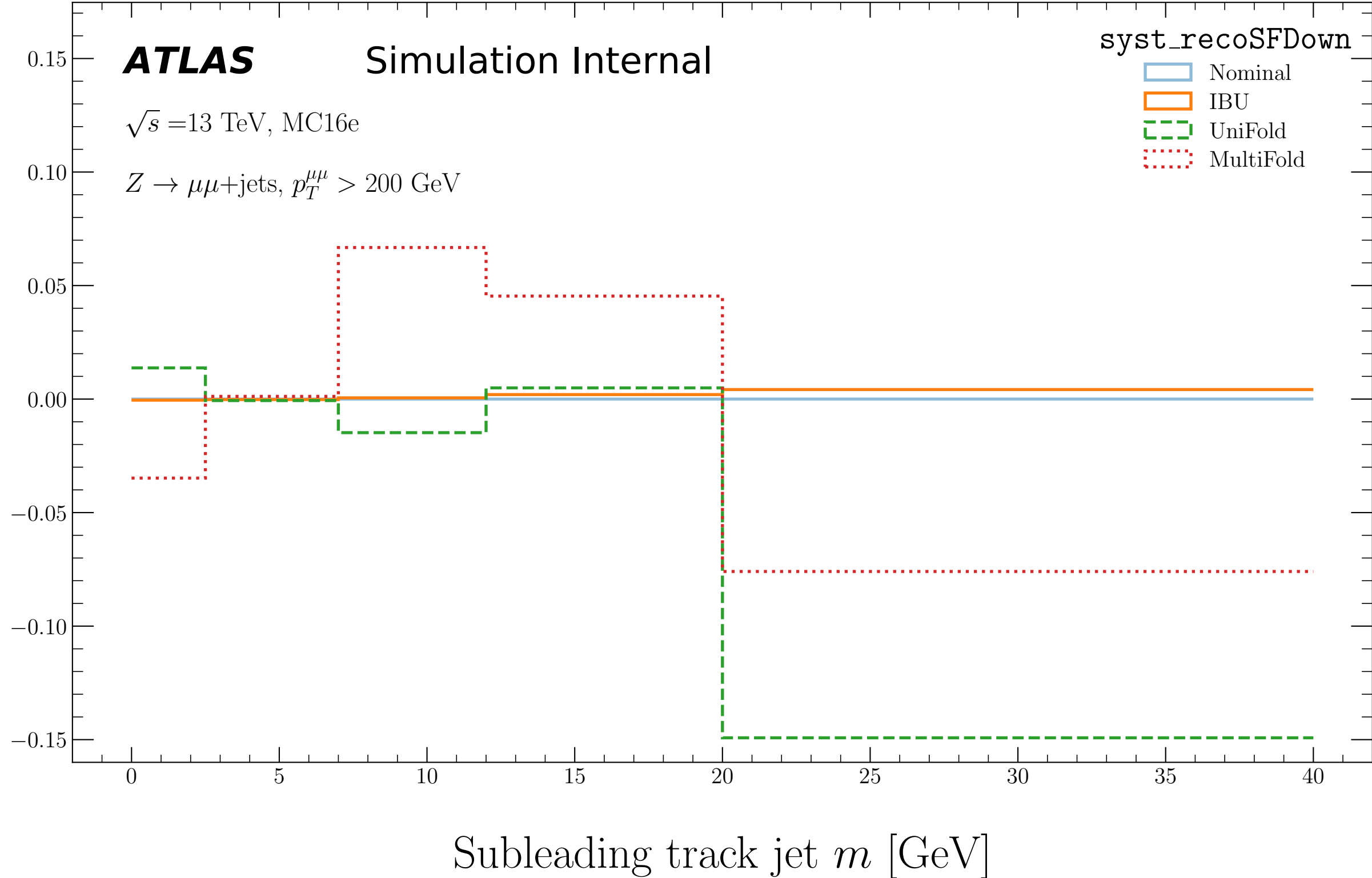
Simulation Internal

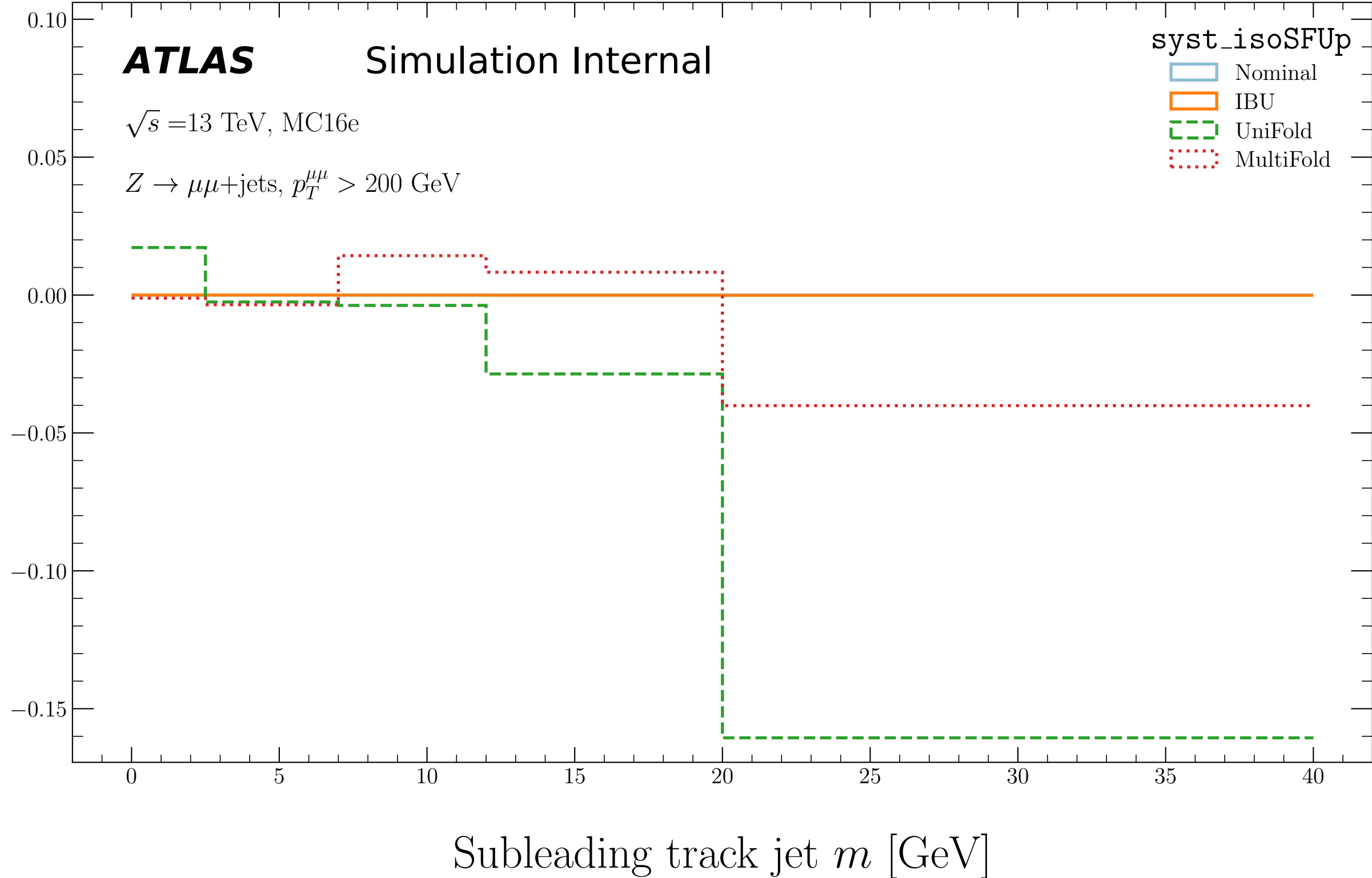
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet m [GeV]





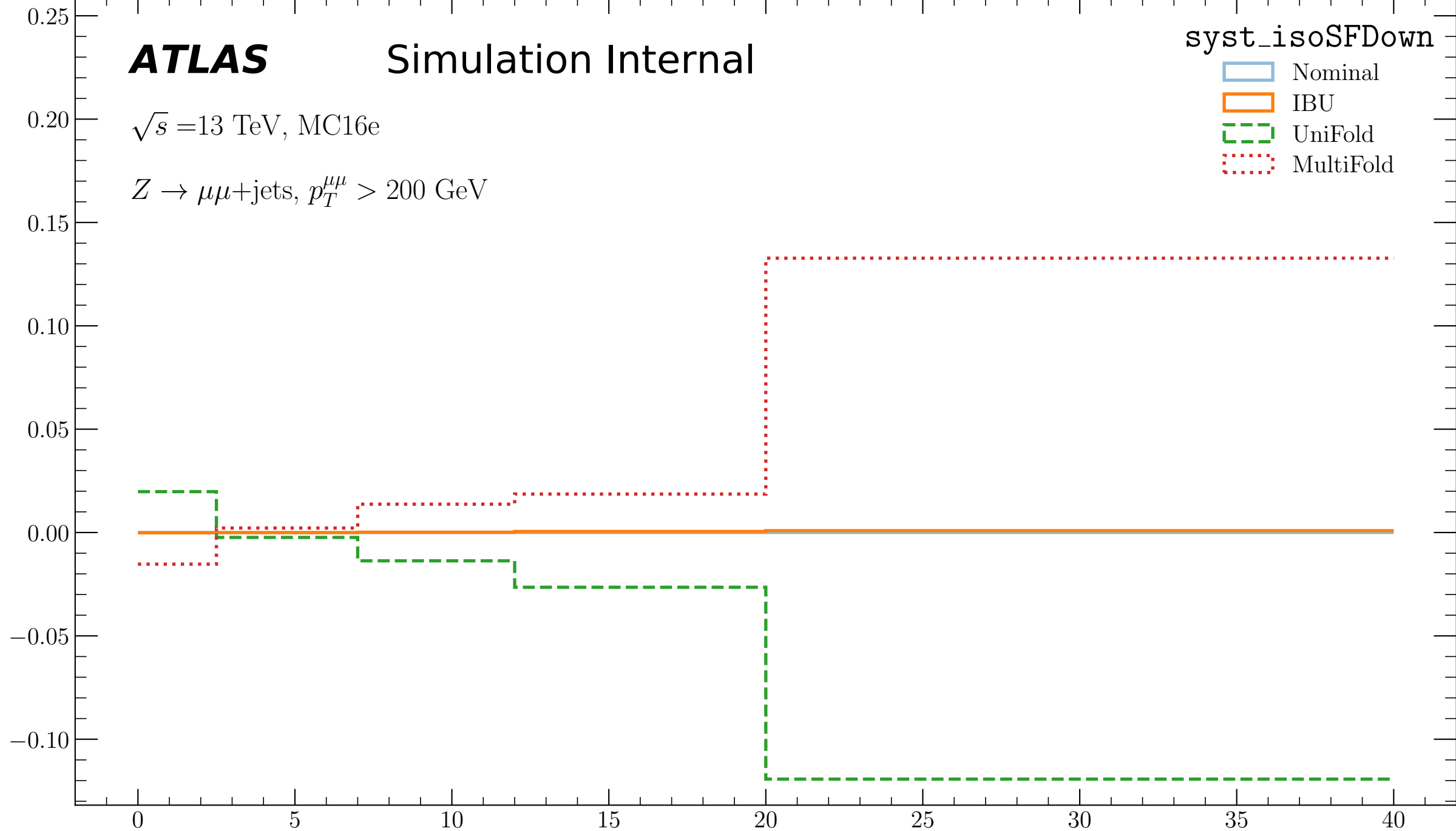
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet m [GeV]

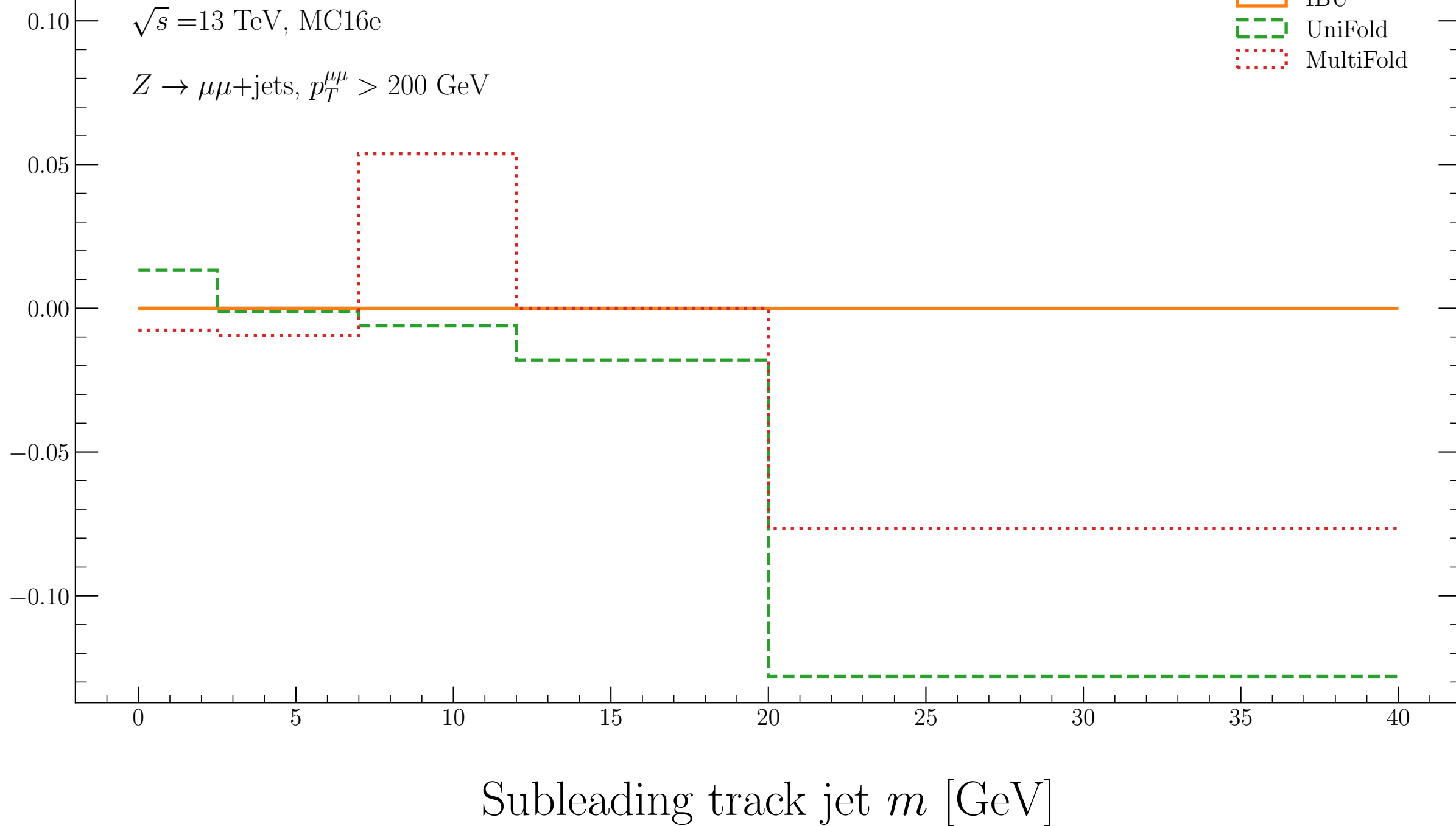
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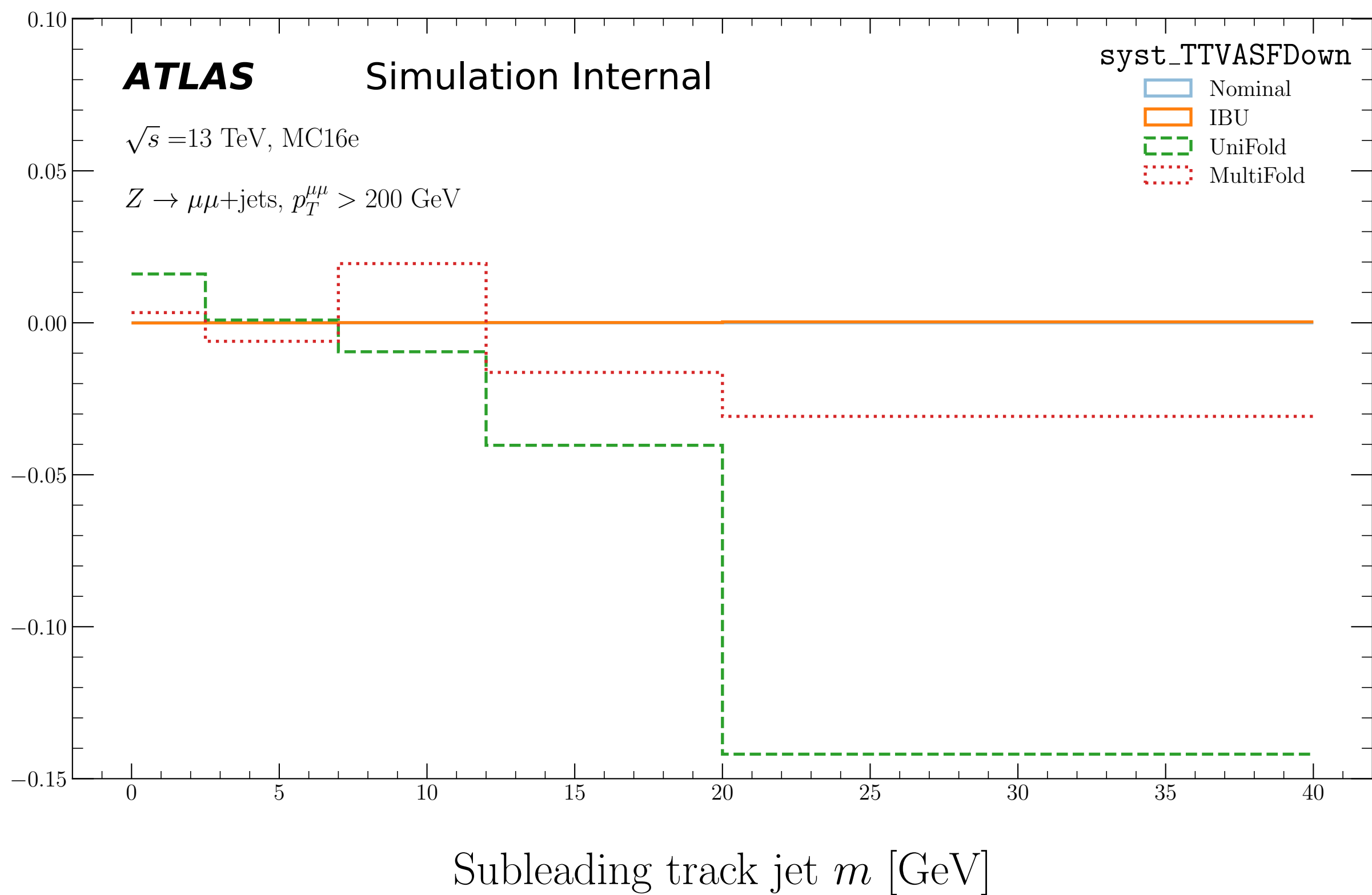
Simulation Internal

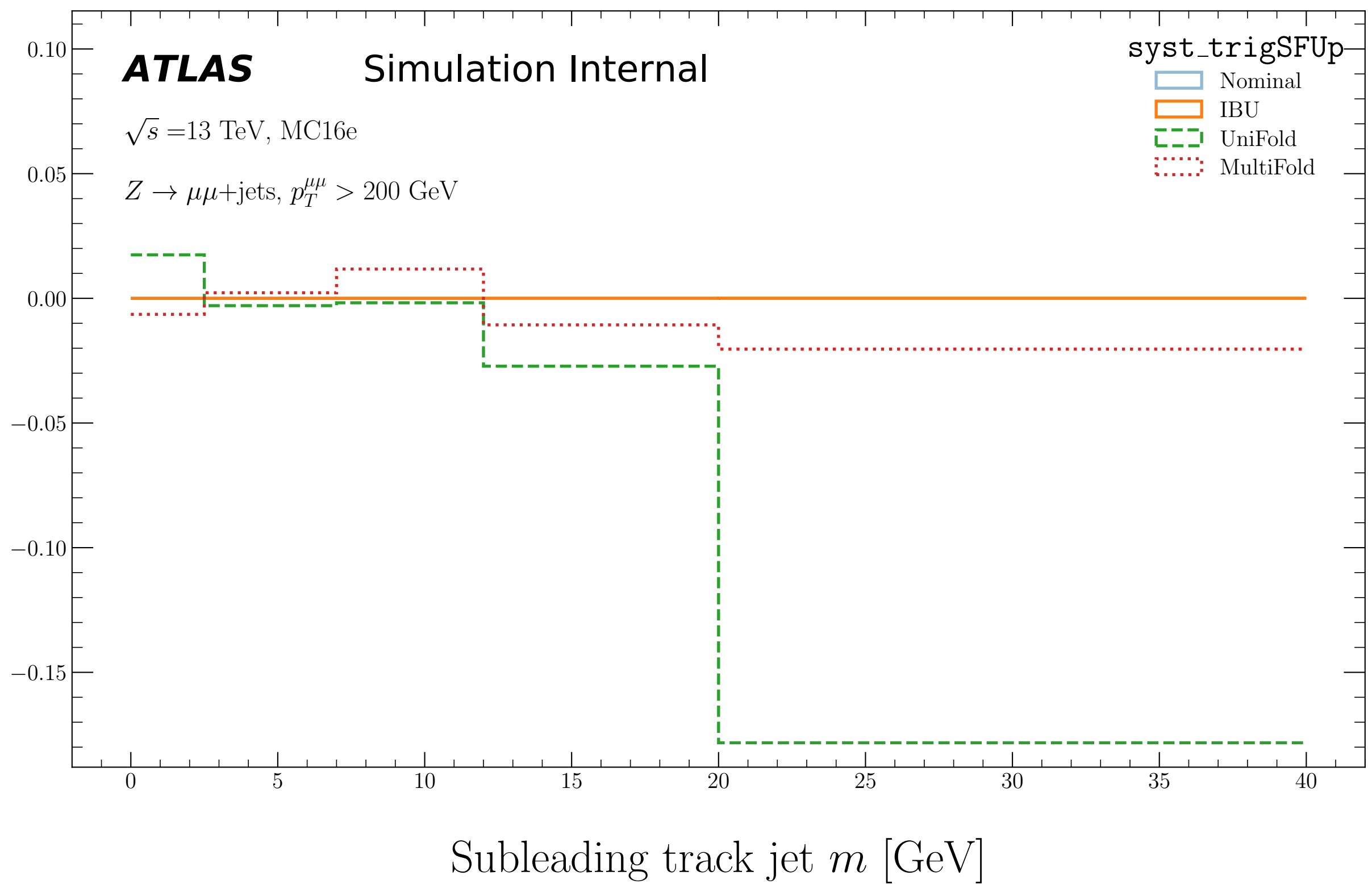
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

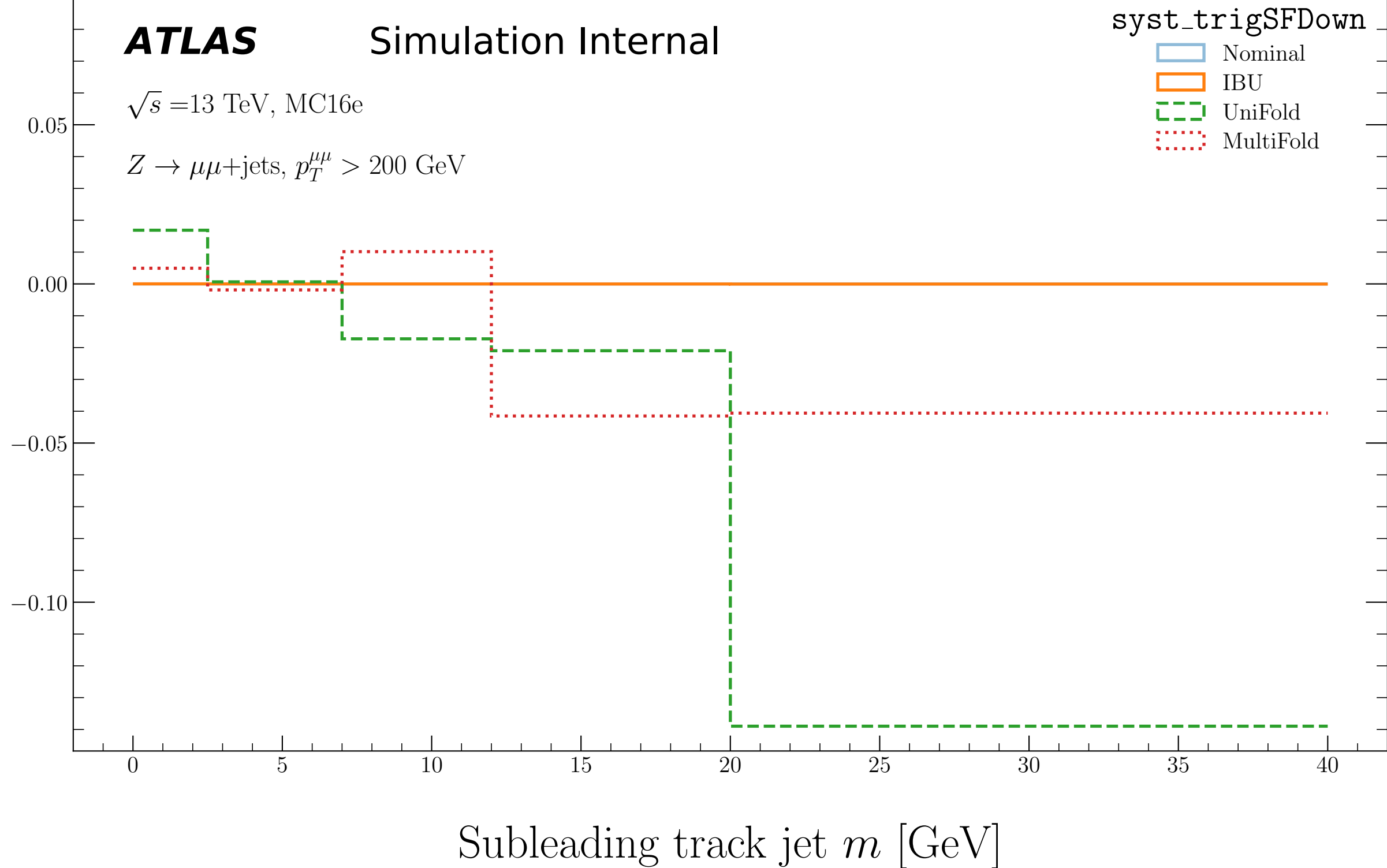


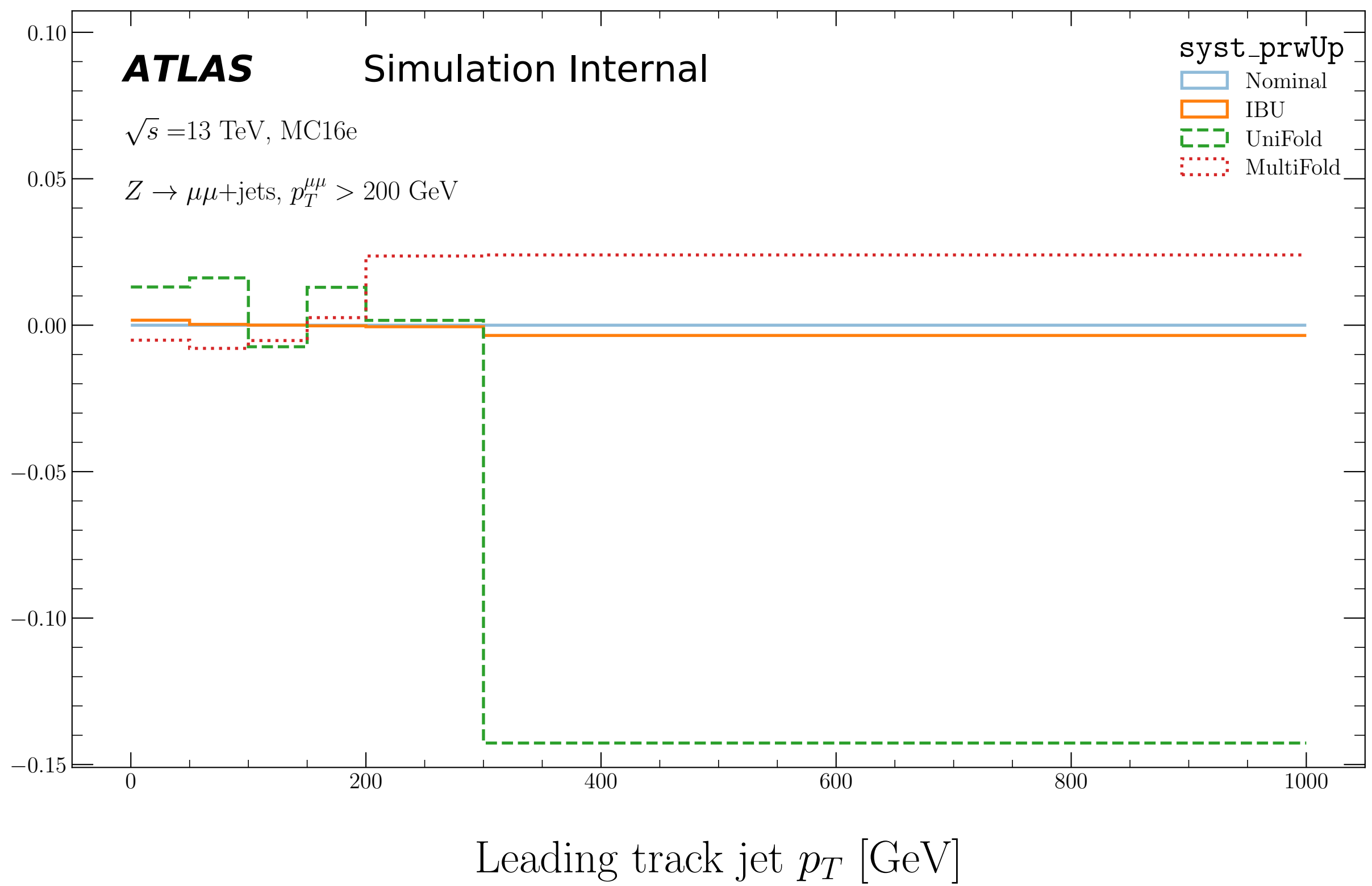




ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV



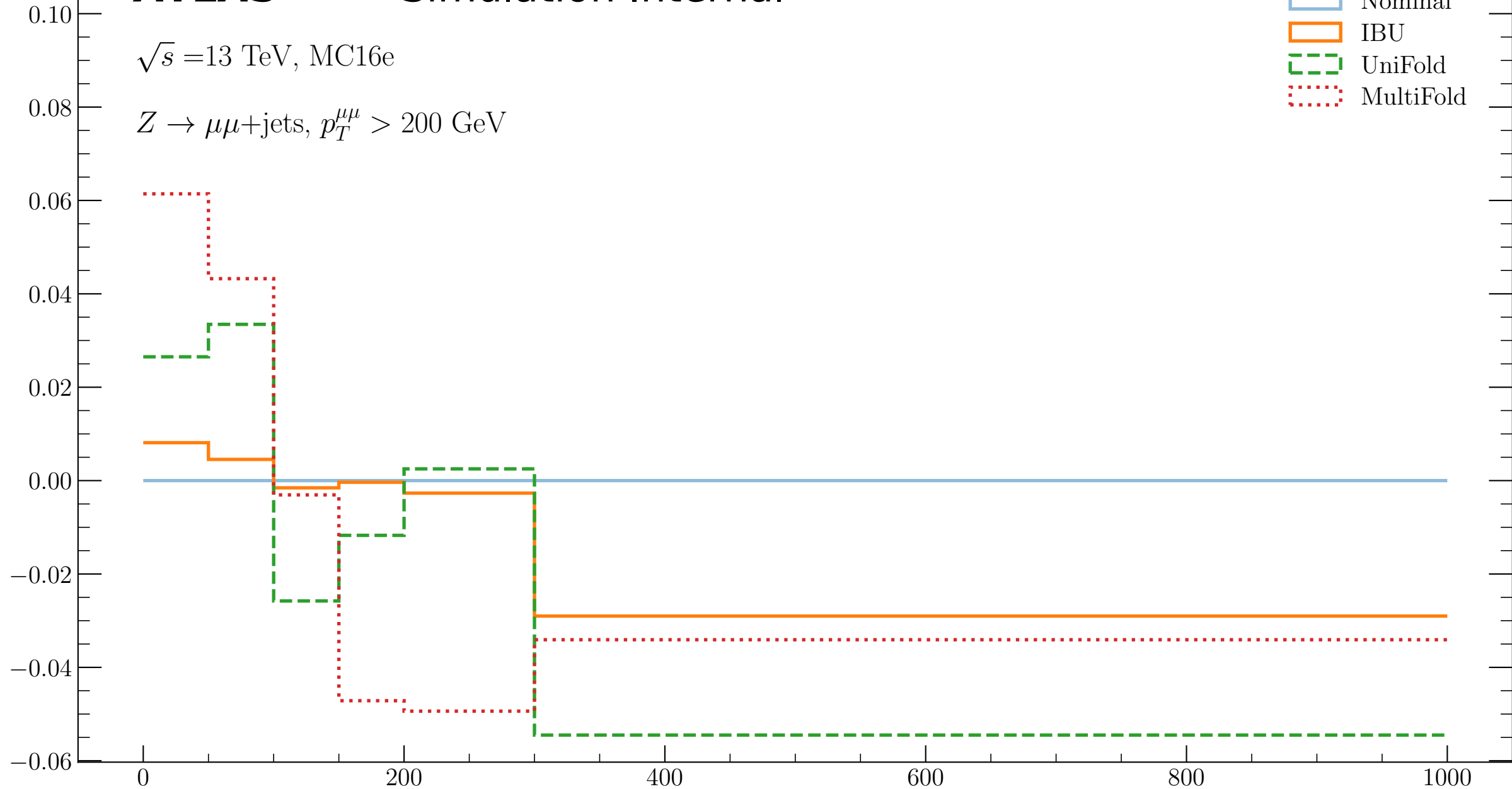
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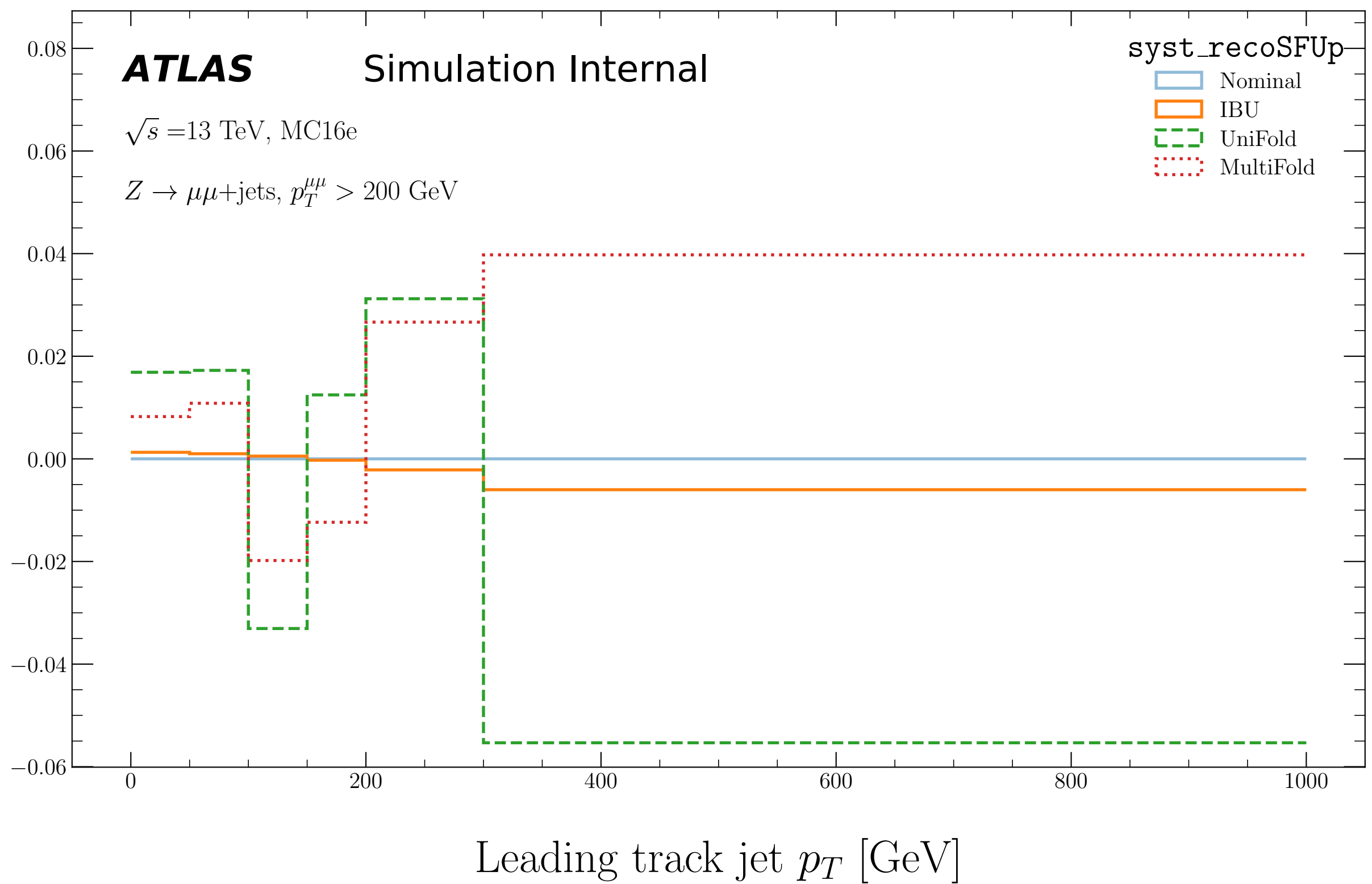
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet p_T [GeV]



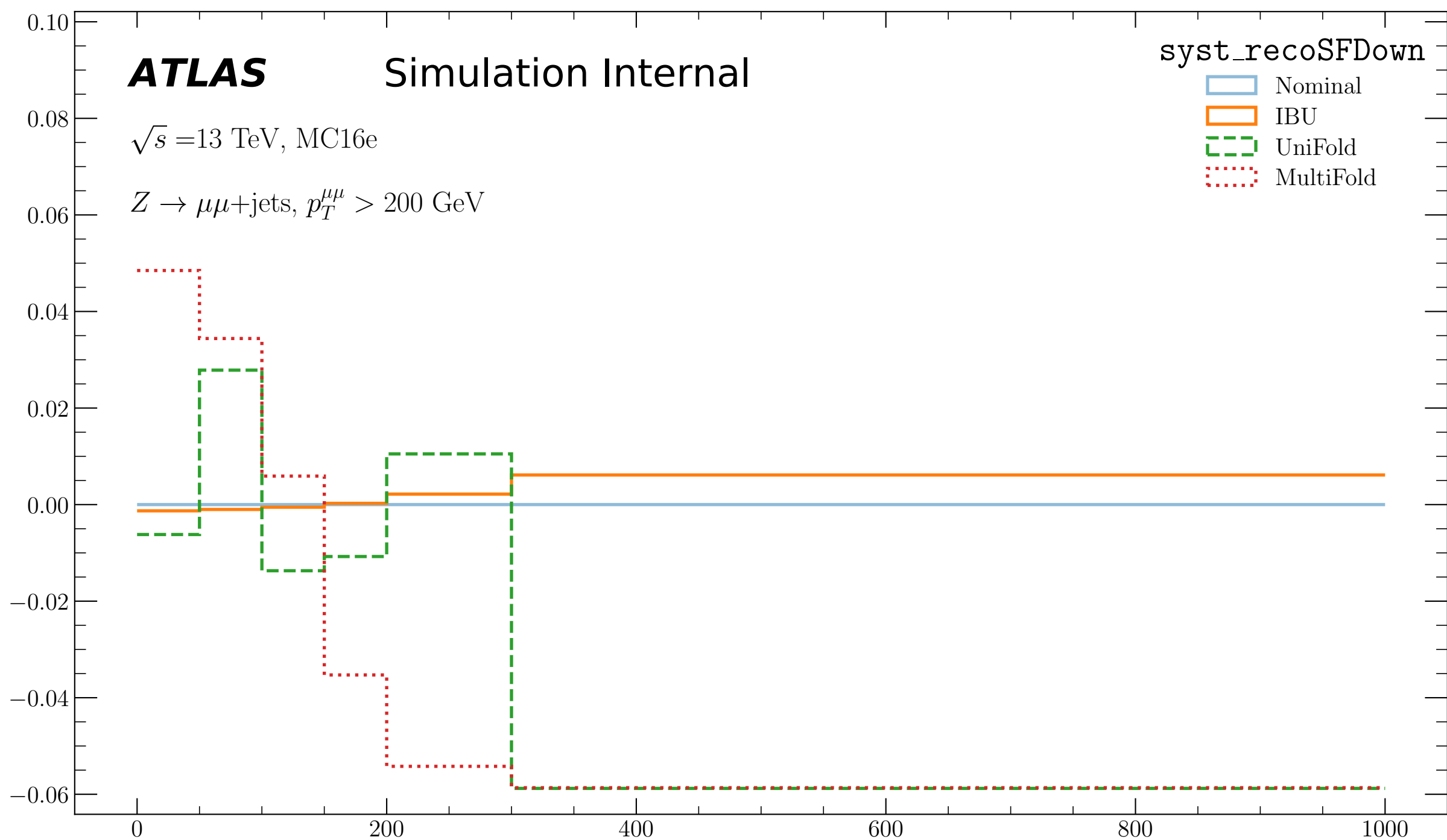
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet p_T [GeV]

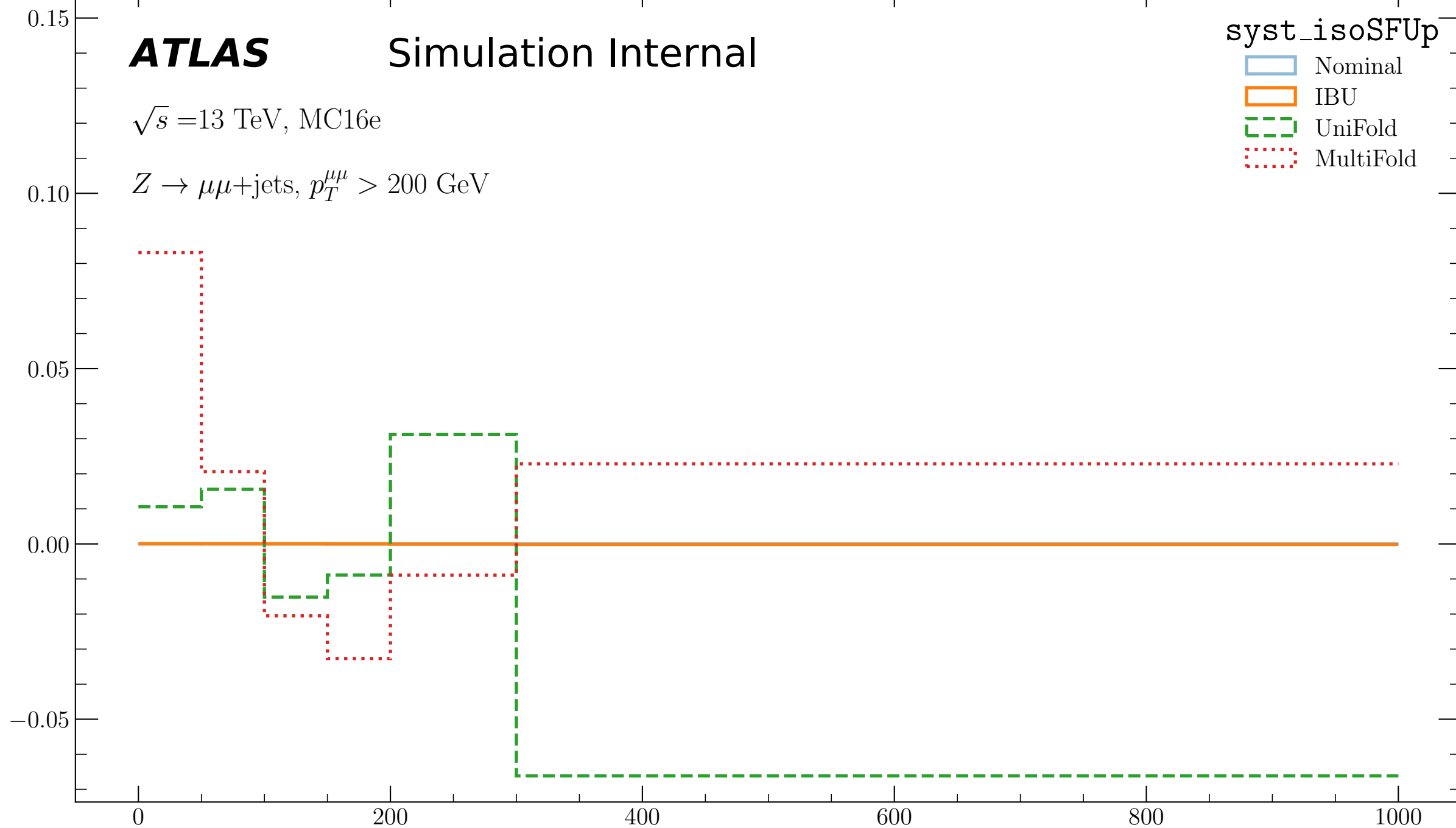
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet p_T [GeV]

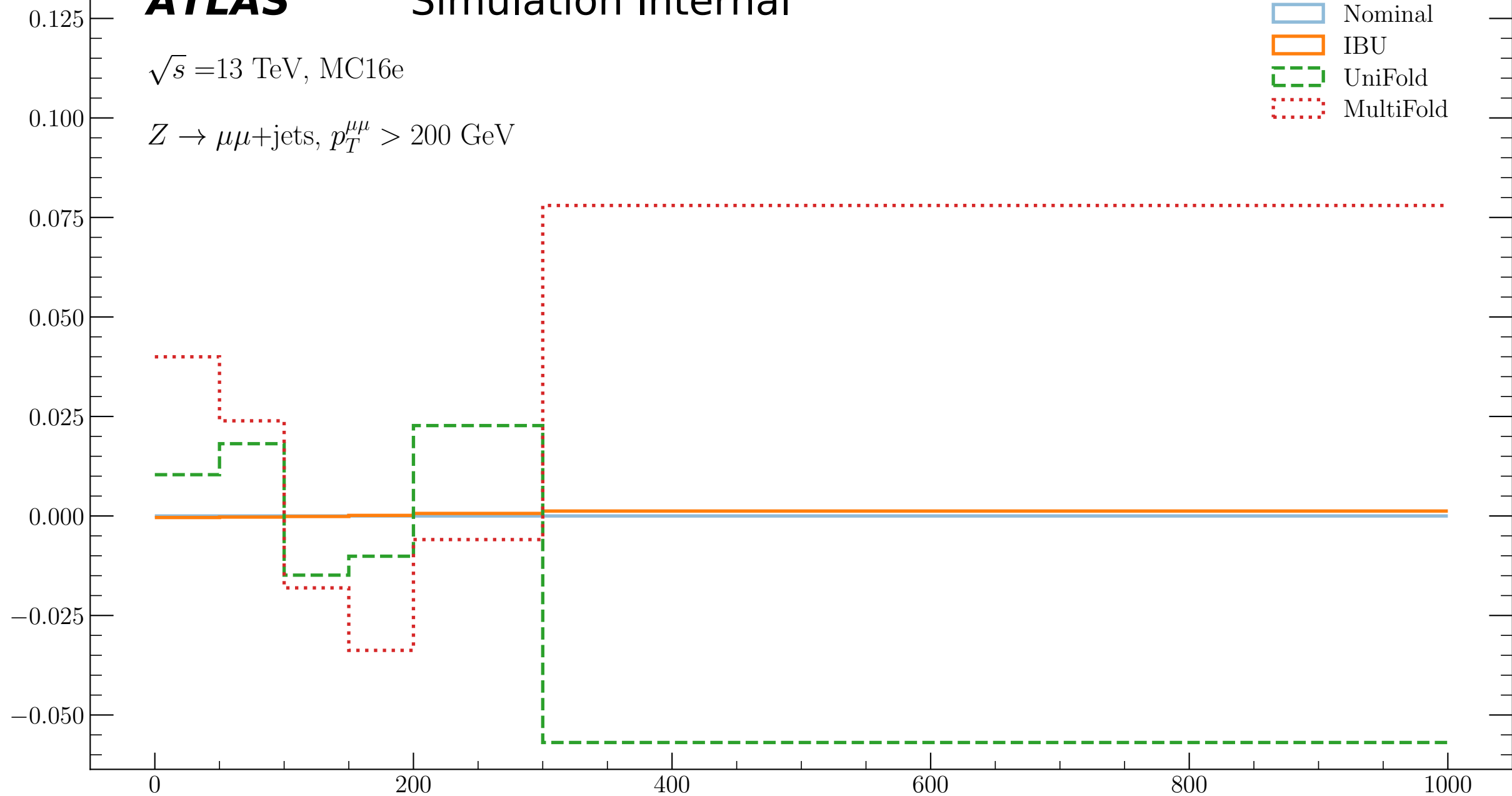
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet p_T [GeV]

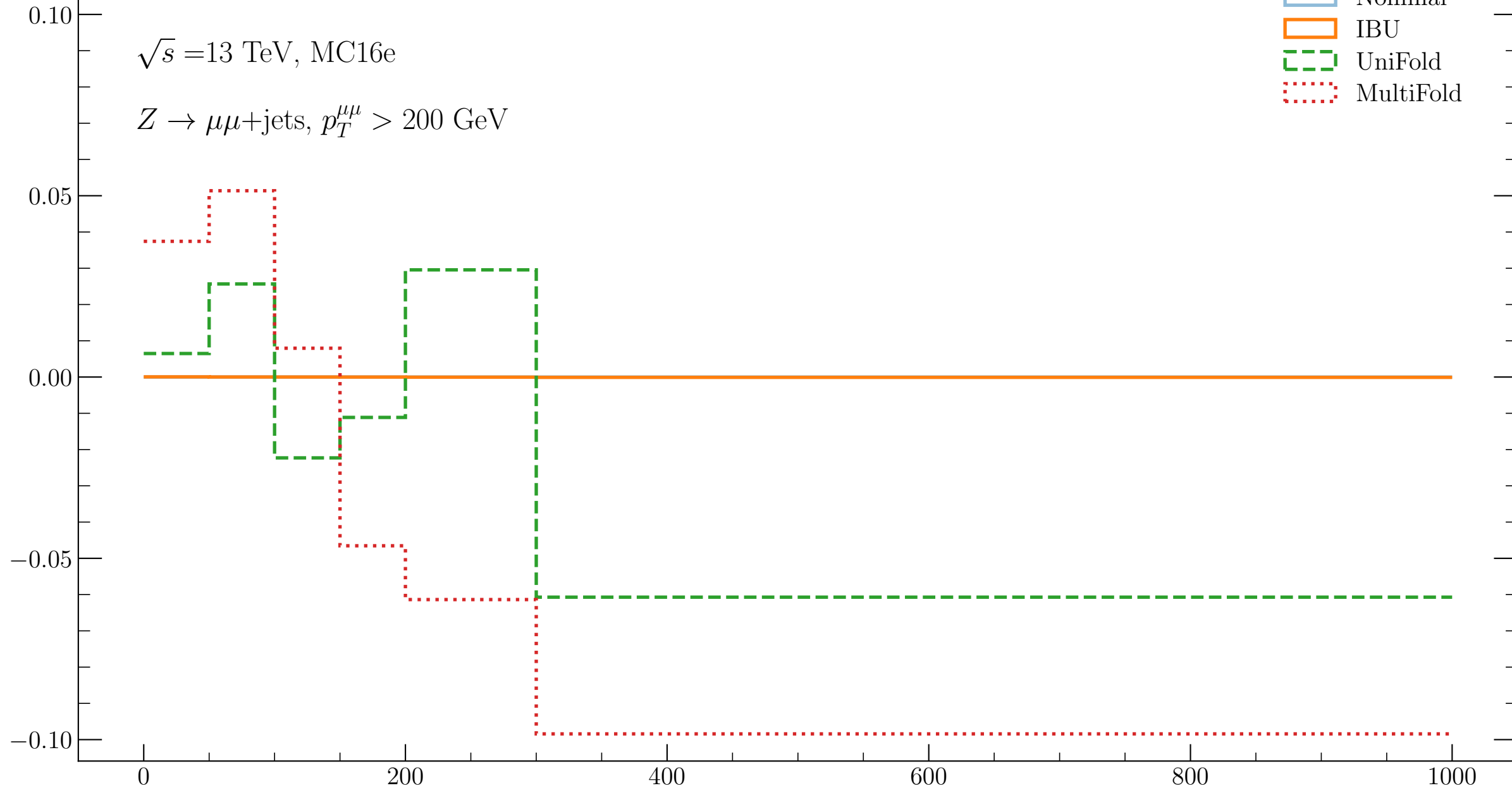
ATLAS

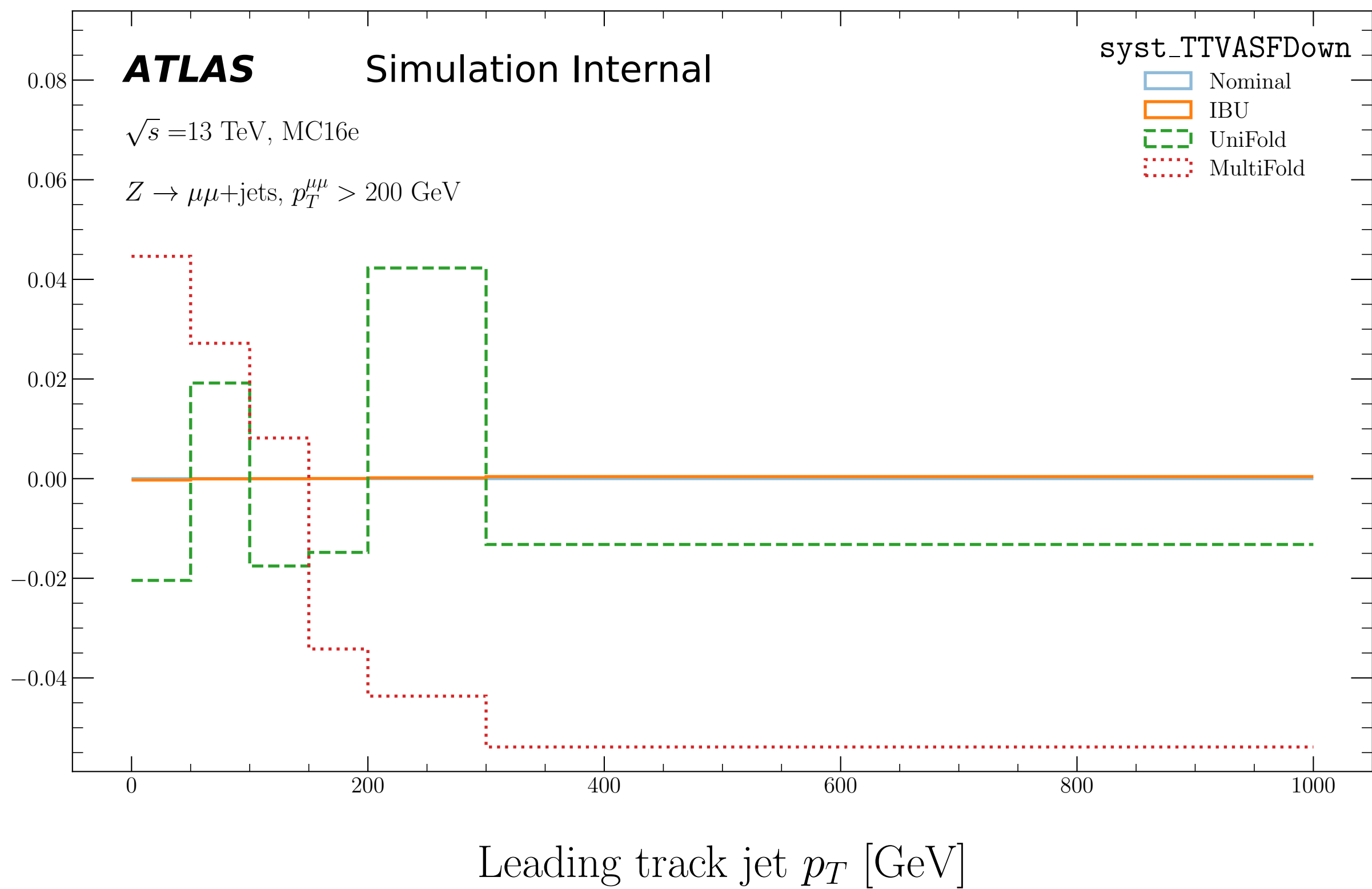
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet p_T [GeV]



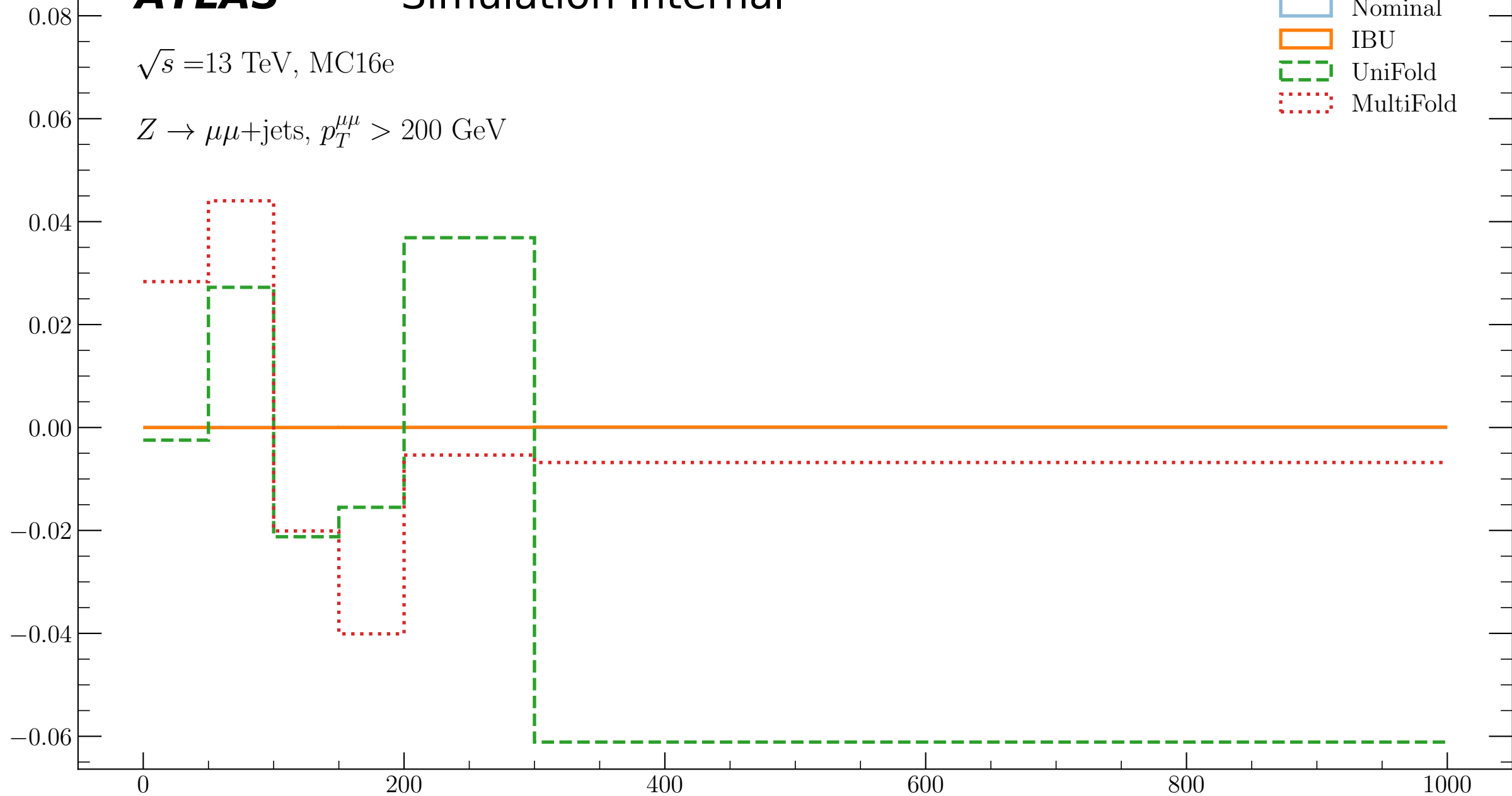
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

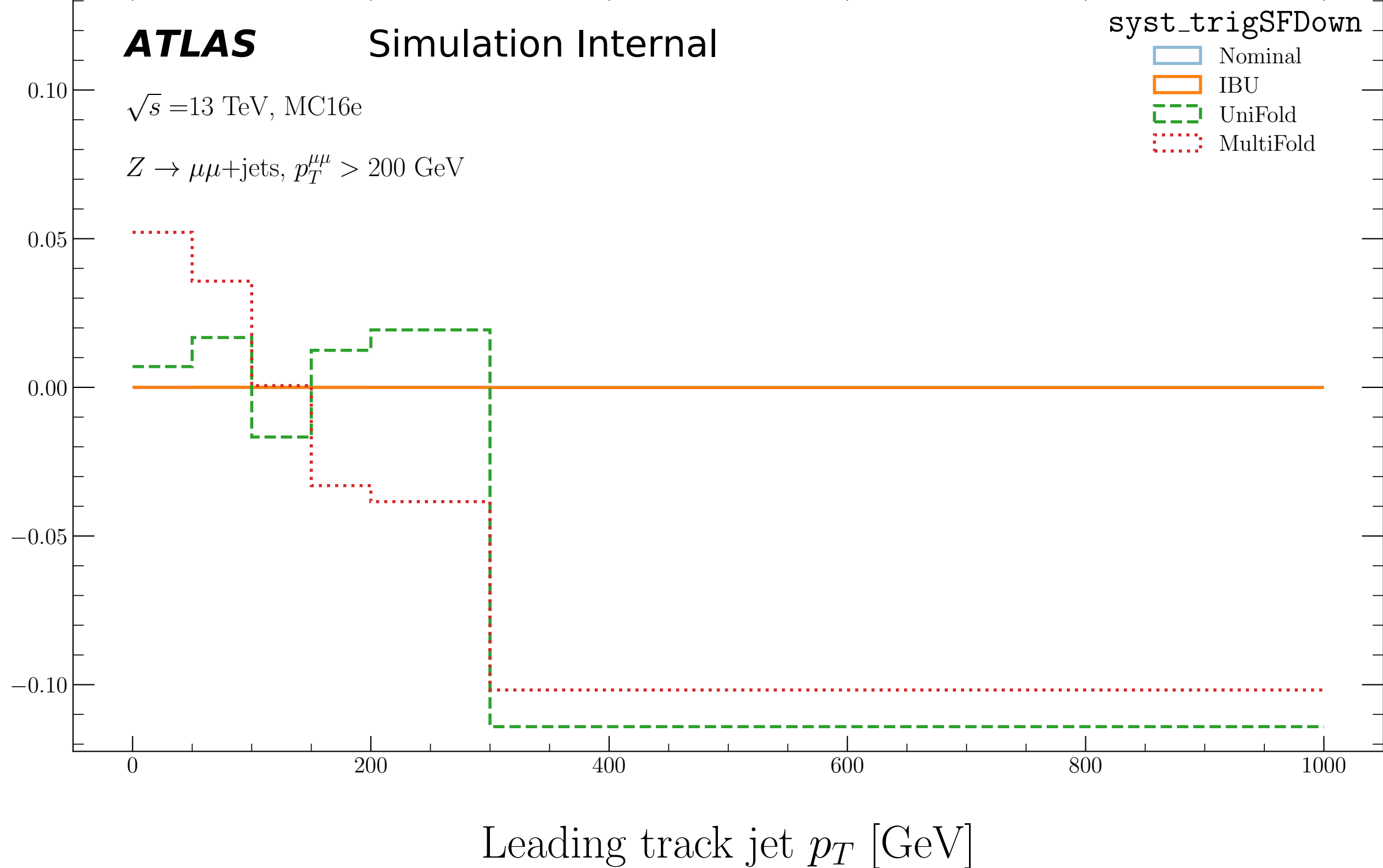
syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet p_T [GeV]

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

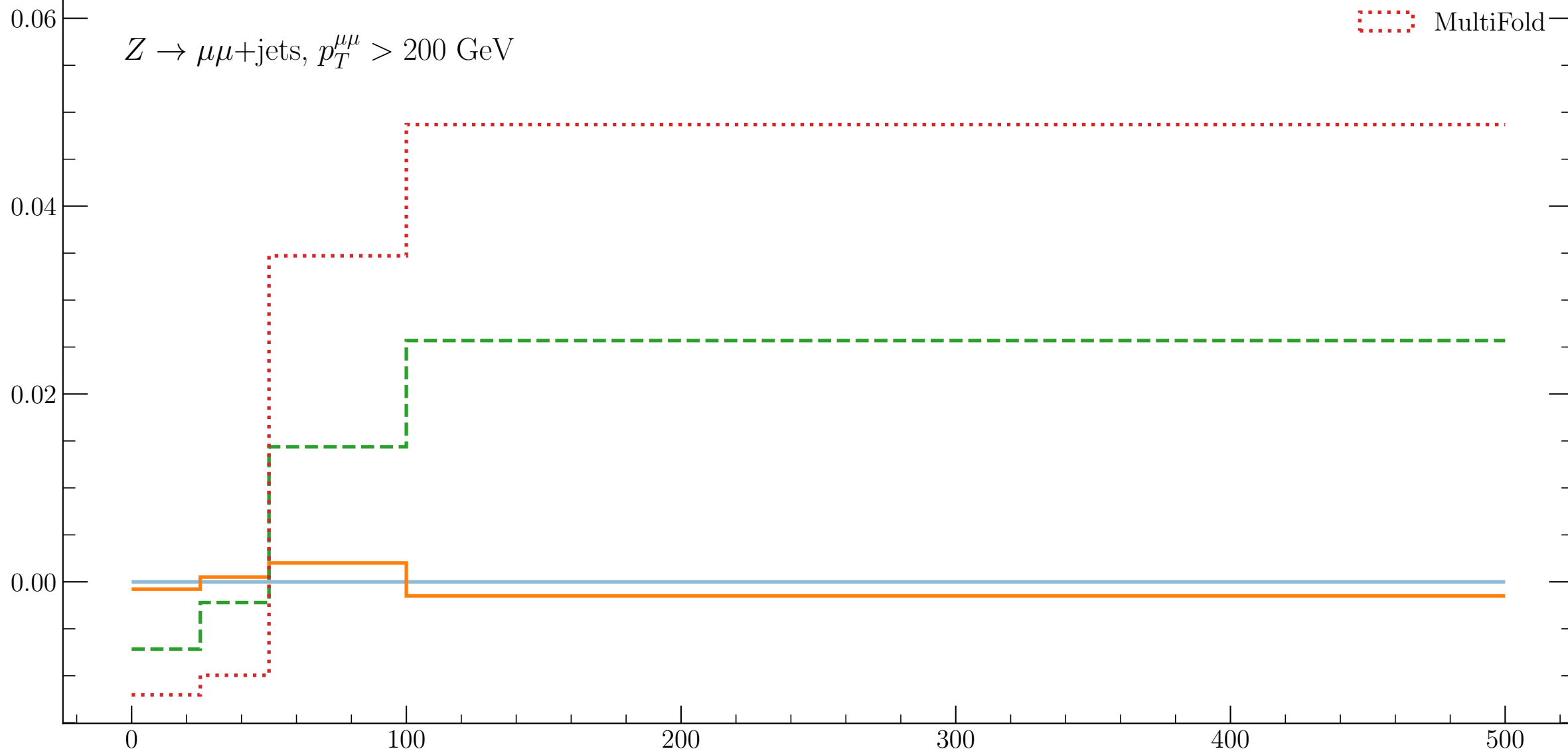
syst_prwUp

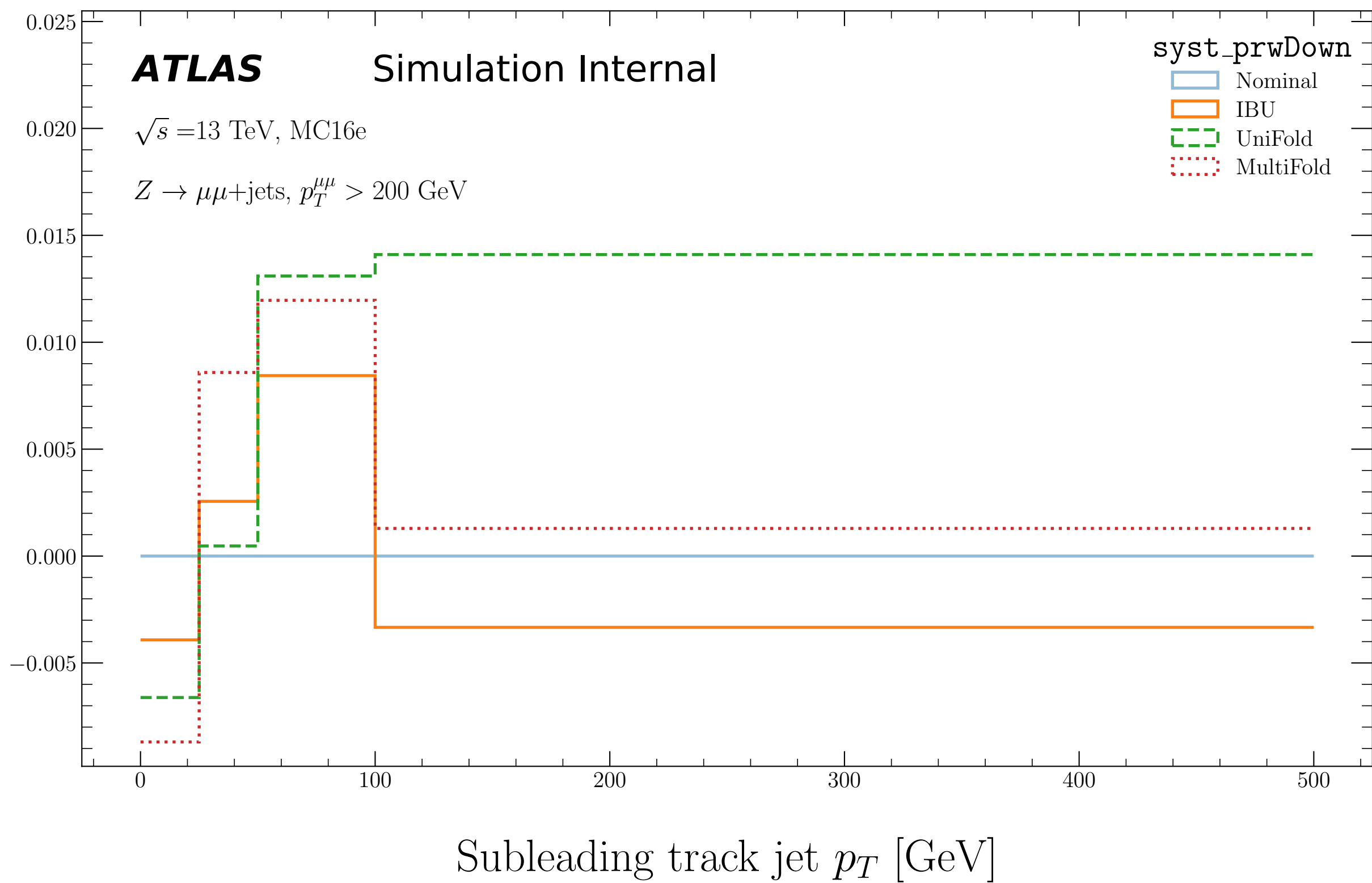
Nominal

IBU

UniFold

MultiFold

Subleading track jet p_T [GeV]



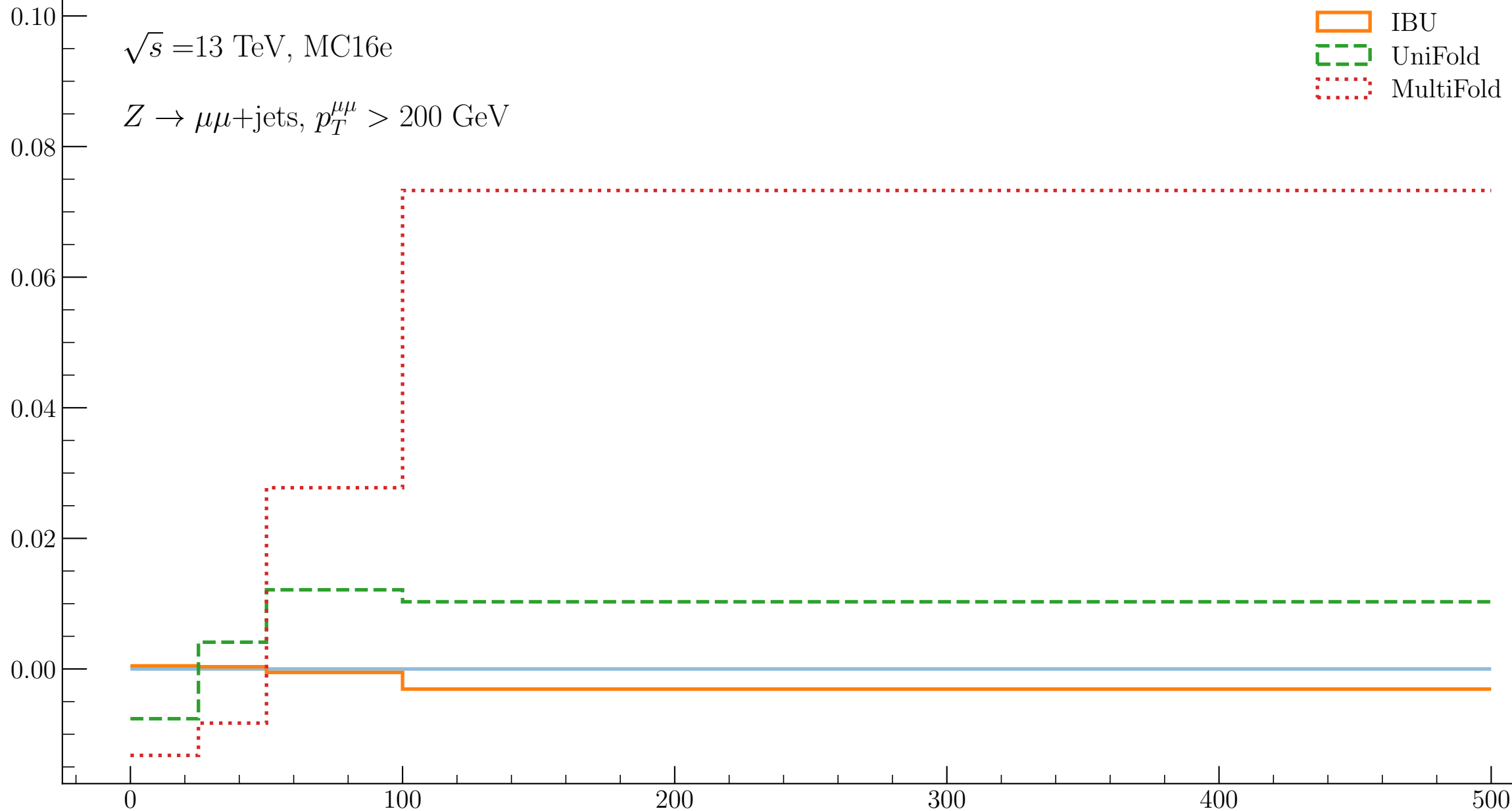
ATLAS

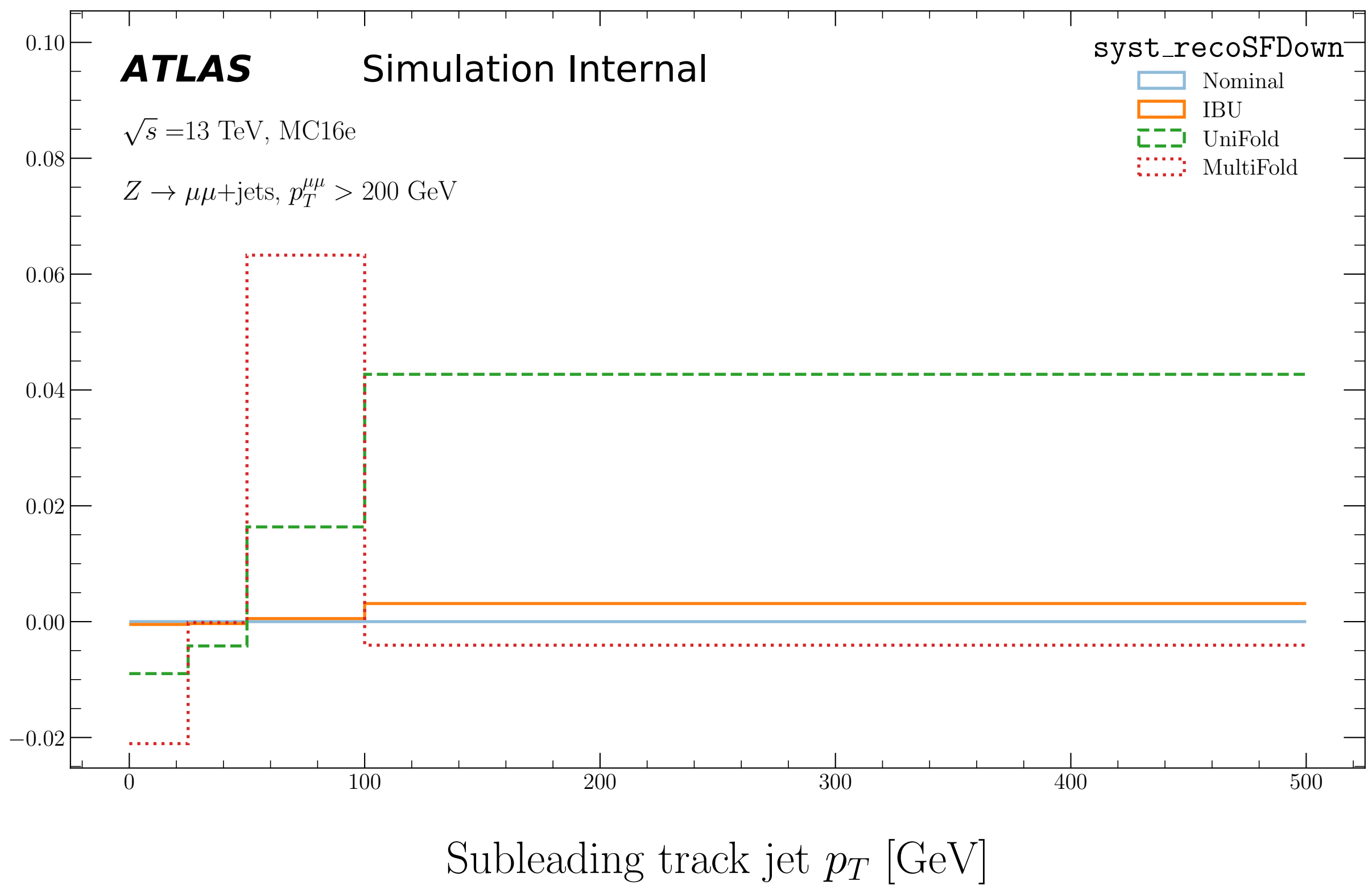
Simulation Internal

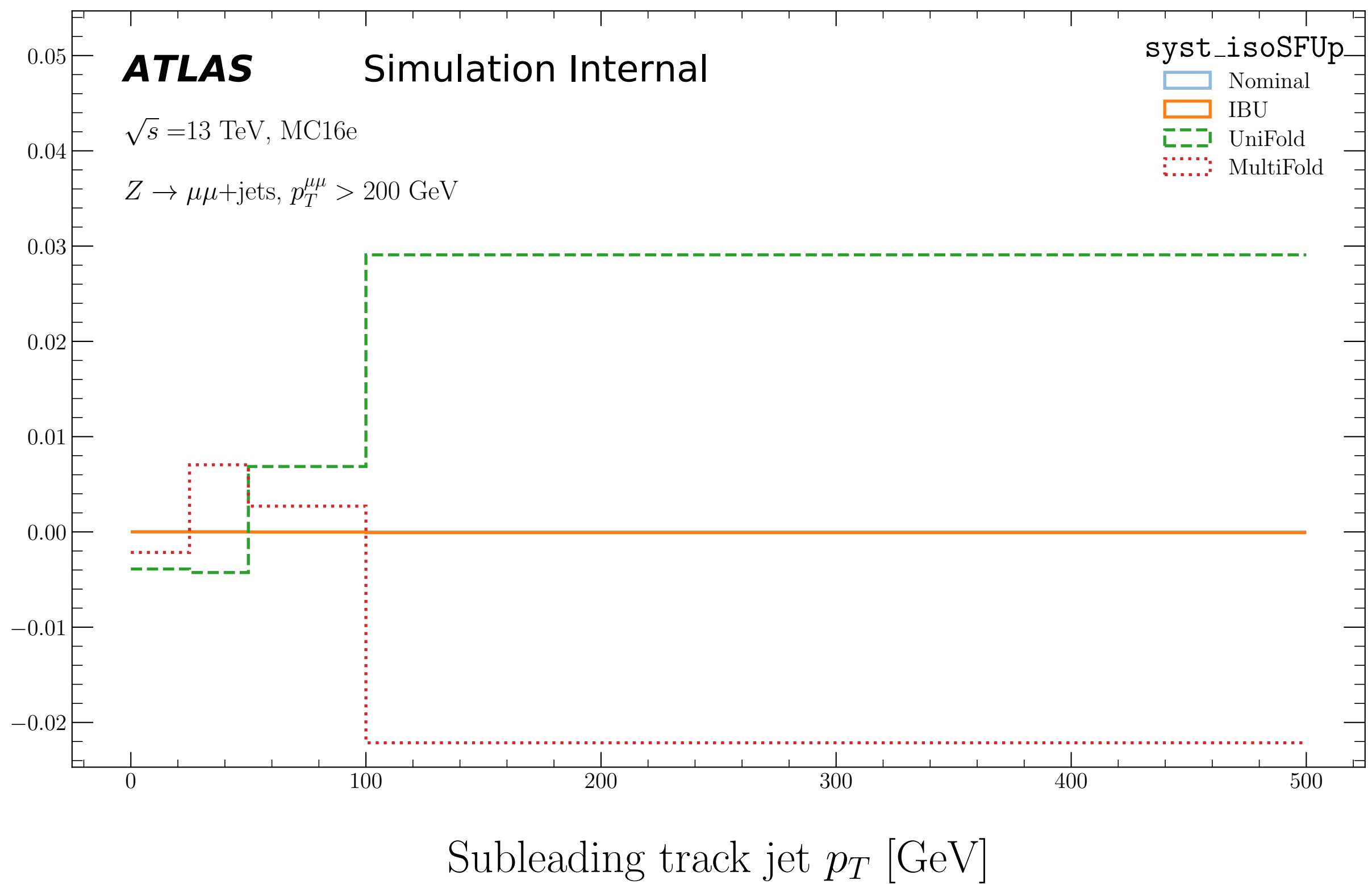
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet p_T [GeV]





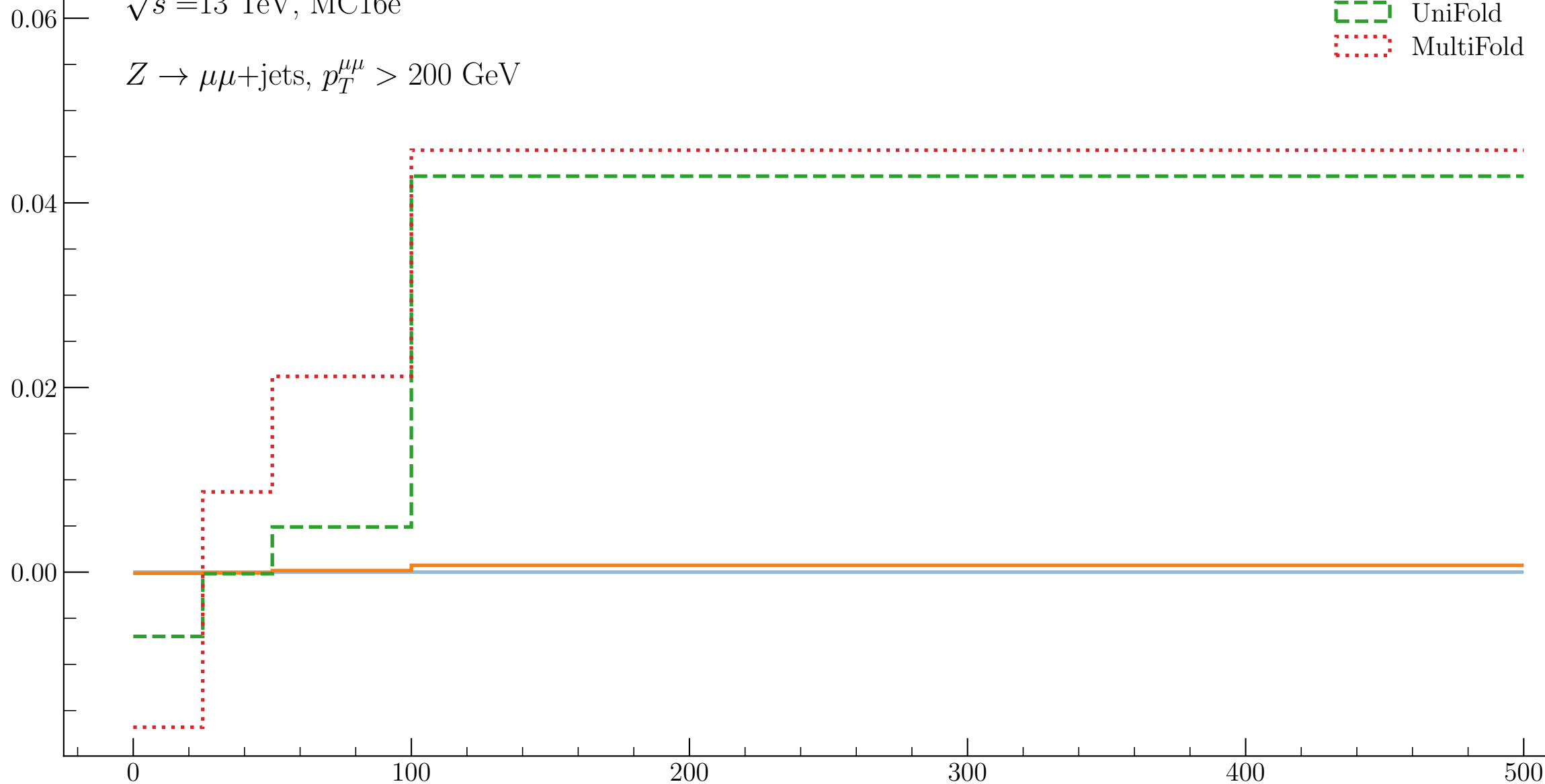
ATLAS

Simulation Internal

syst_isoSFDown

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet p_T [GeV]

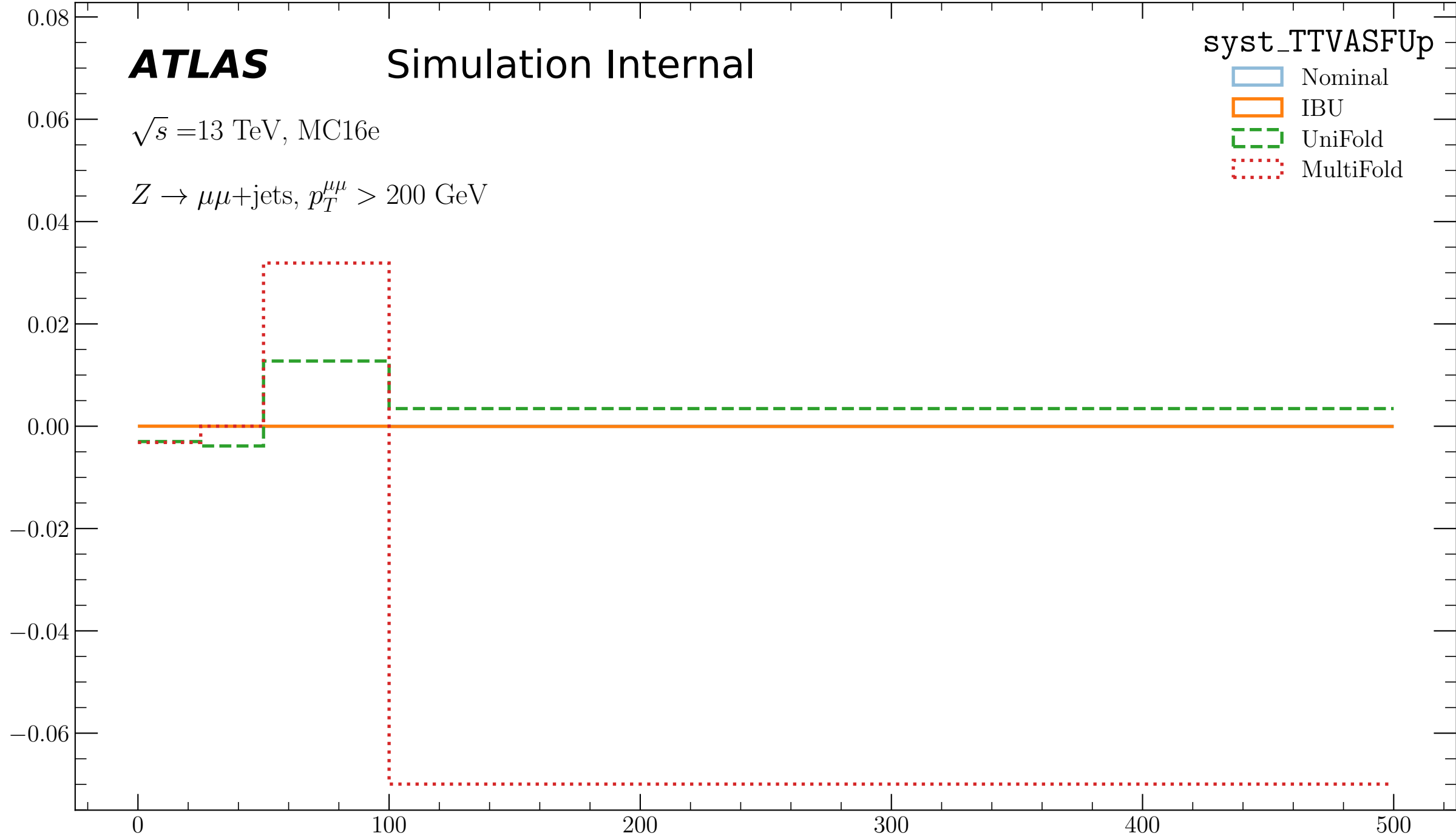
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet p_T [GeV]

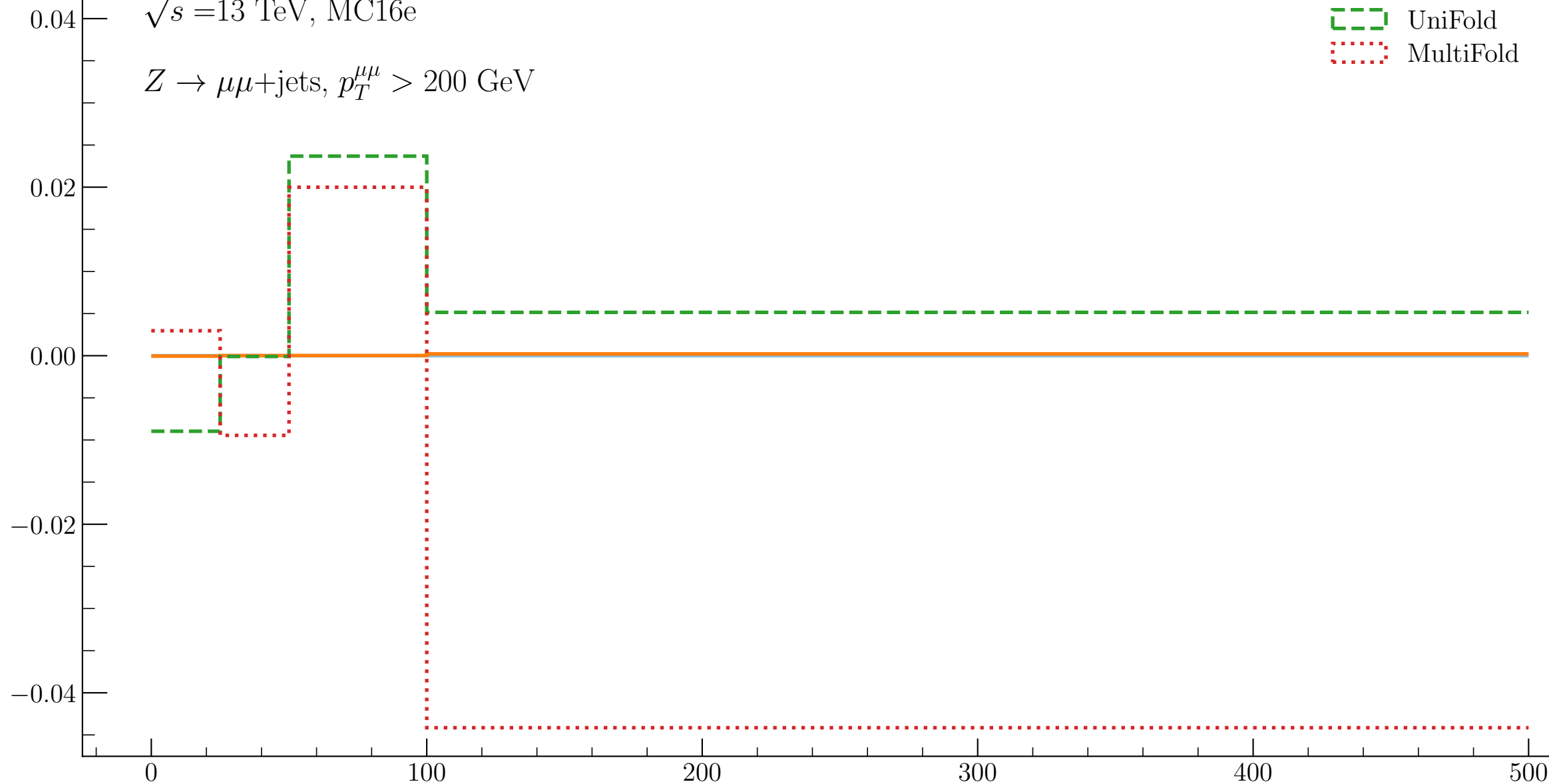
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFDown

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet p_T [GeV]

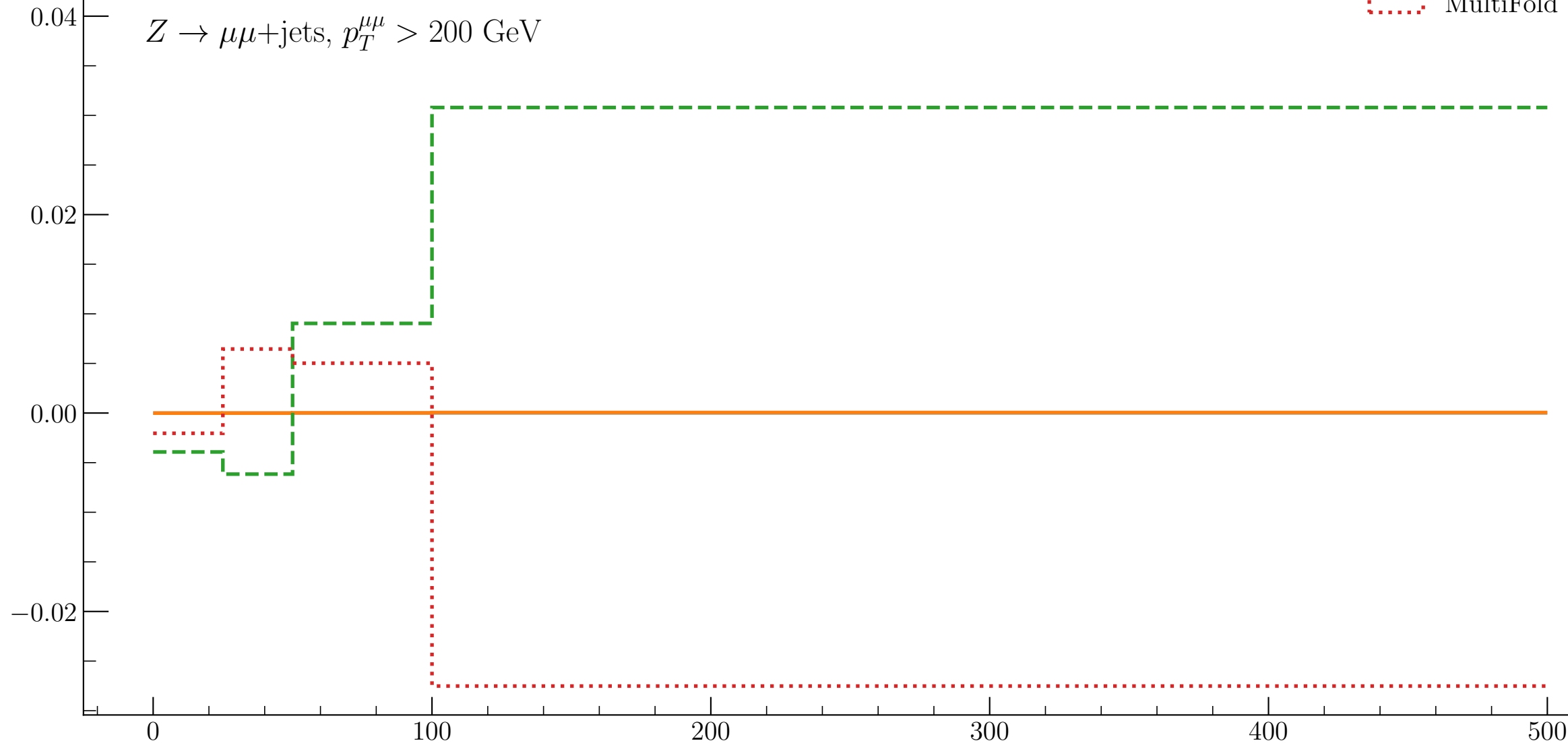
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

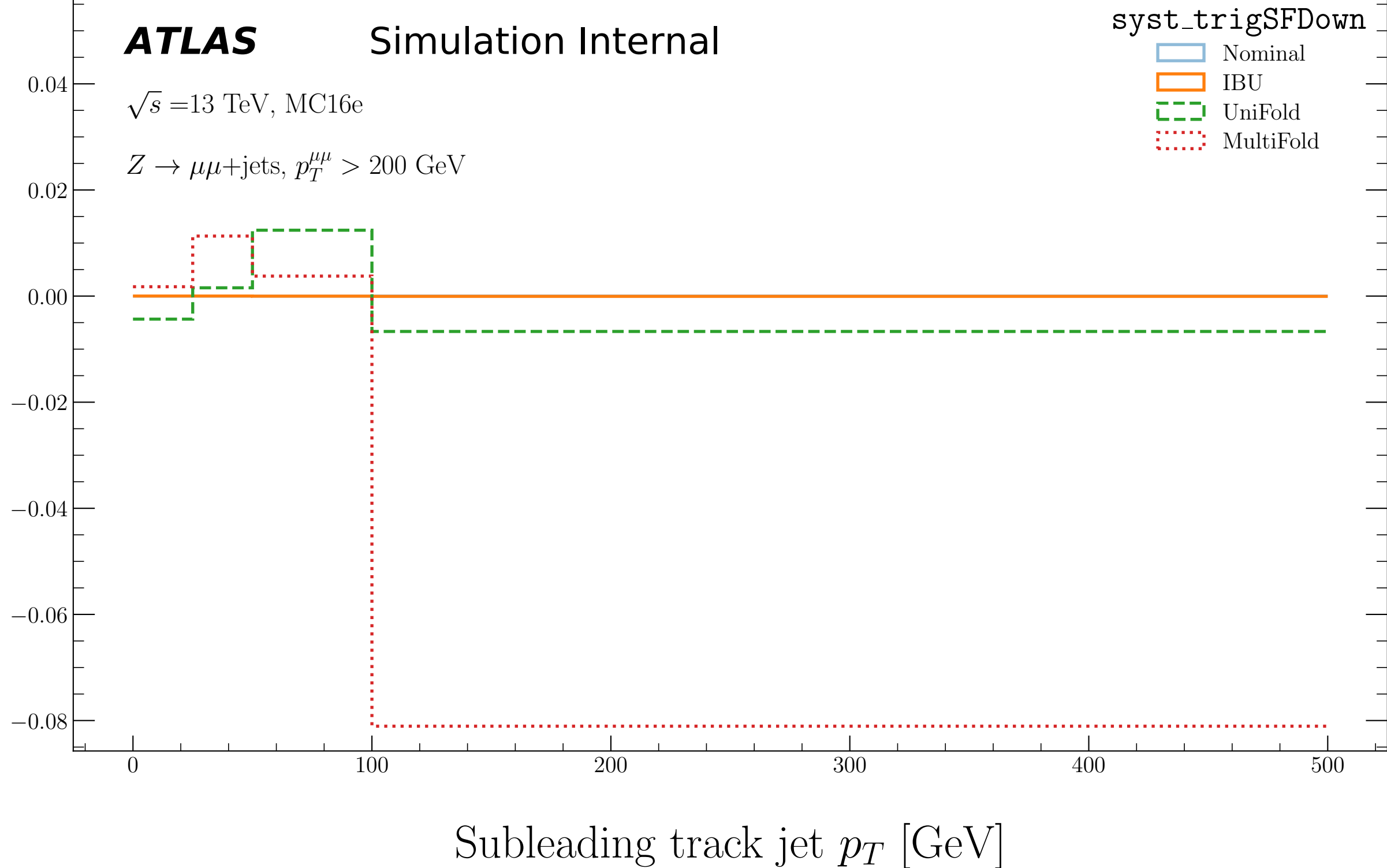
syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet p_T [GeV]

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwUp

Nominal

IBU

UniFold

MultiFold

0.08
0.06
0.04
0.02
0.00
-0.02
-0.04

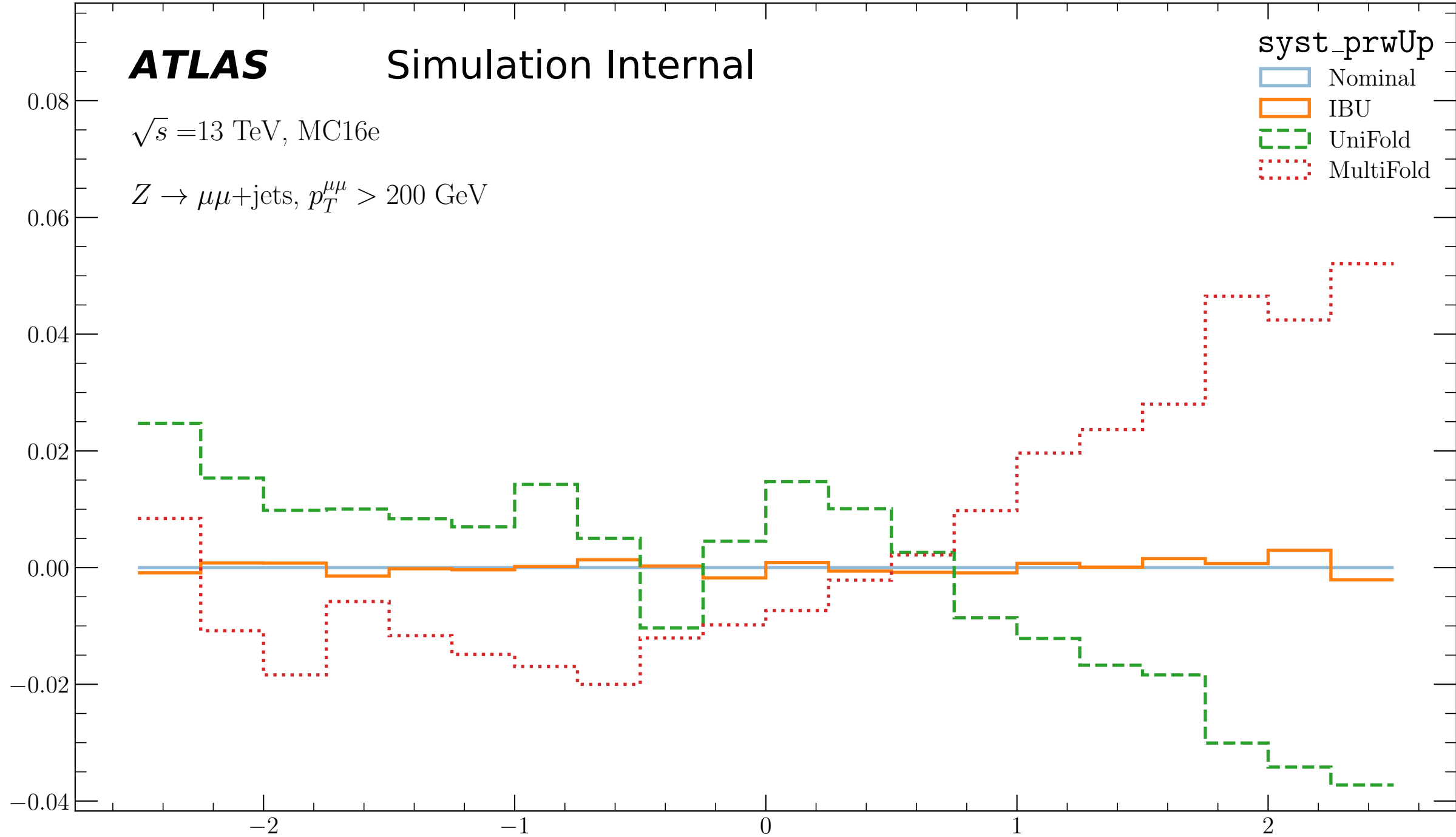
-2

-1

0

1

2

Leading track jet y 

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

Nominal

IBU

UniFold

MultiFold

0.06
0.04
0.02
0.00
-0.02

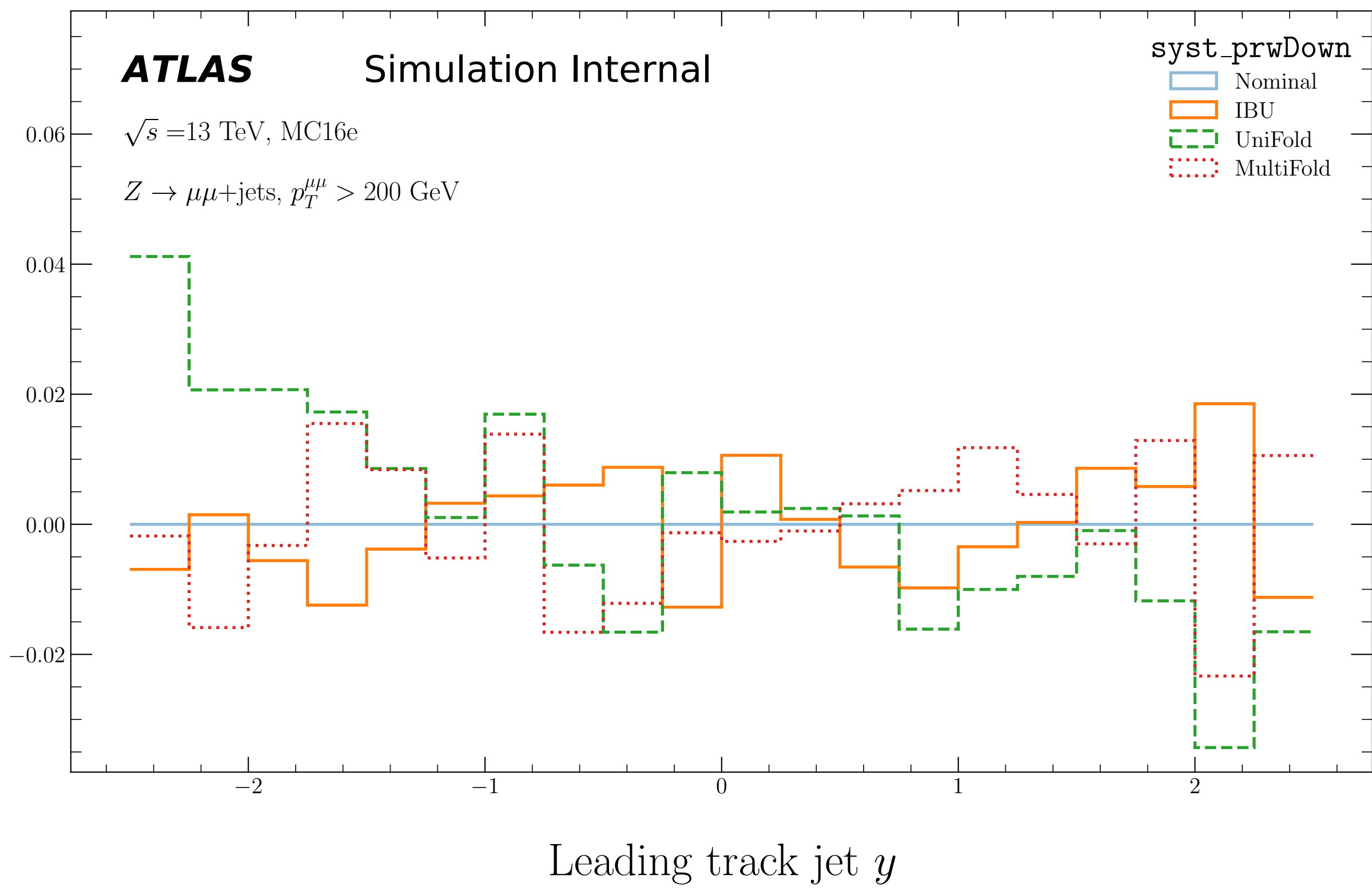
-2

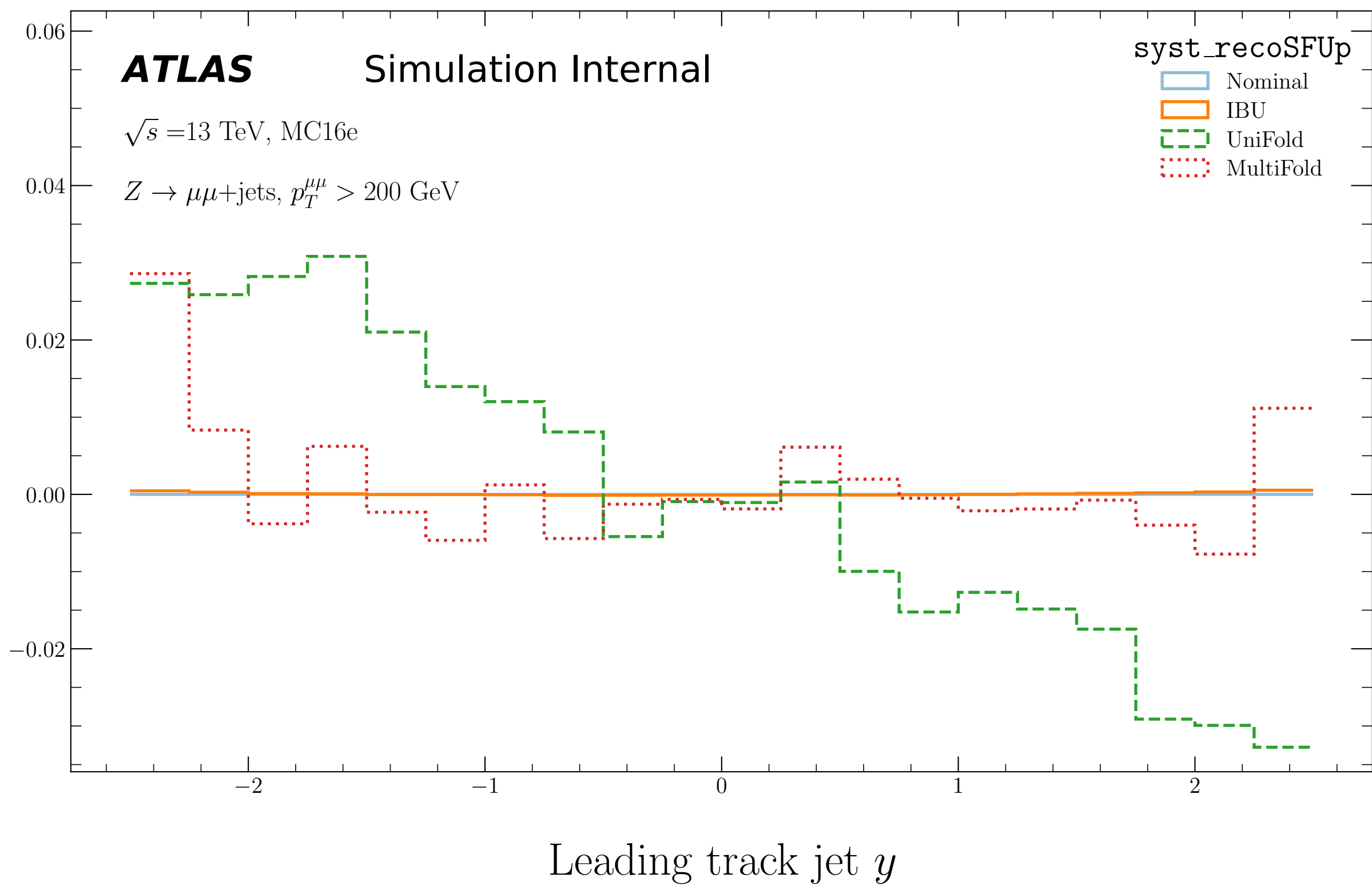
-1

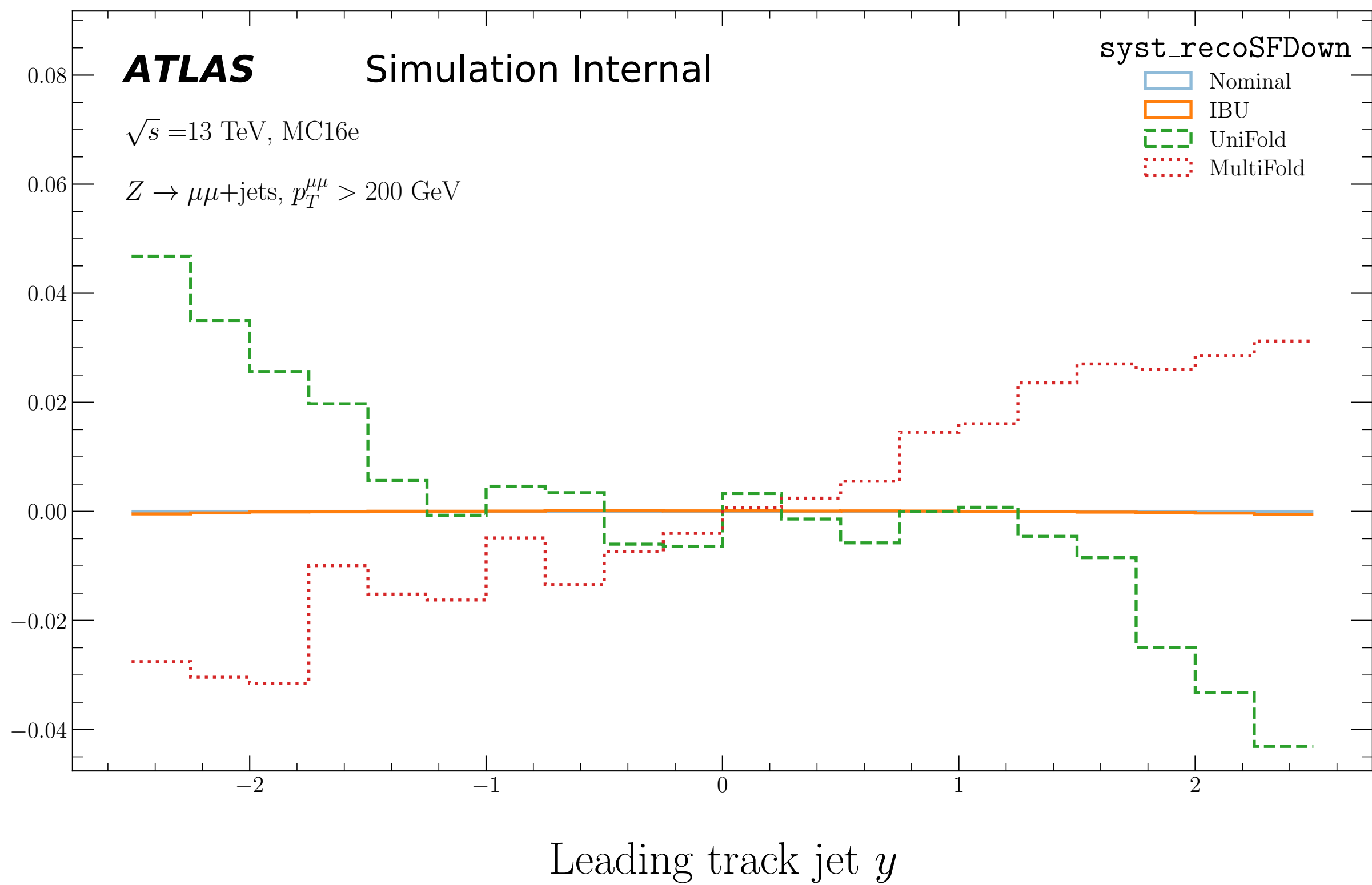
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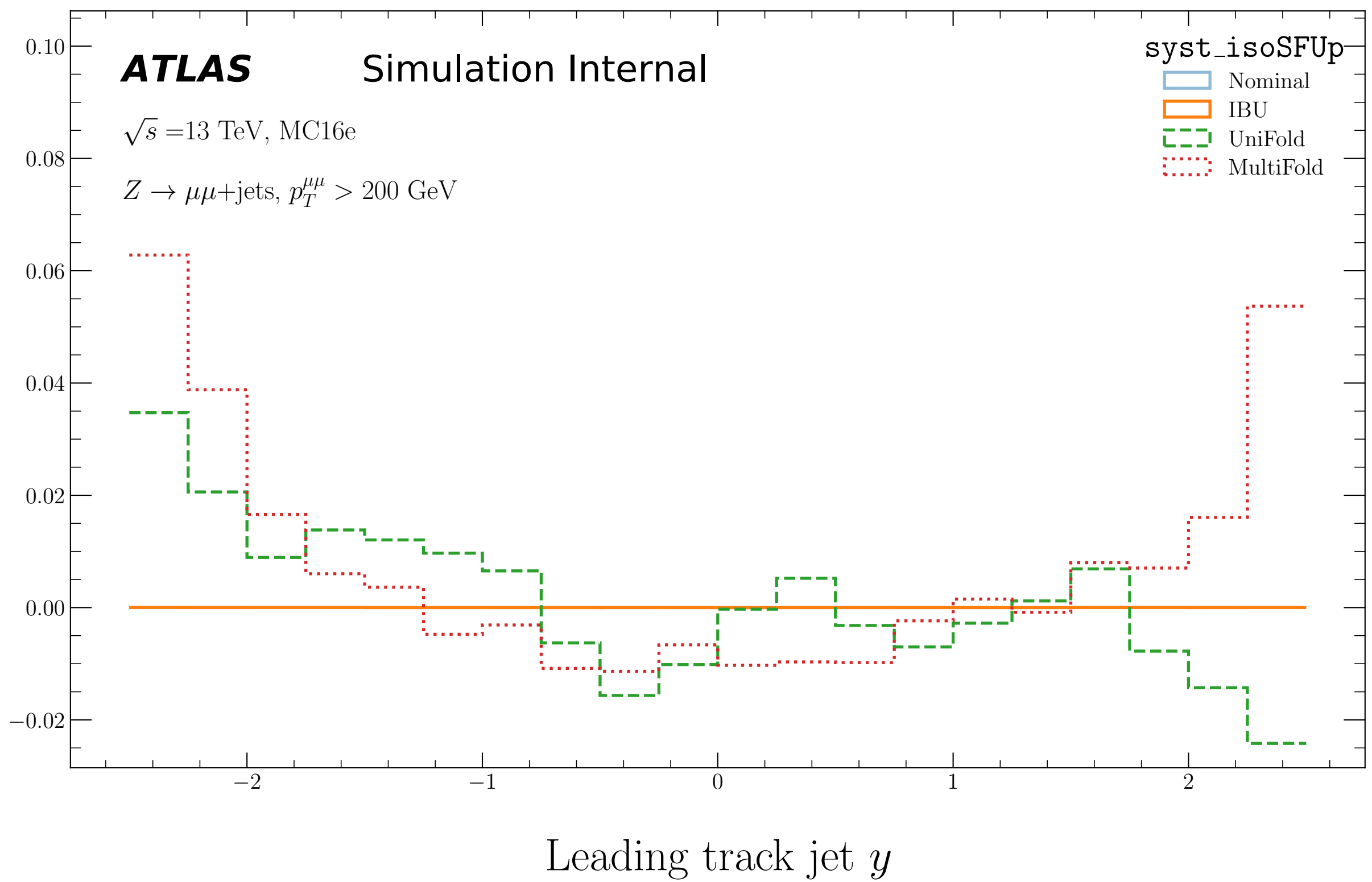
1

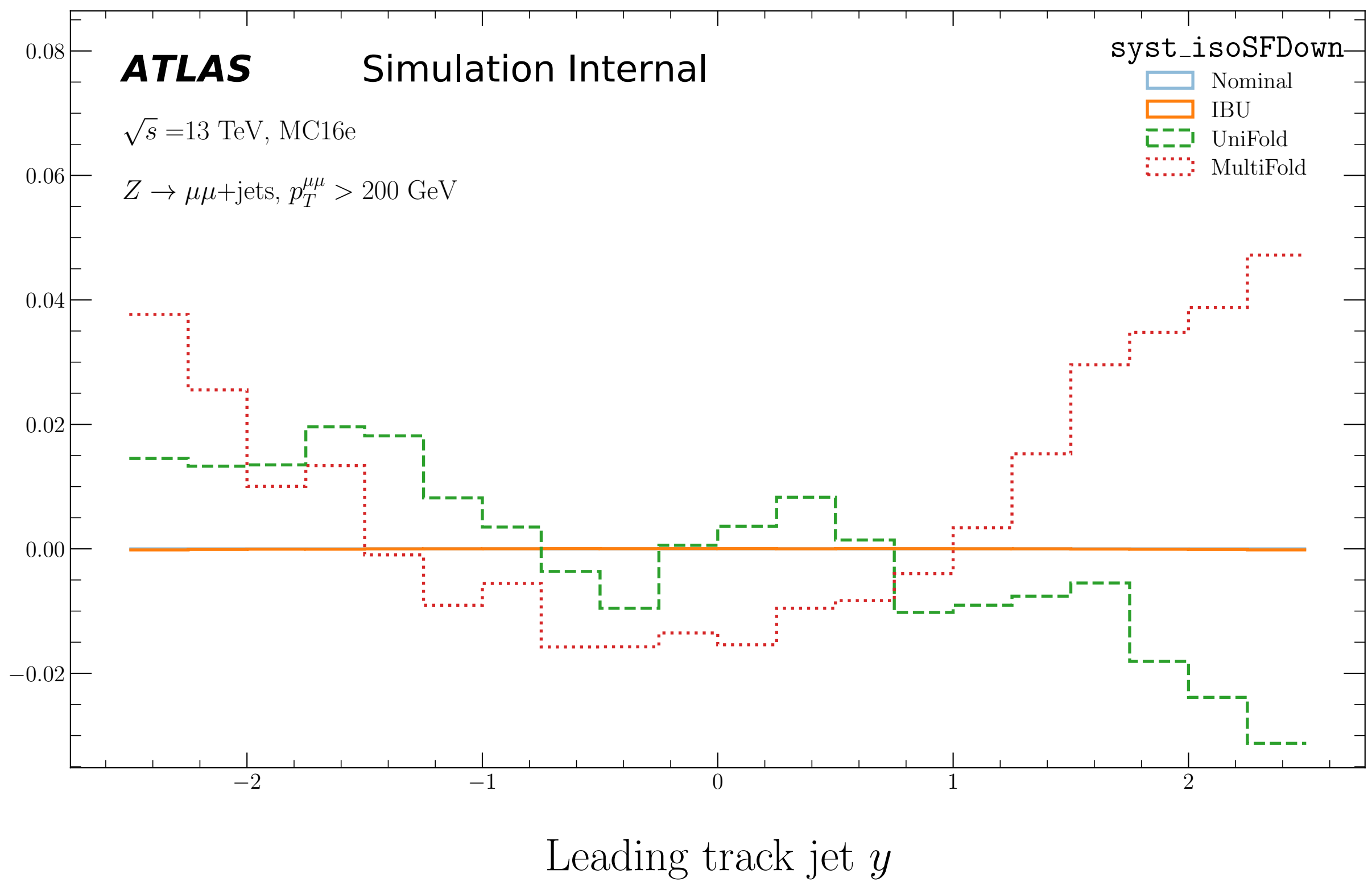
2

Leading track jet y 









ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

0.08
0.06
0.04
0.02
0.00
-0.02
-0.04

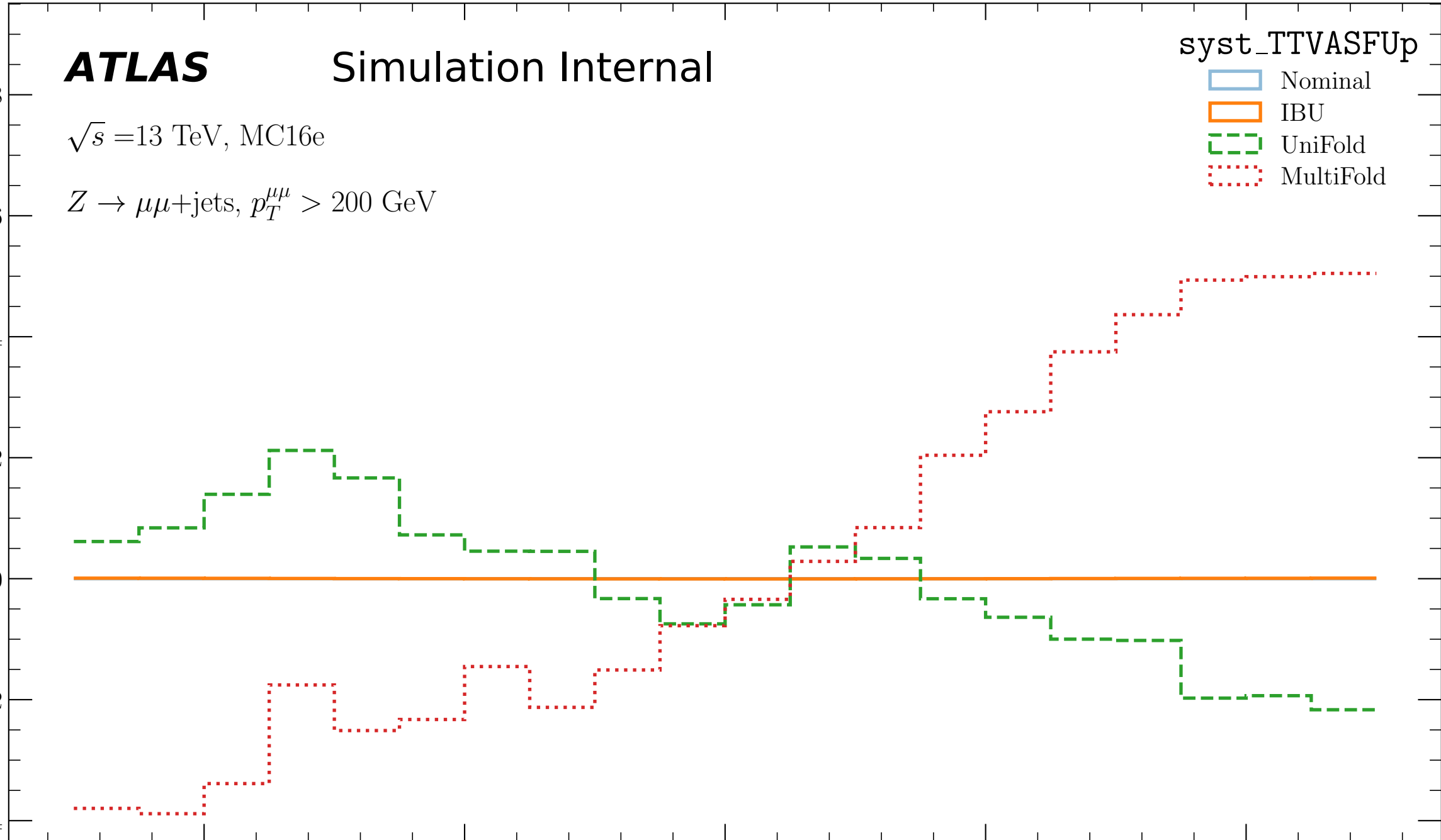
-2

-1

0

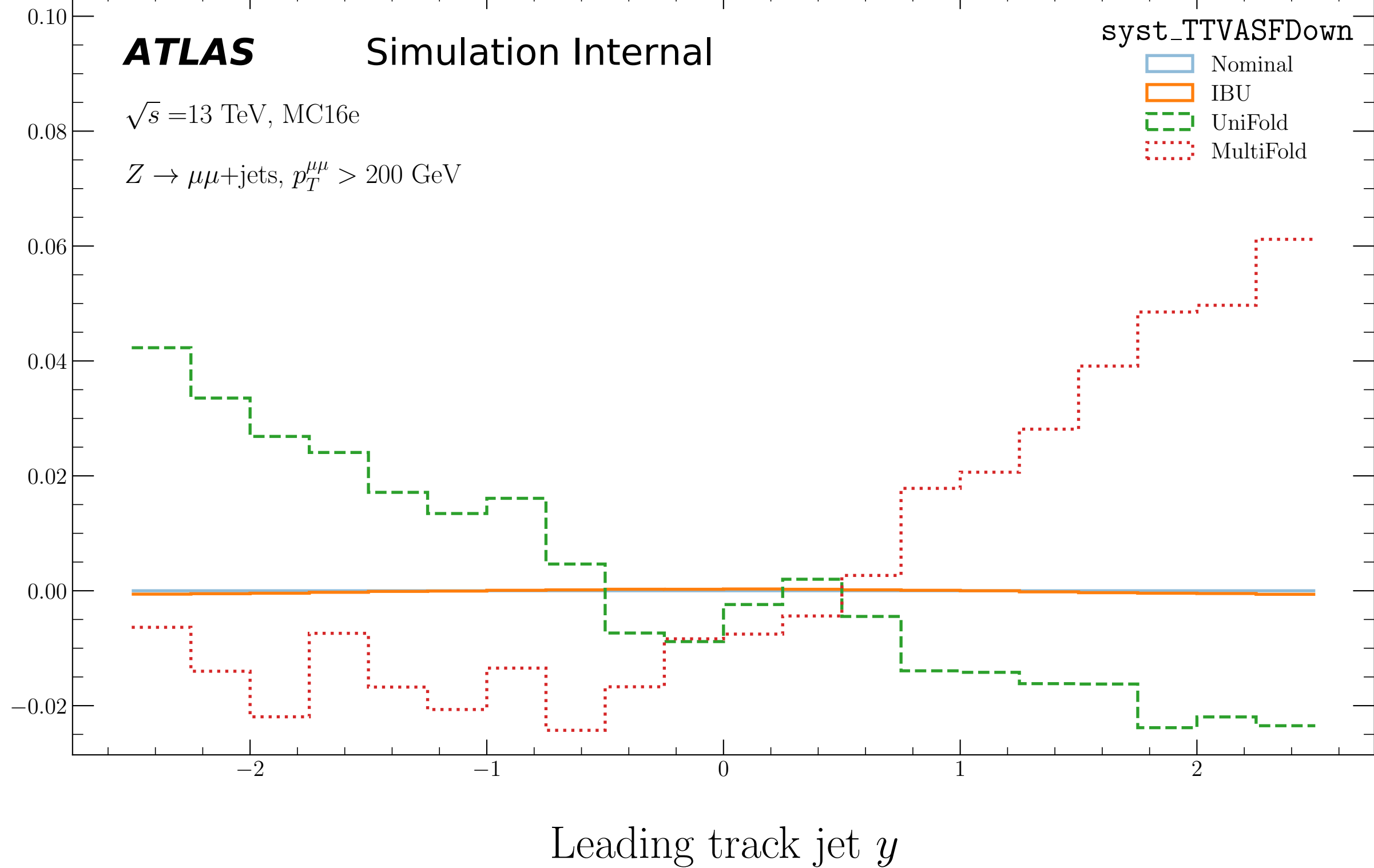
1

2

Leading track jet y 

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold

0.08
0.06
0.04
0.02
0.00
-0.02

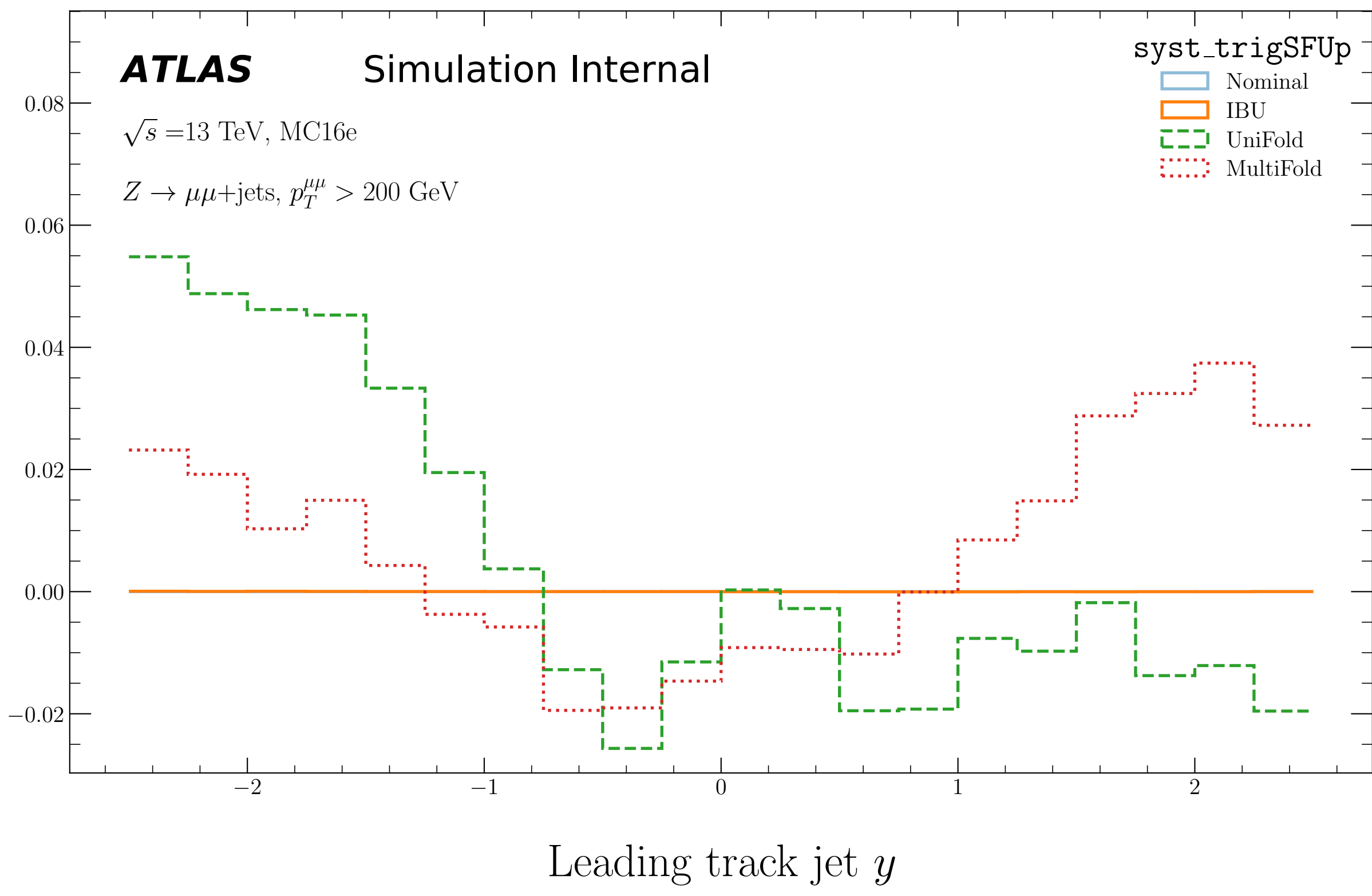
-2

-1

0

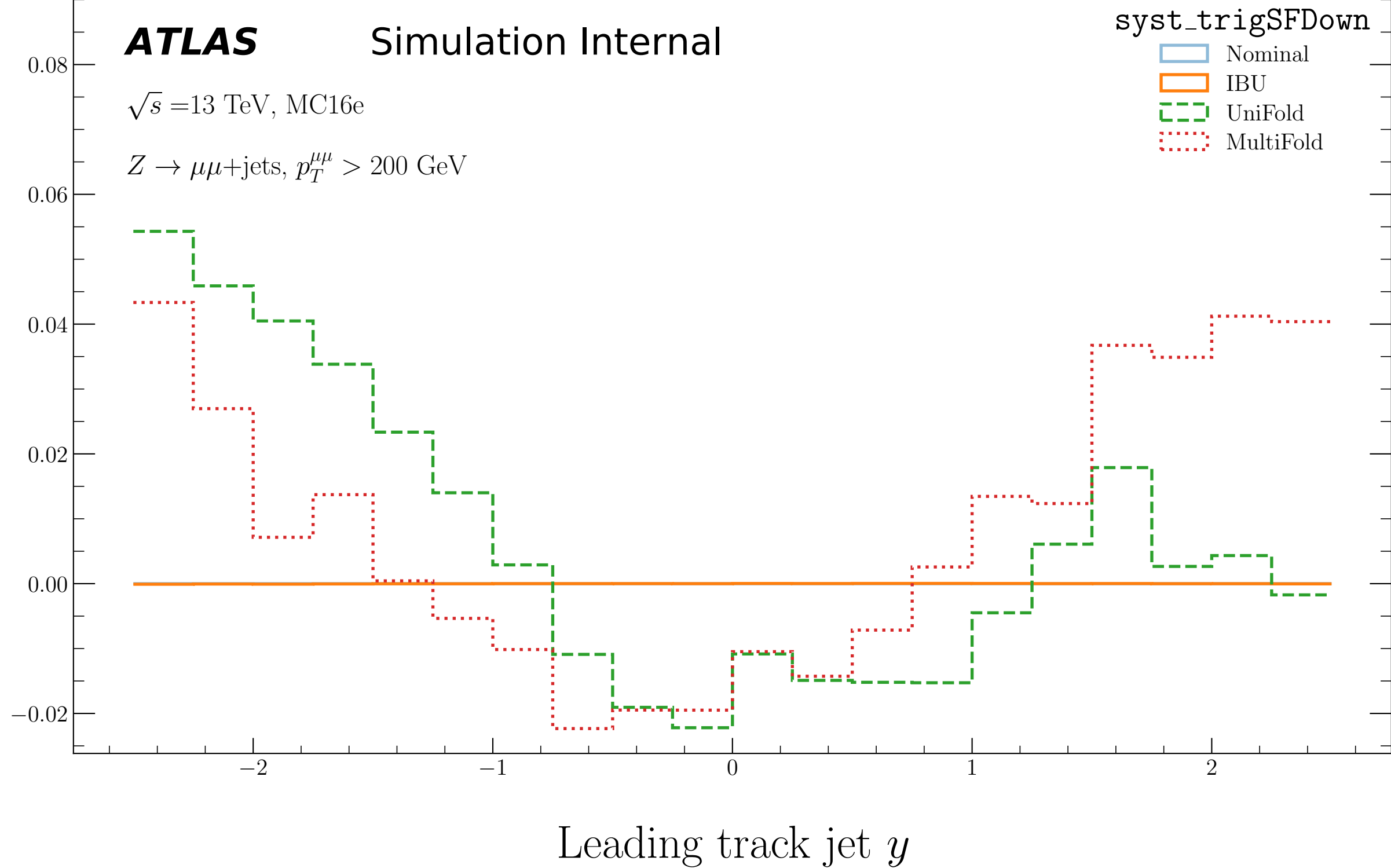
1

2

Leading track jet y 

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

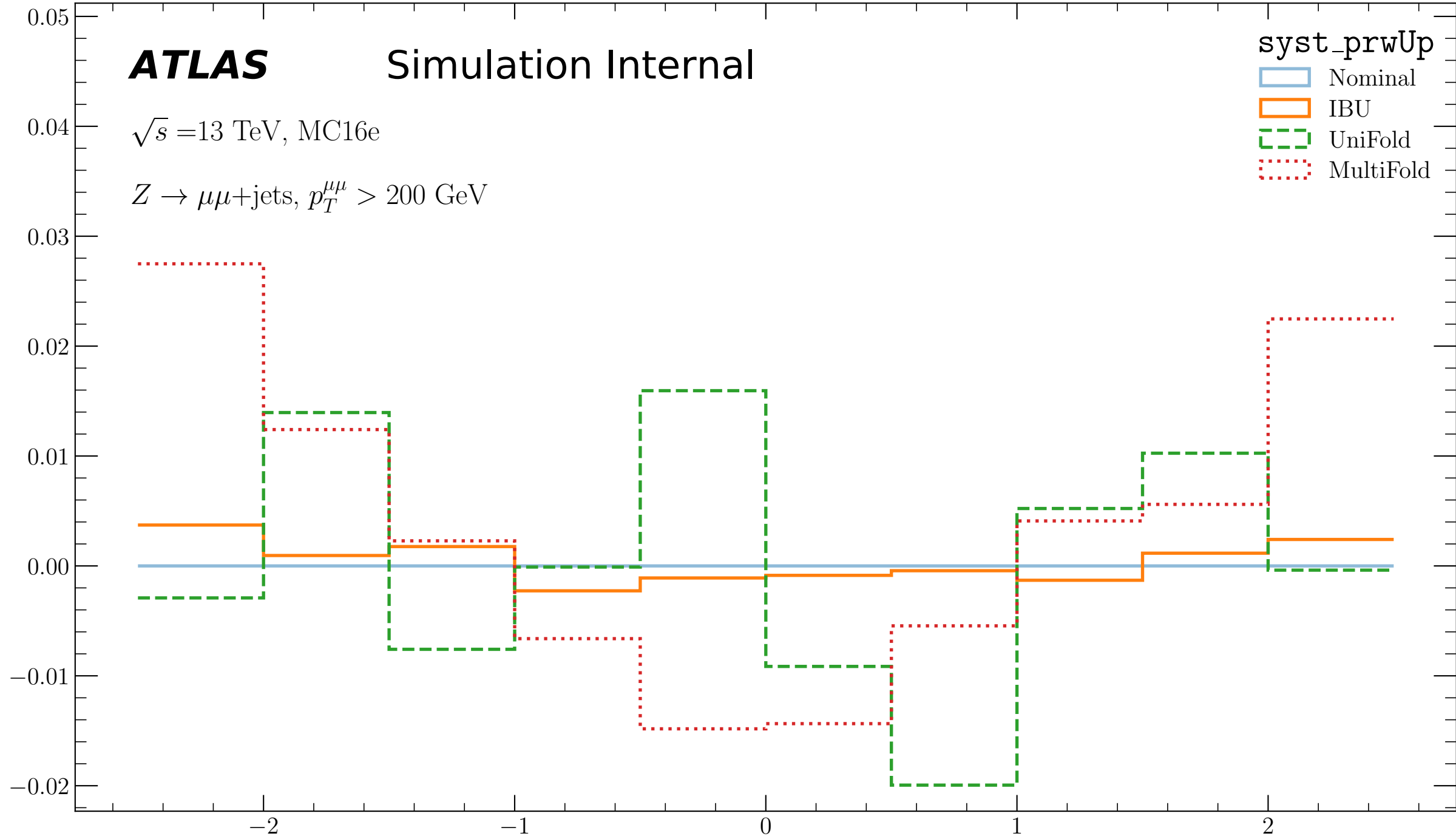
syst_prwUp

Nominal

IBU

UniFold

MultiFold

Subleading track jet y

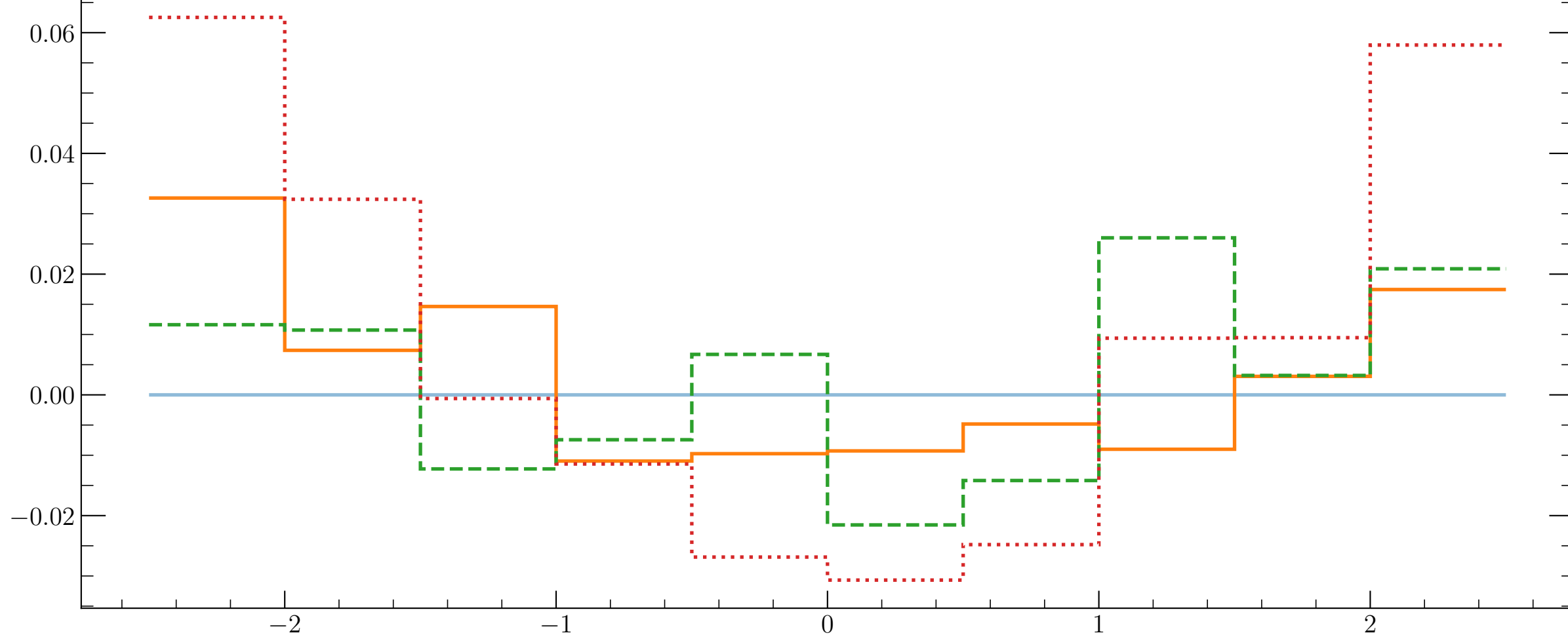
ATLAS

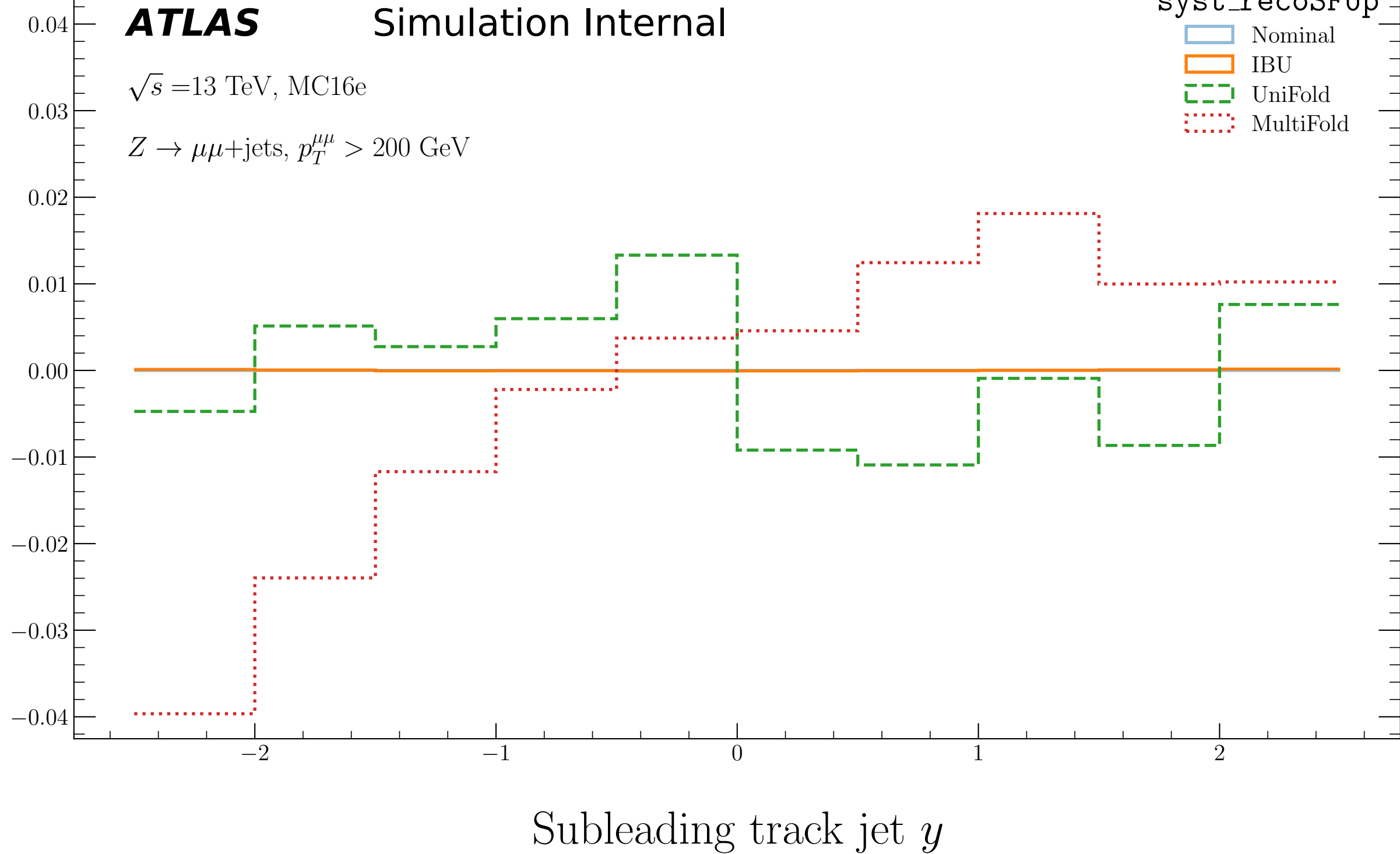
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

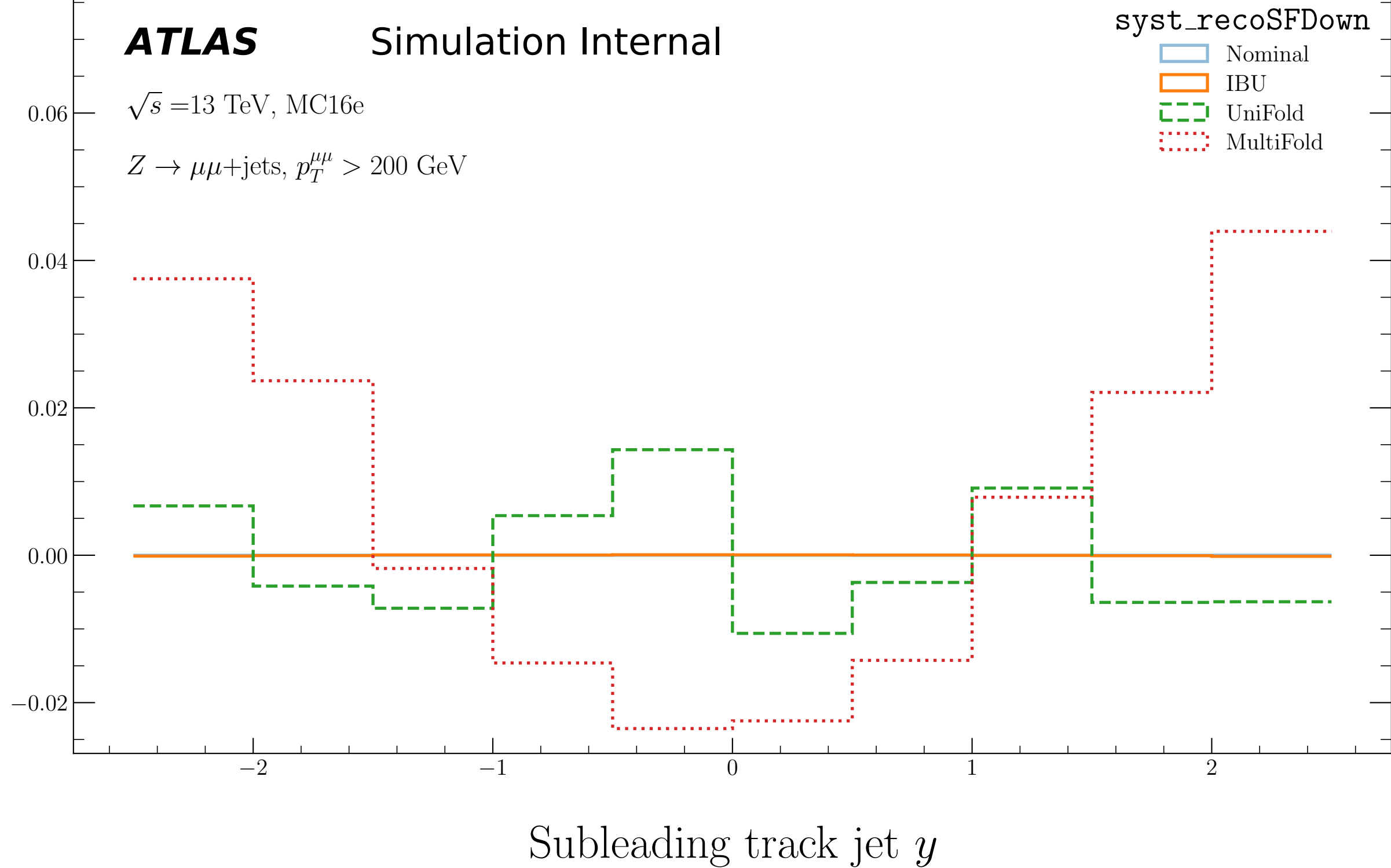
- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet y



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

0.04
0.03
0.02
0.01
0.00
-0.01

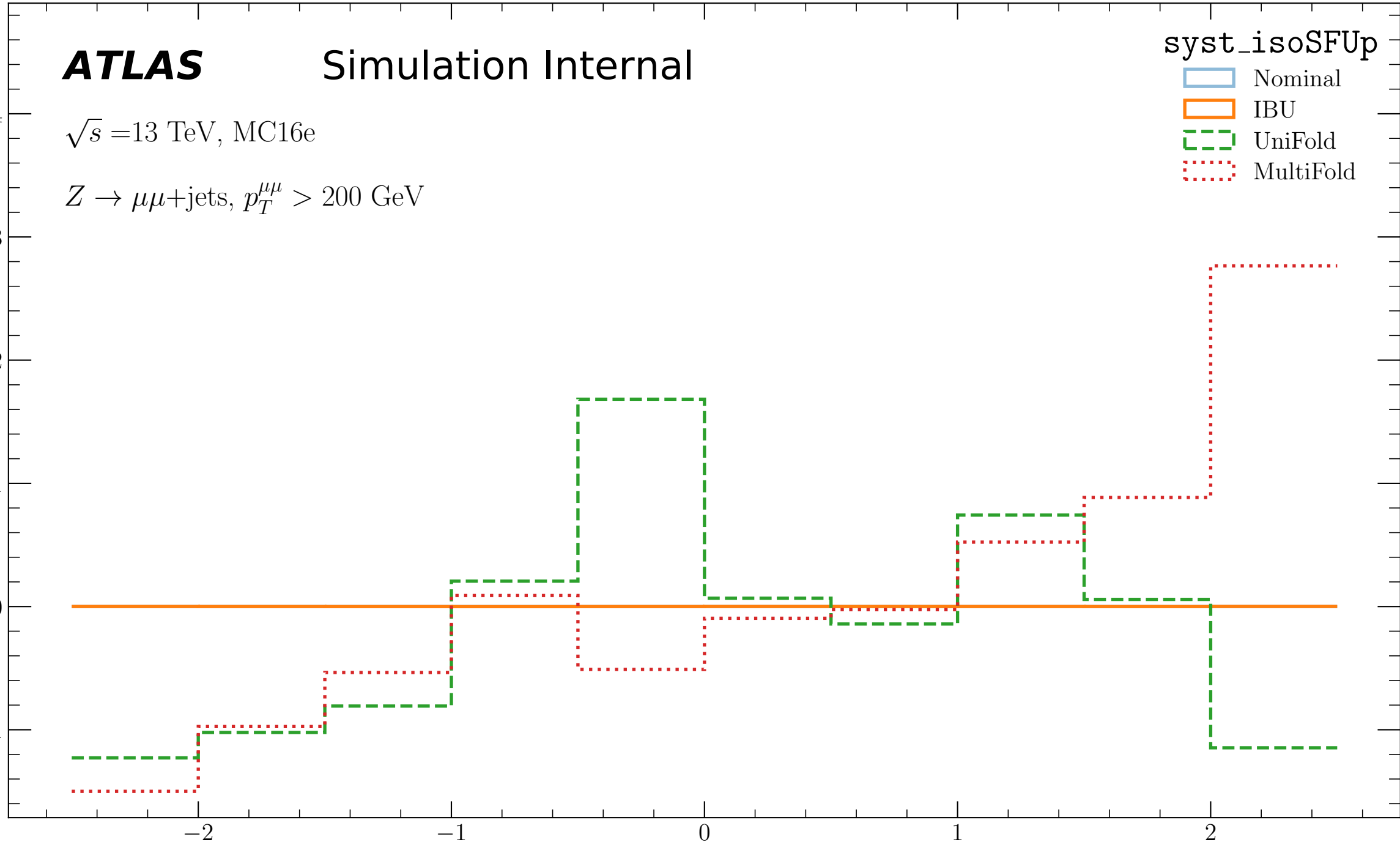
-2

-1

0

1

2

Subleading track jet y 

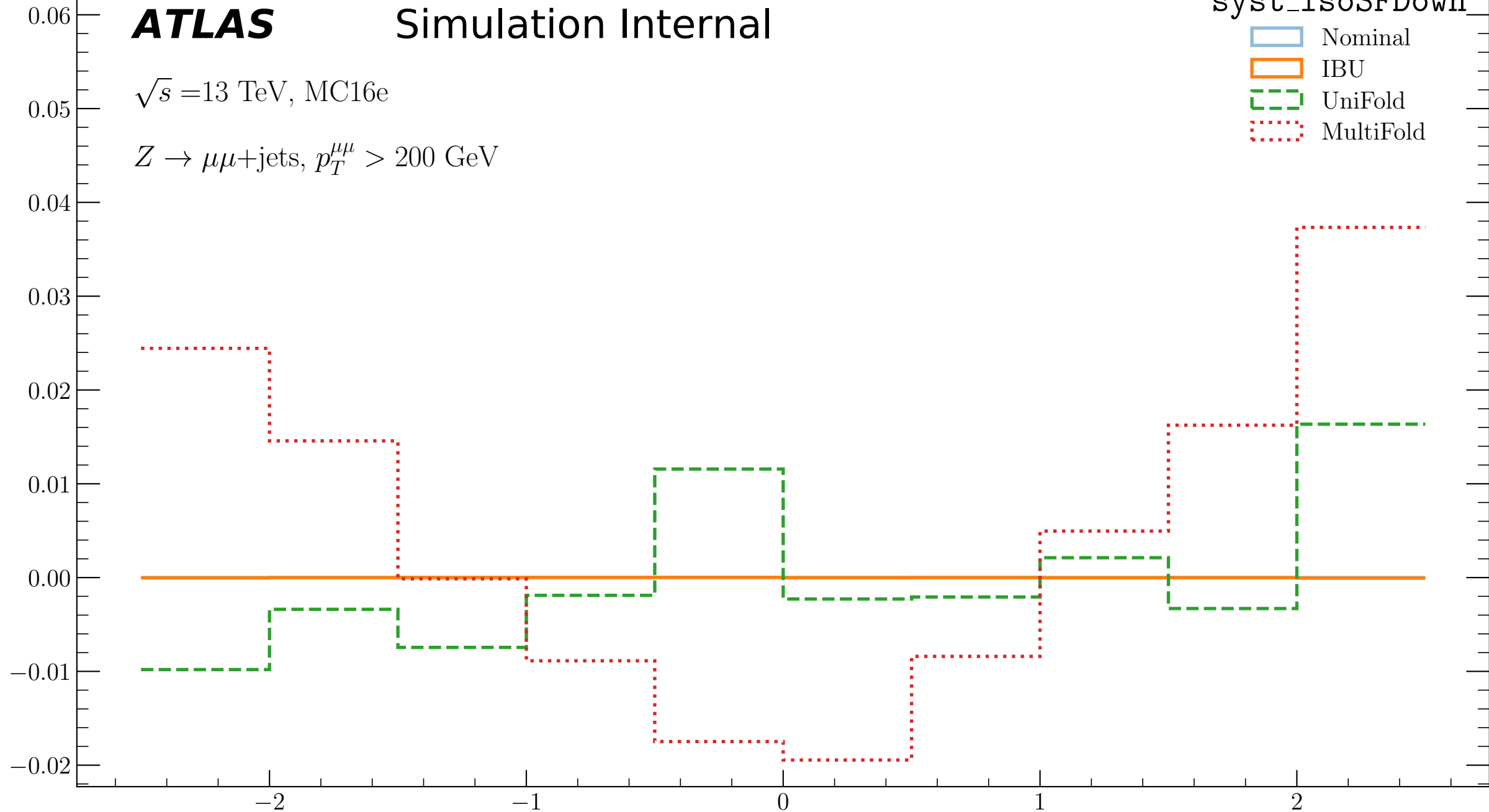
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet y

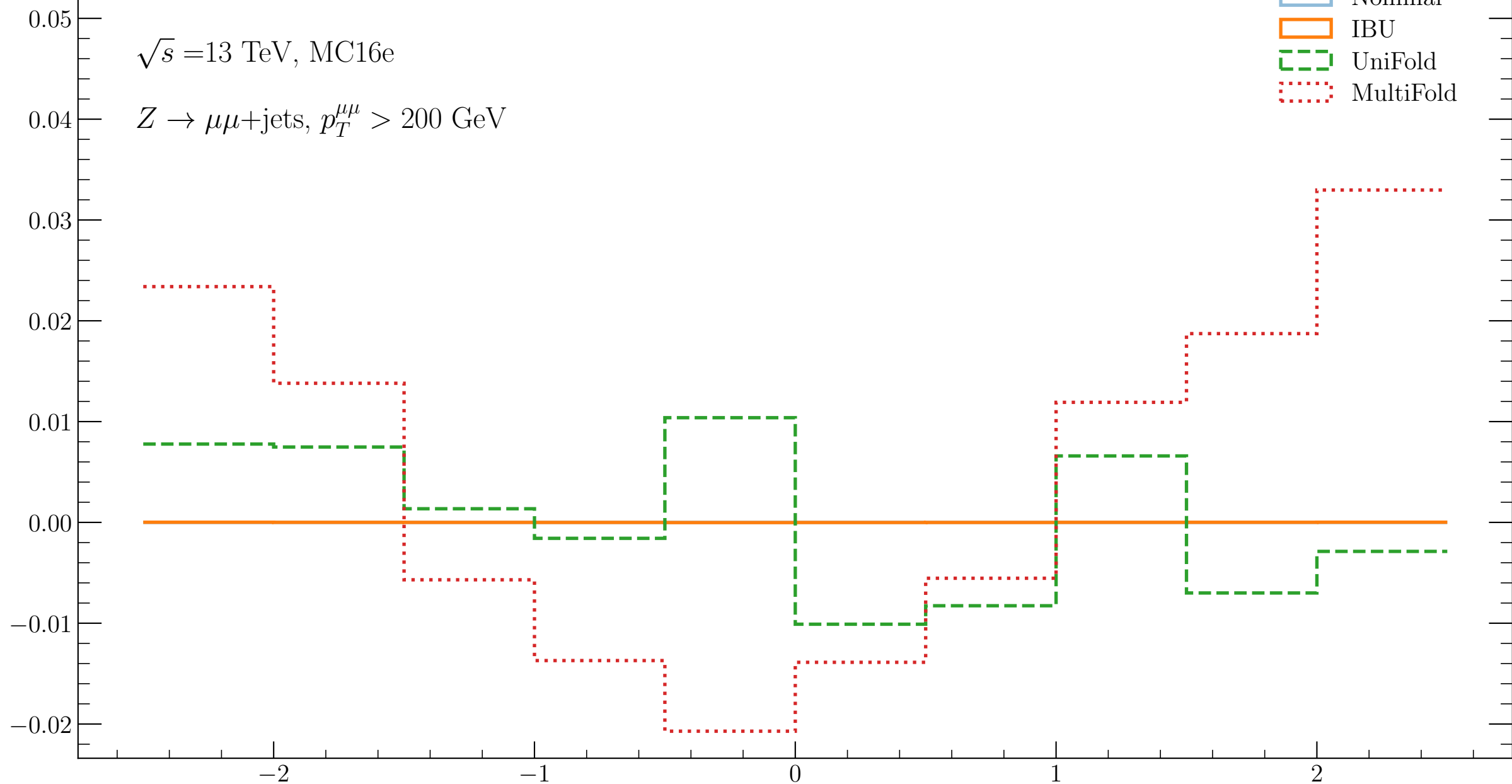
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

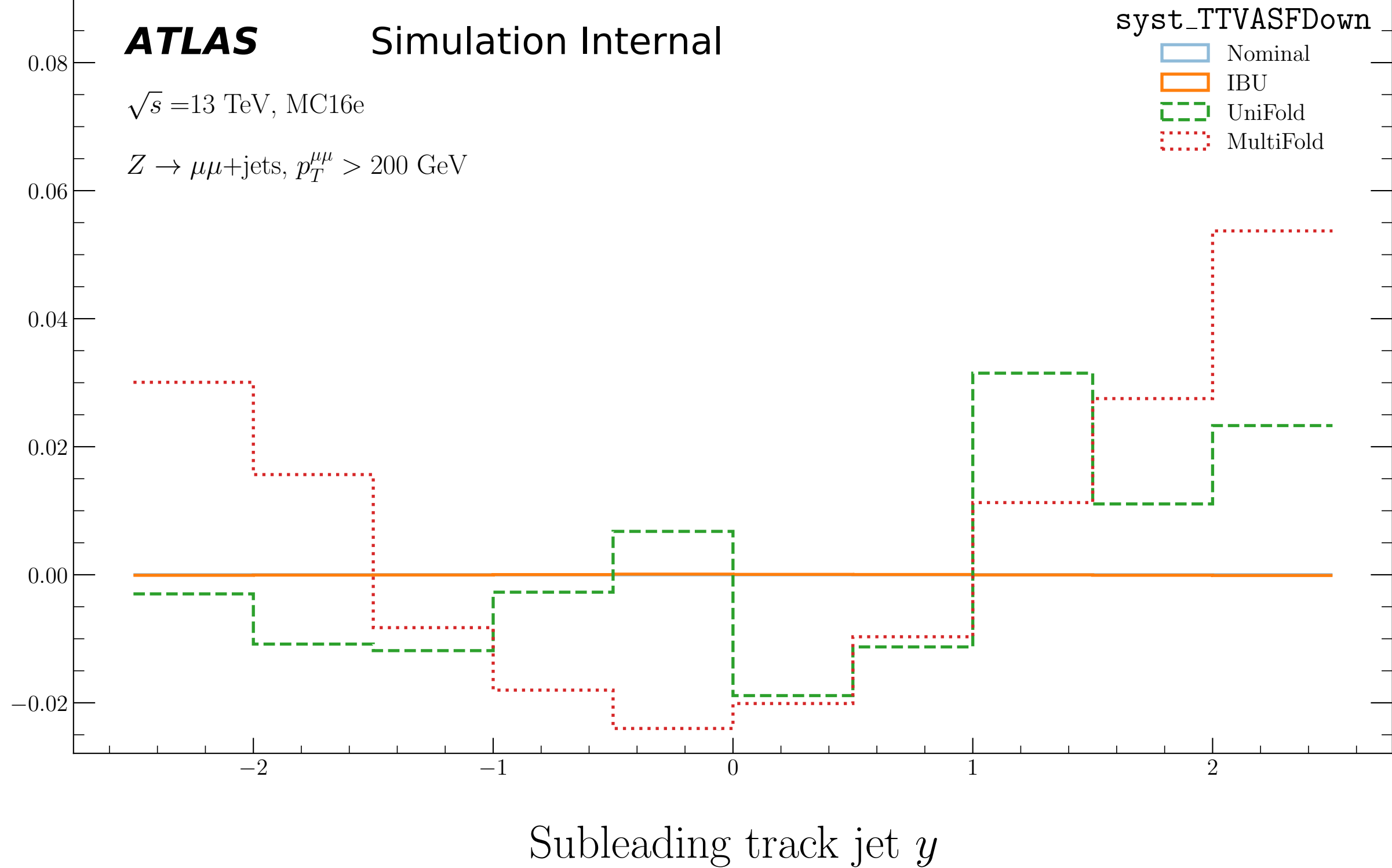
syst_TTVASFUp

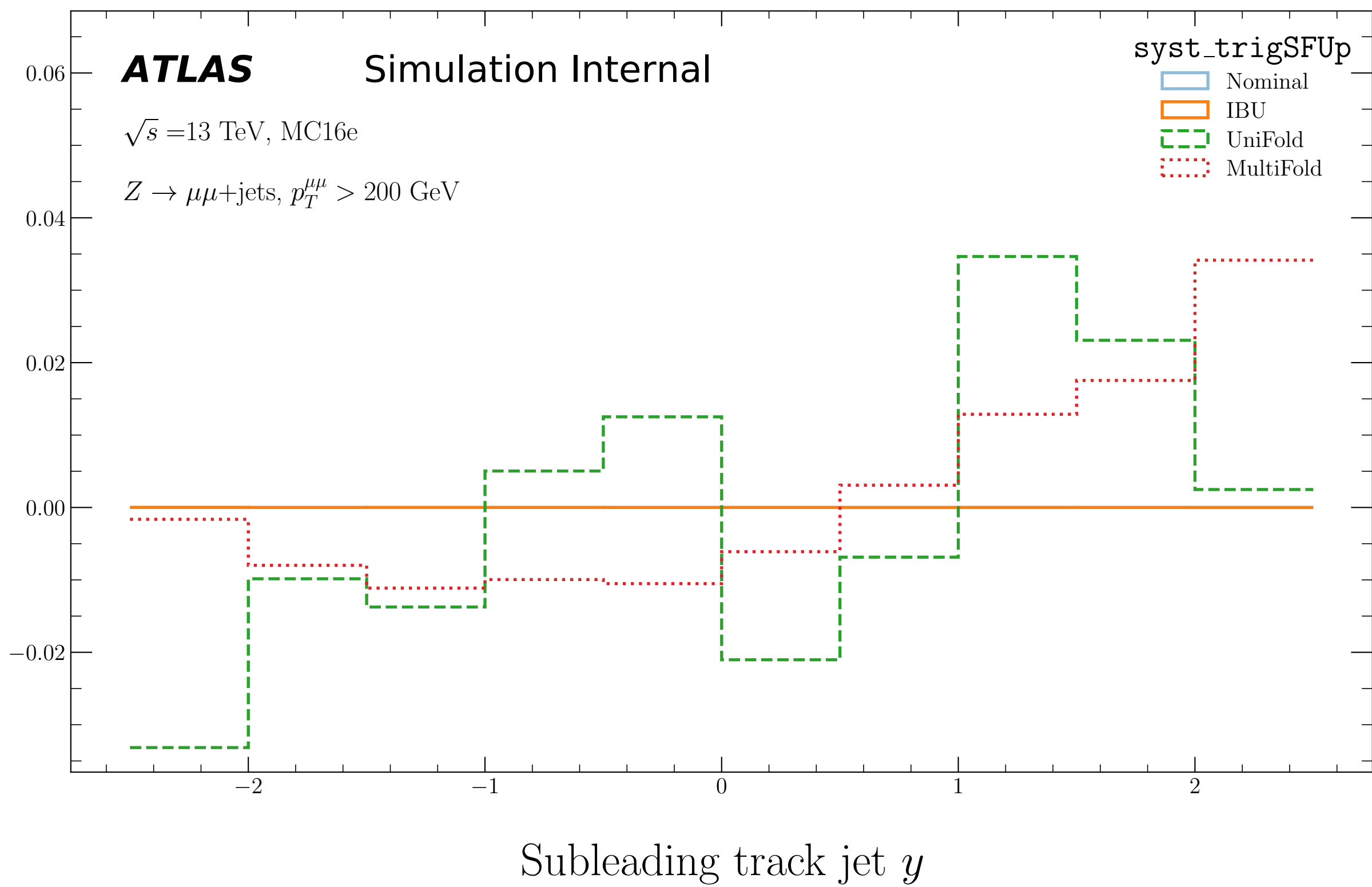
- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet y

ATLAS

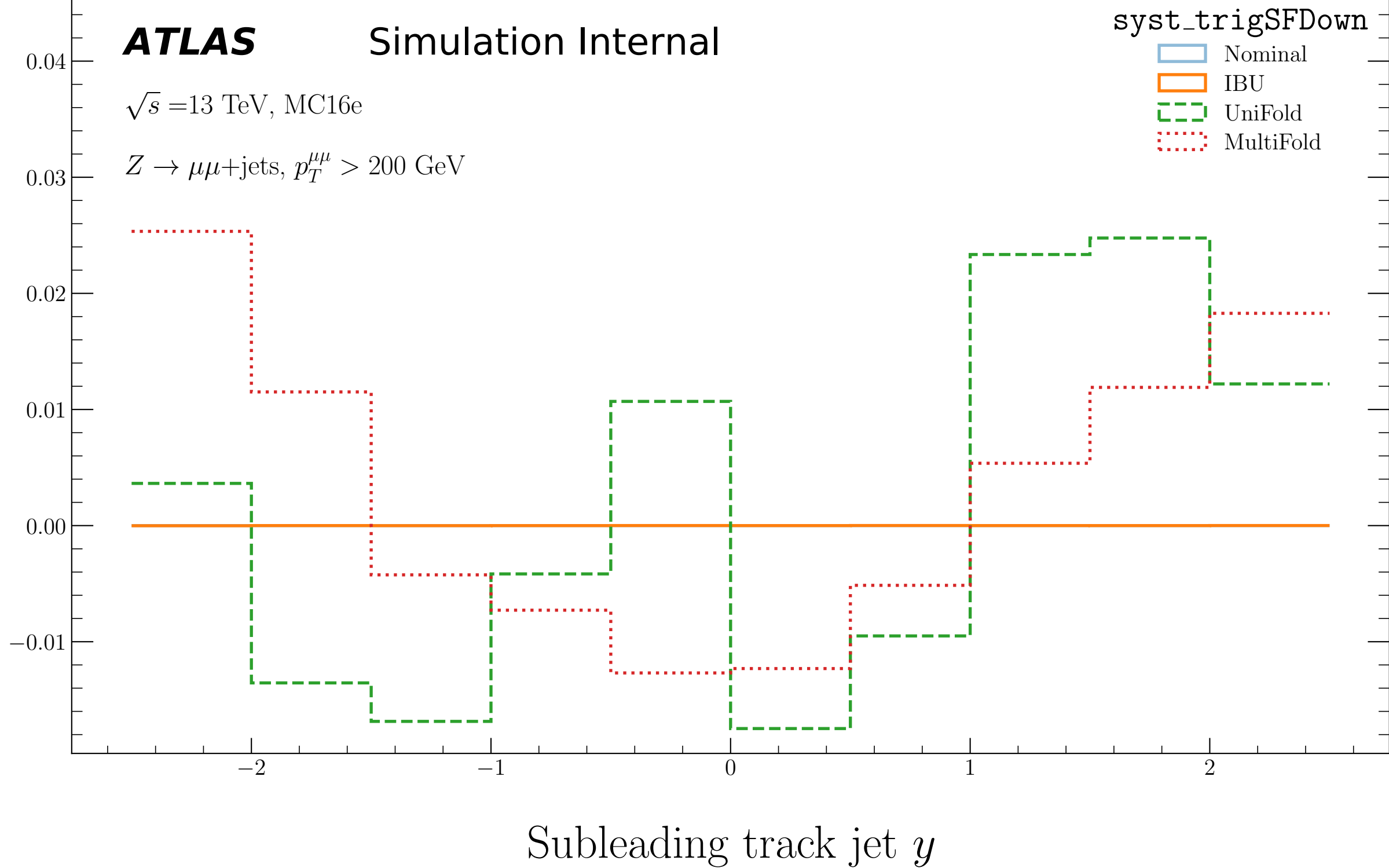
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

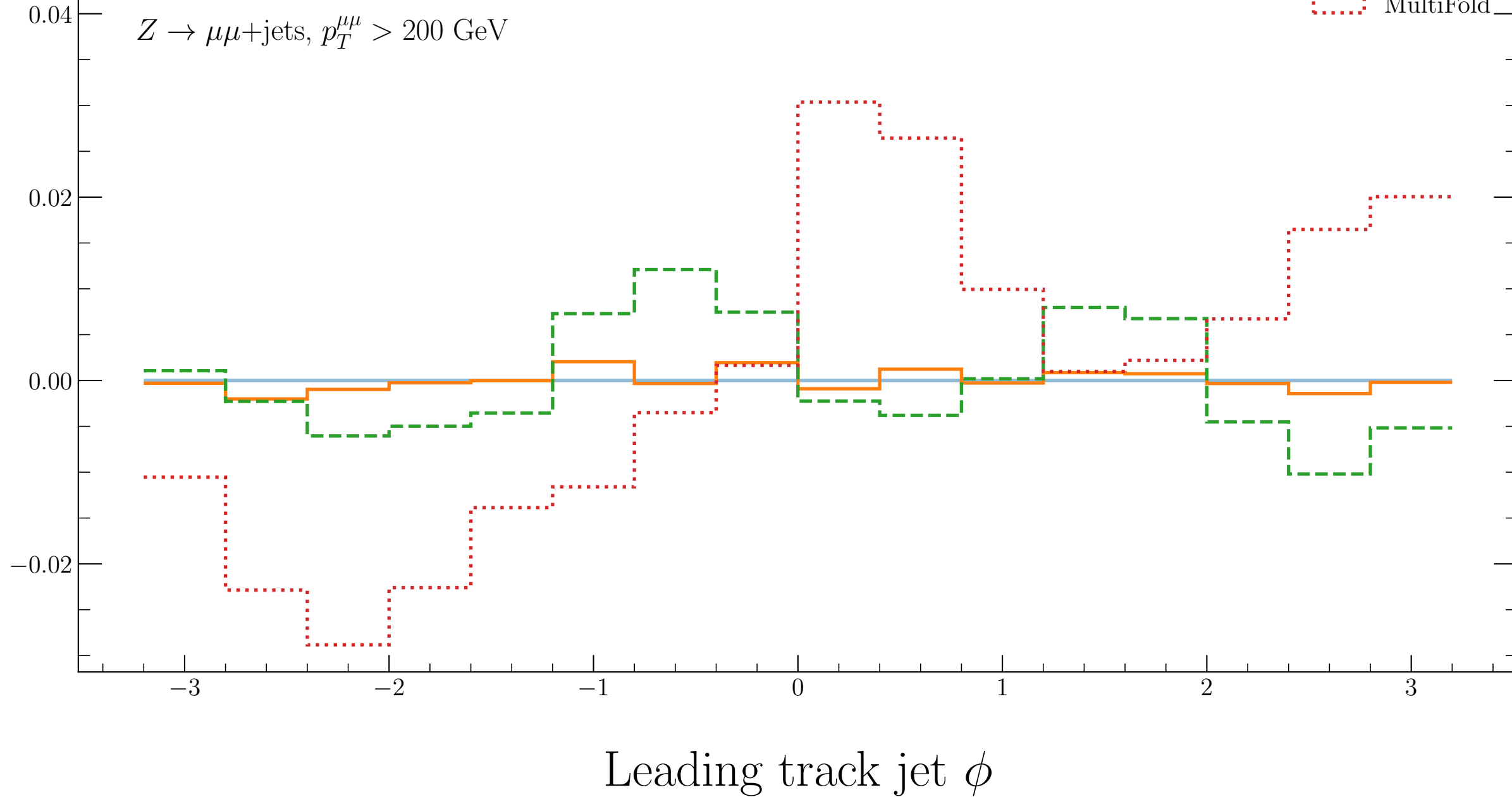
syst_prwUp

Nominal

IBU

UniFold

MultiFold



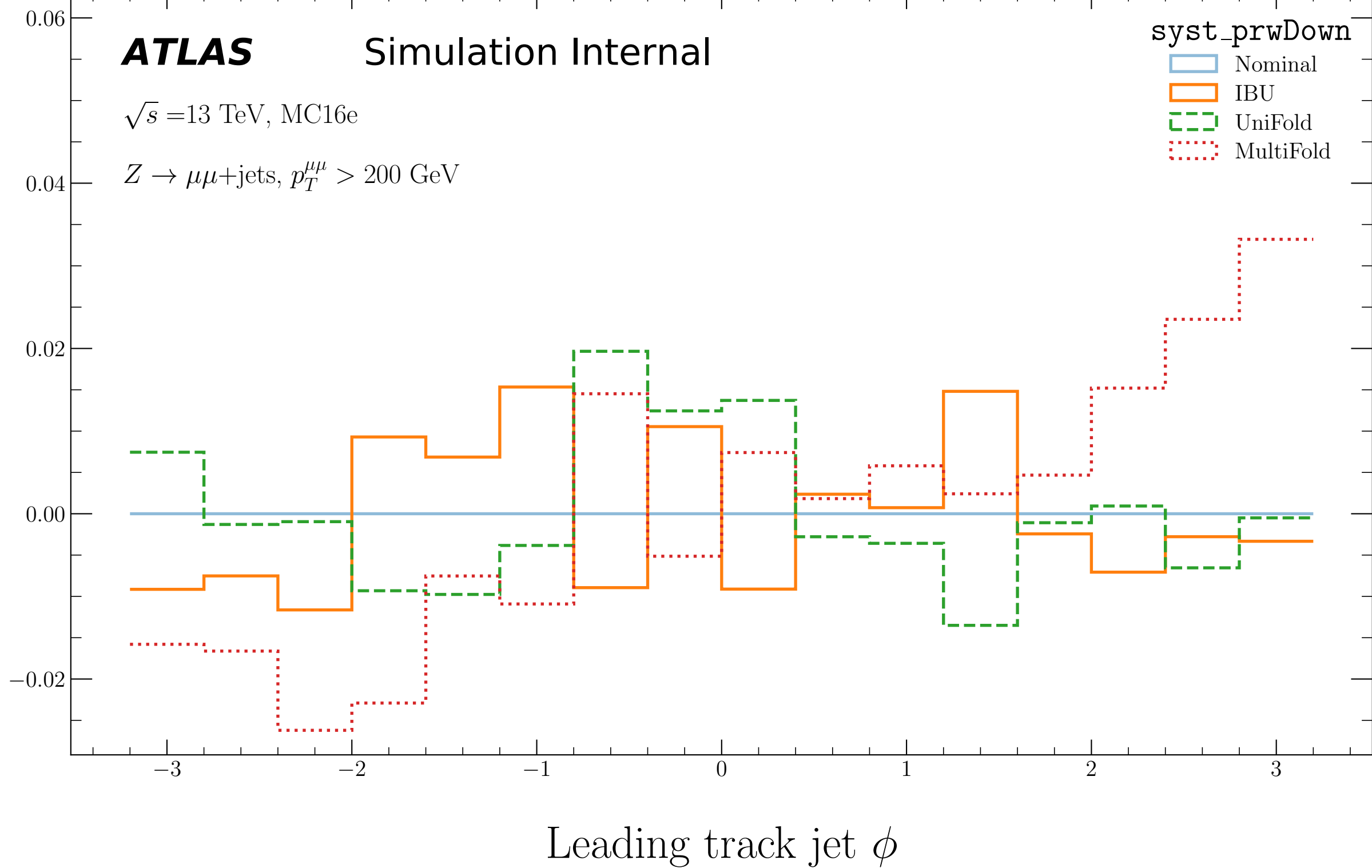
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

- Nominal
- IBU
- UniFold
- MultiFold



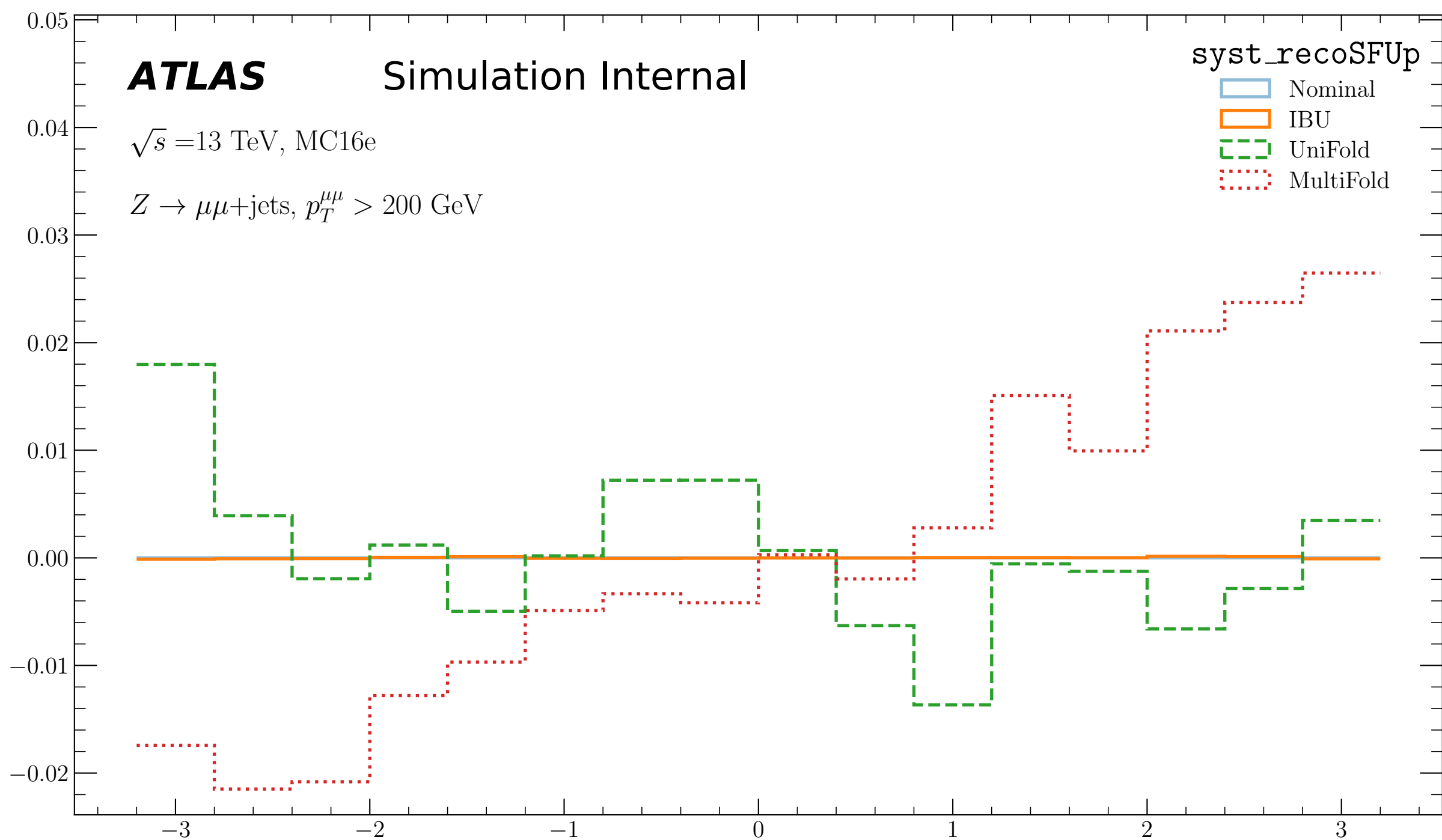
ATLAS

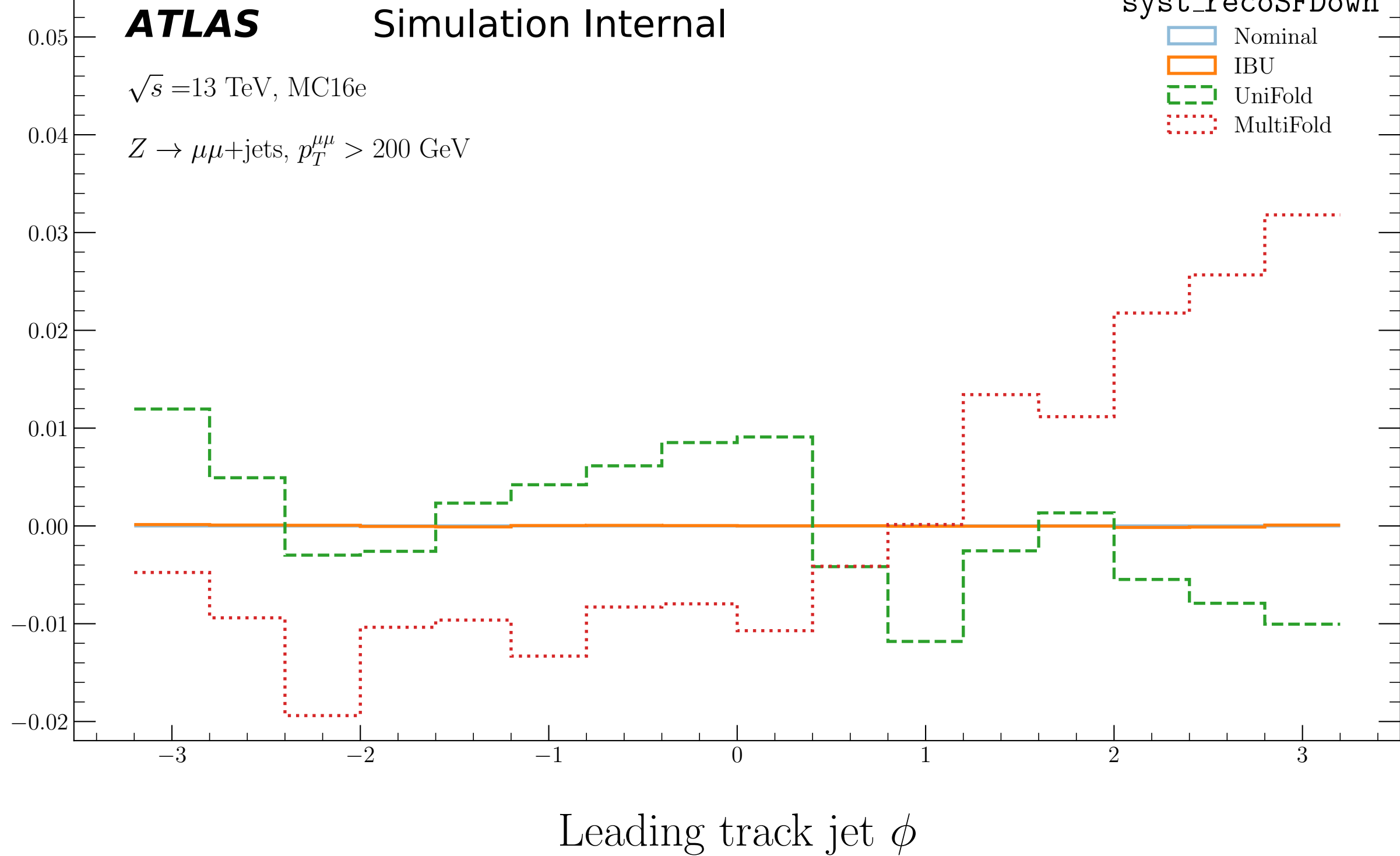
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold





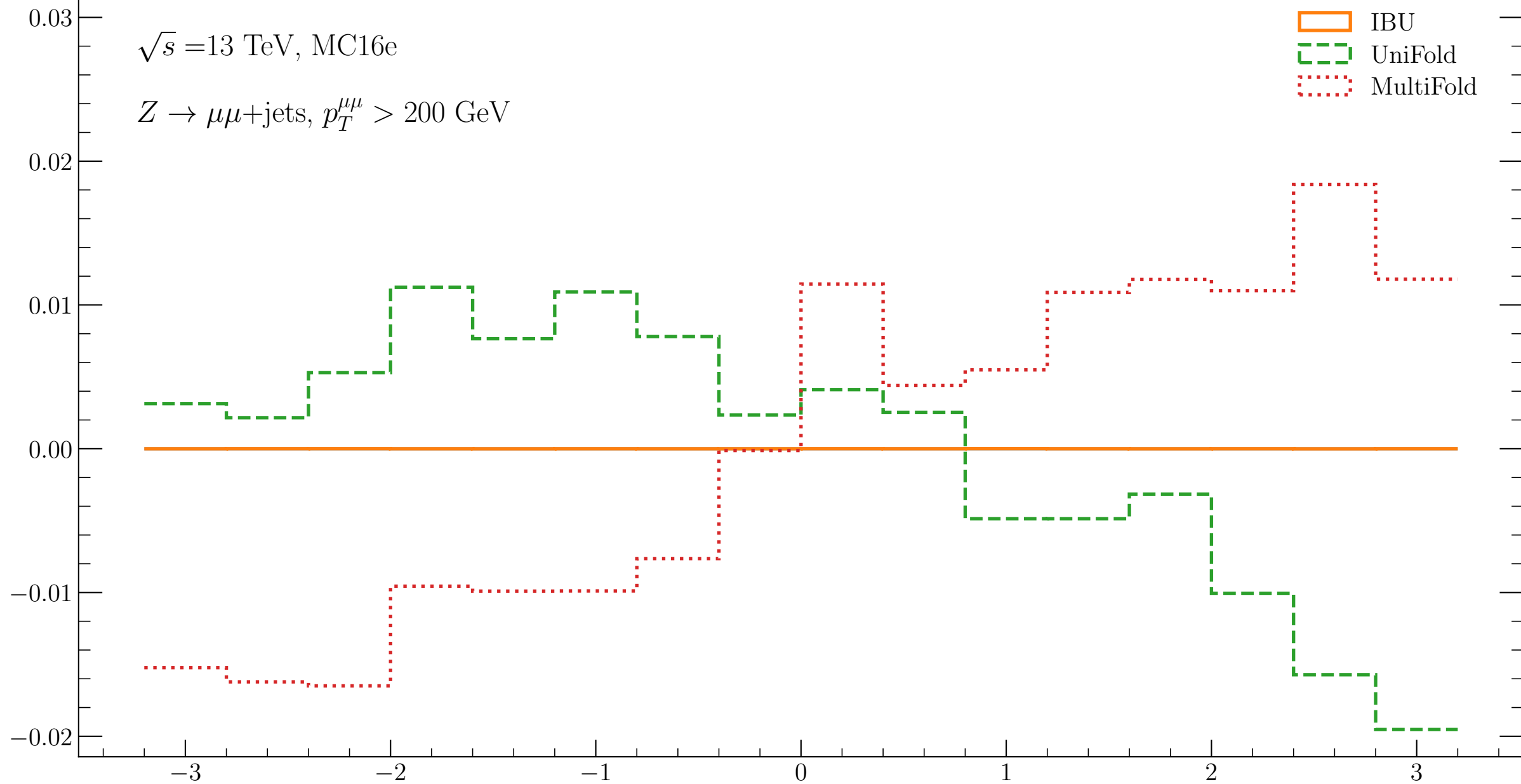
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet ϕ

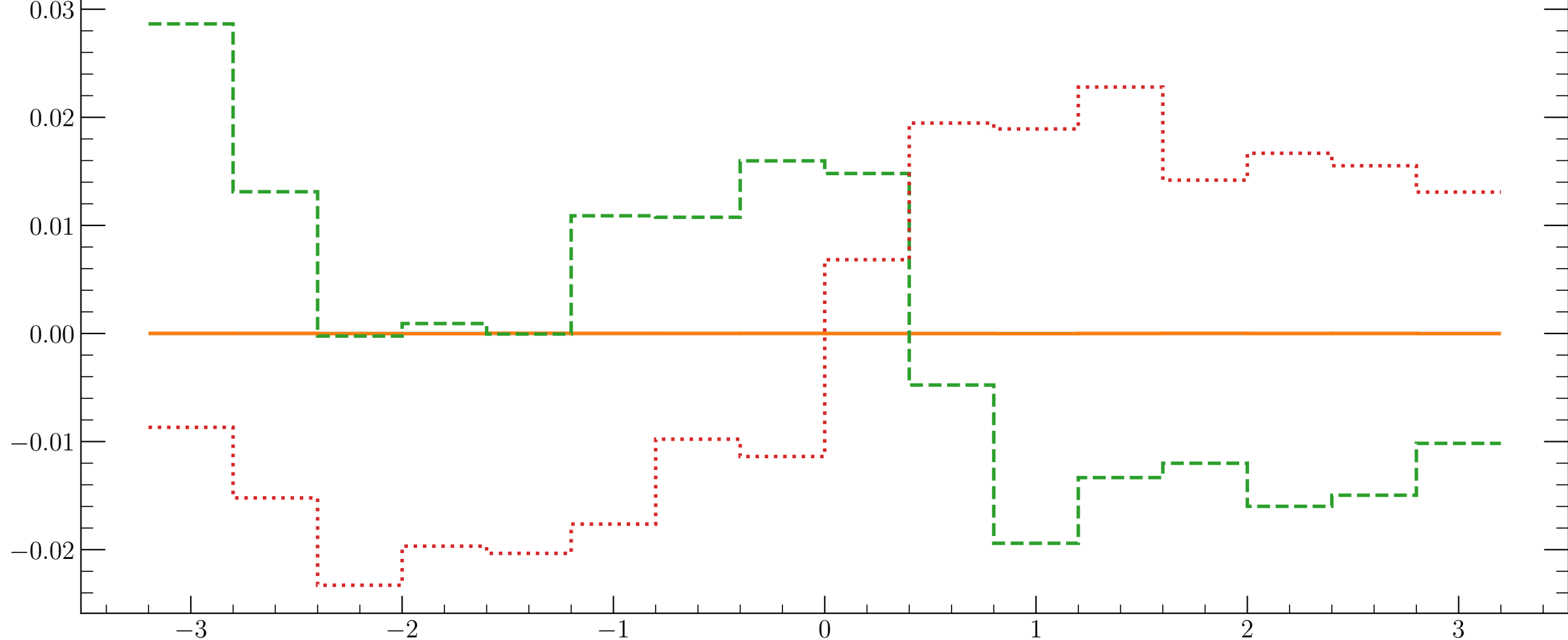
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet ϕ

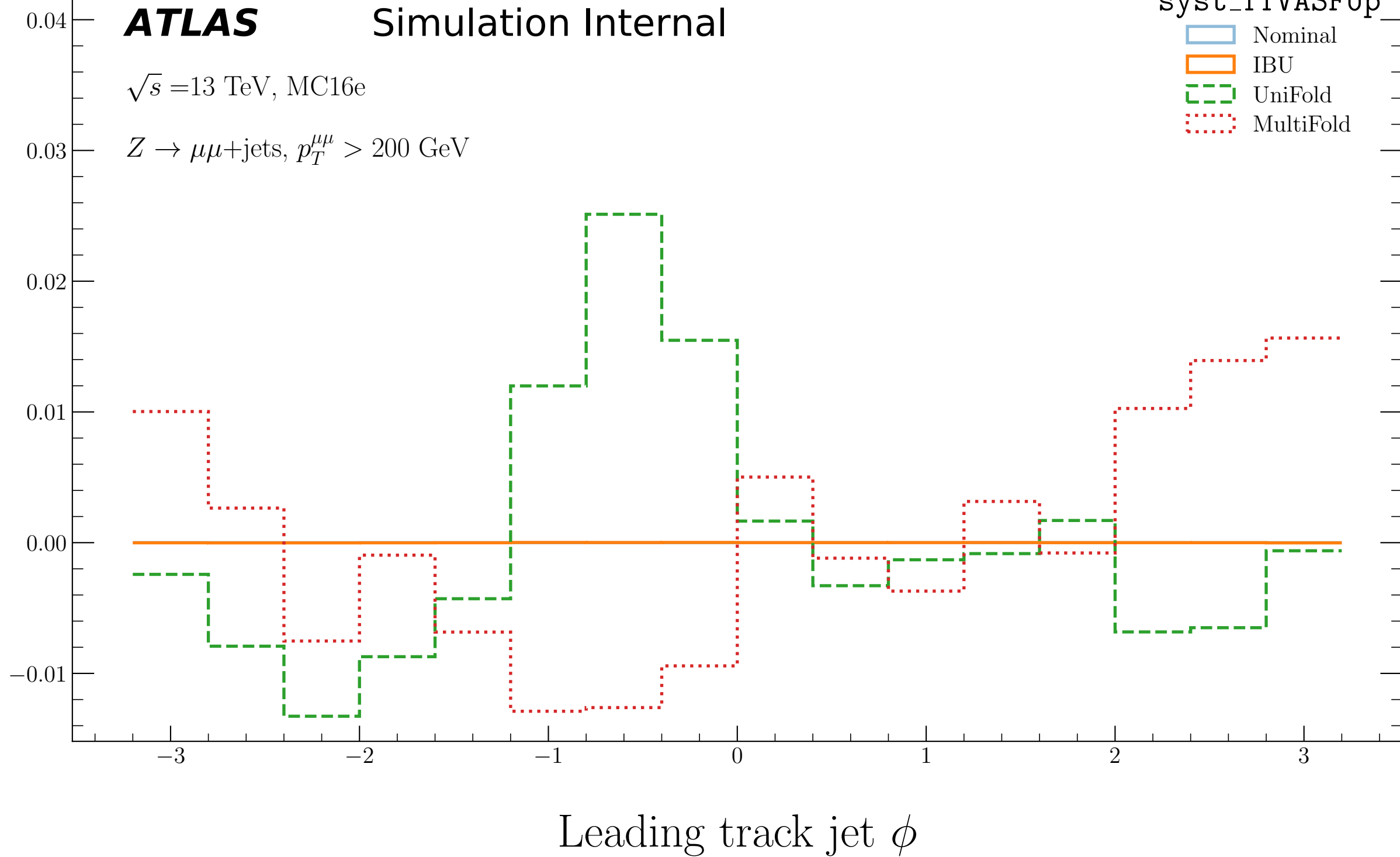
ATLAS

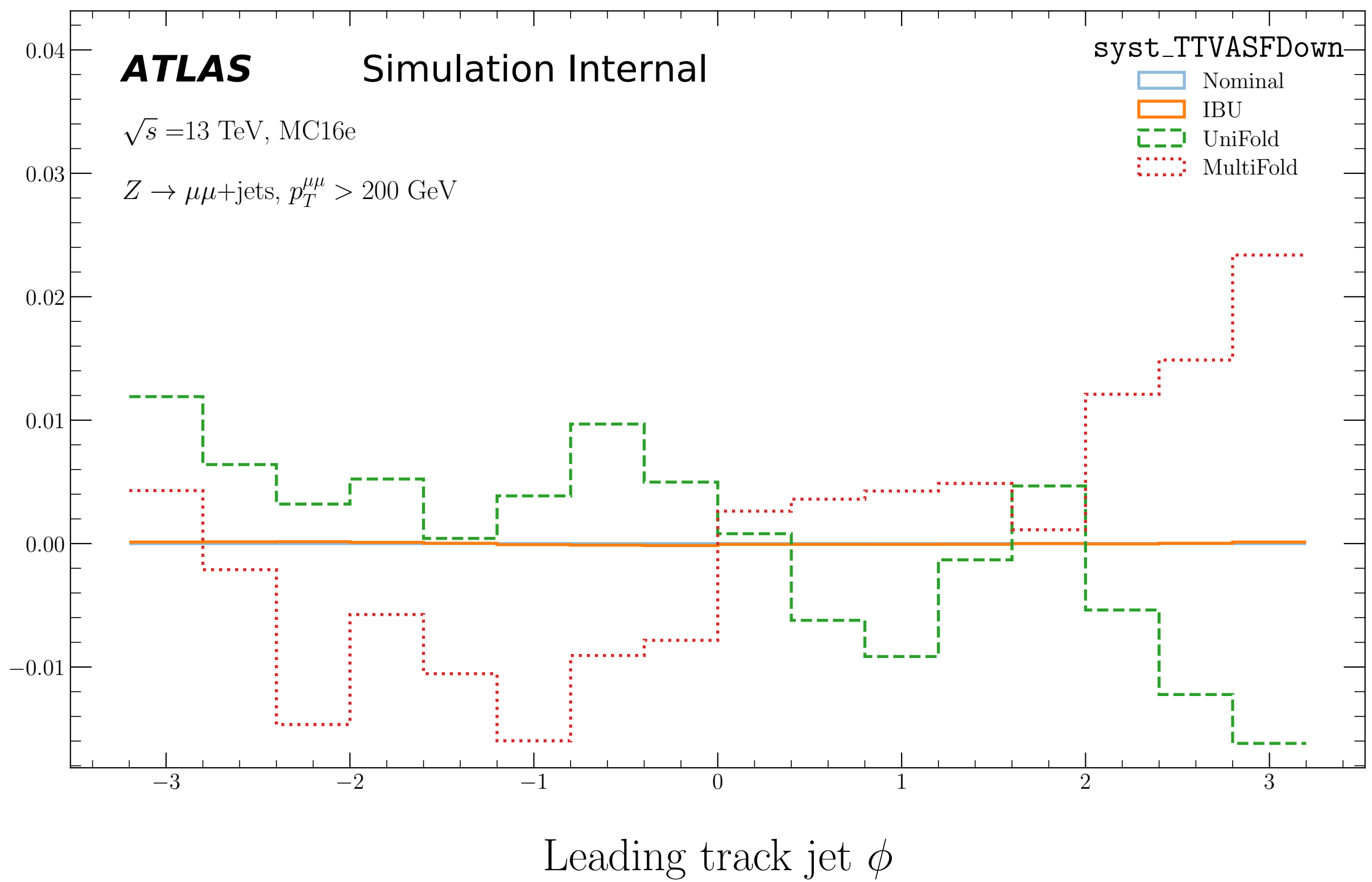
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold





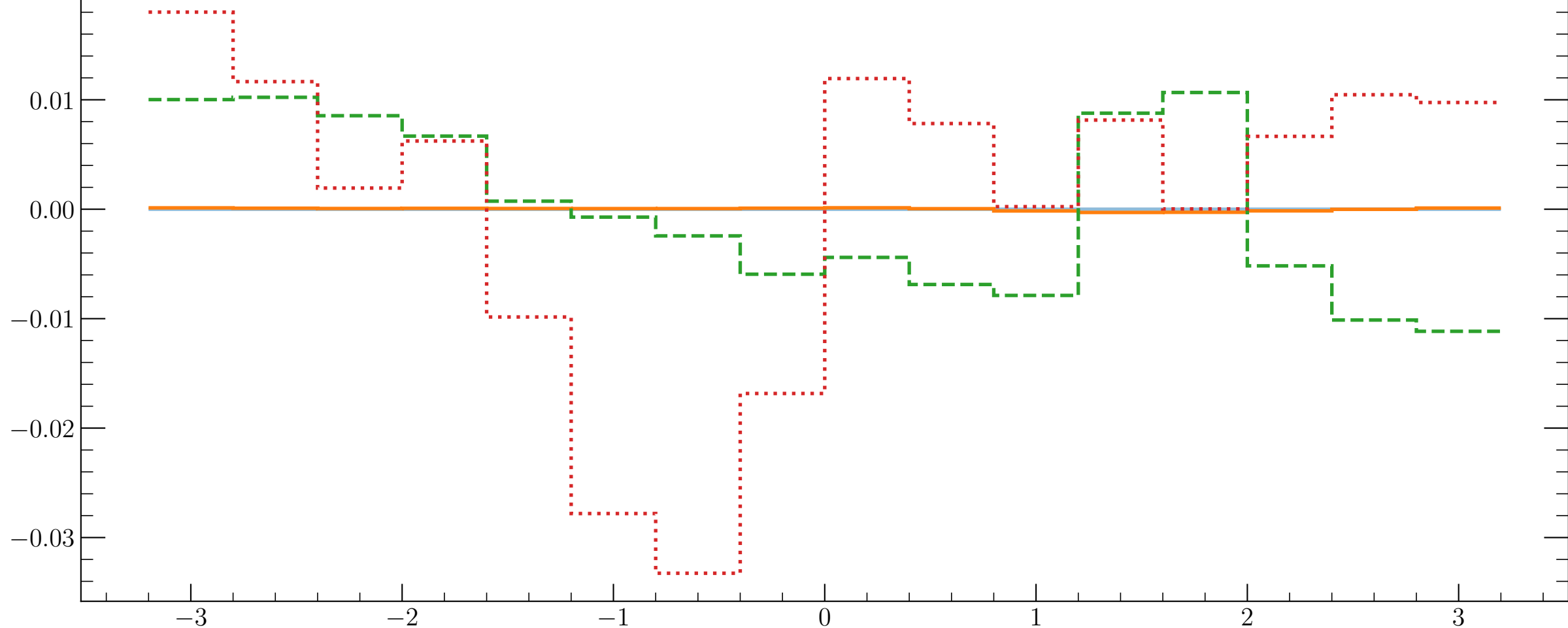
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

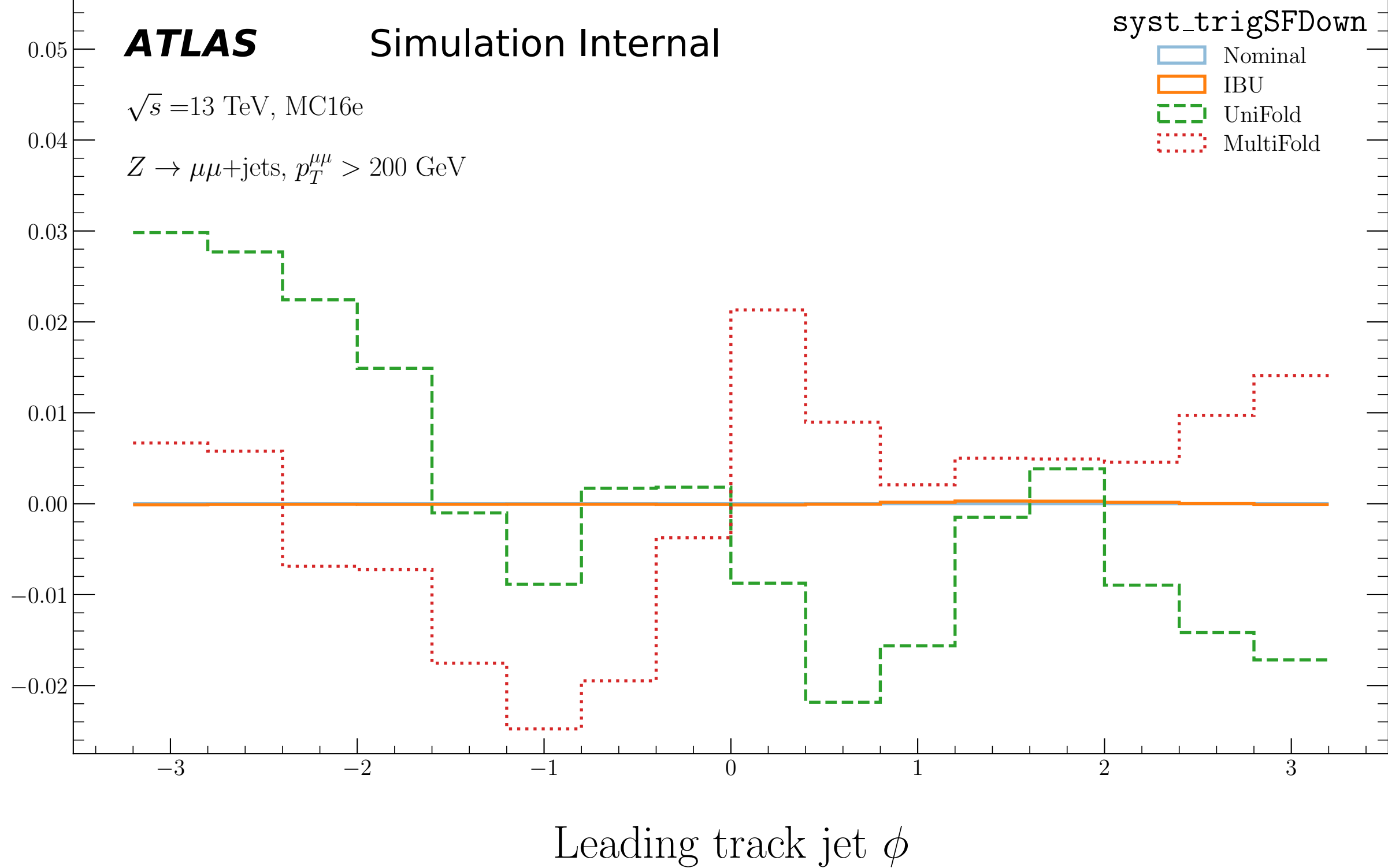
syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet ϕ

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

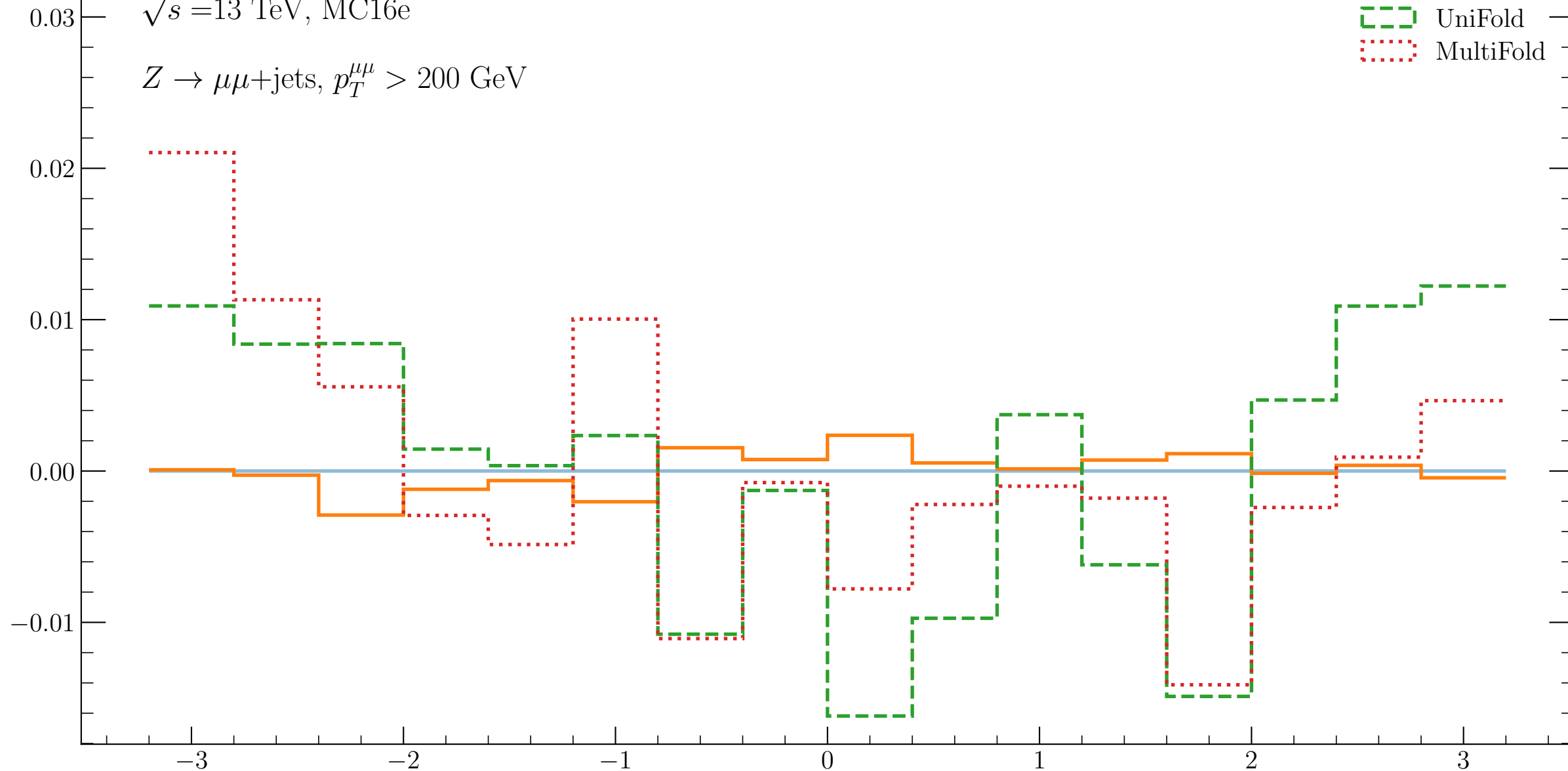
syst_prwUp

Nominal

IBU

UniFold

MultiFold



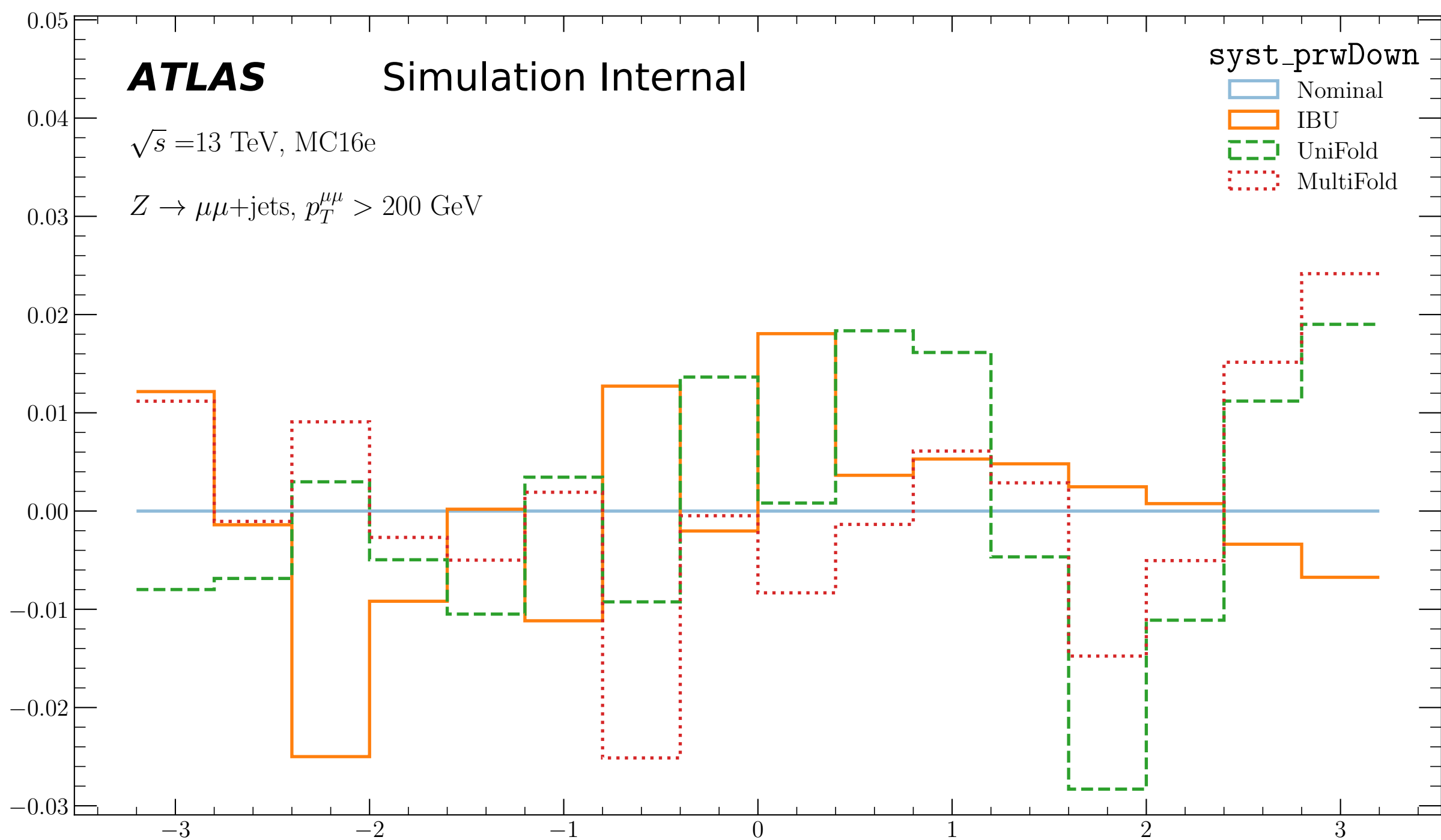
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet ϕ

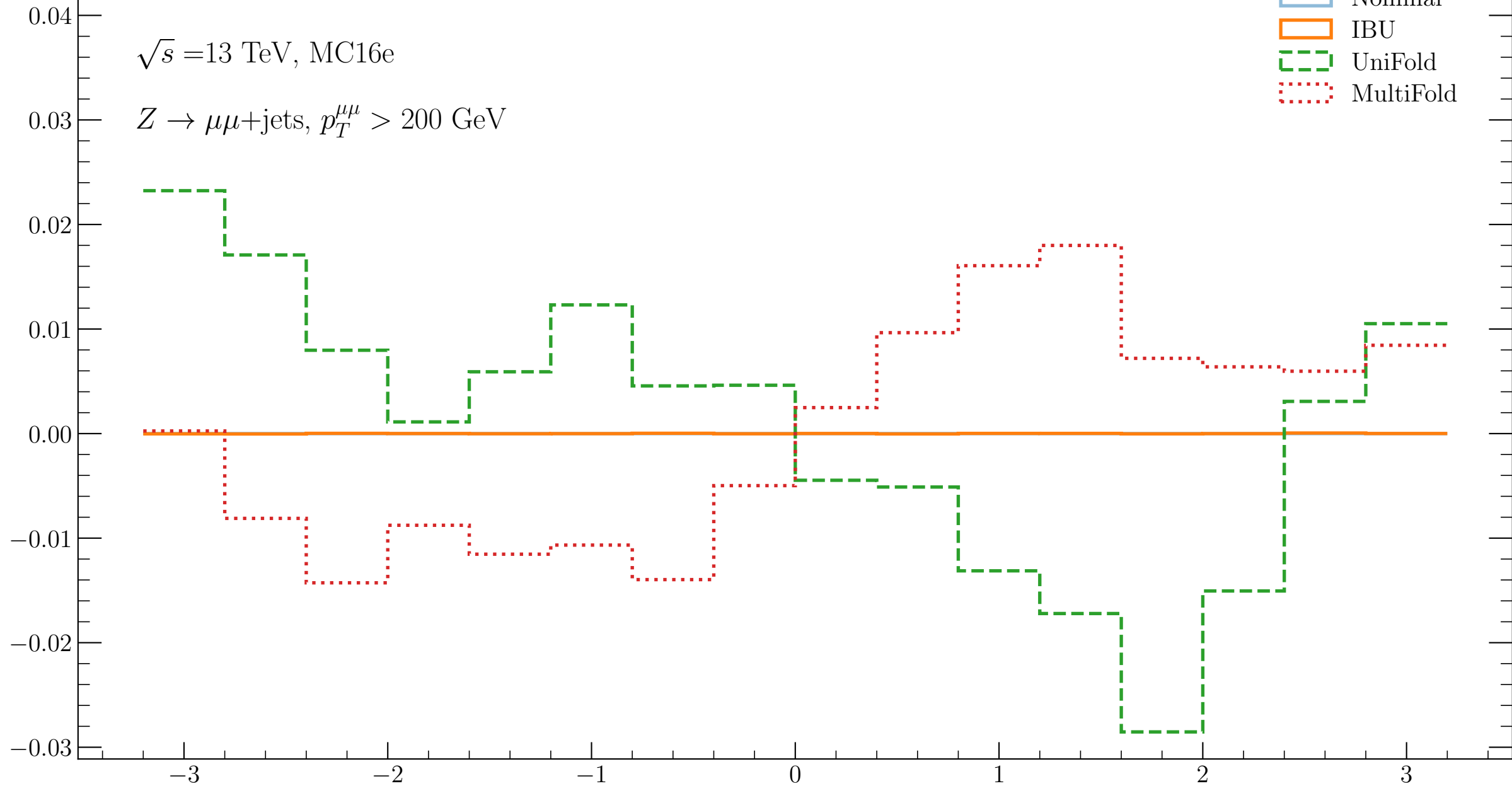
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

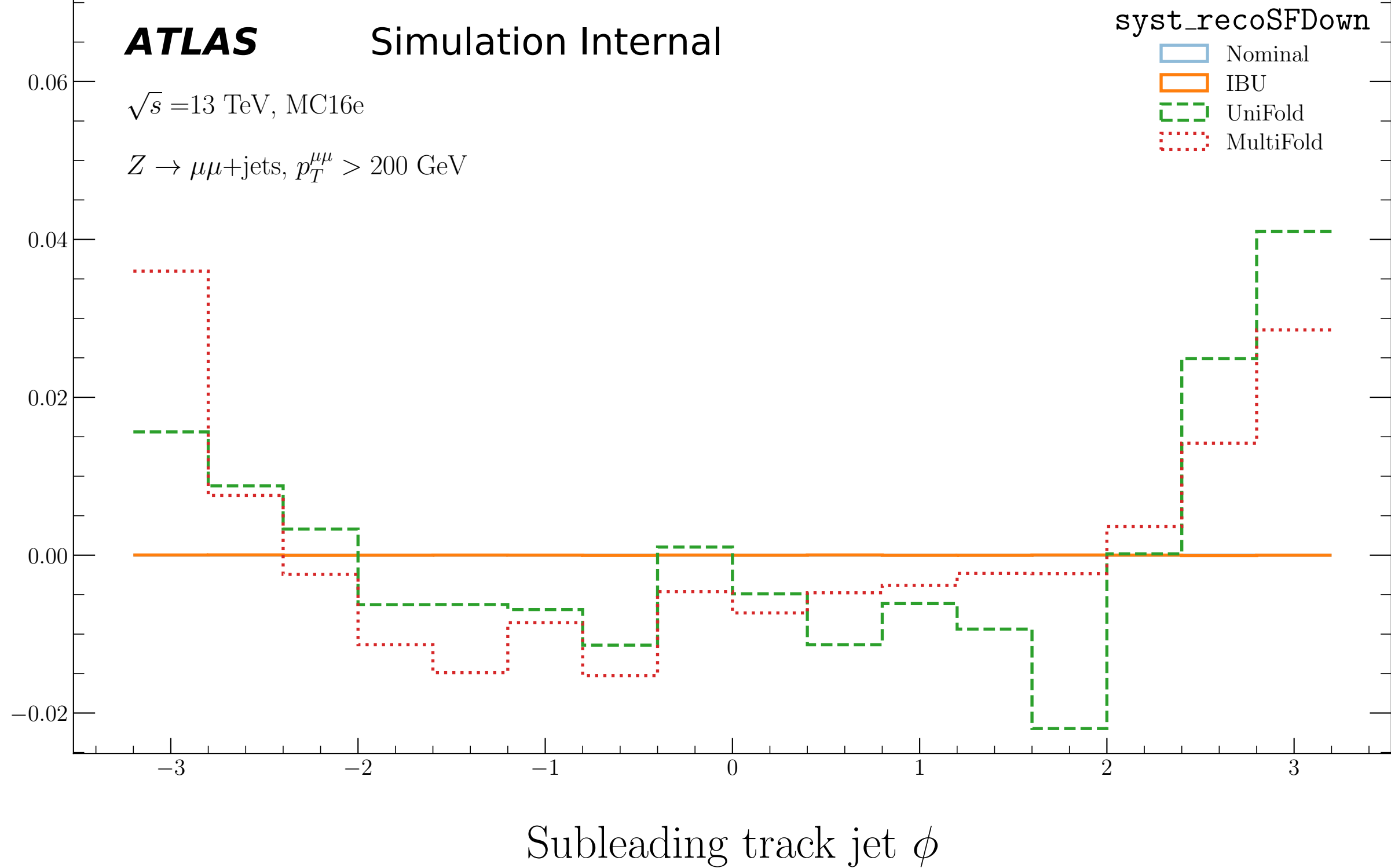
syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet ϕ

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

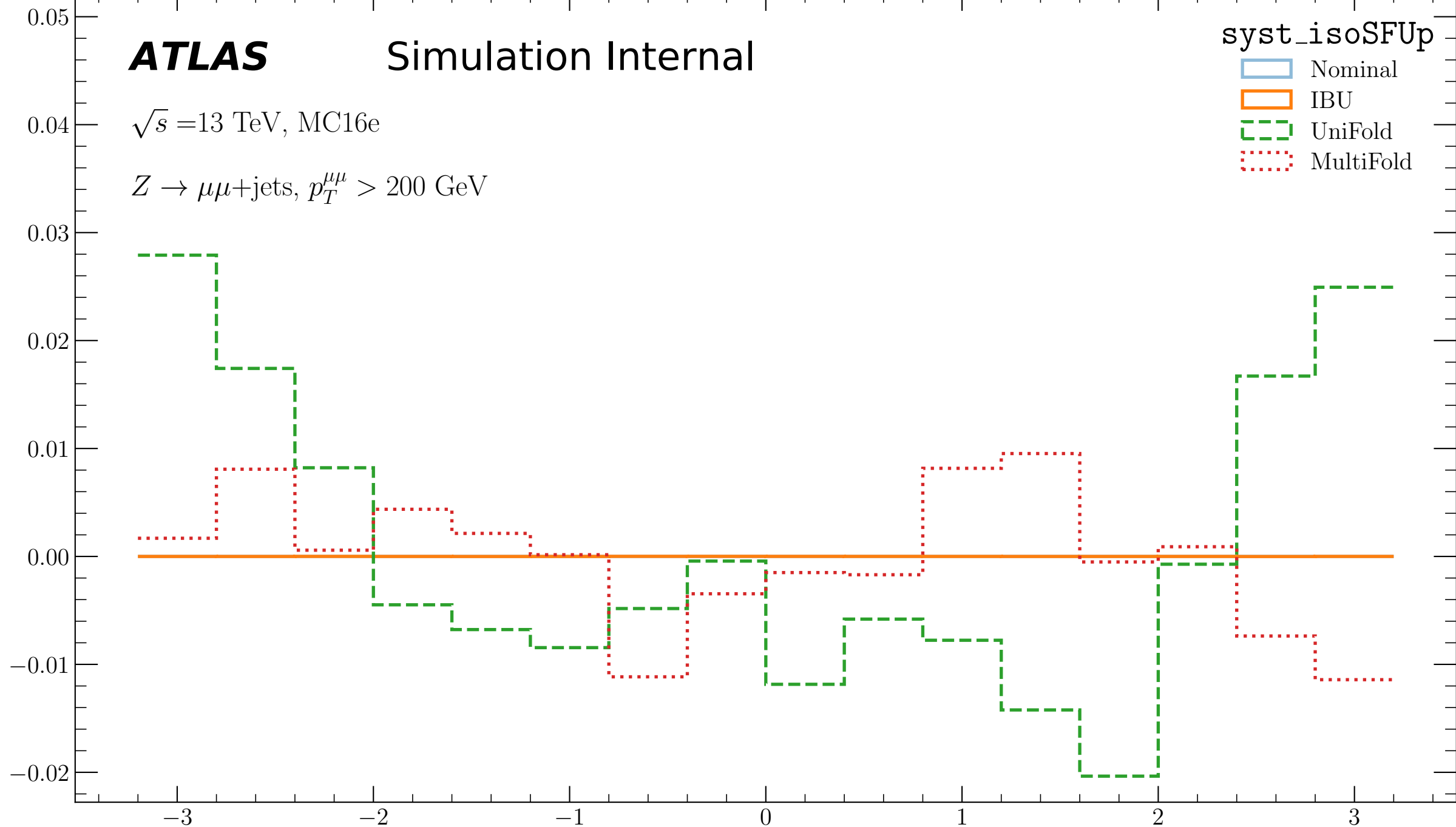
ATLAS

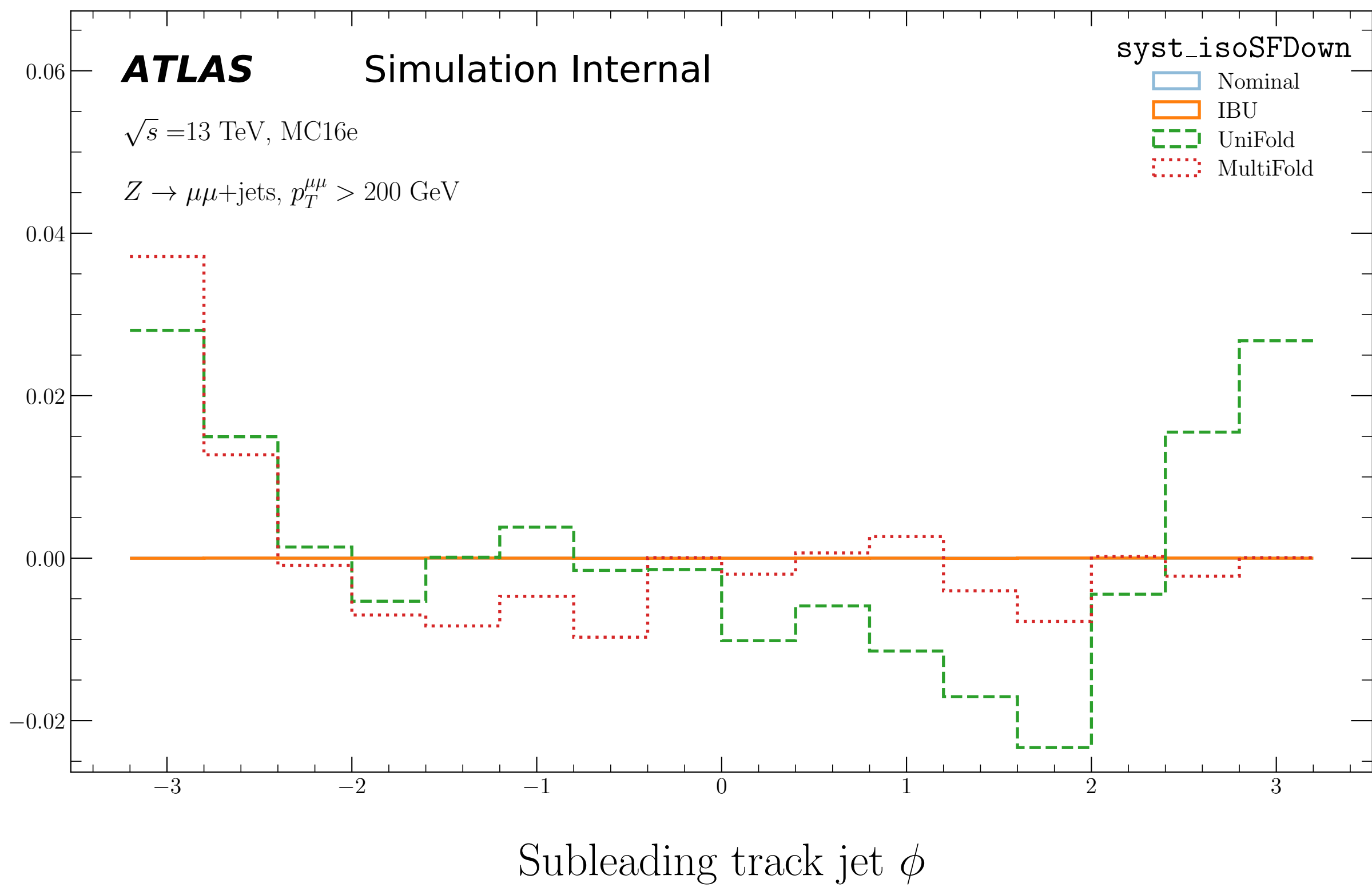
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet ϕ



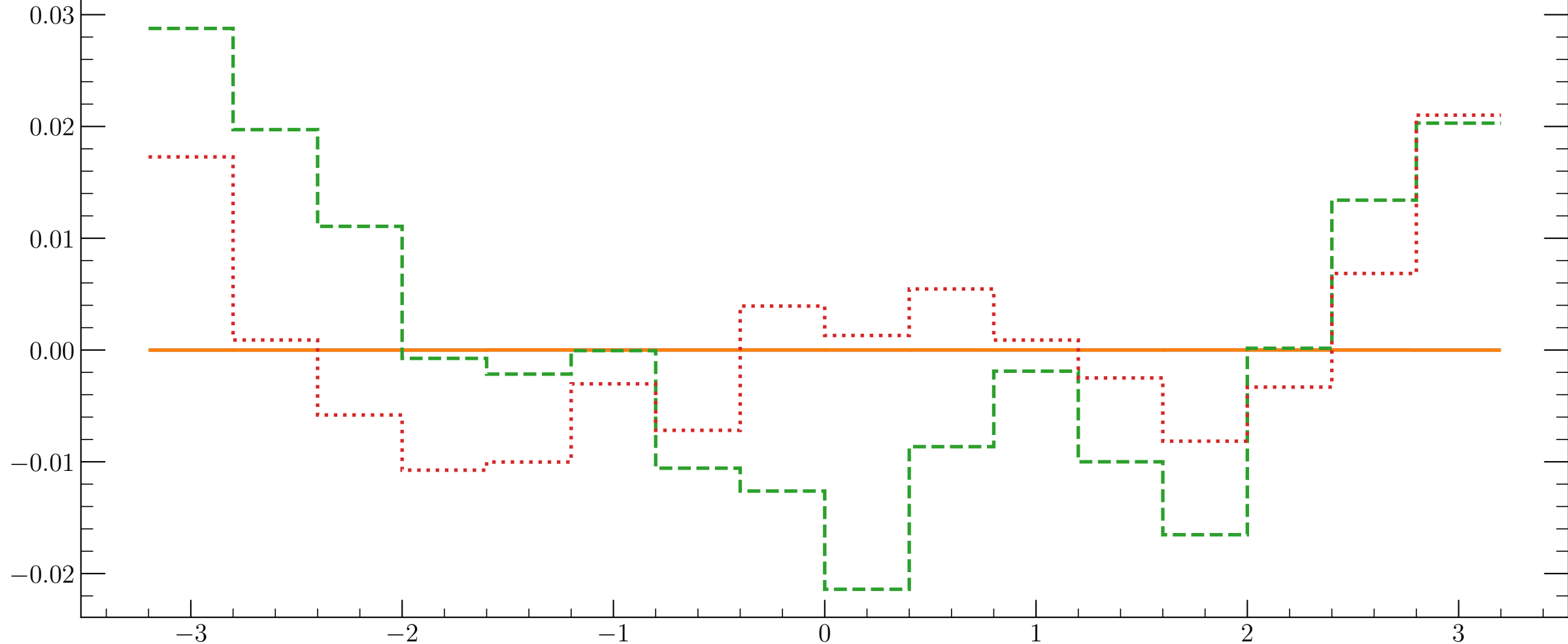
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

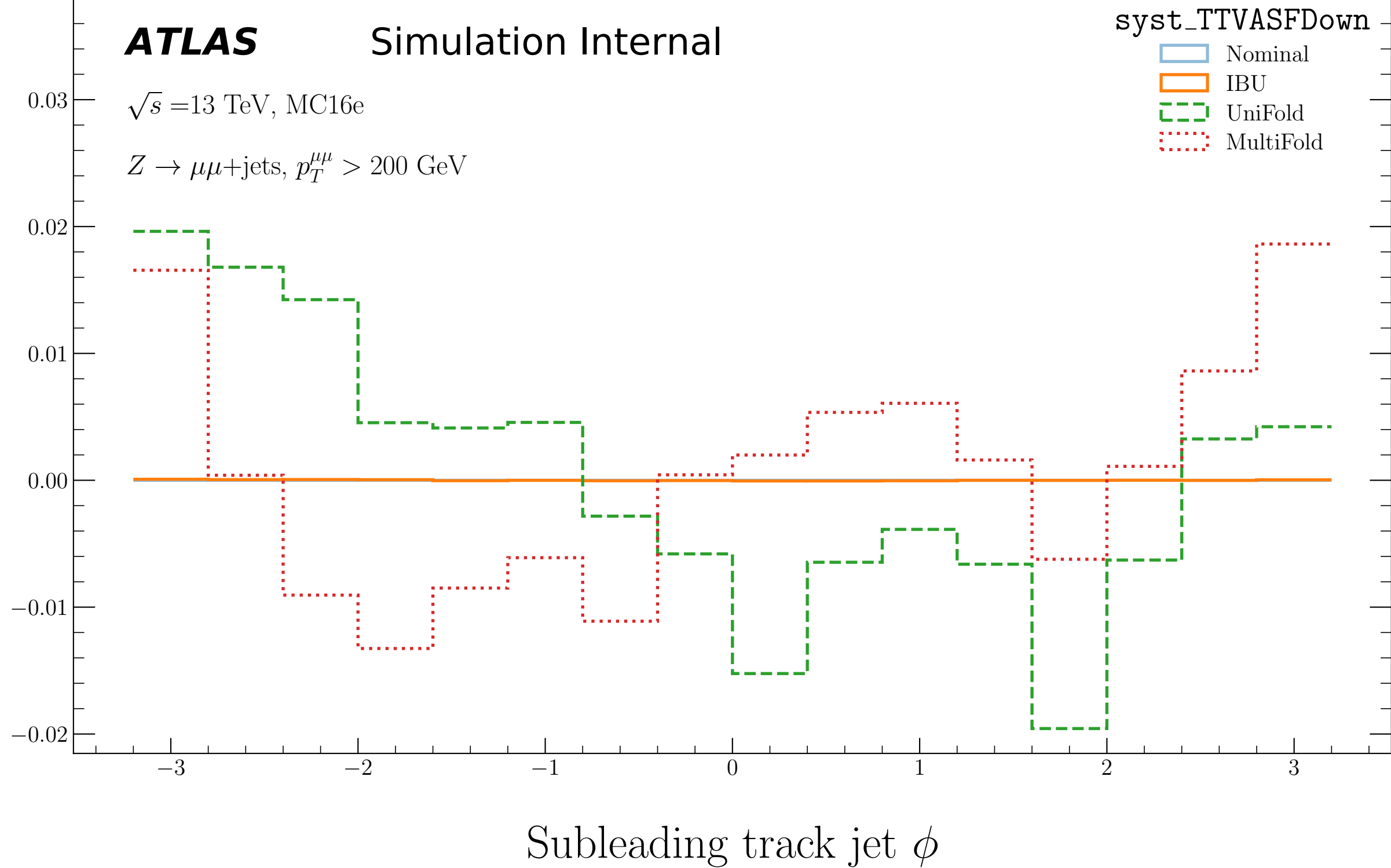
syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet ϕ

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

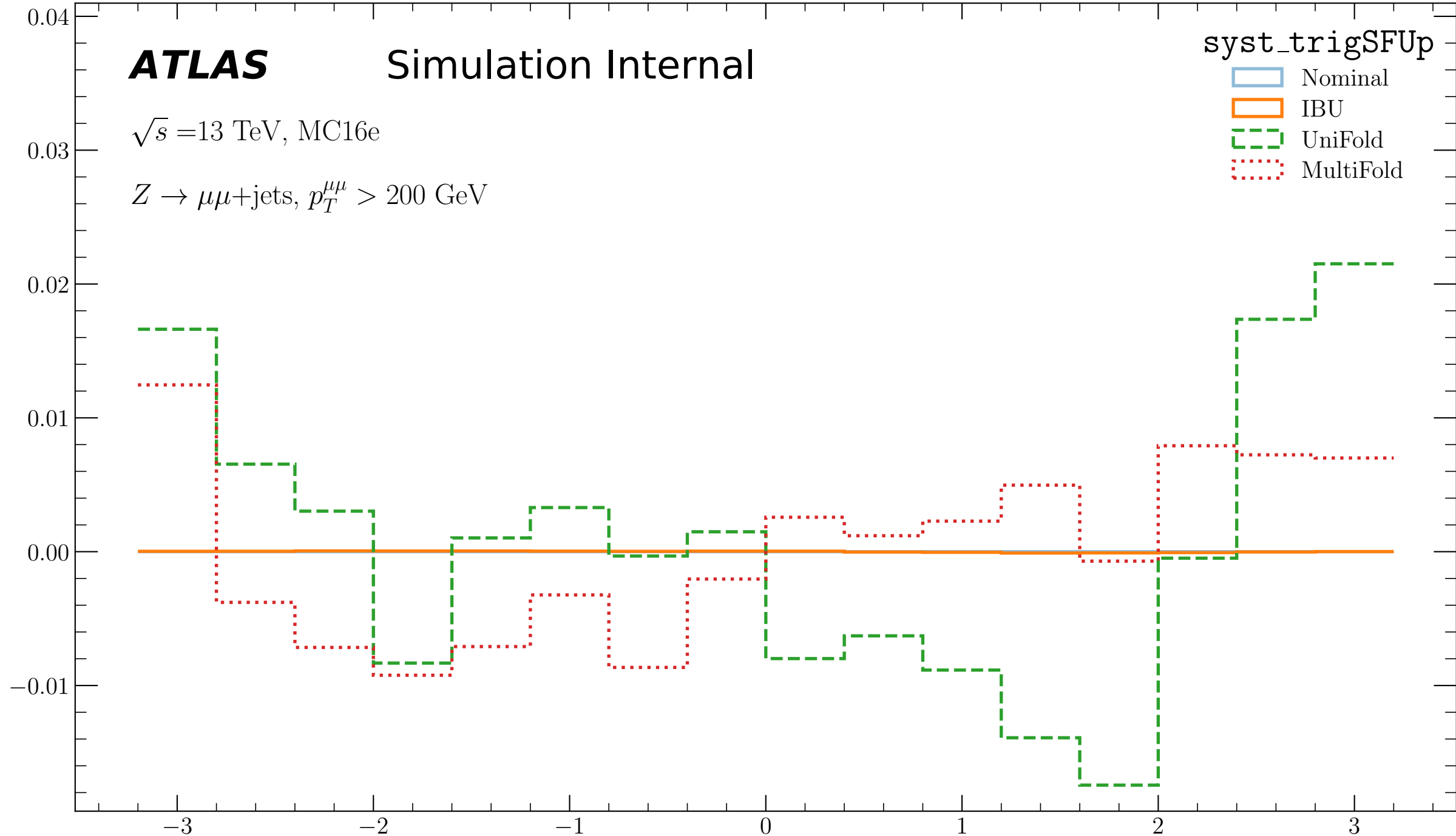
ATLAS

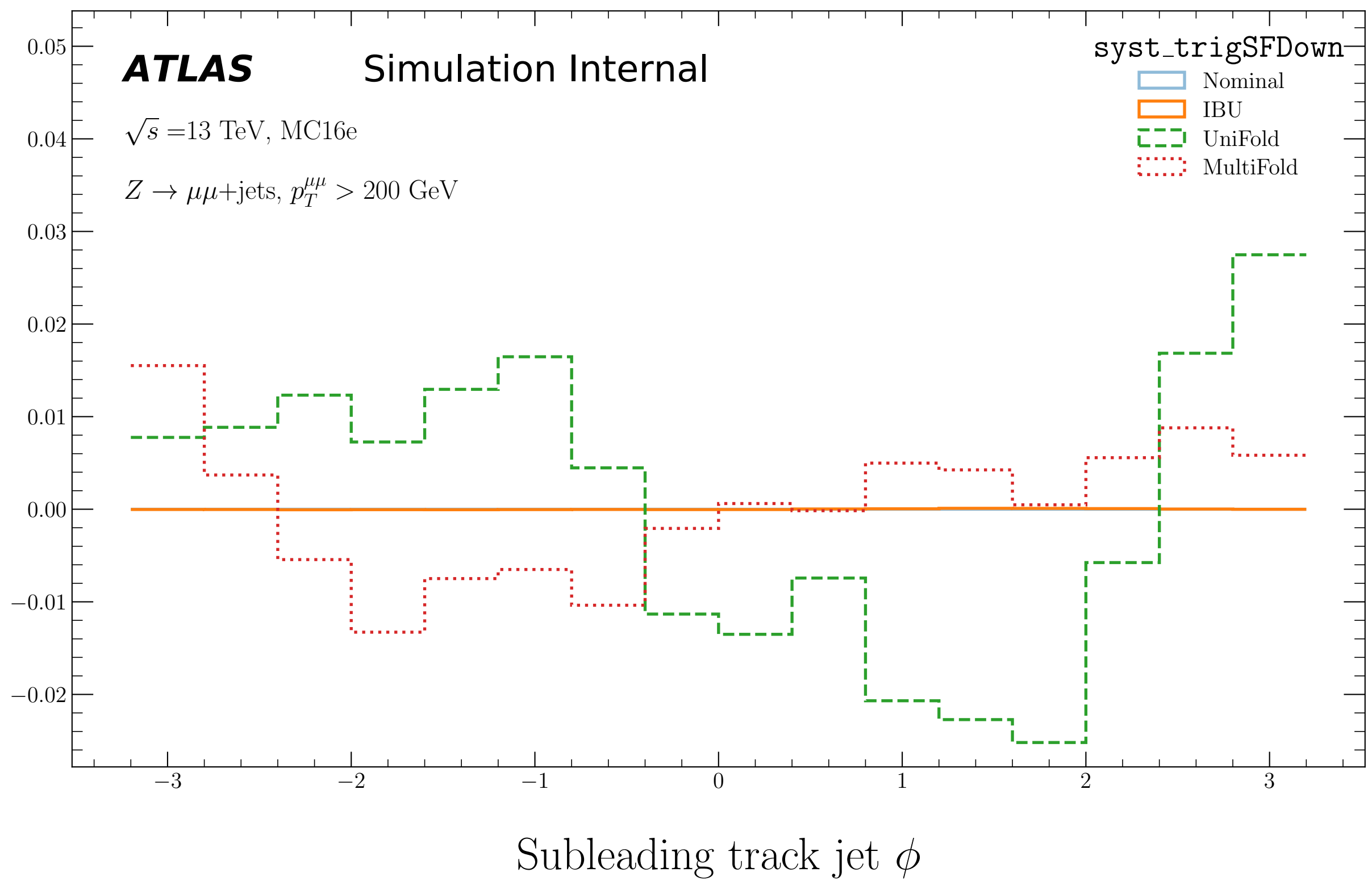
Simulation Internal

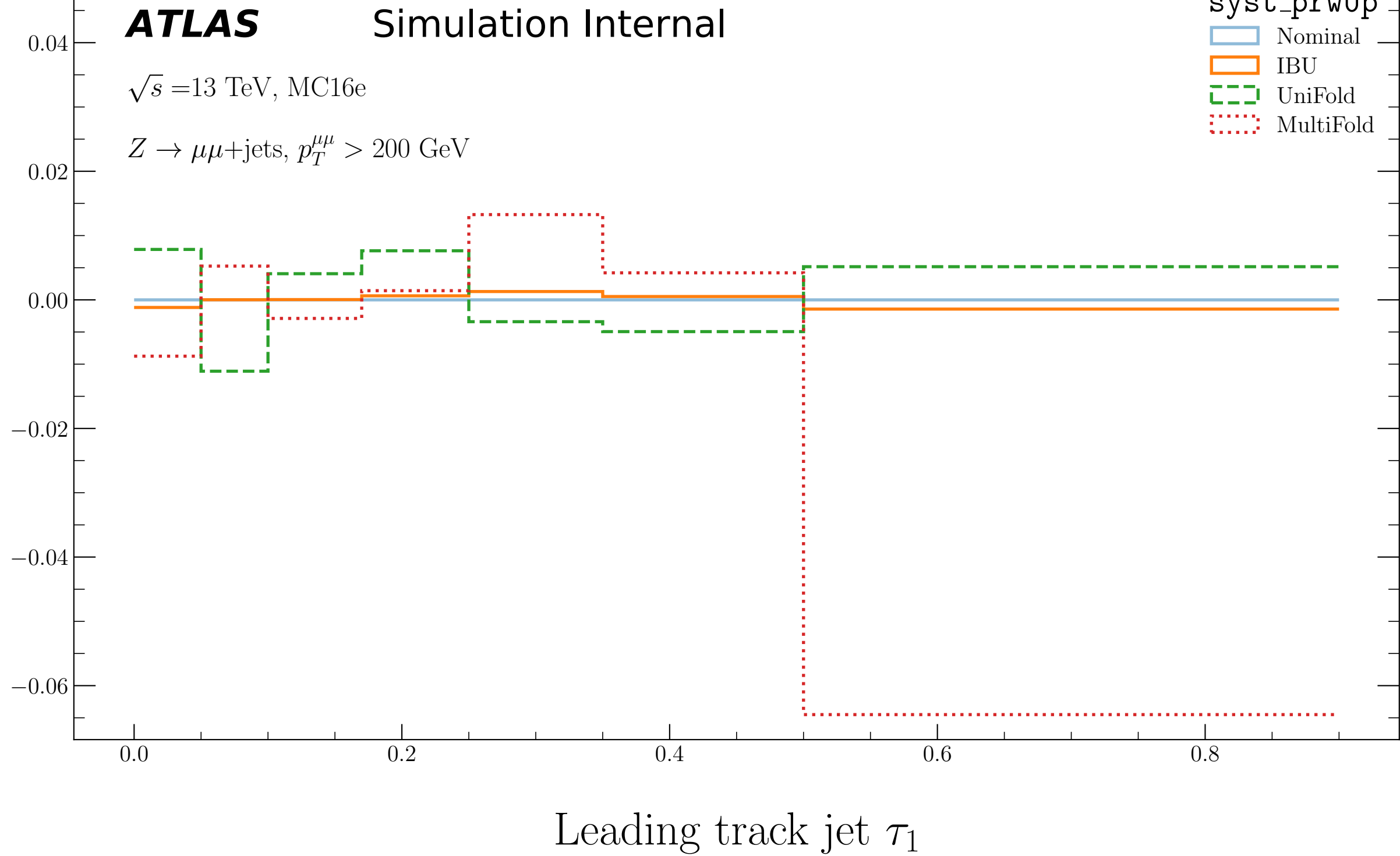
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

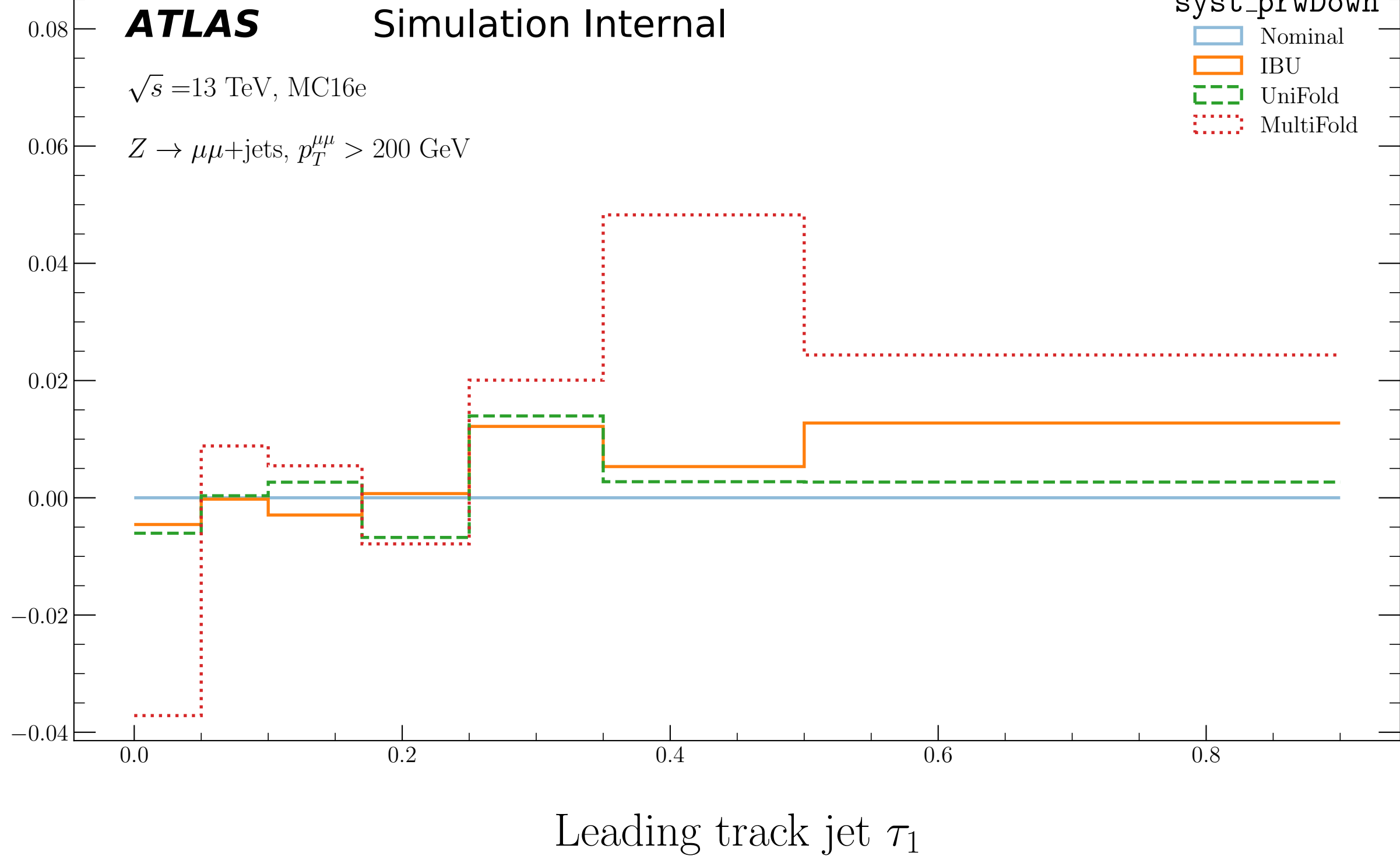
syst_trigSFUp

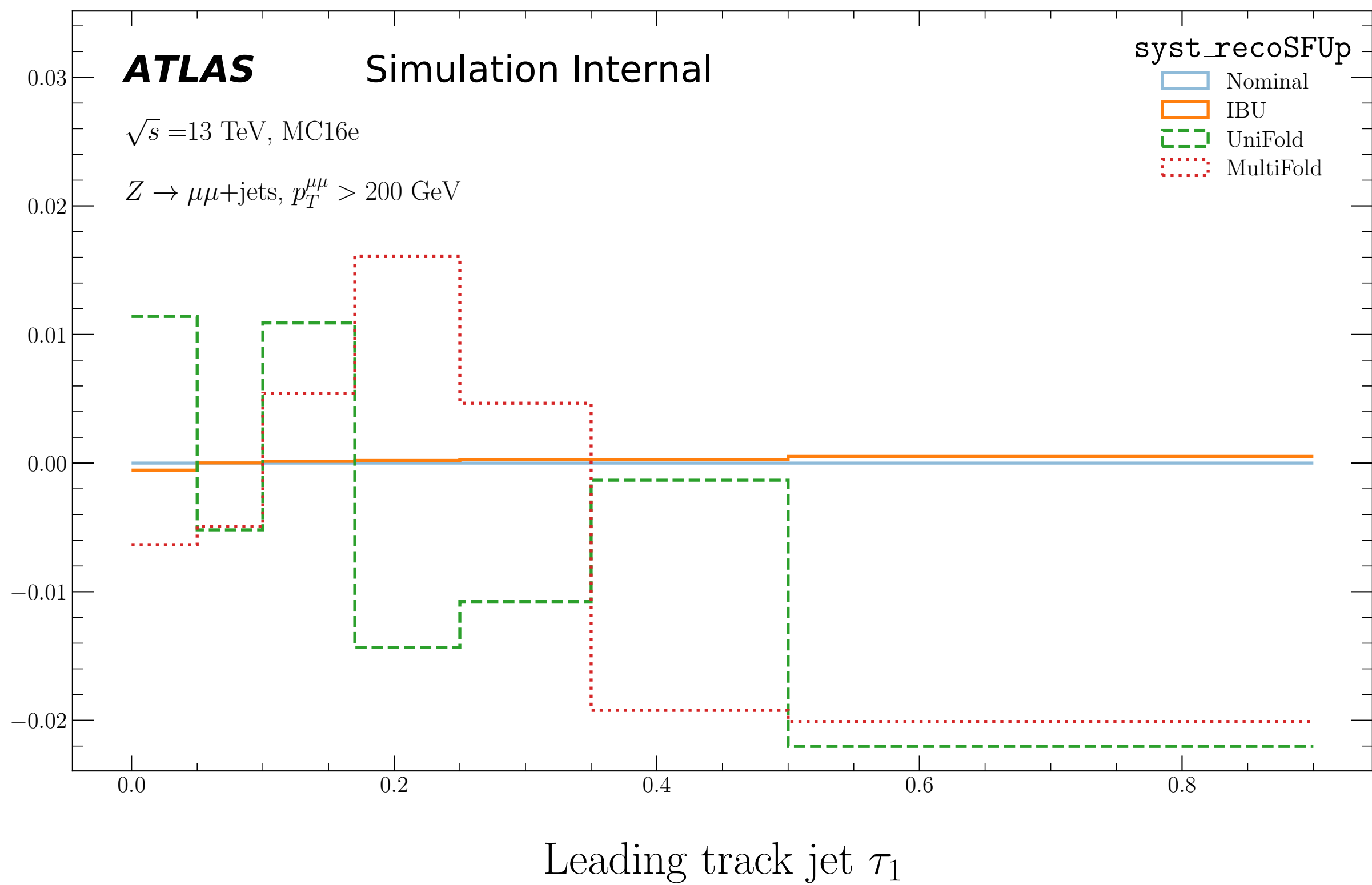
- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet ϕ









ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

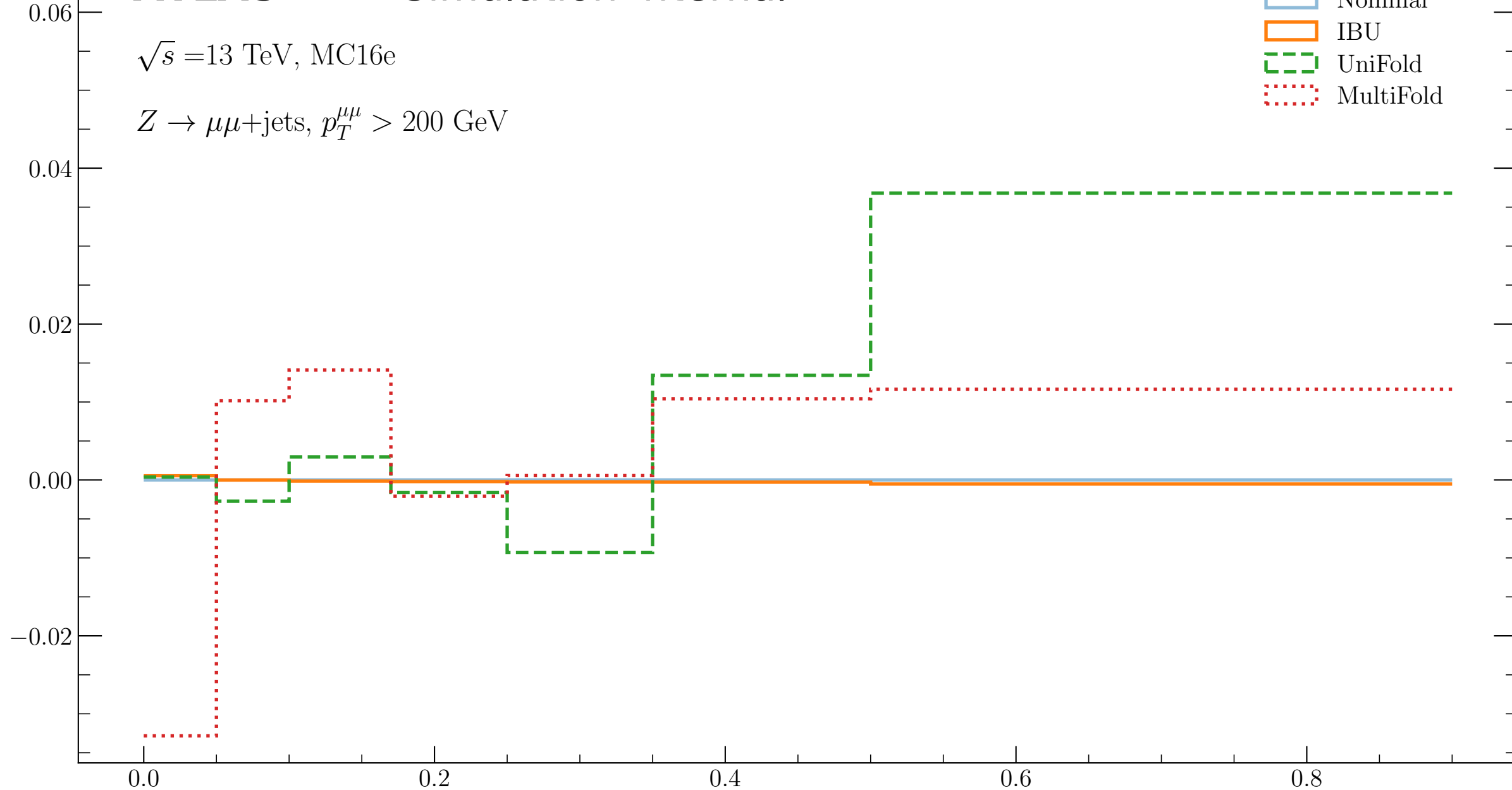
syst_recoSFDown

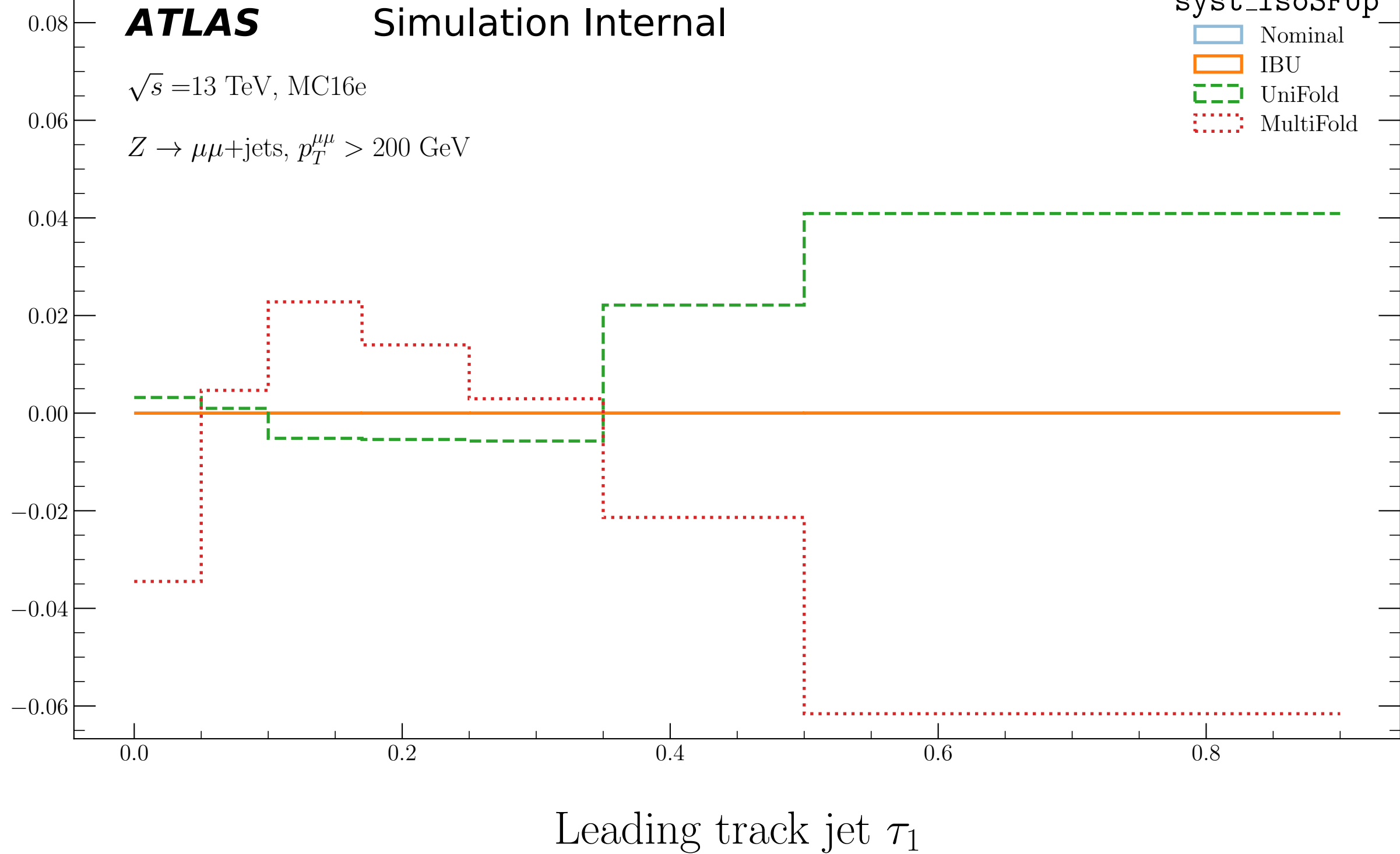
Nominal

IBU

UniFold

MultiFold

Leading track jet τ_1



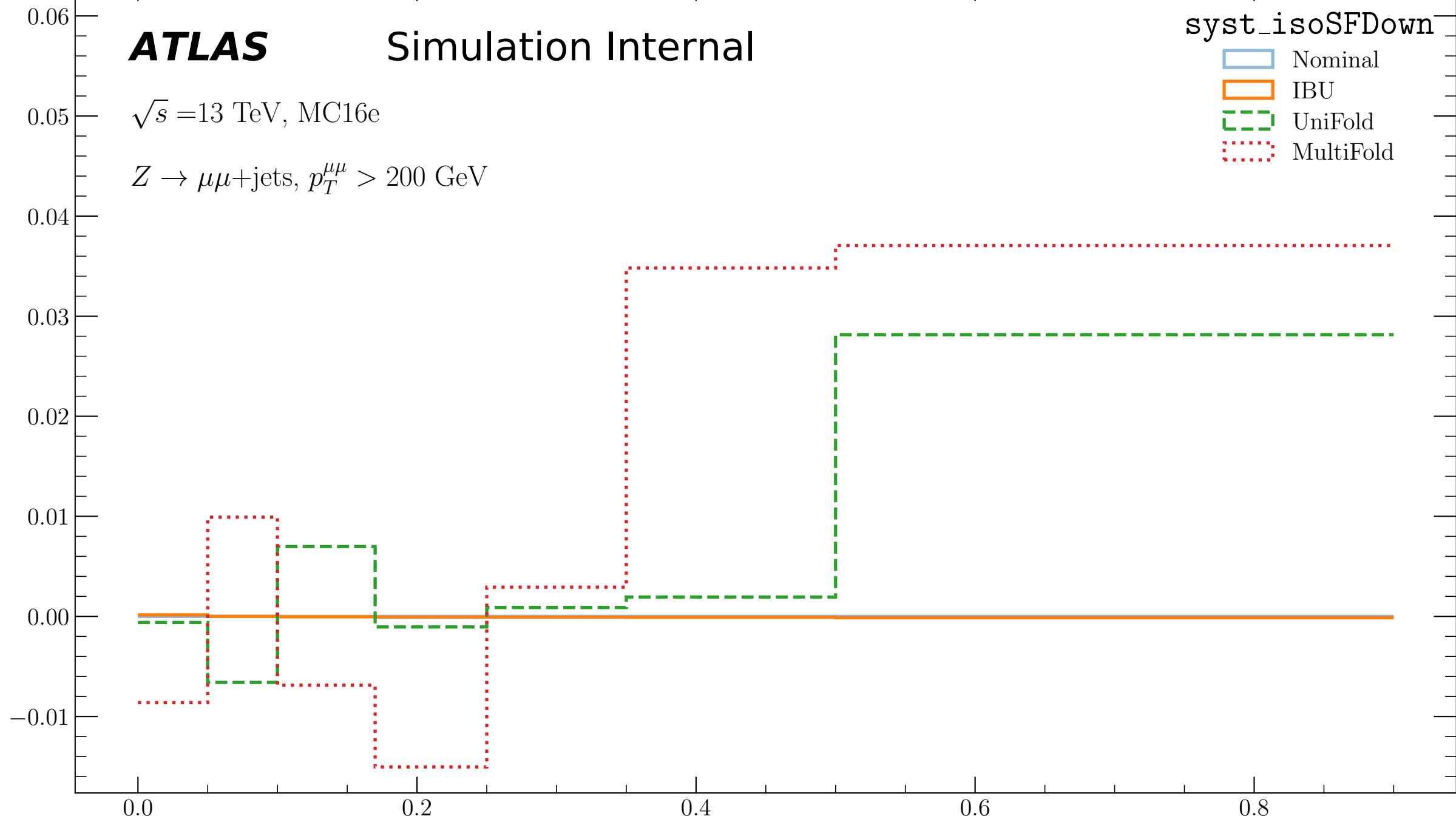
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet τ_1

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

0.08
0.06
0.04
0.02
0.00
-0.02

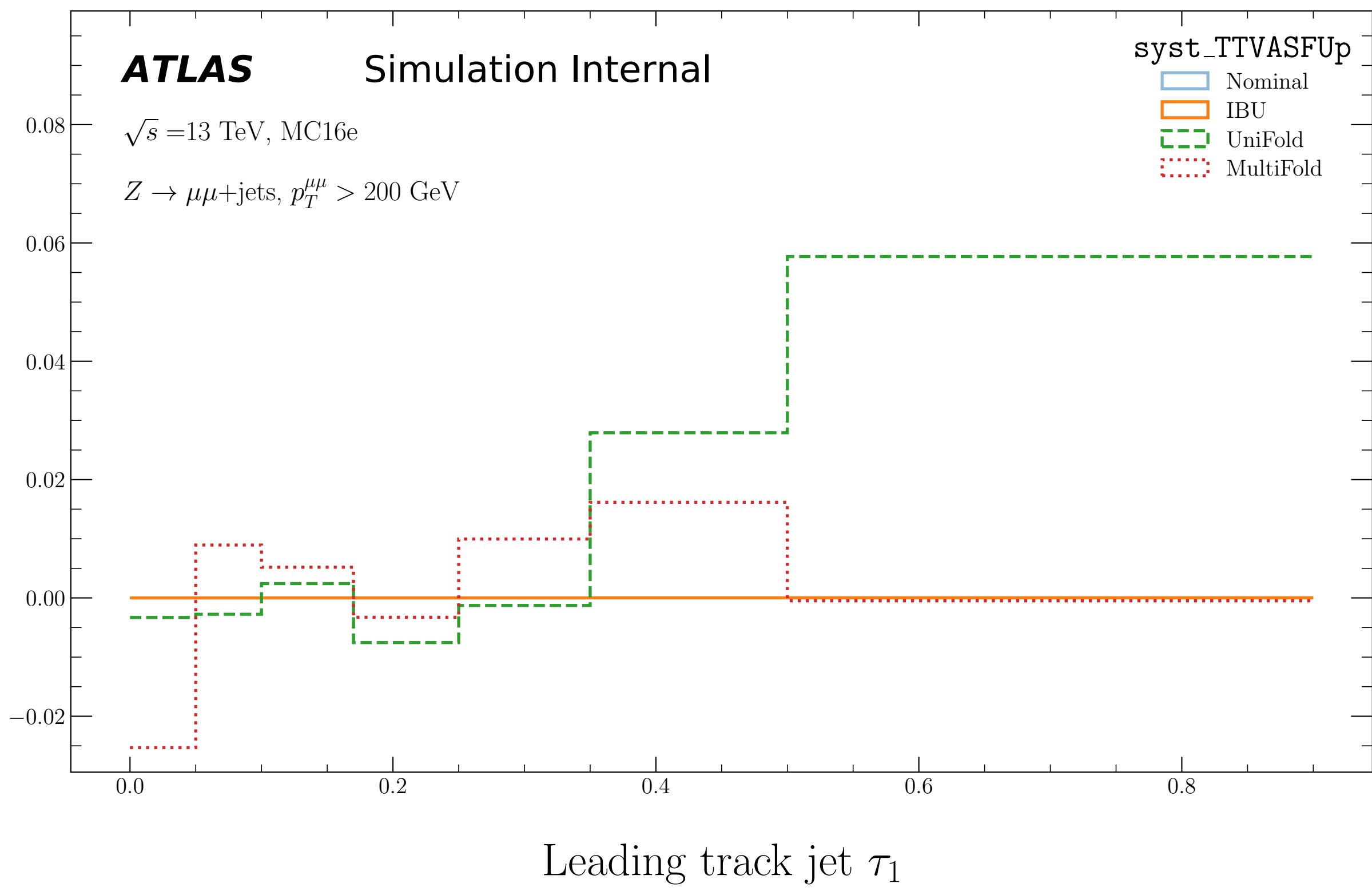
0.0

0.2

0.4

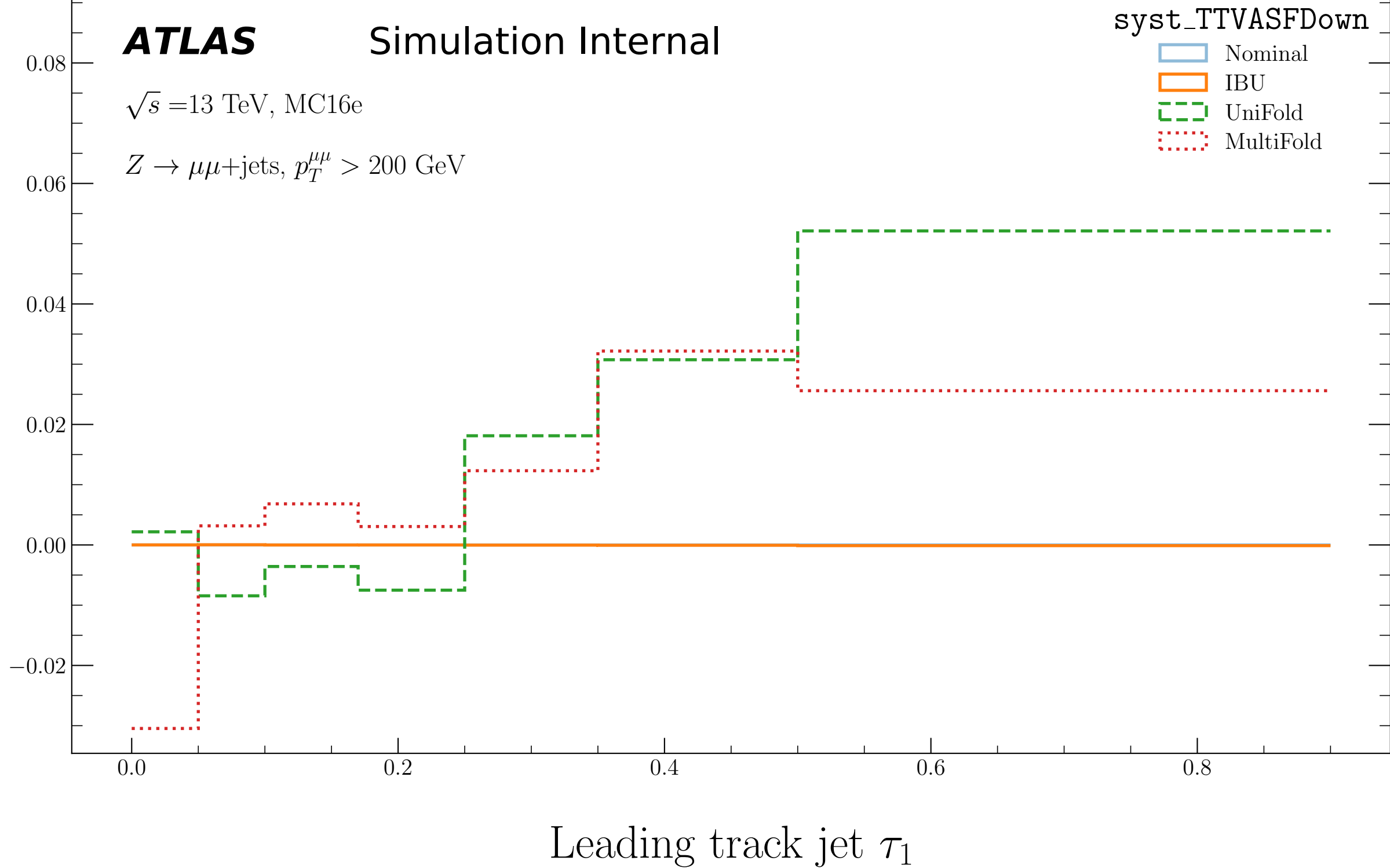
0.6

0.8

Leading track jet τ_1 

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold

0.06
0.04
0.02
0.00
-0.02

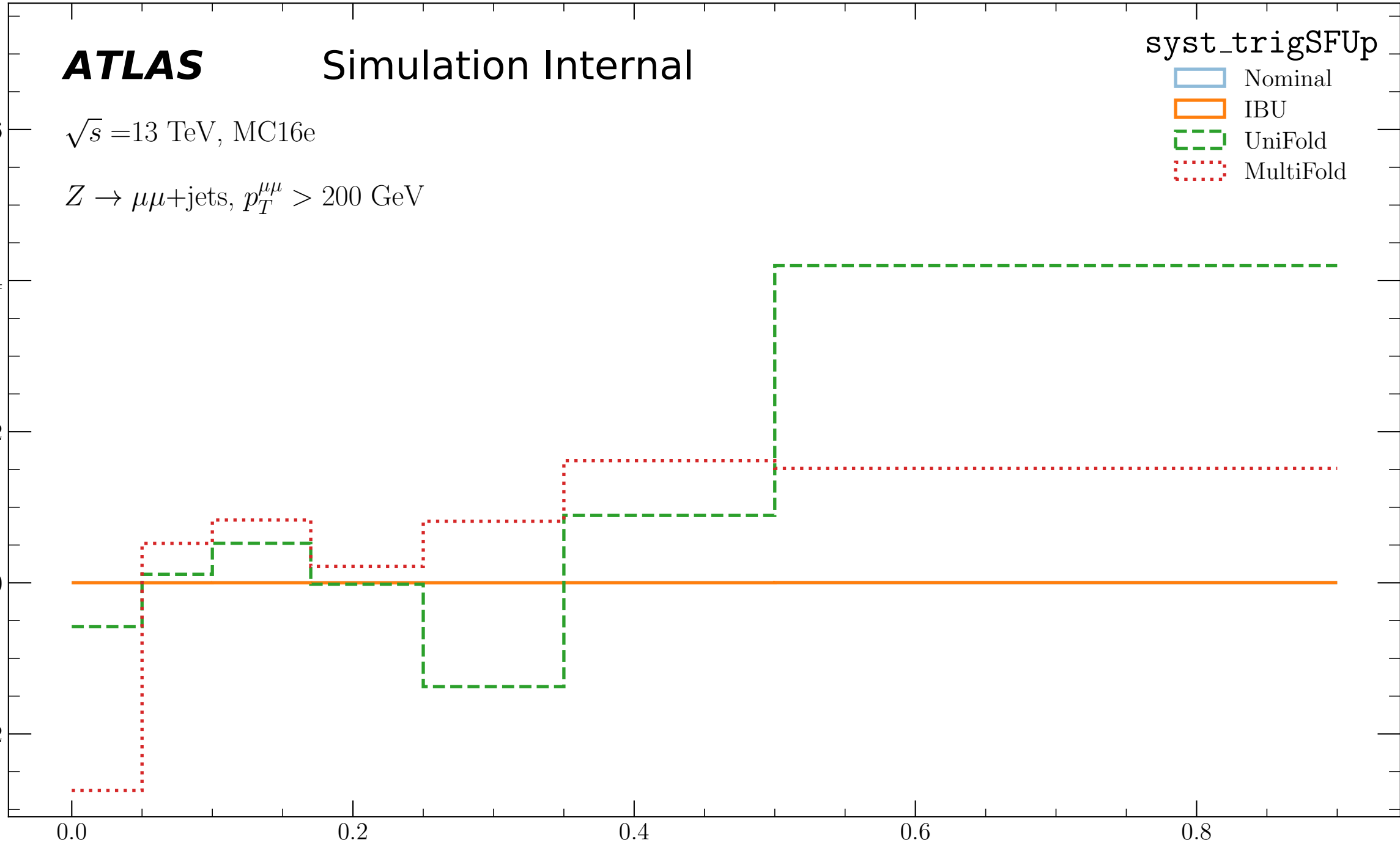
0.0

0.2

0.4

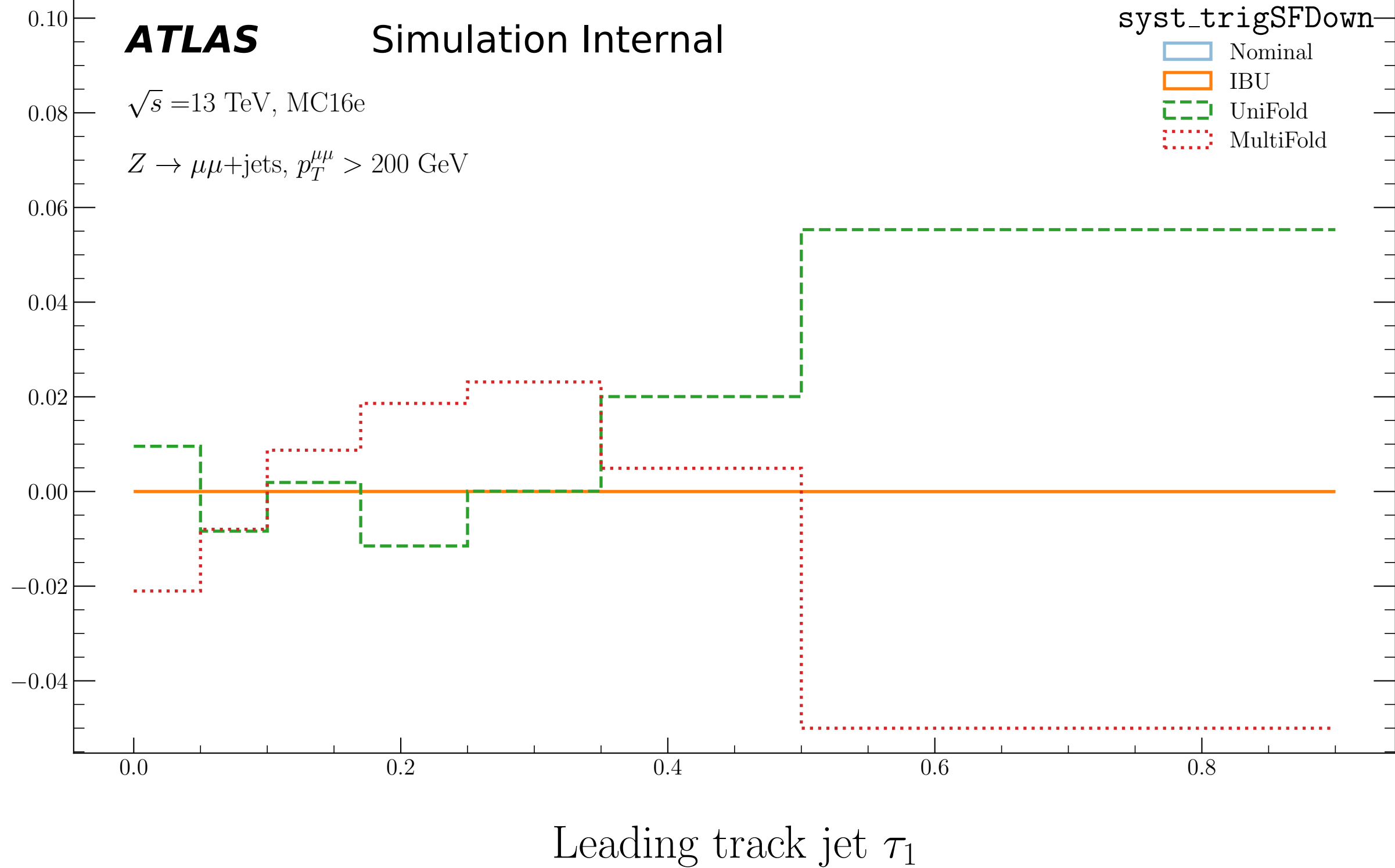
0.6

0.8

Leading track jet τ_1 

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

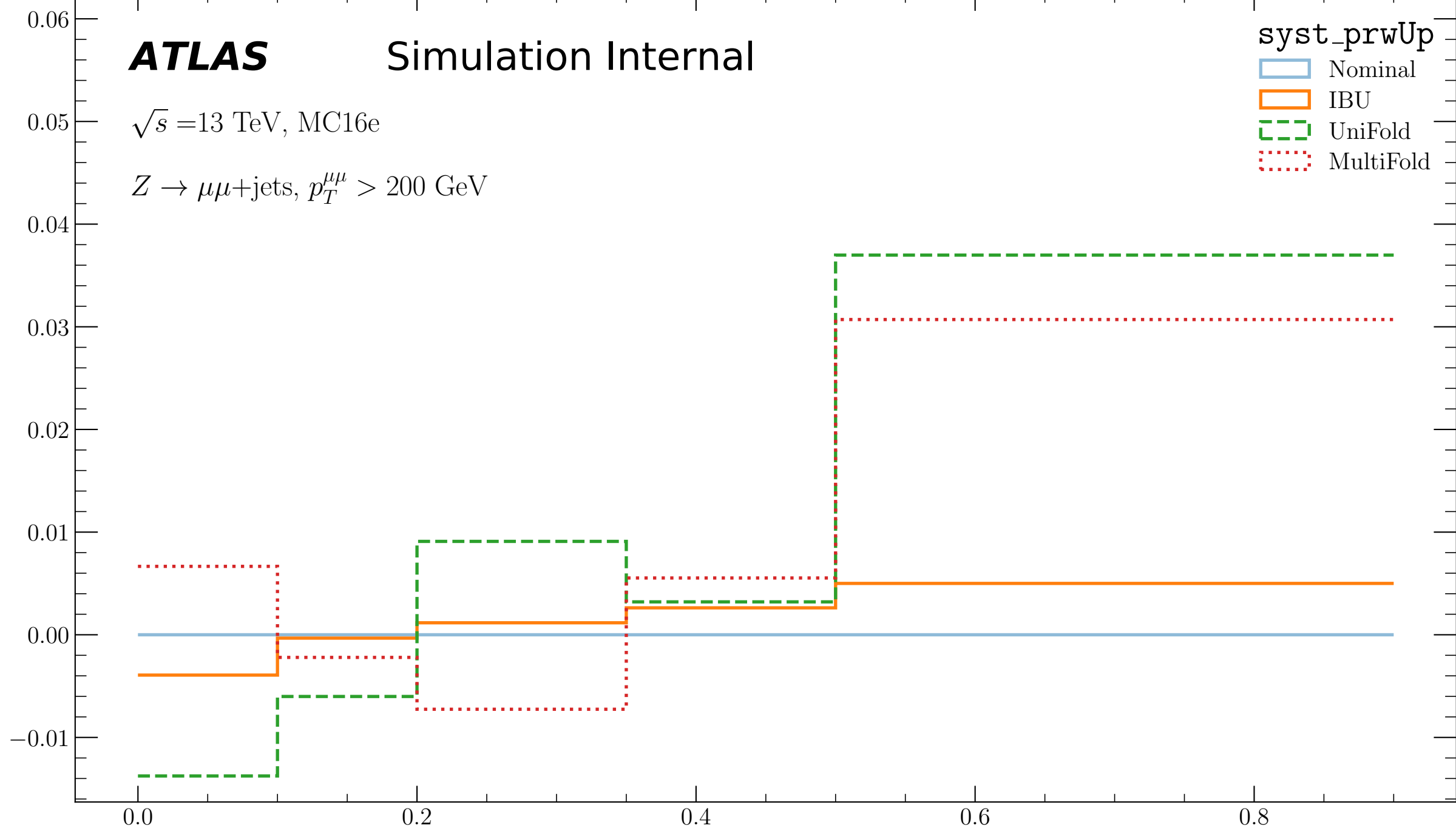
syst_prwUp

Nominal

IBU

UniFold

MultiFold

Subleading track jet τ_1

ATLAS

Simulation Internal

 $\sqrt{s}=13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

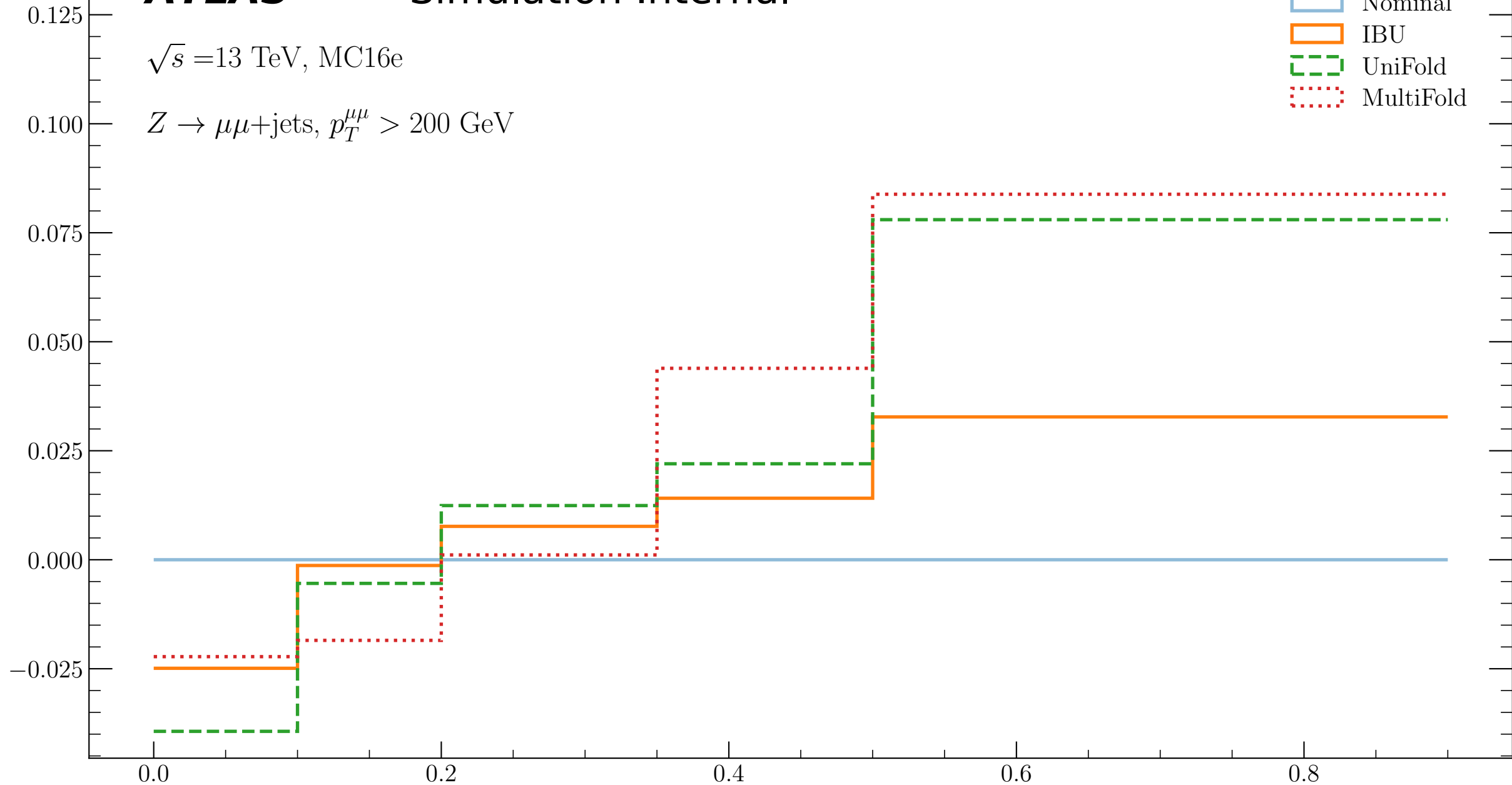
syst_prwDown

Nominal

IBU

UniFold

MultiFold

Subleading track jet τ_1

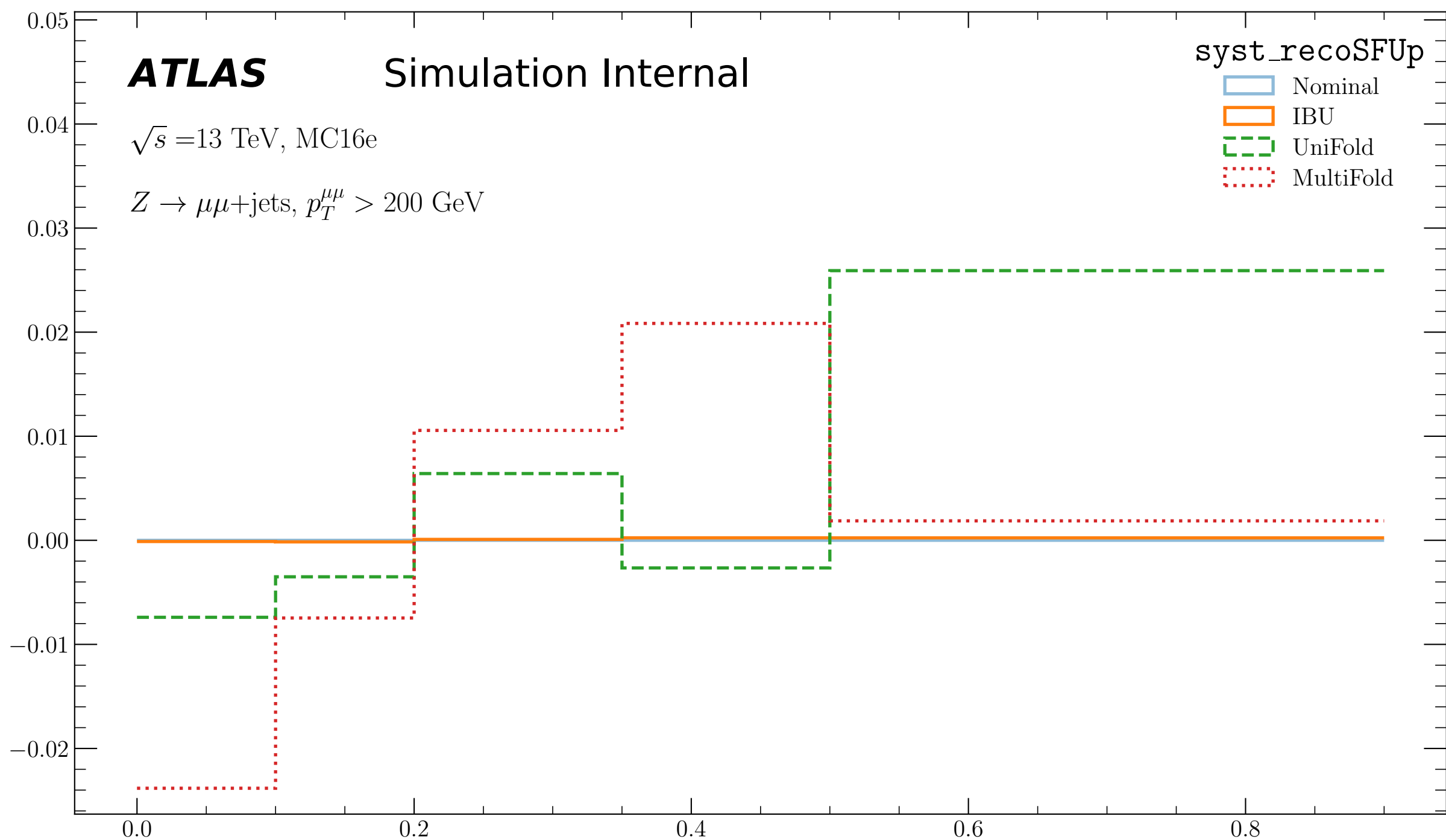
ATLAS

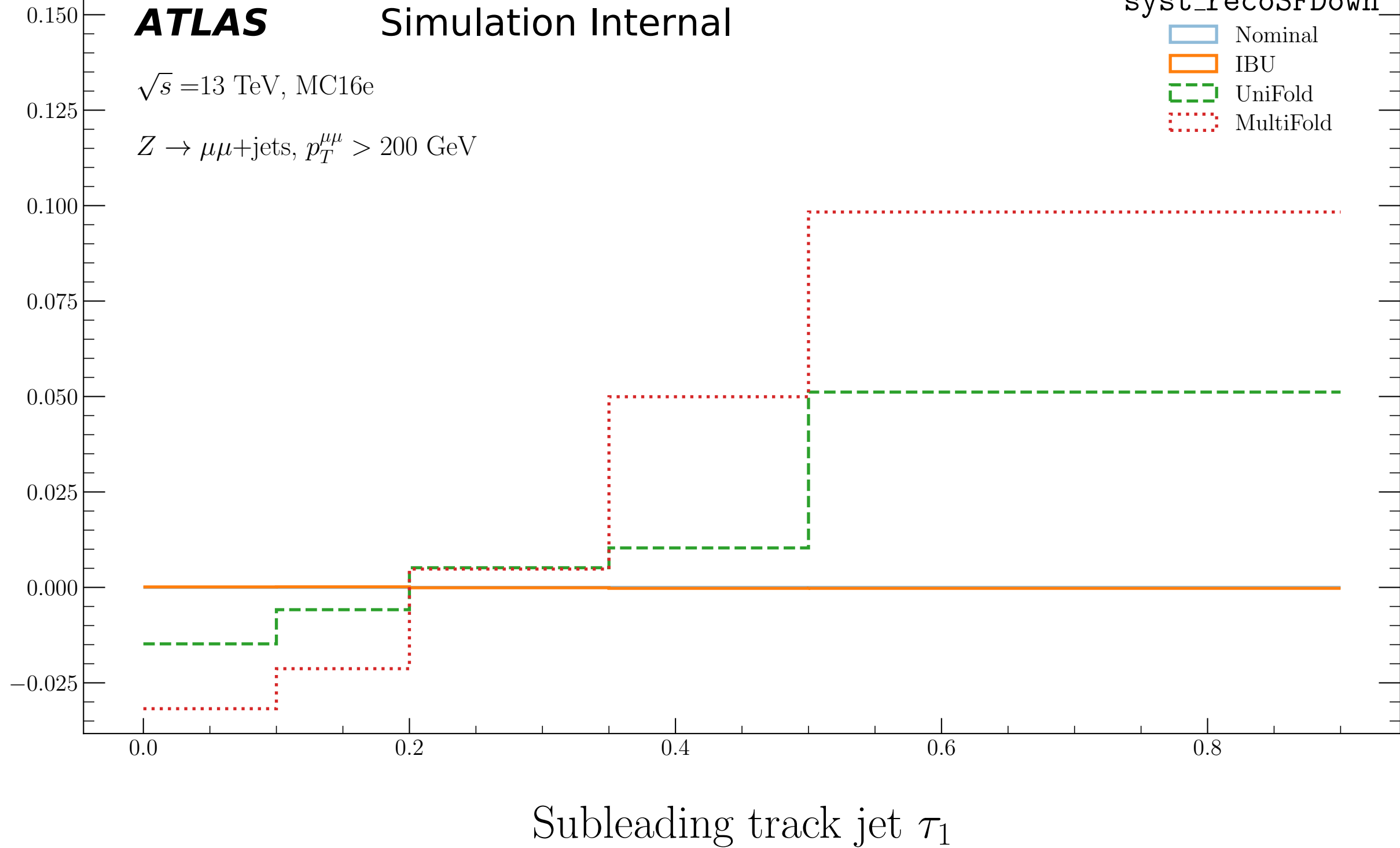
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet p_T



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

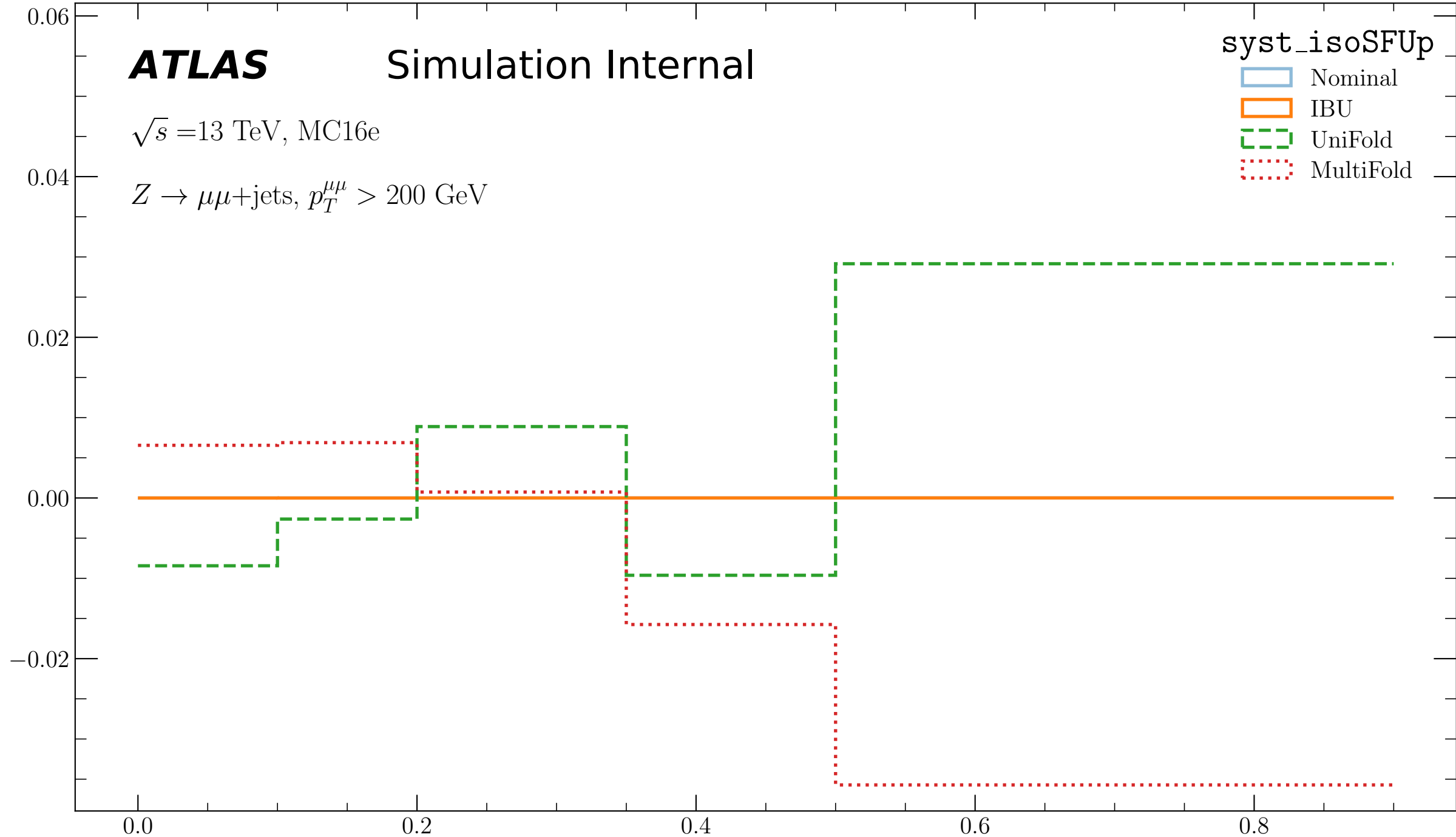
syst_isoSFUp

Nominal

IBU

UniFold

MultiFold

Subleading track jet τ_1

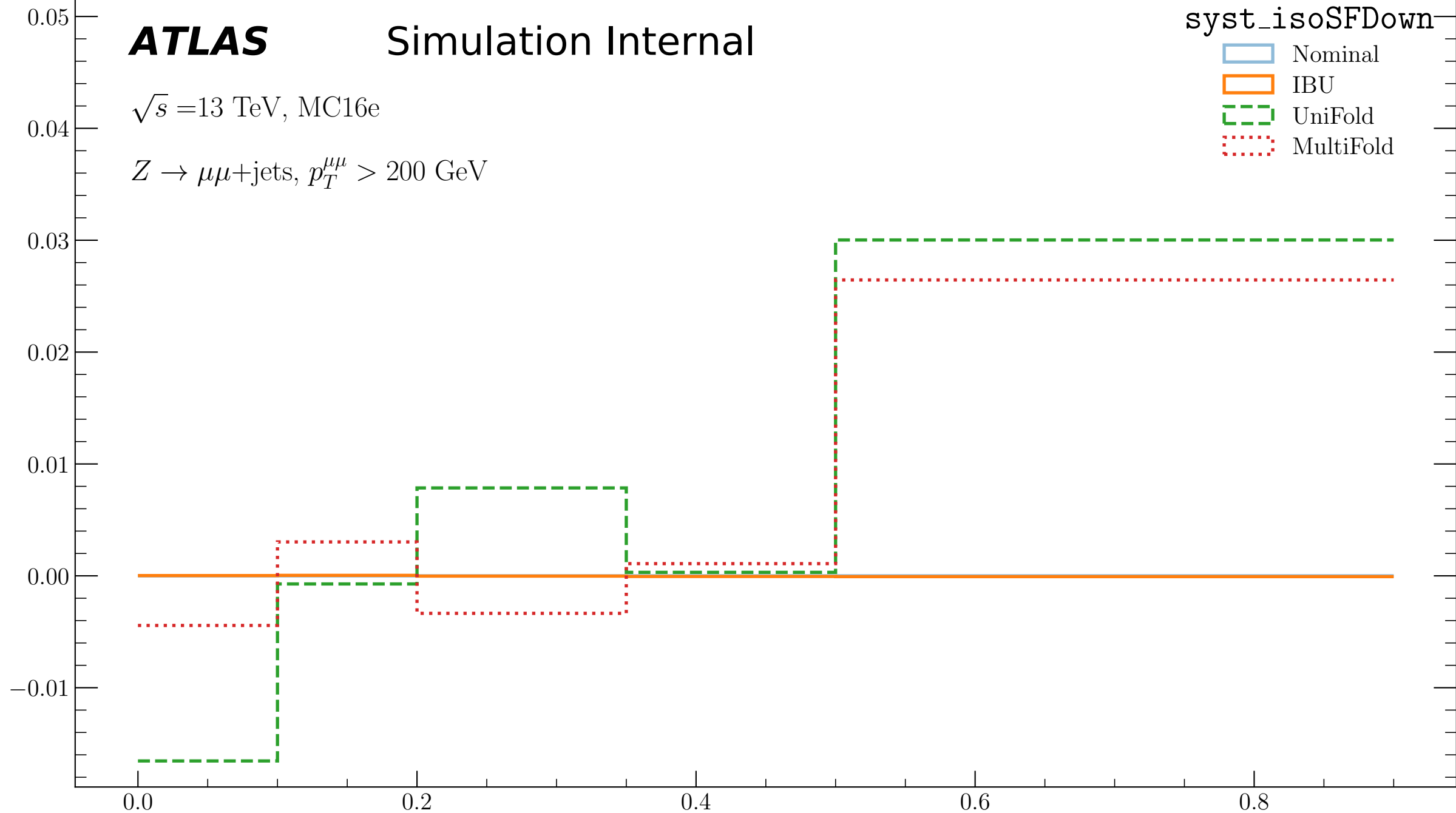
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_1

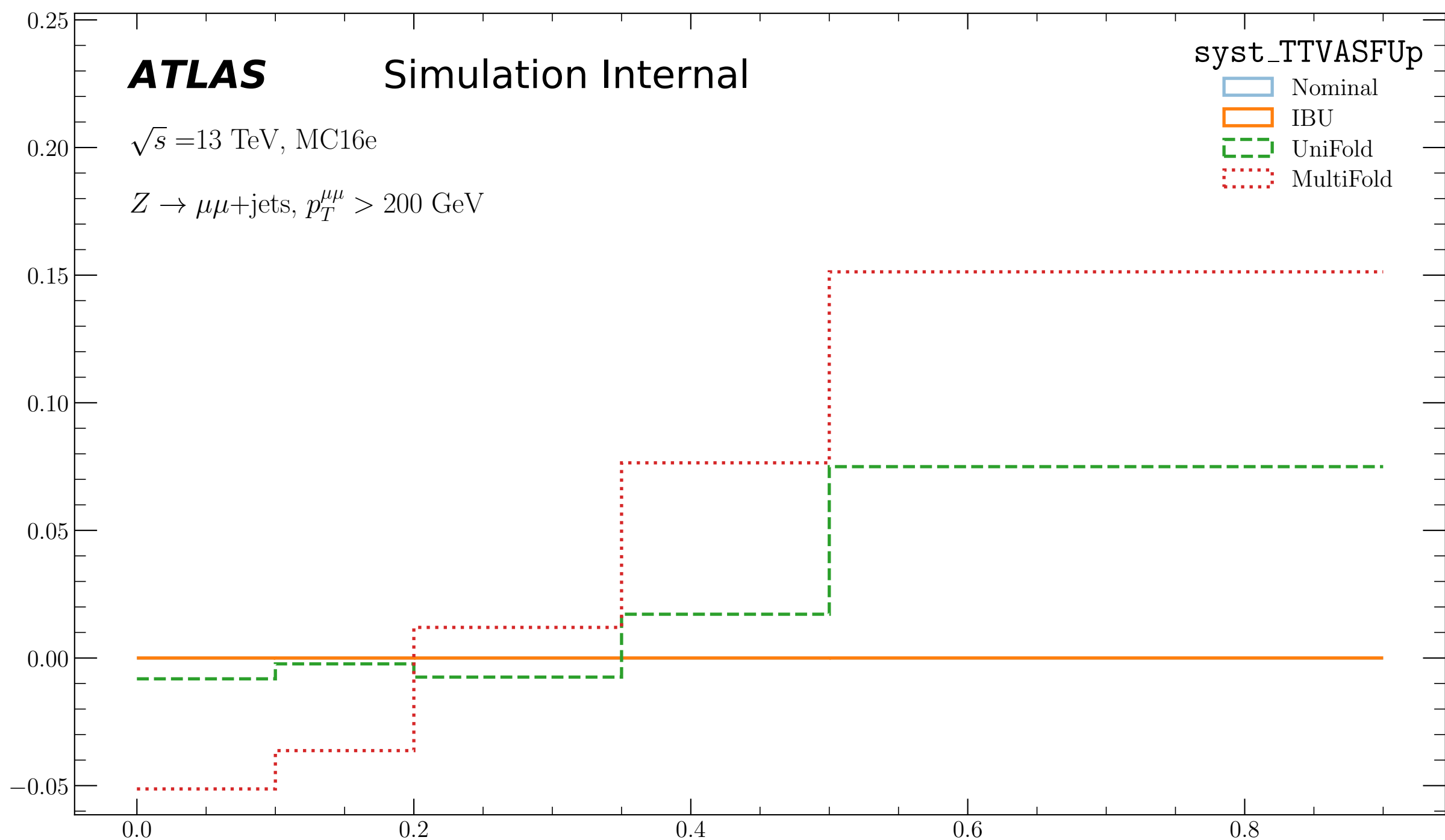
ATLAS

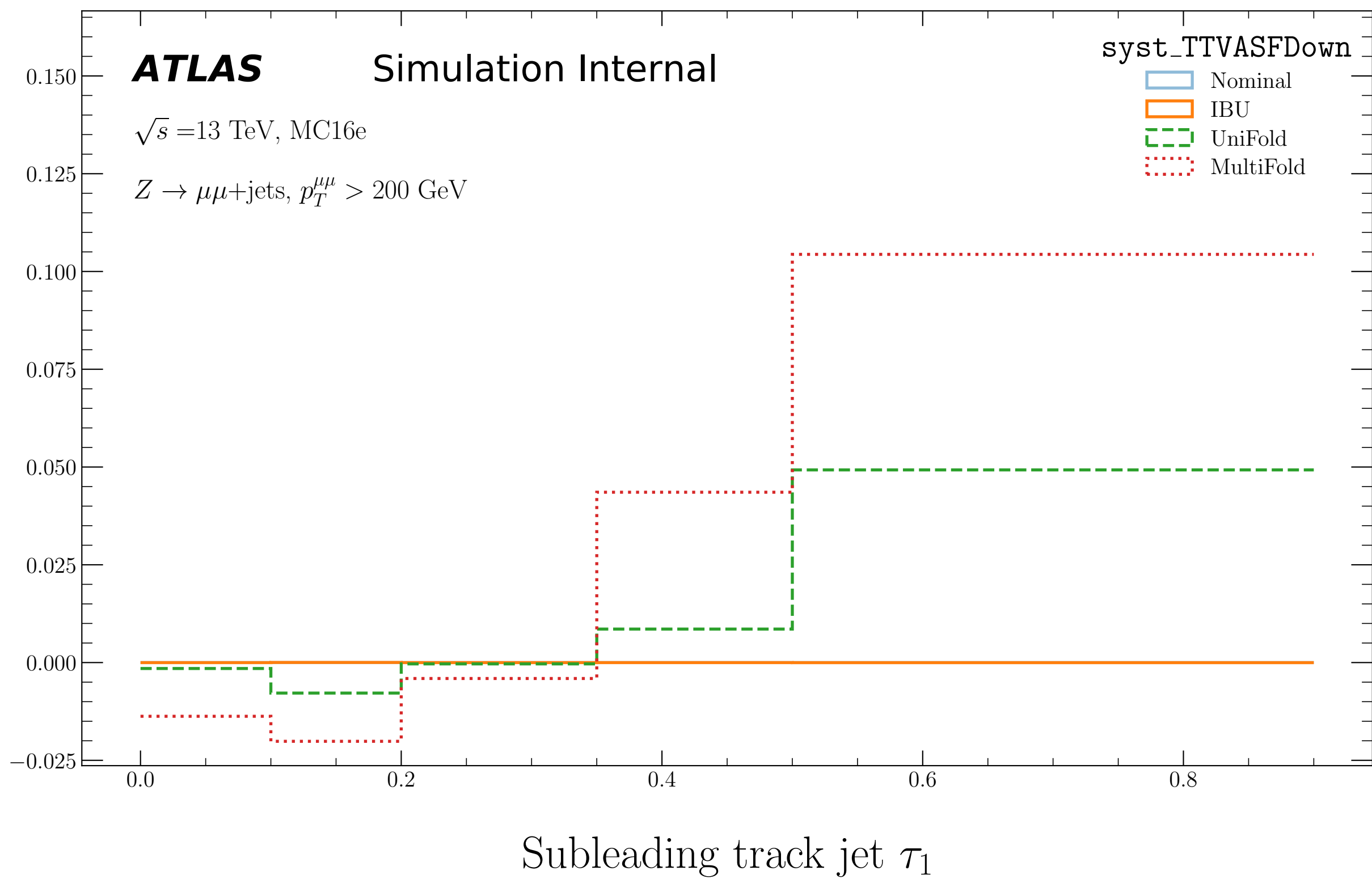
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_1



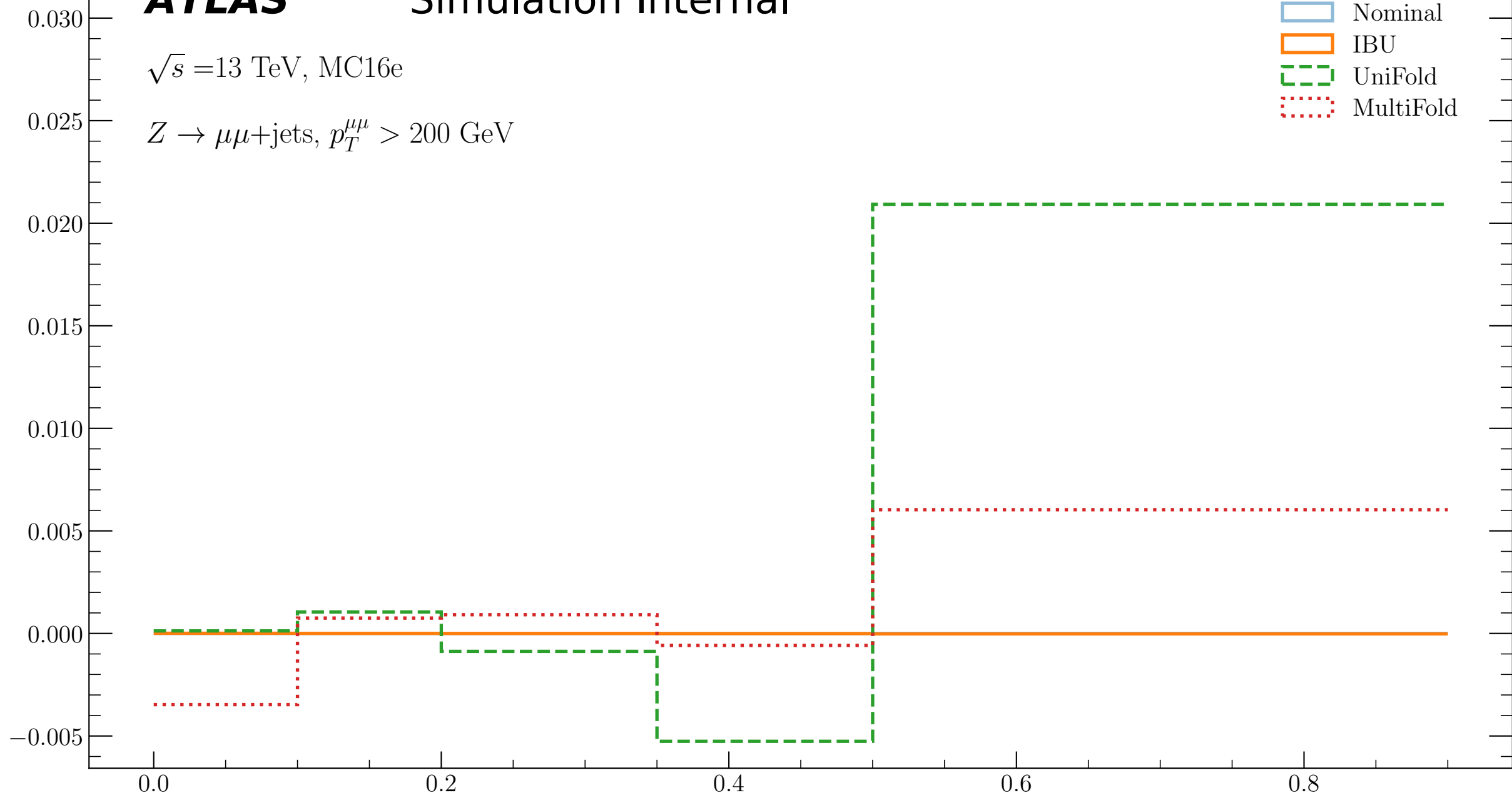
ATLAS

Simulation Internal

 $\sqrt{s}=13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_1

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_trigSFDown

Nominal

IBU

UniFold

MultiFold

0.06
0.04
0.02
0.00
-0.02

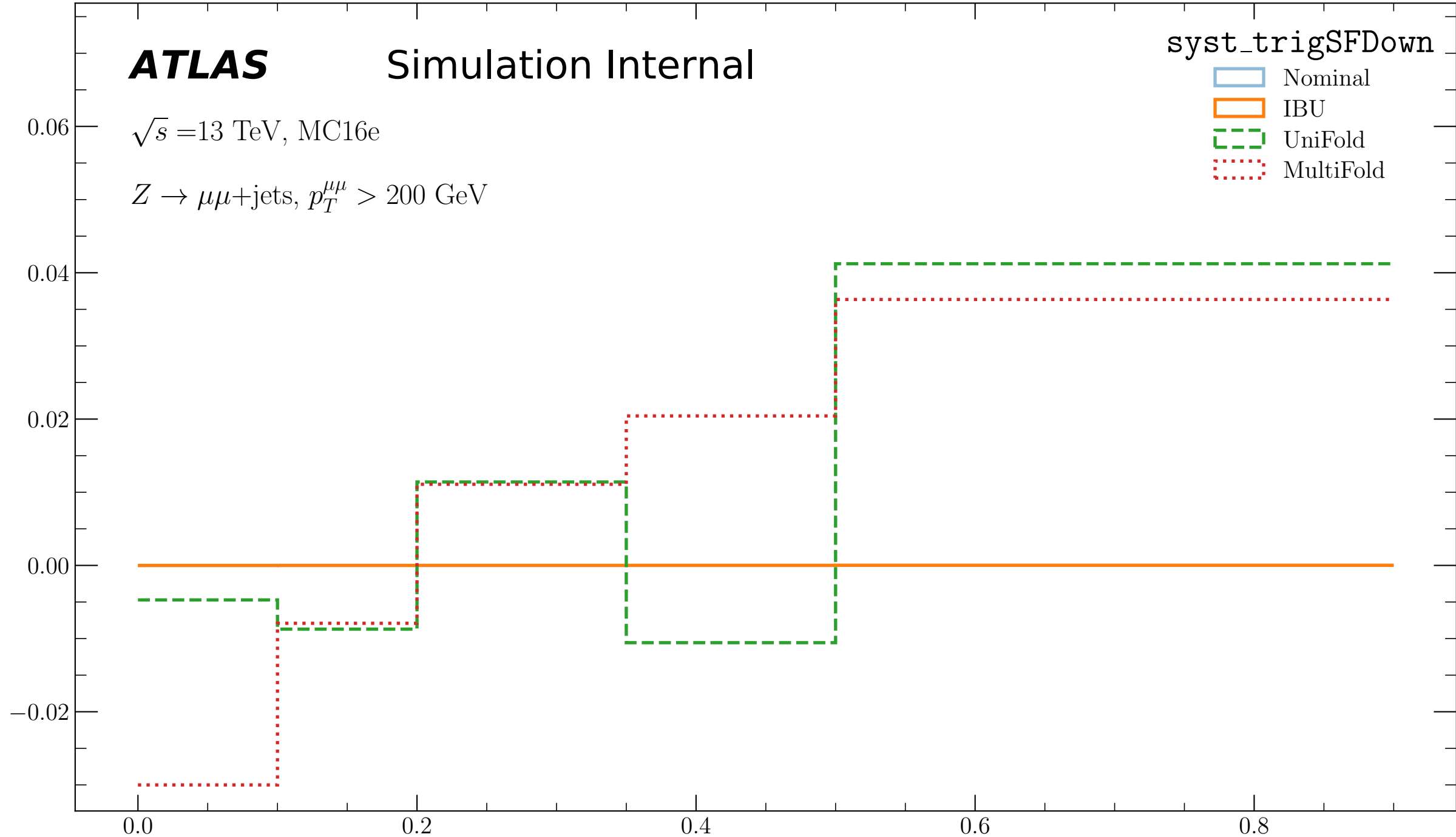
0.0

0.2

0.4

0.6

0.8

Subleading track jet τ_1 

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

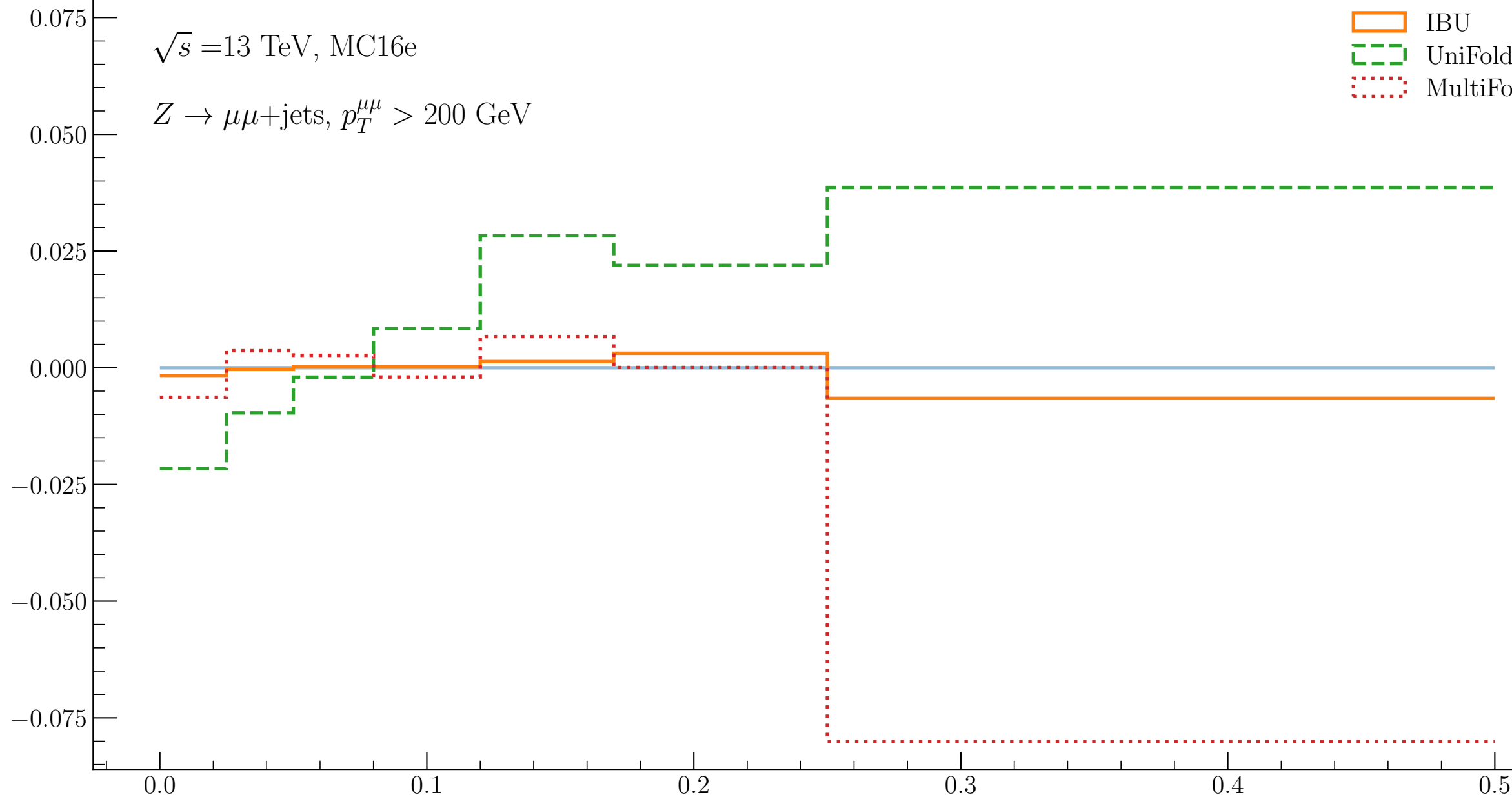
syst_prwUp

Nominal

IBU

UniFold

MultiFold

Leading track jet τ_2

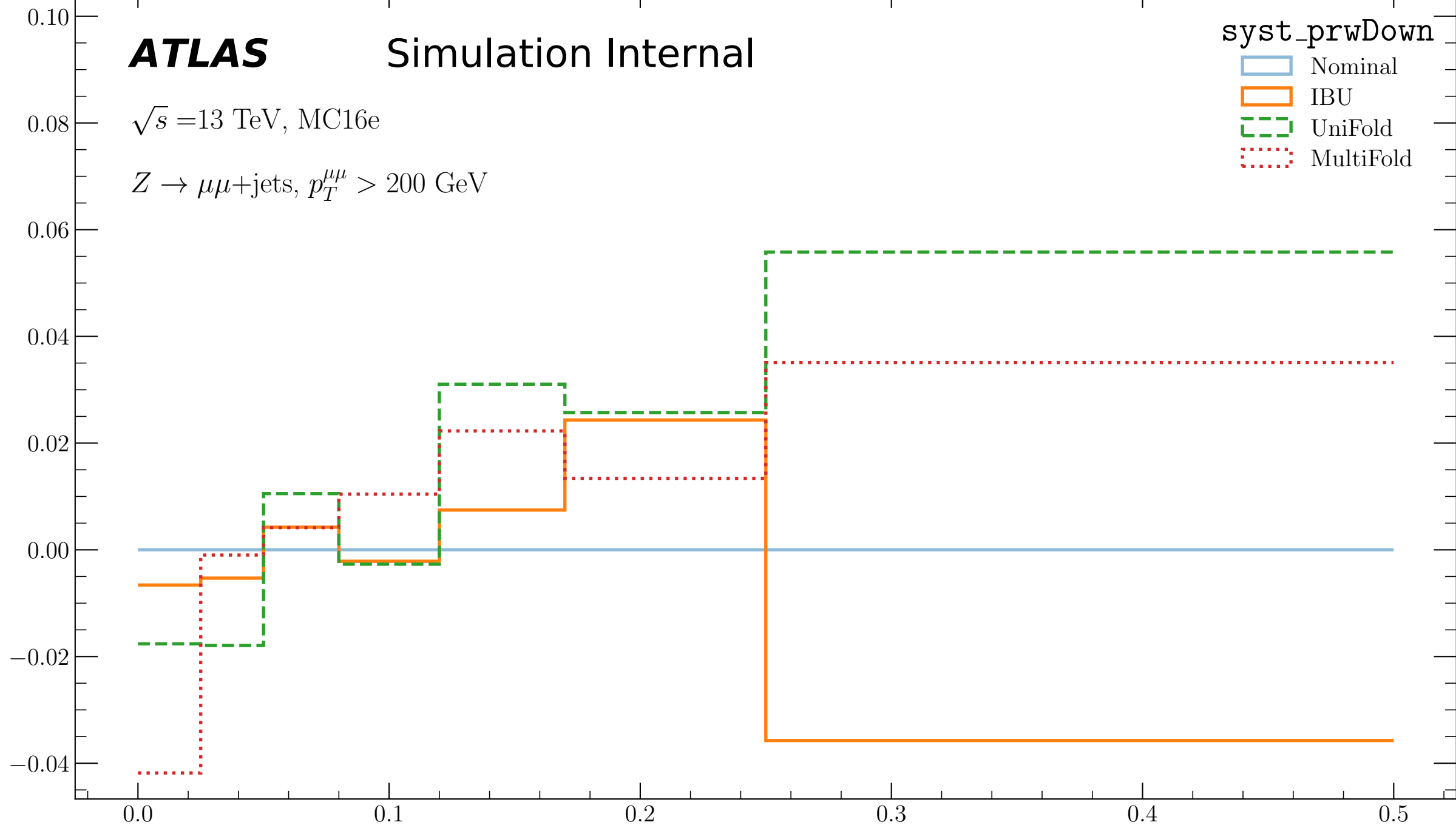
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet τ_2

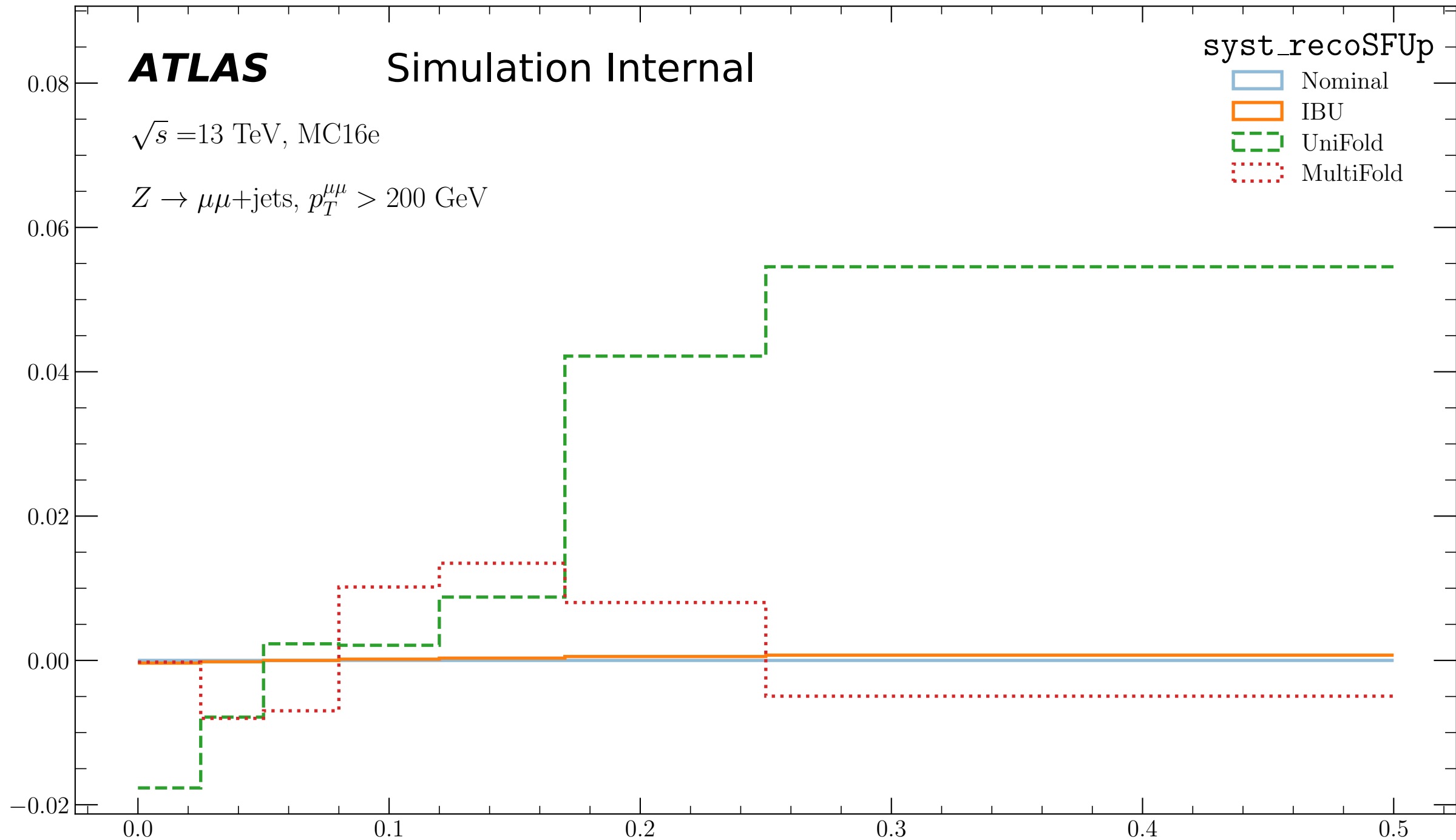
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet τ_2

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

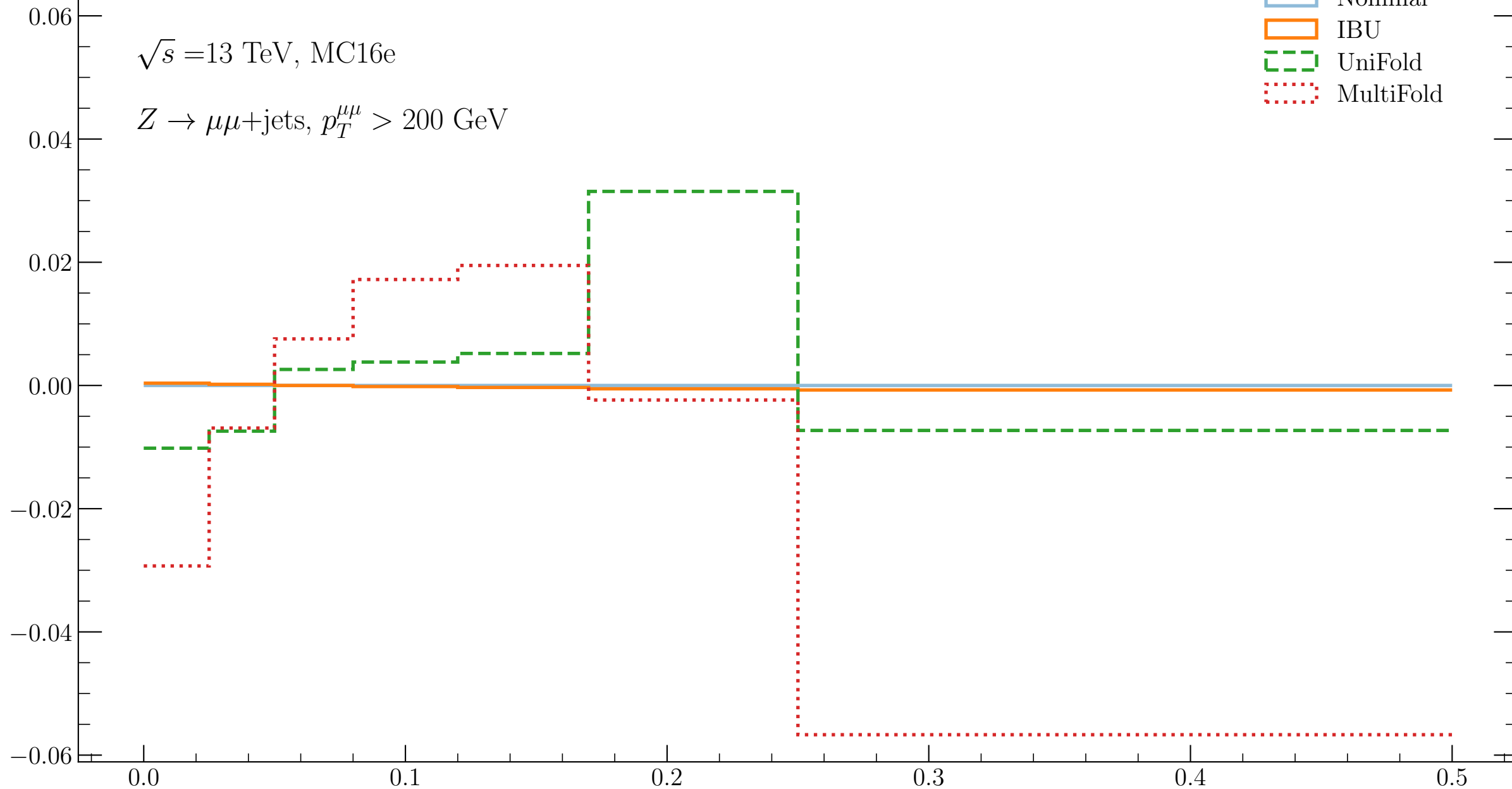
syst_recoSFDown

Nominal

IBU

UniFold

MultiFold

Leading track jet τ_2

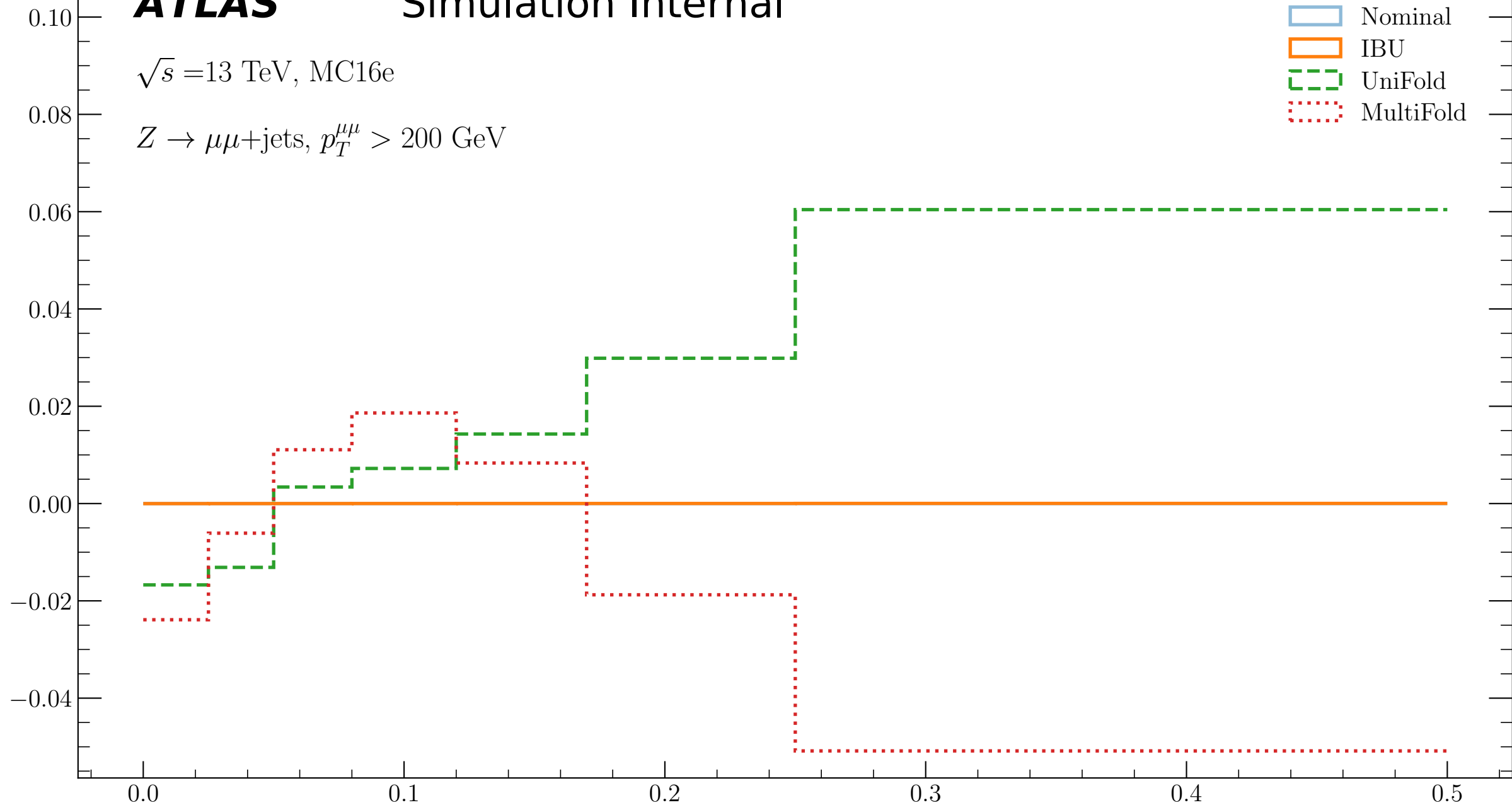
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet τ_2

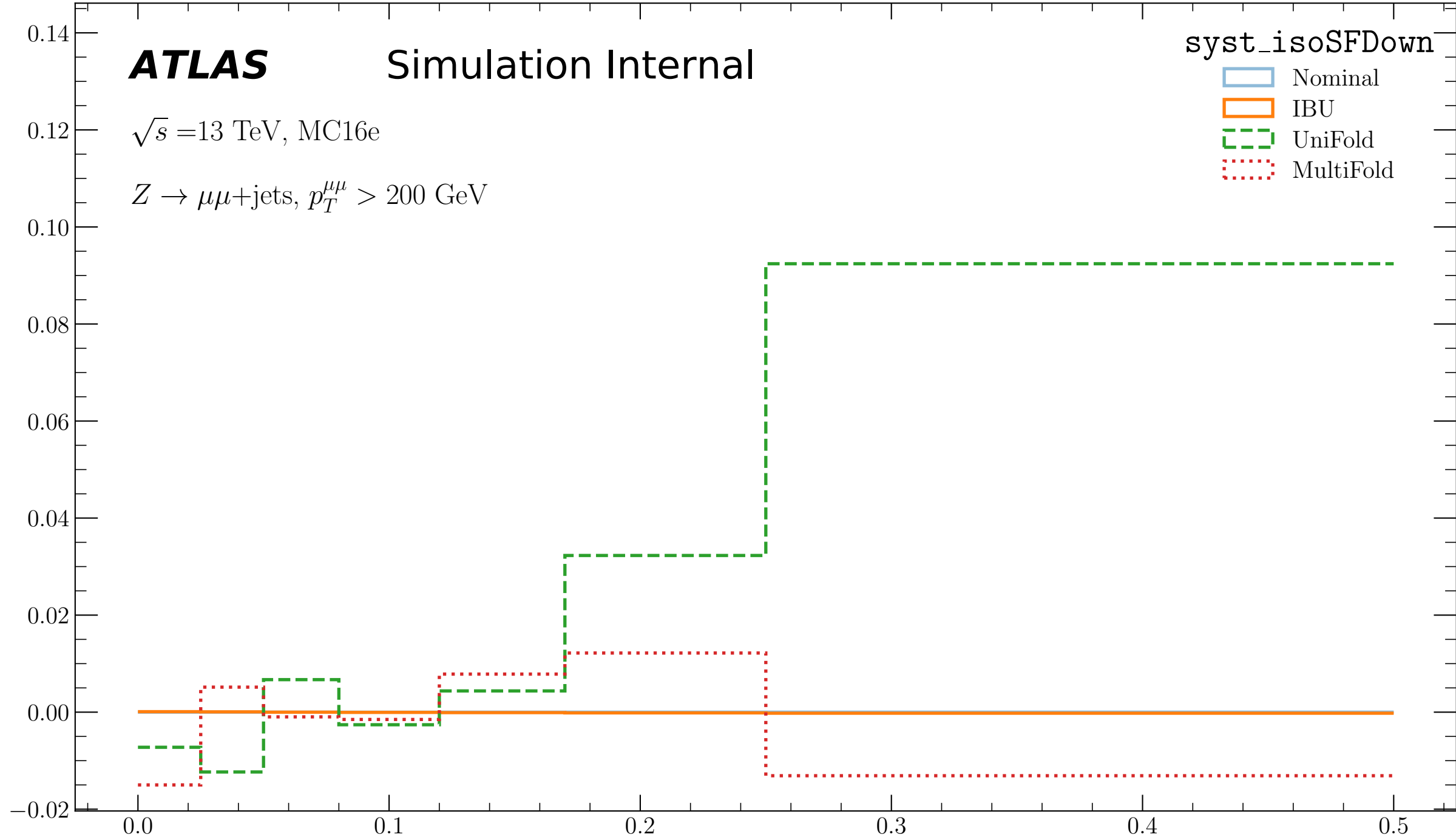
ATLAS

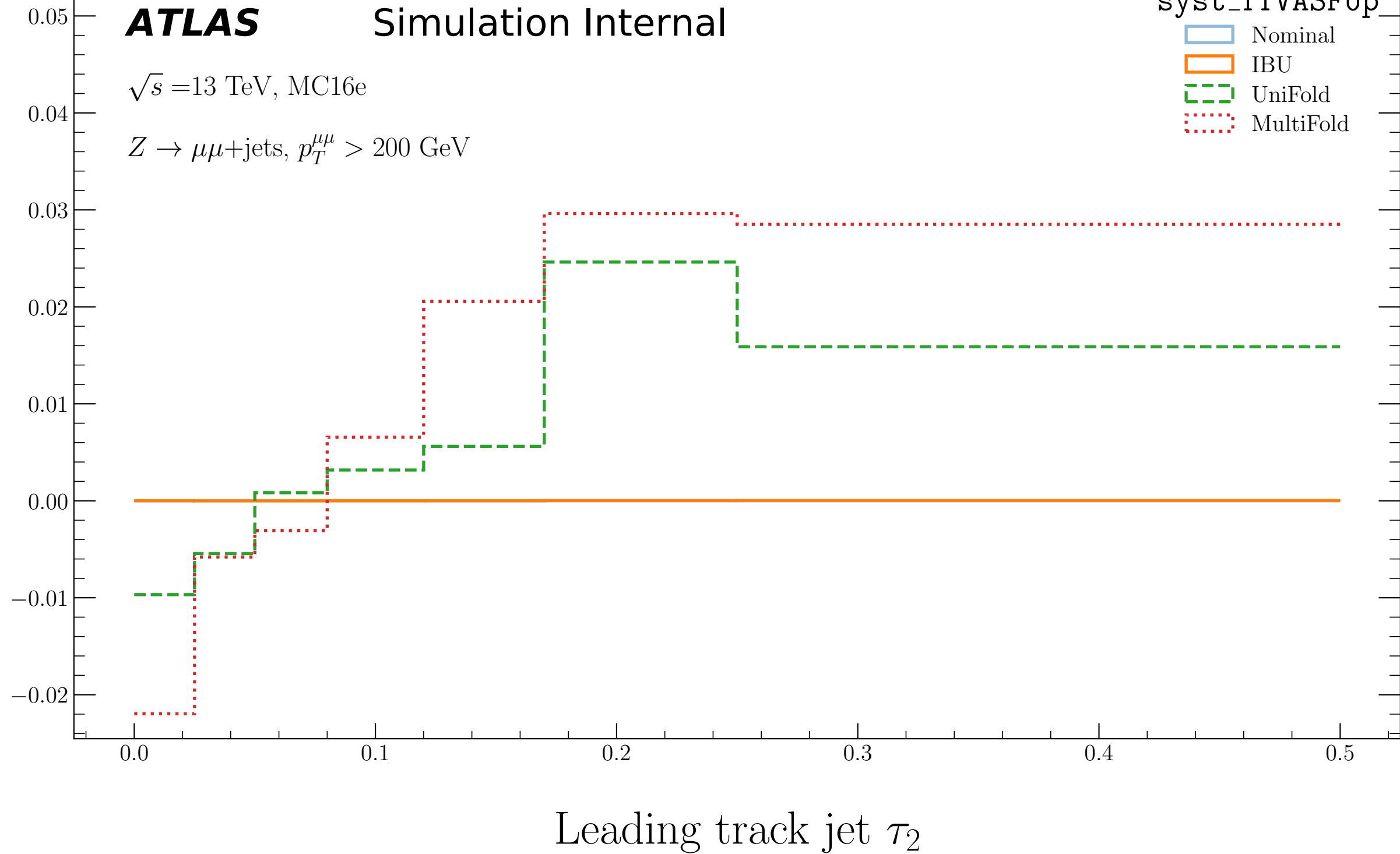
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet τ_2



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

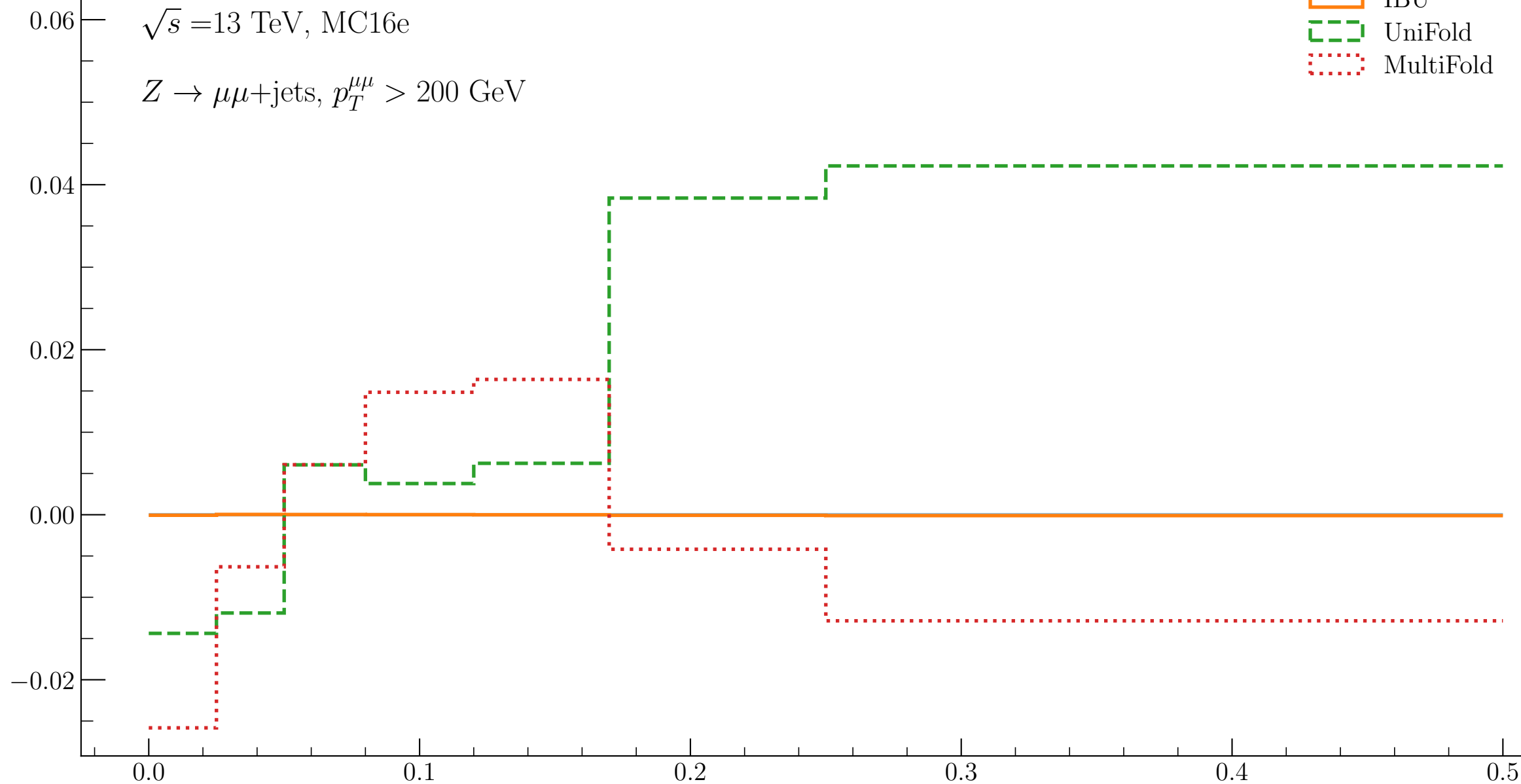
syst_TTVASFDown

Nominal

IBU

UniFold

MultiFold

Leading track jet τ_2

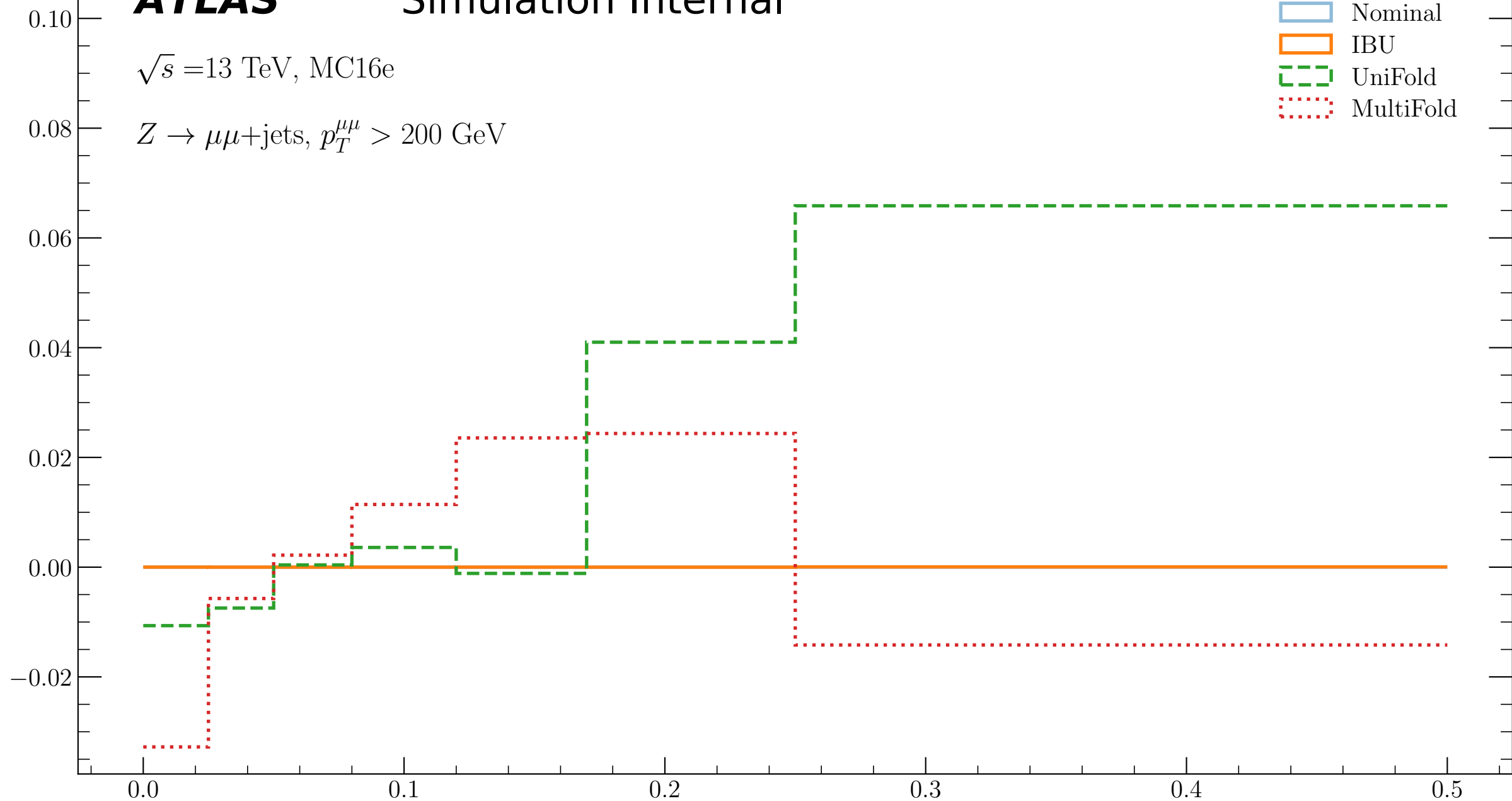
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

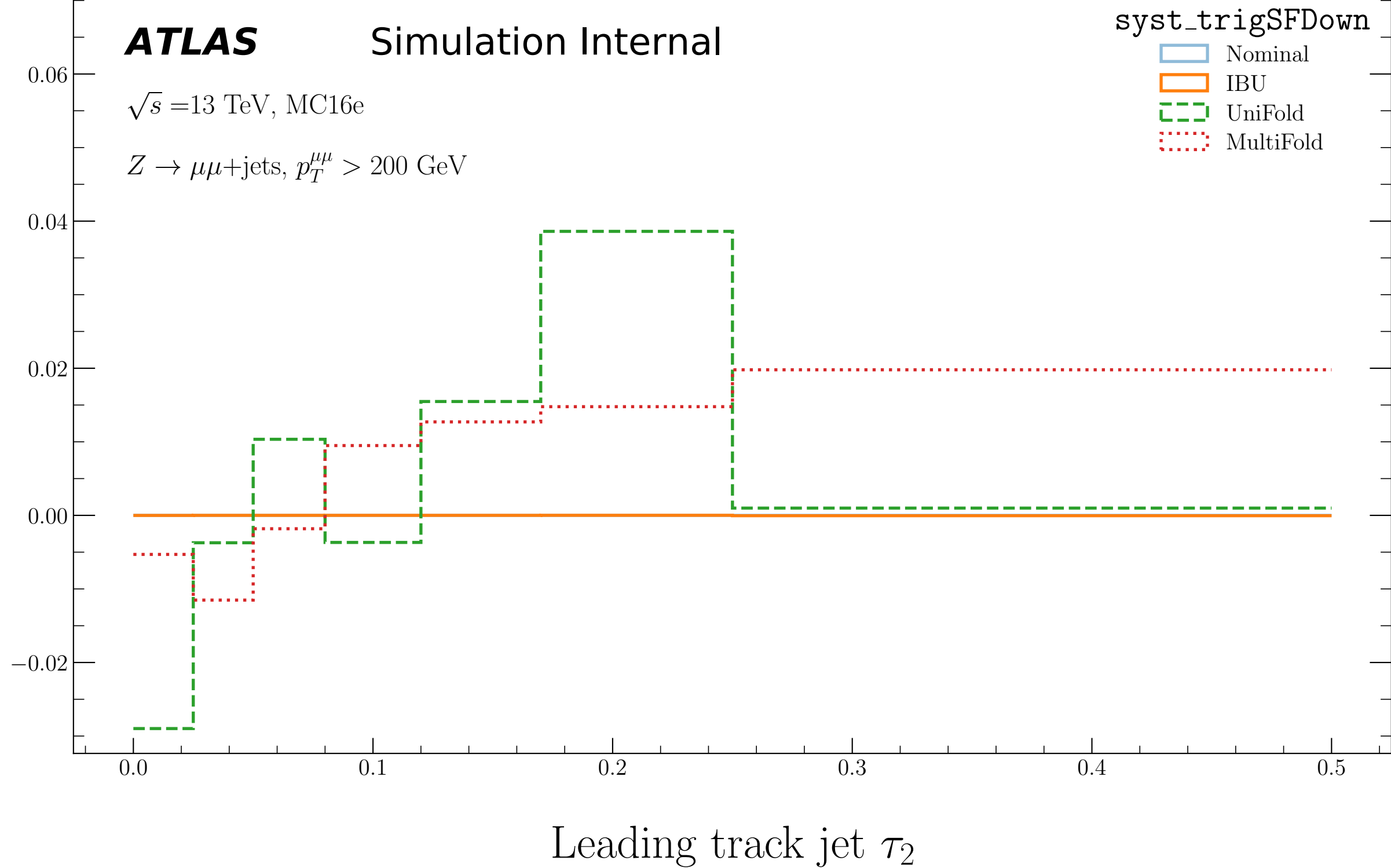
syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet τ_2

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

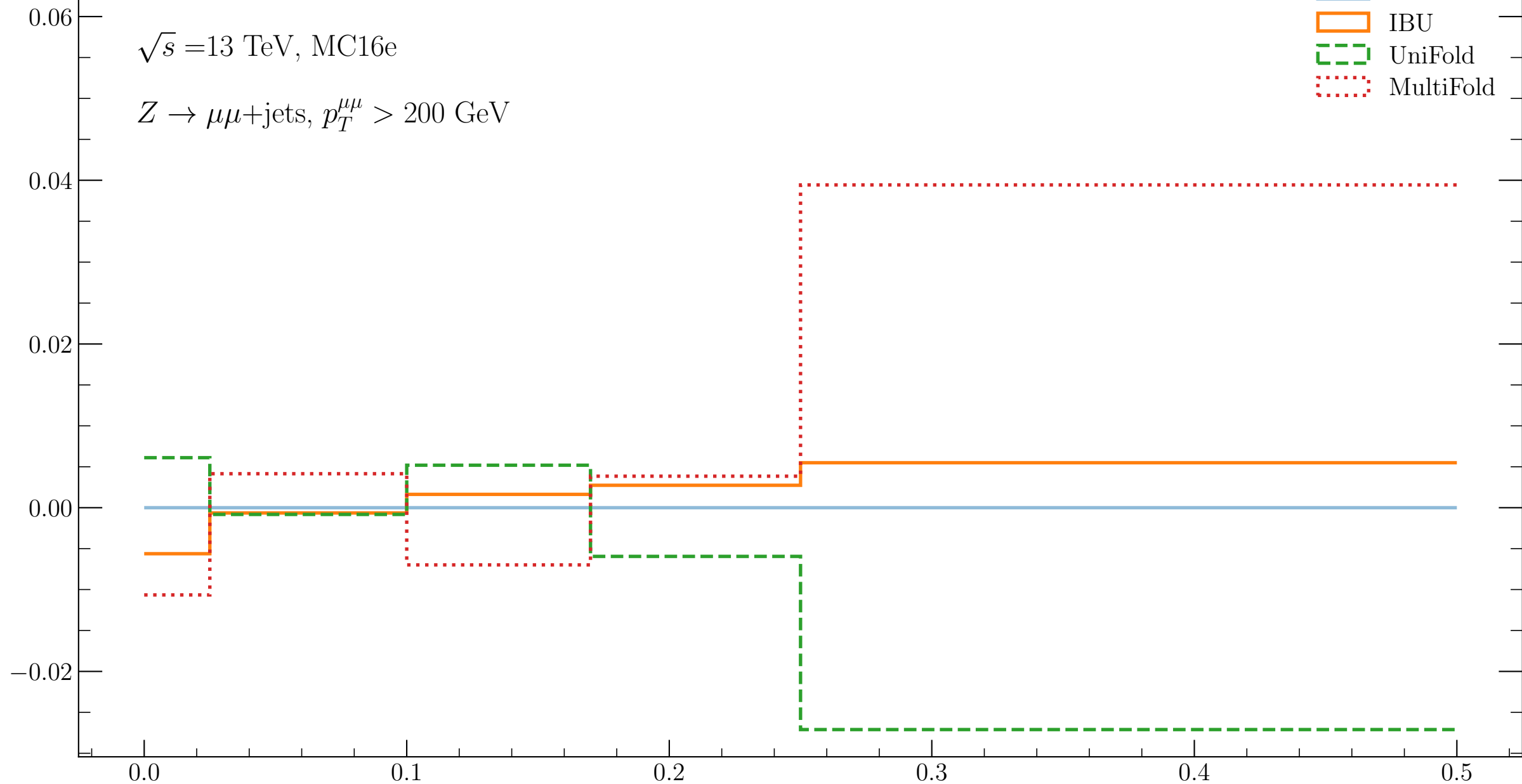
syst_prwUp

Nominal

IBU

UniFold

MultiFold

Subleading track jet τ_2

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

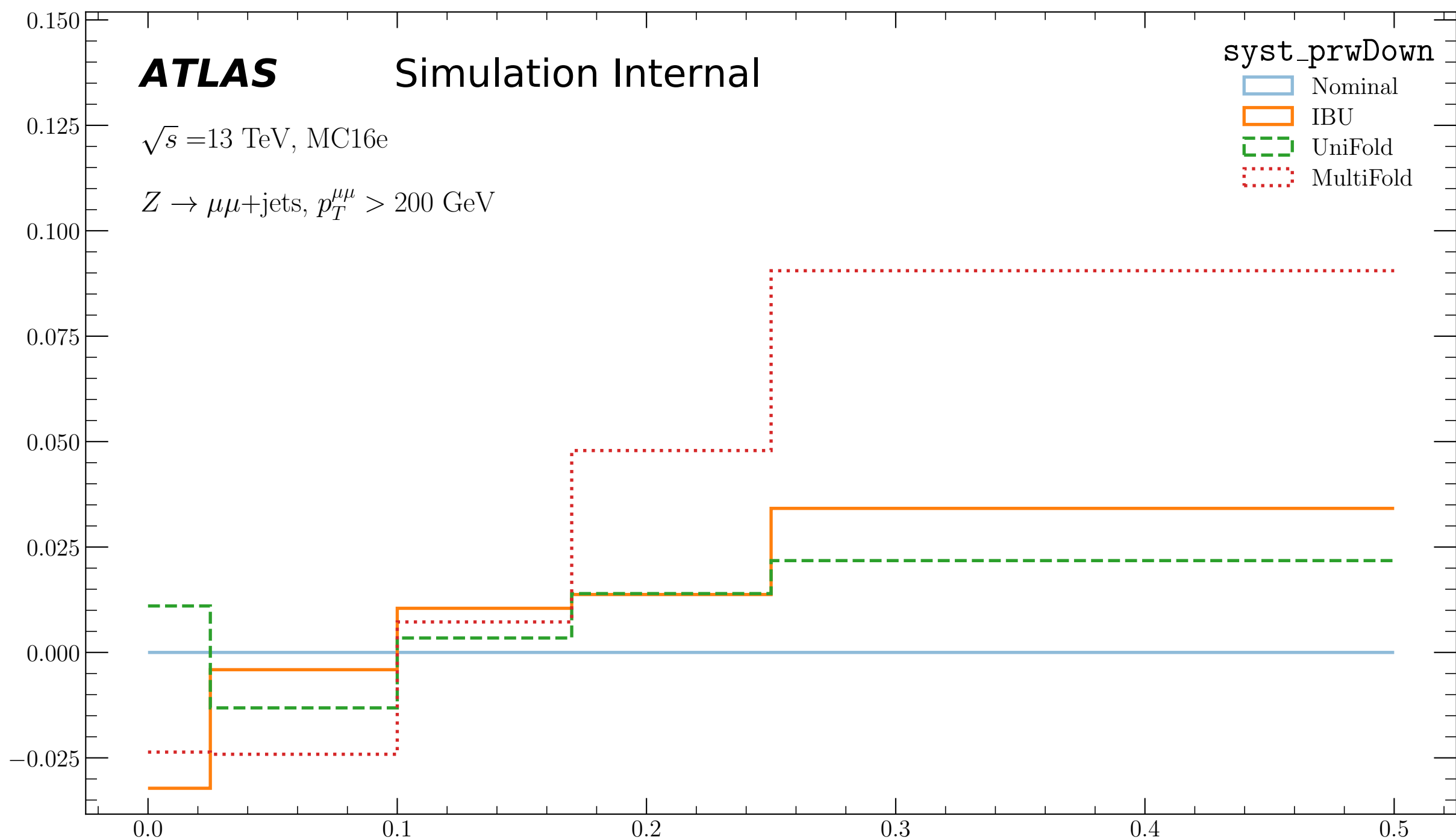
syst_prwDown

Nominal

IBU

UniFold

MultiFold

Subleading track jet τ_2

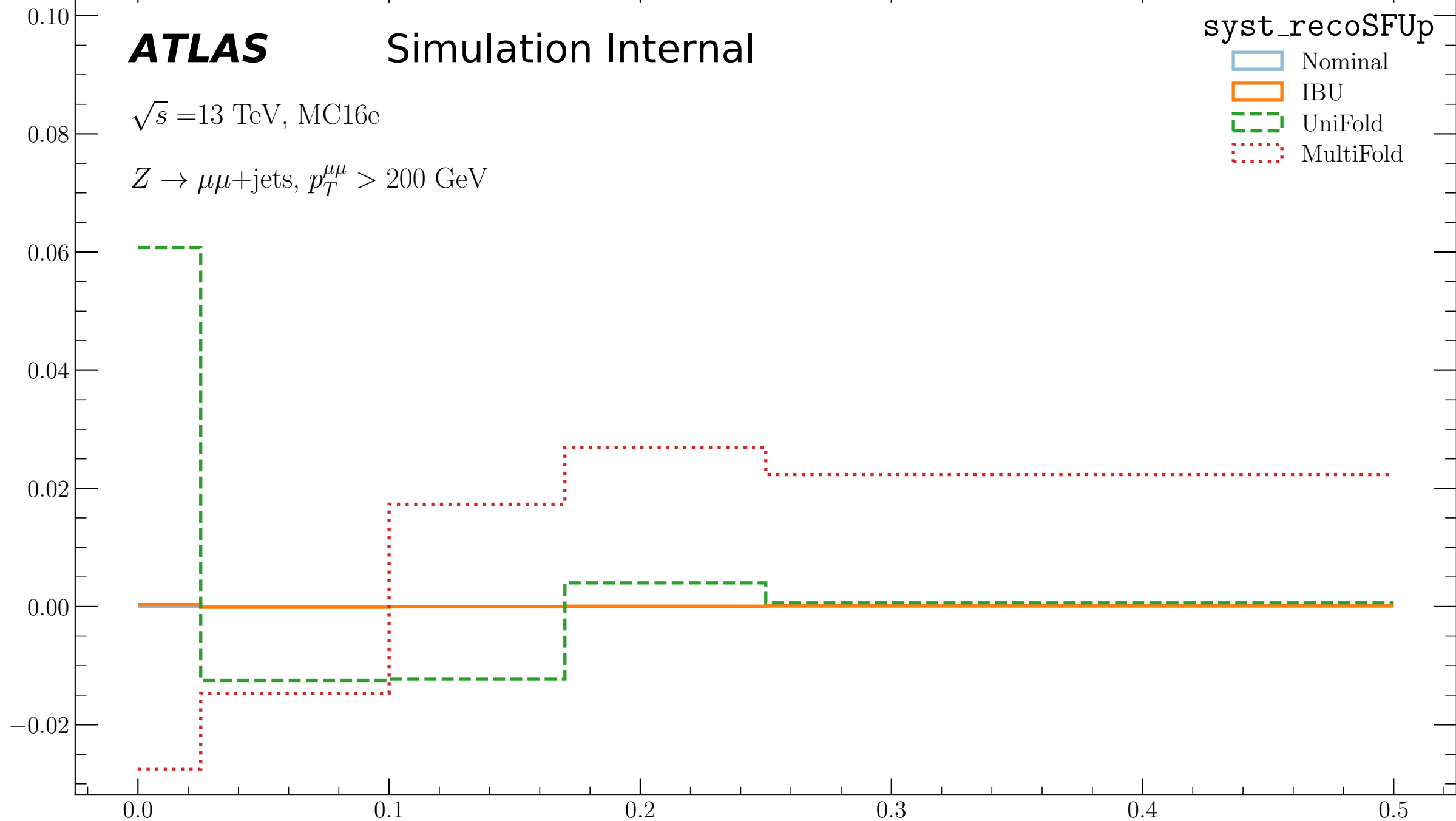
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_2

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

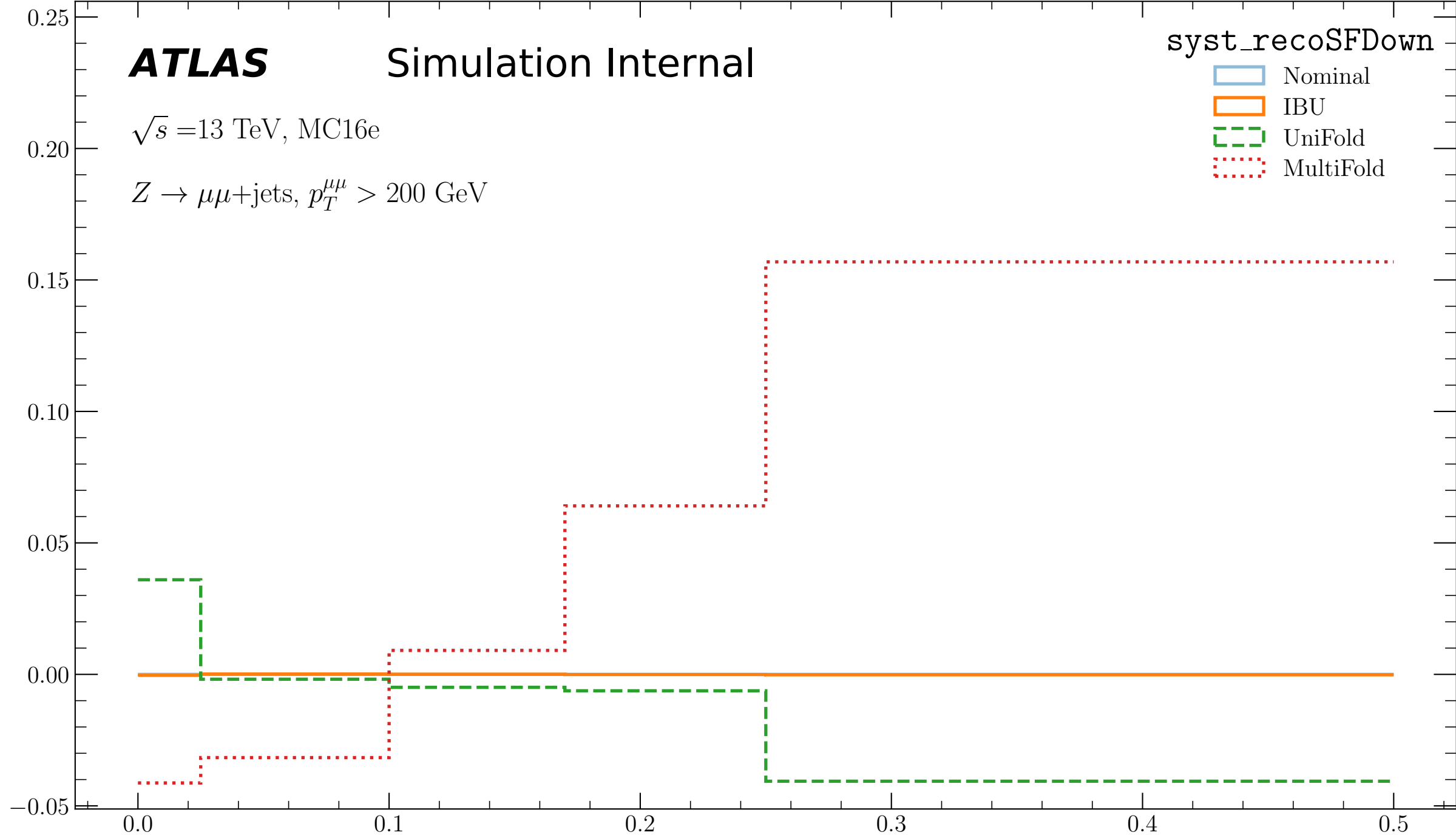
syst_recoSFDown

Nominal

IBU

UniFold

MultiFold

Subleading track jet τ_2

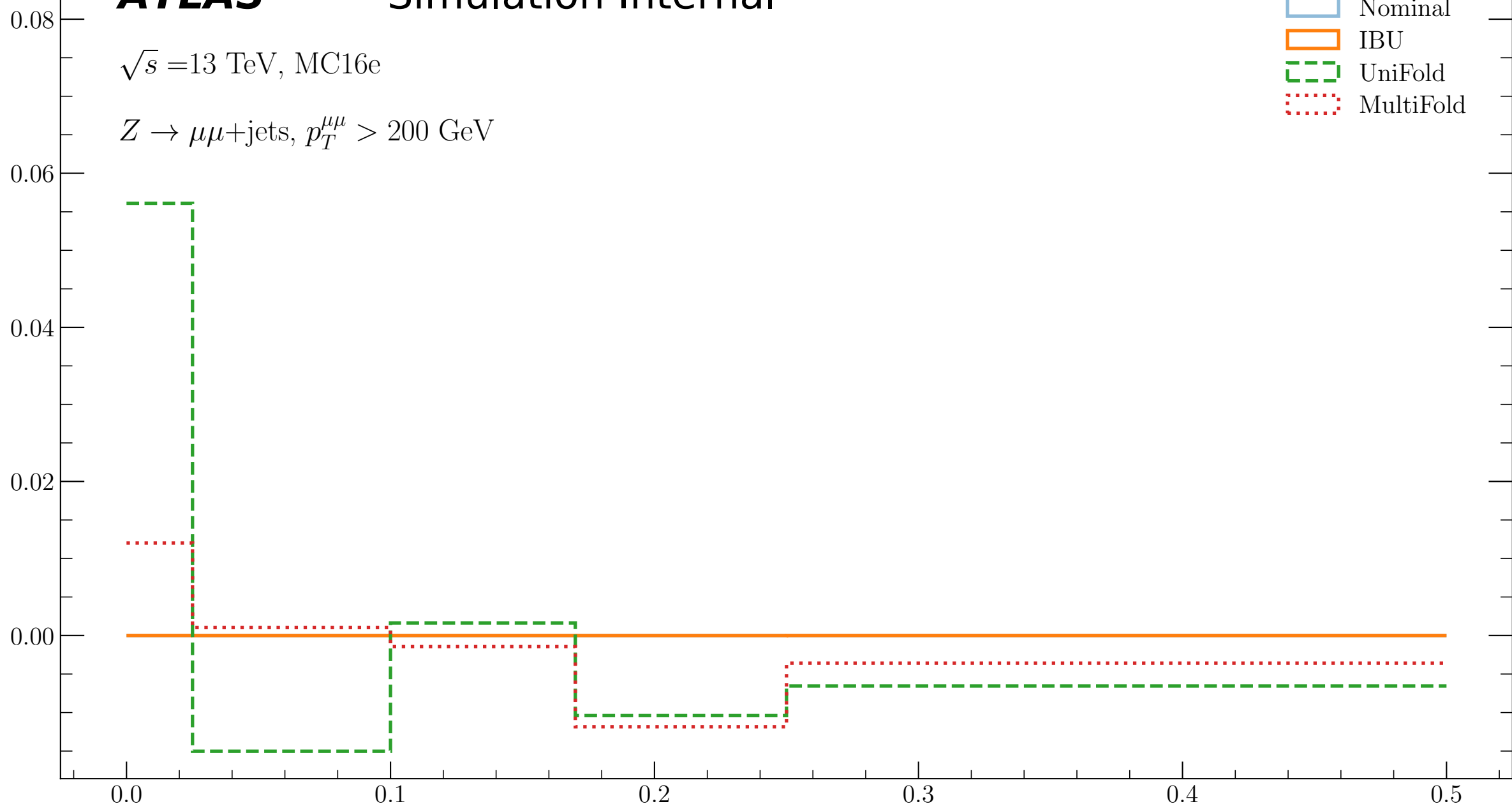
ATLAS

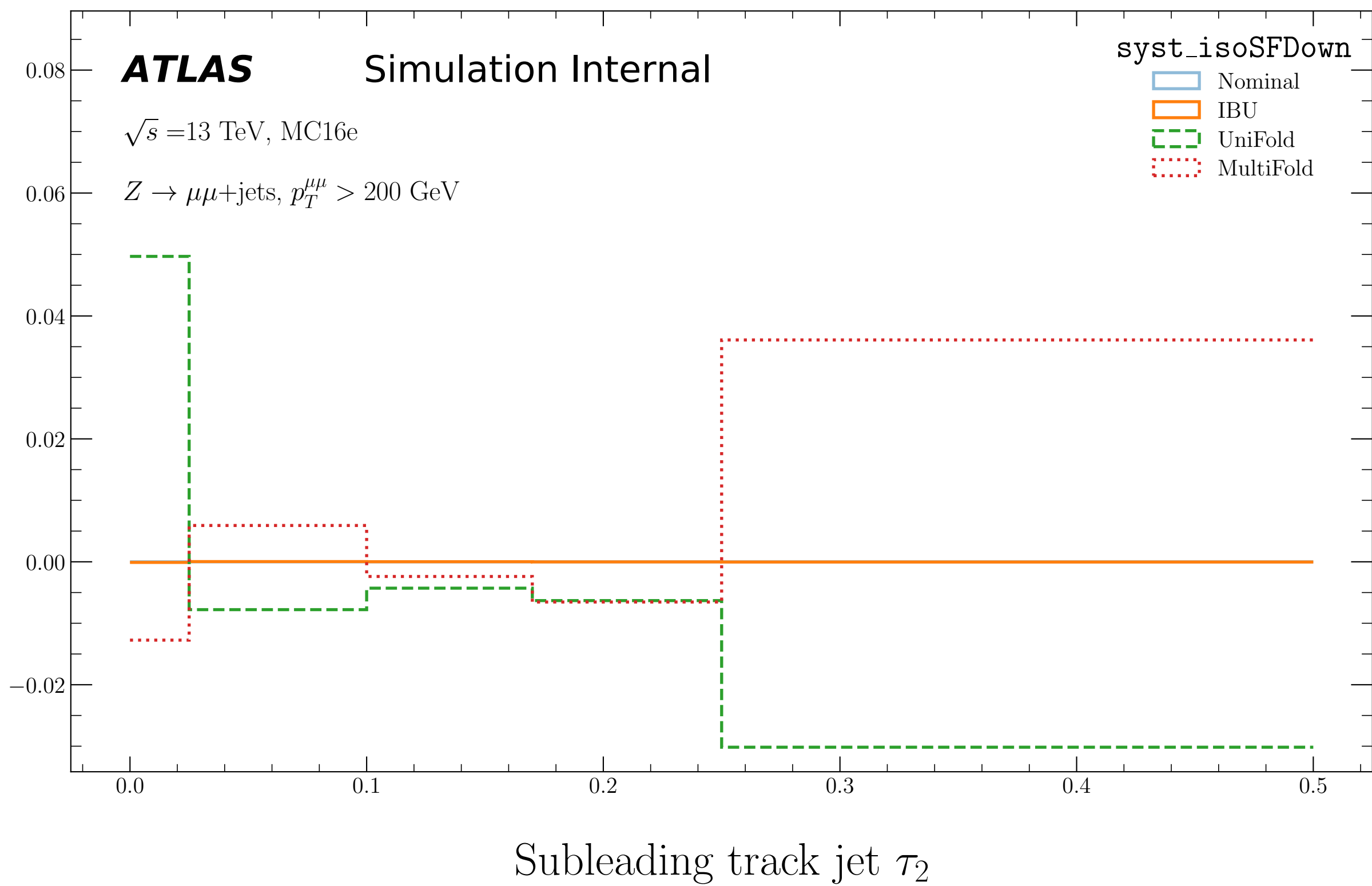
Simulation Internal

 $\sqrt{s}=13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_2



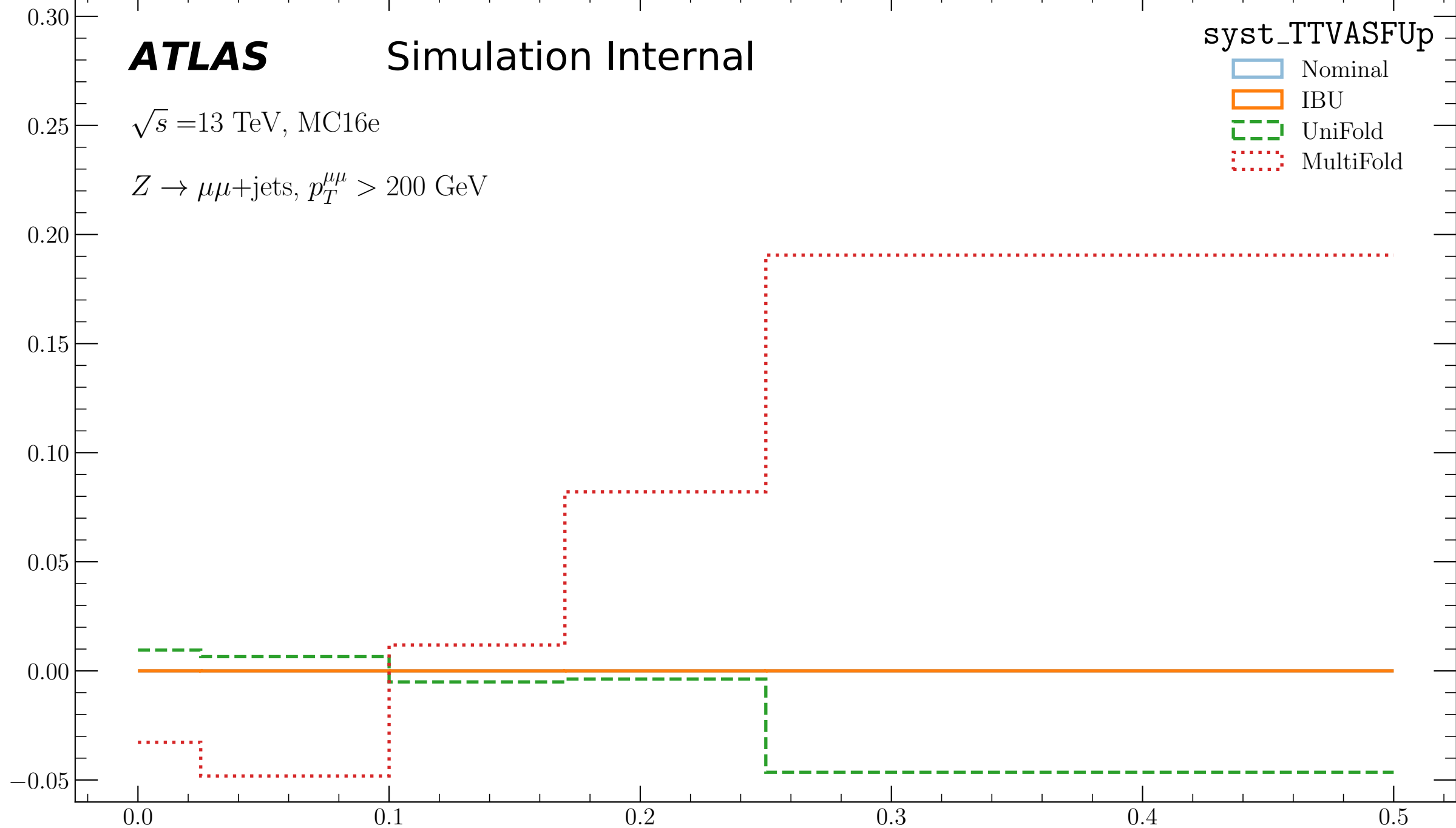
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_2

ATLAS

Simulation Internal

 $\sqrt{s}=13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

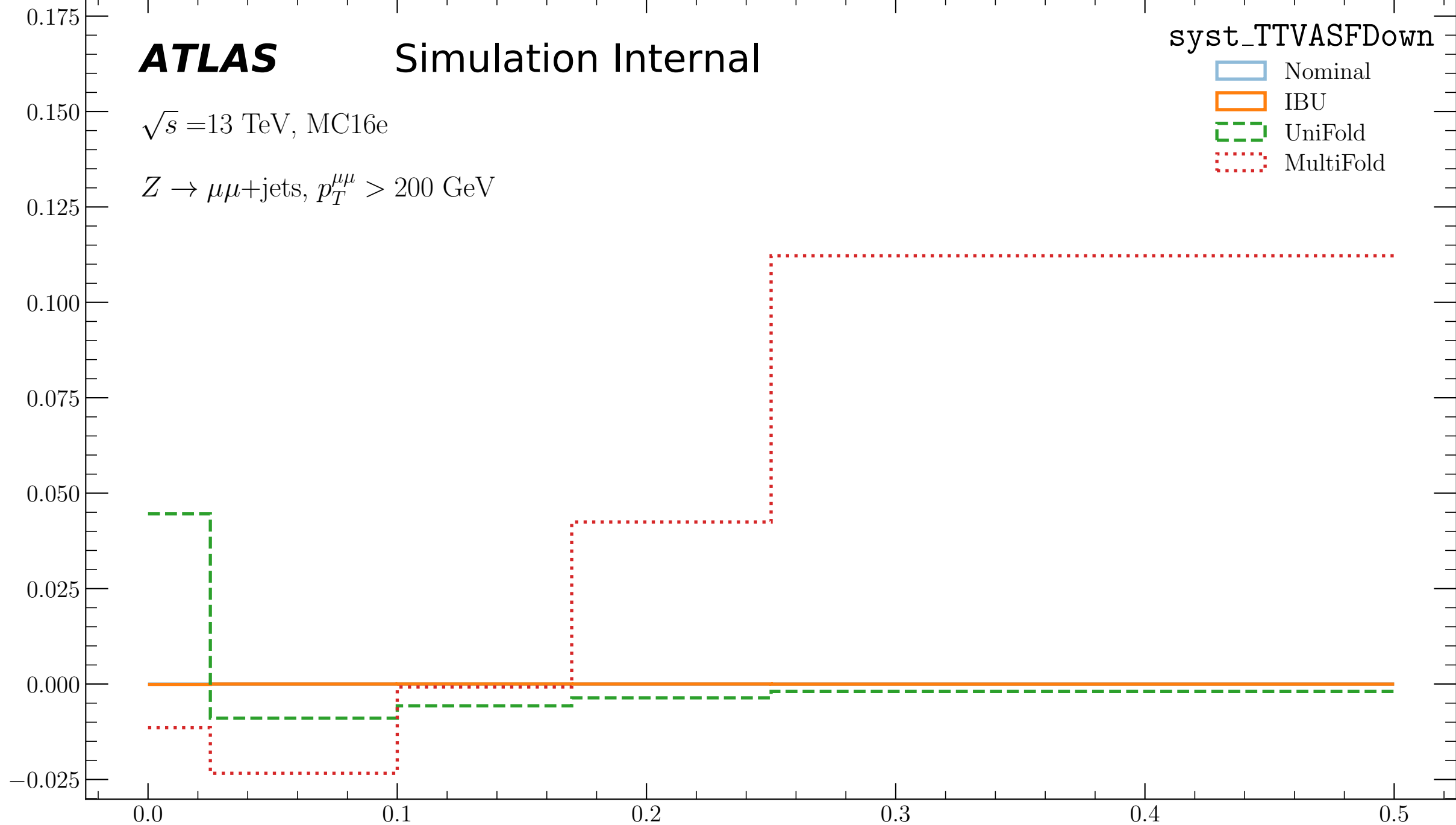
syst_TTVASFDown

Nominal

IBU

UniFold

MultiFold

Subleading track jet τ_2

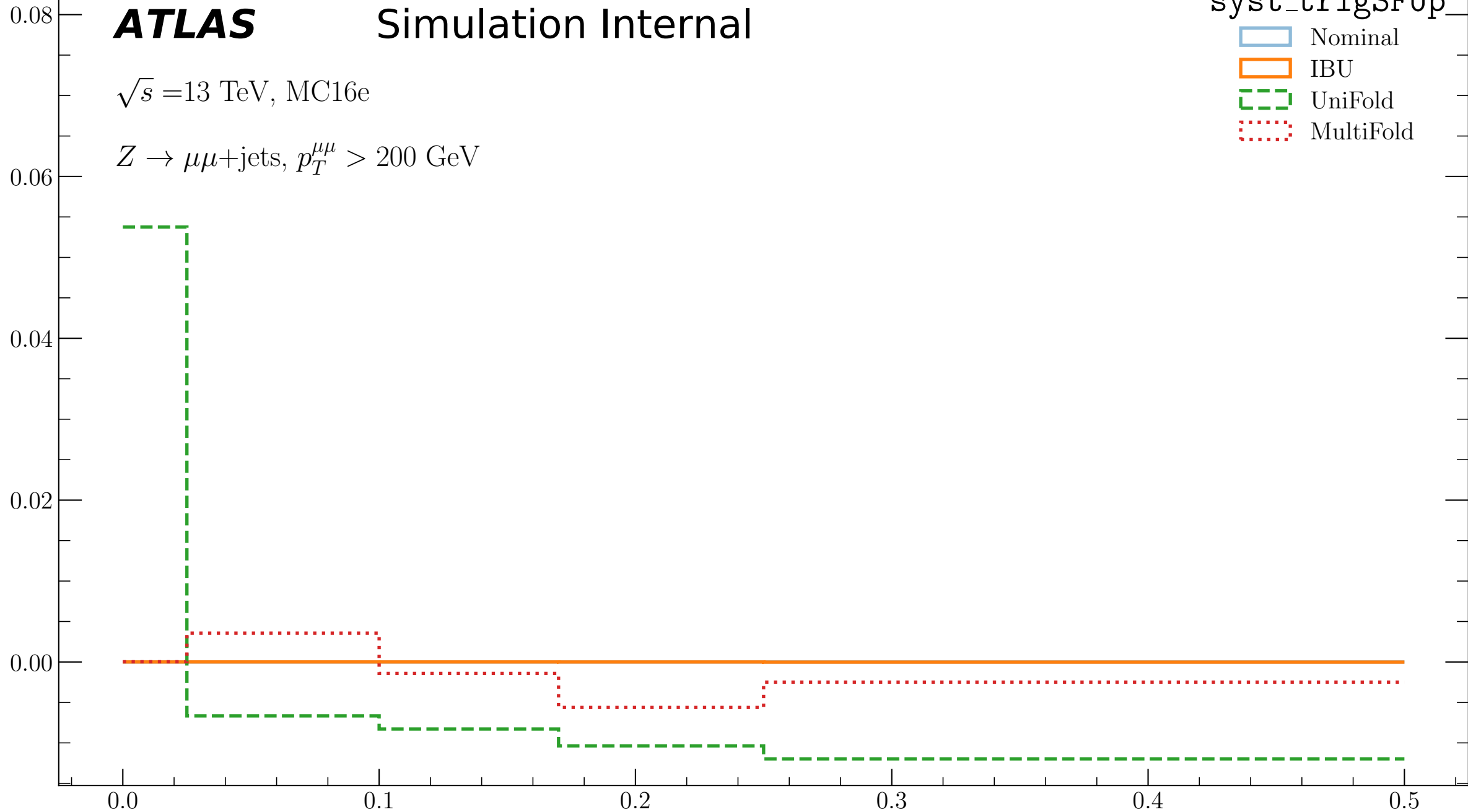
ATLAS

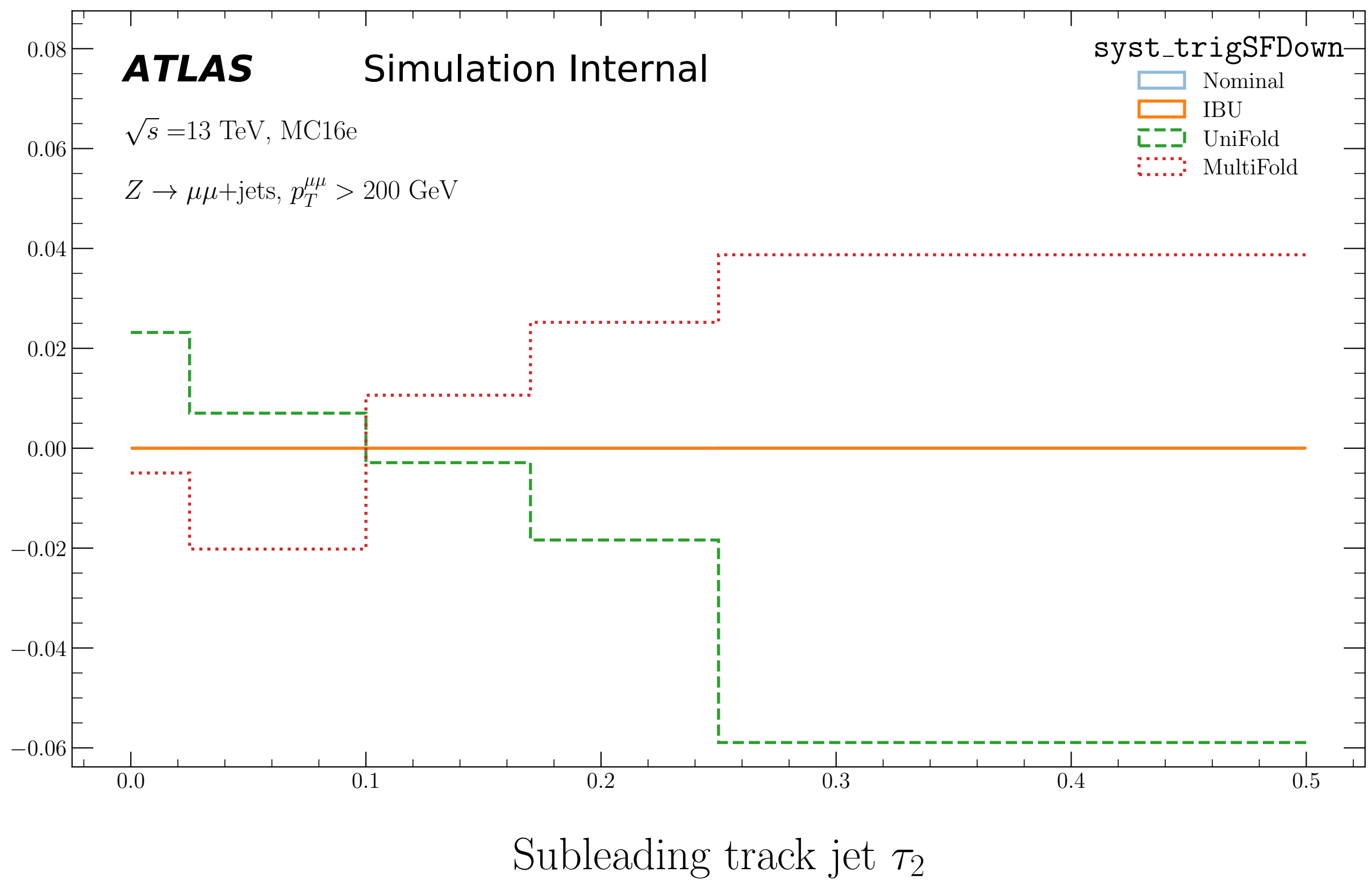
Simulation Internal

 $\sqrt{s}=13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_2



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

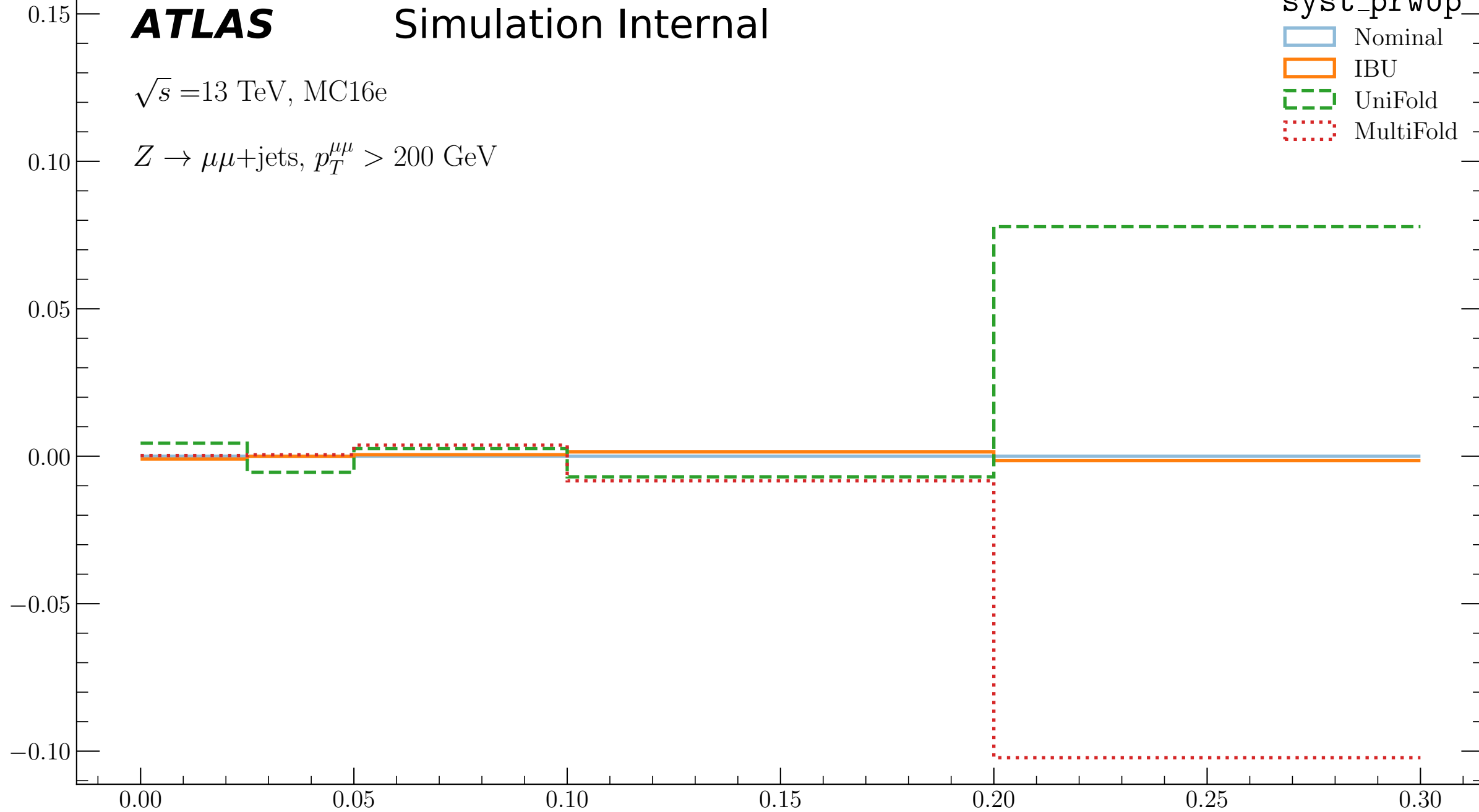
syst_prwUp

Nominal

IBU

UniFold

MultiFold

Leading track jet τ_3

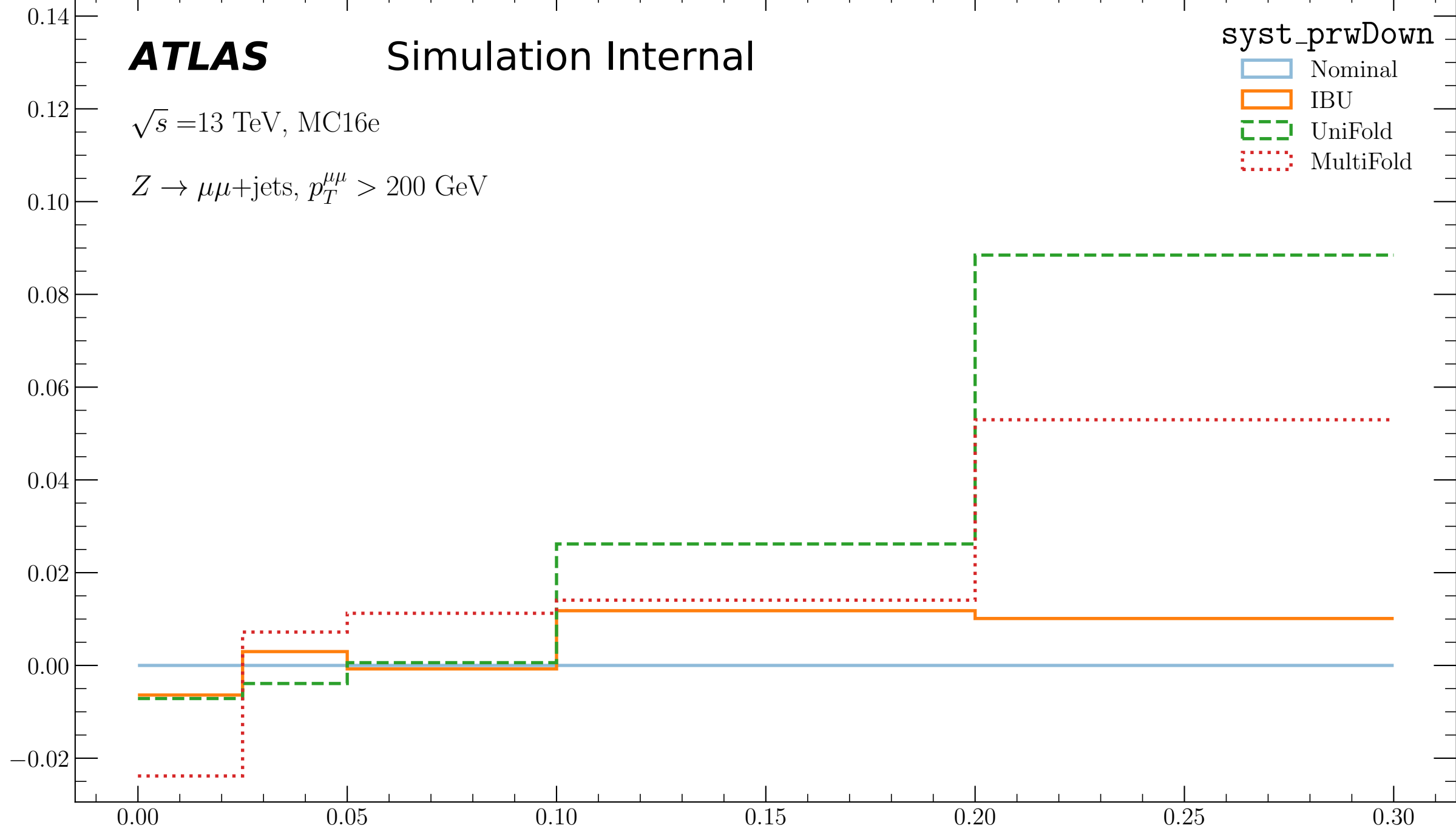
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet τ_3

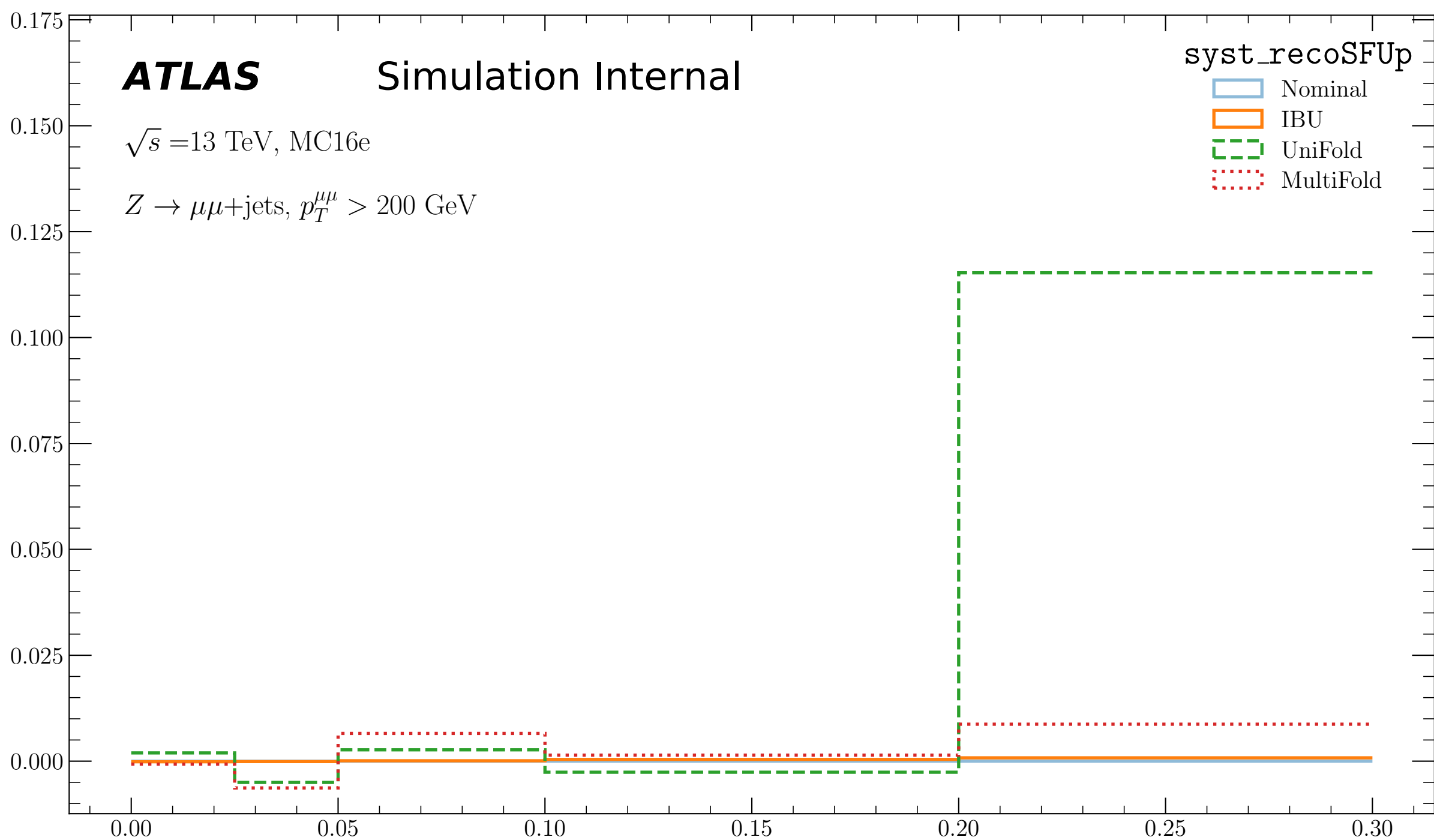
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet τ_3

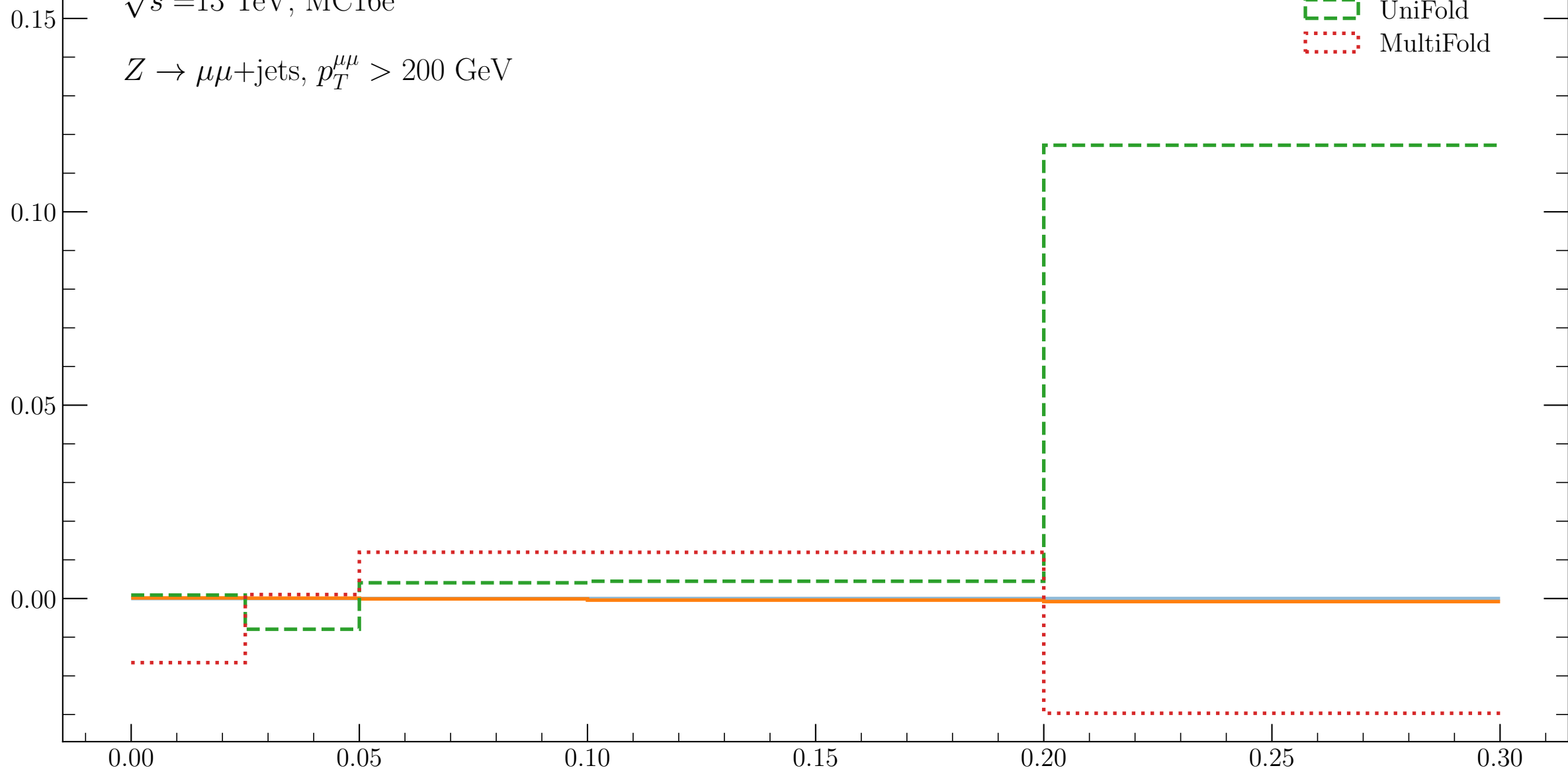
ATLAS

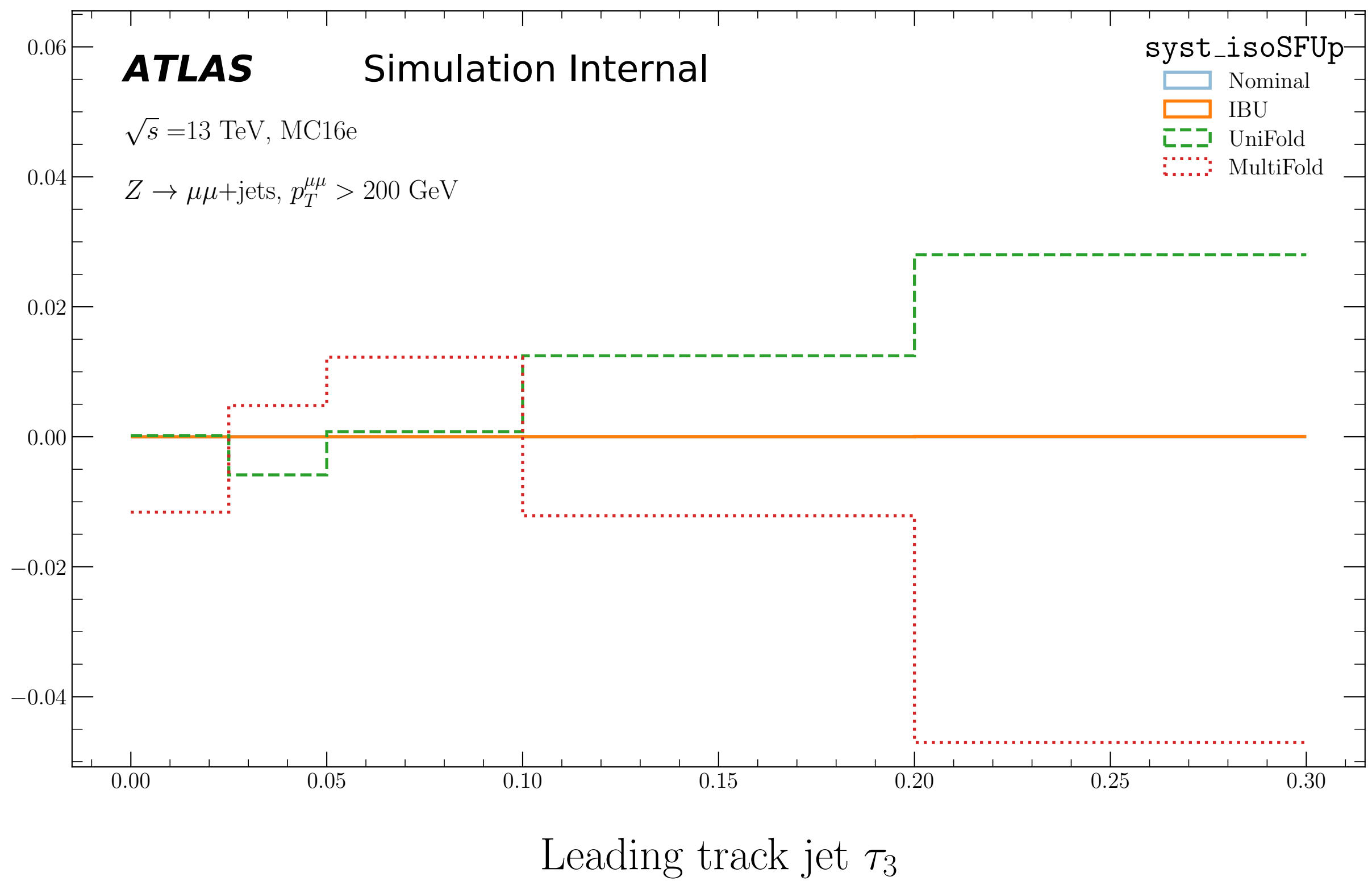
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet τ_3



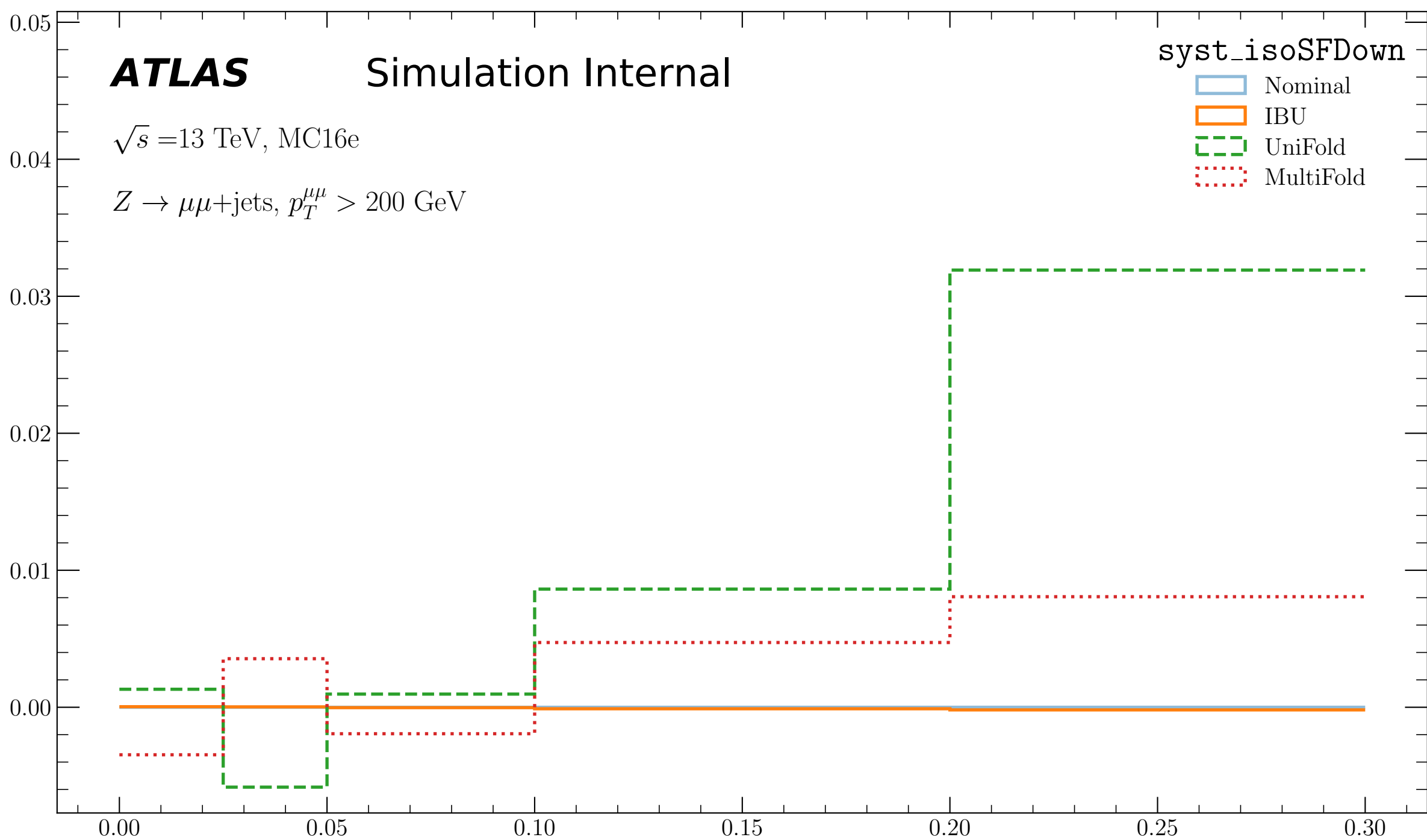
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet τ_3

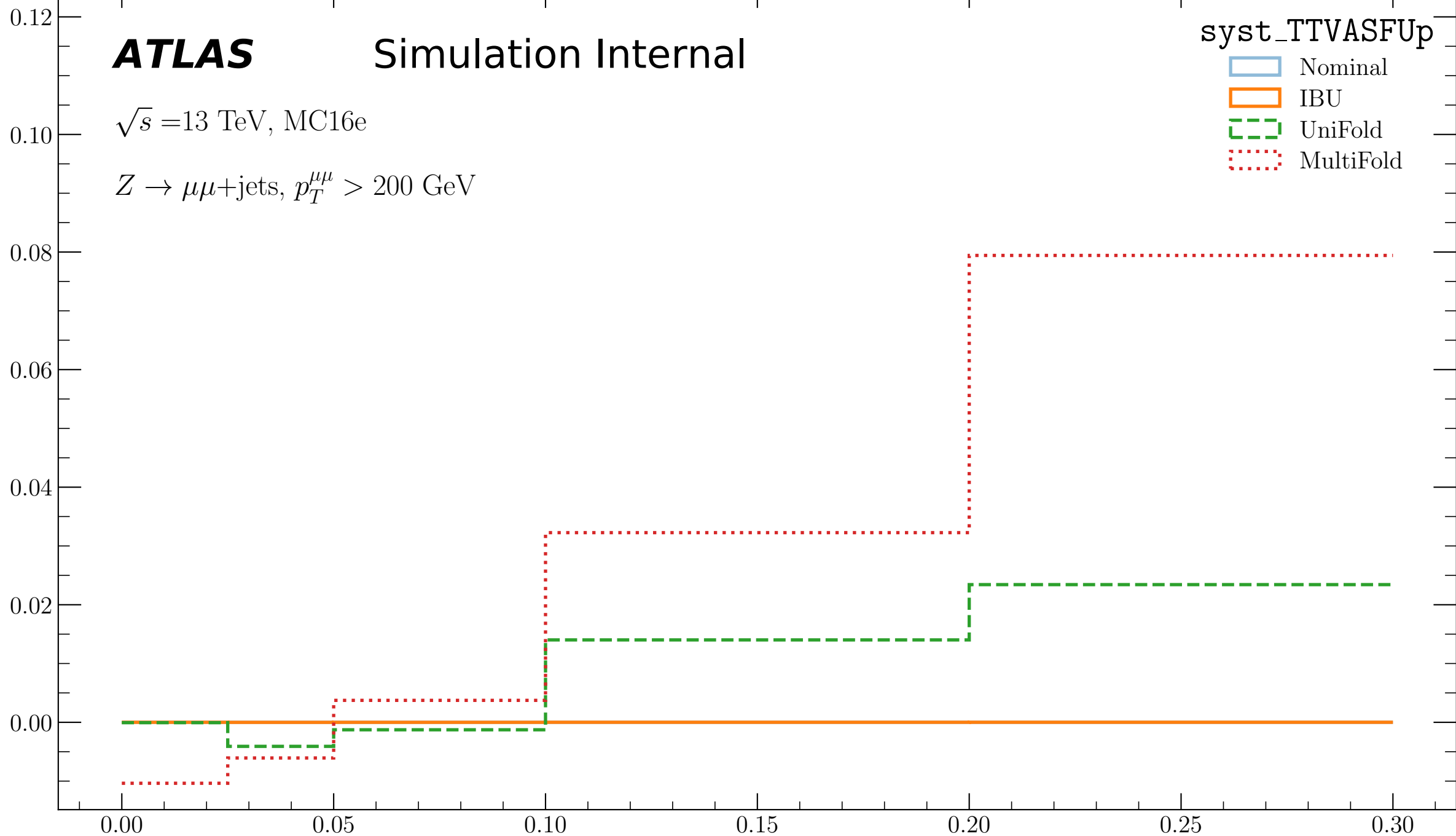
ATLAS

Simulation Internal

 $\sqrt{s}=13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet τ_3

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

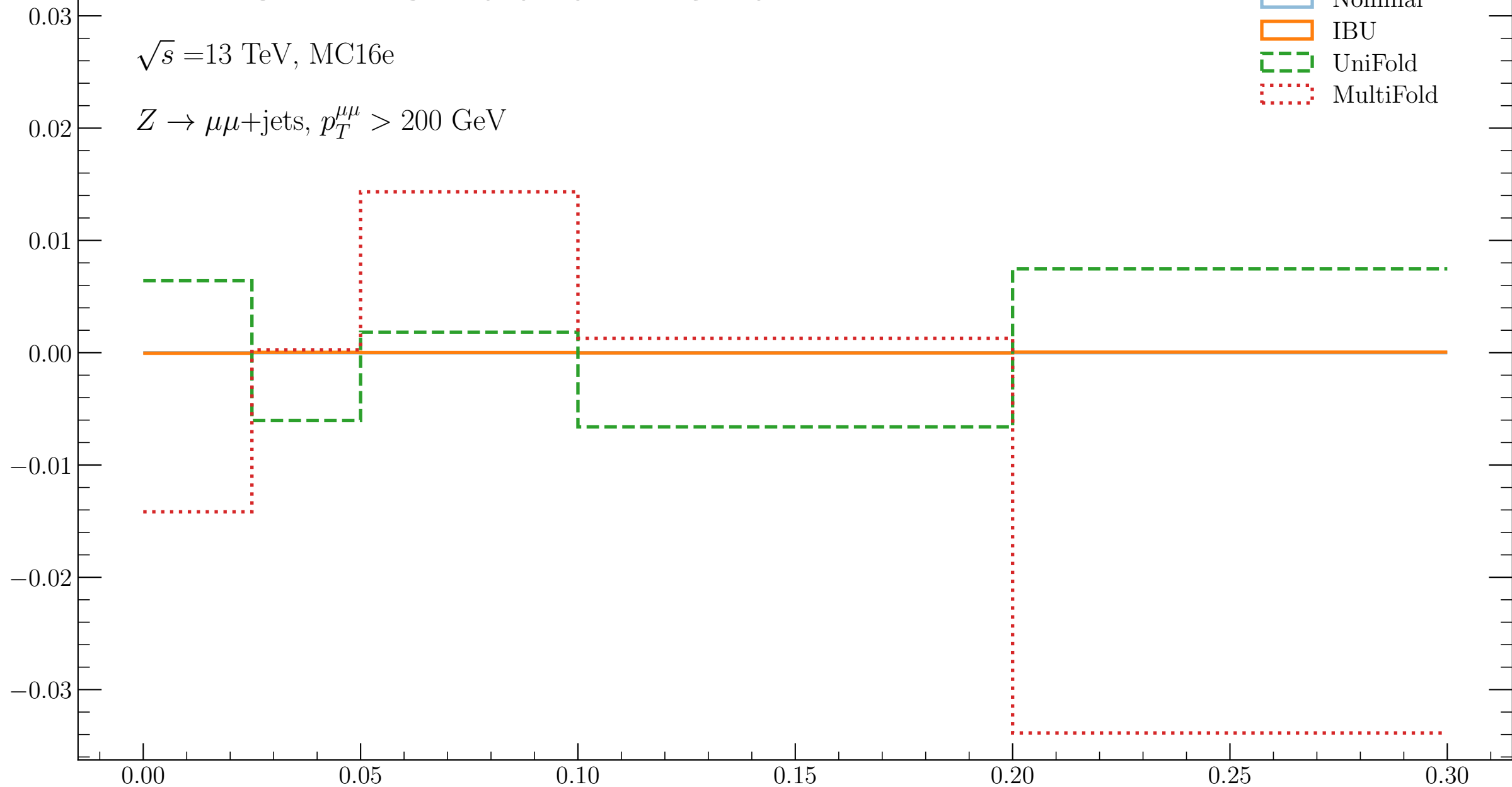
syst_TTVASFDown

Nominal

IBU

UniFold

MultiFold

Leading track jet τ_3

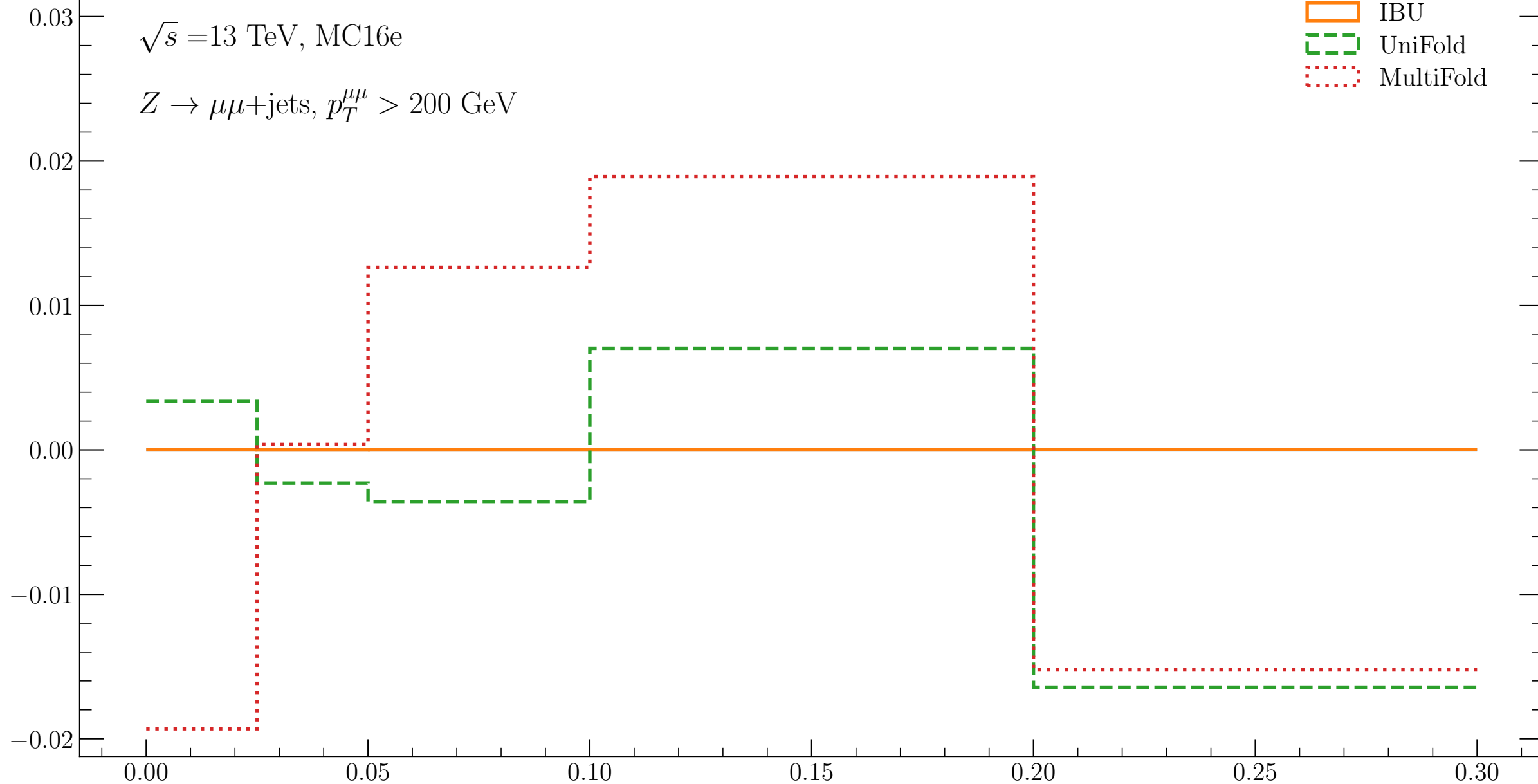
ATLAS

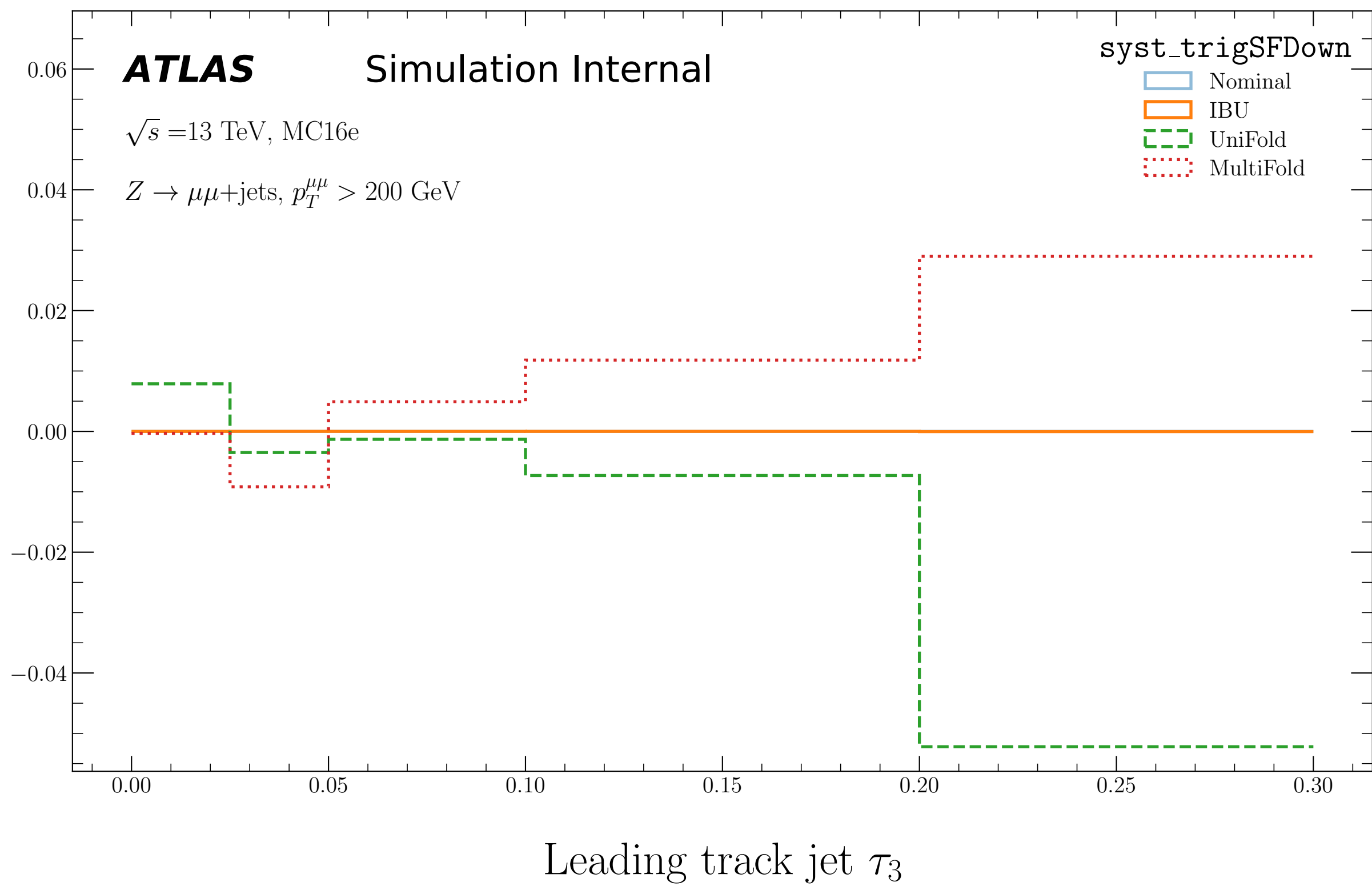
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Leading track jet τ_3



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

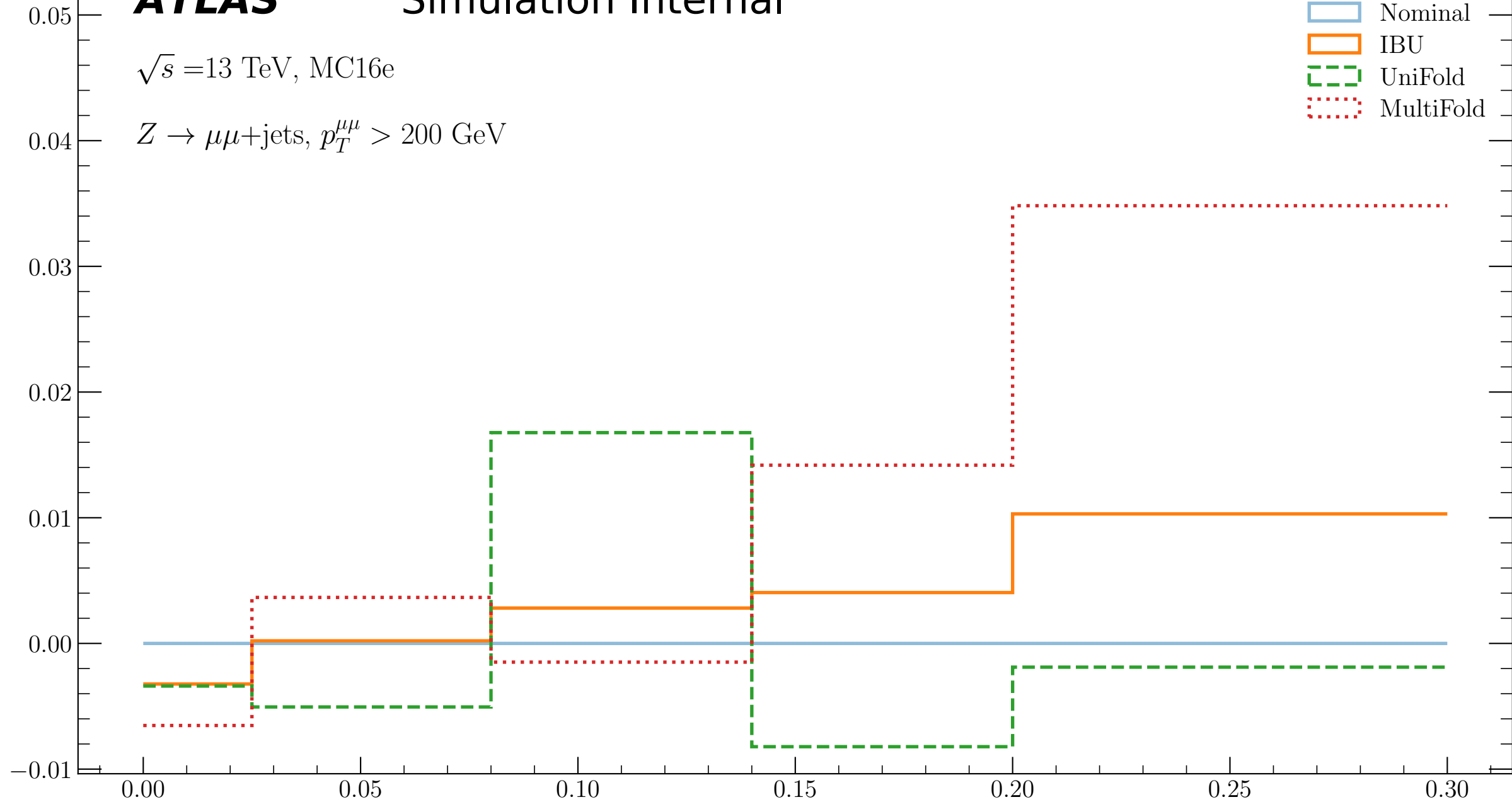
syst_prwUp

Nominal

IBU

UniFold

MultiFold

Subleading track jet τ_3

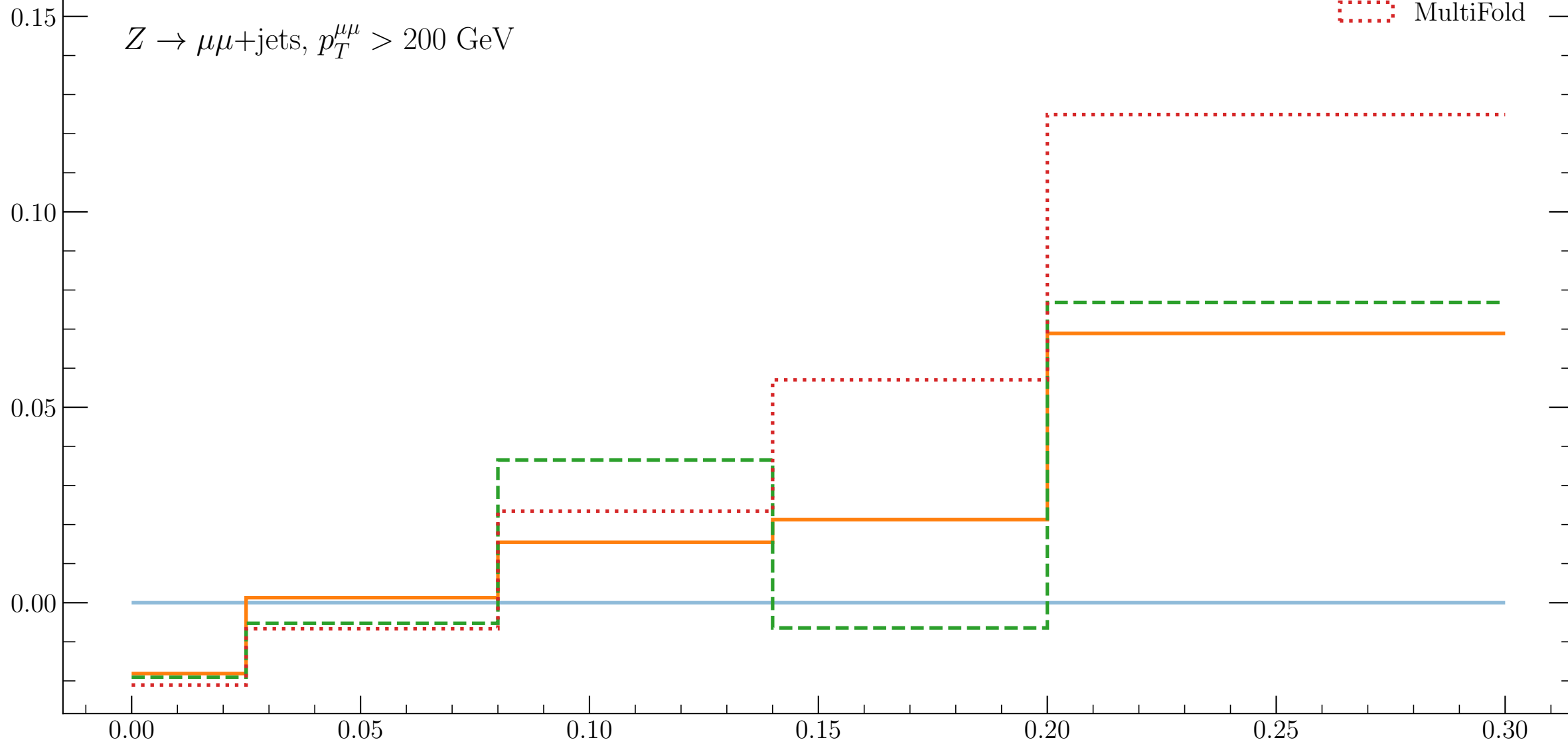
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_3

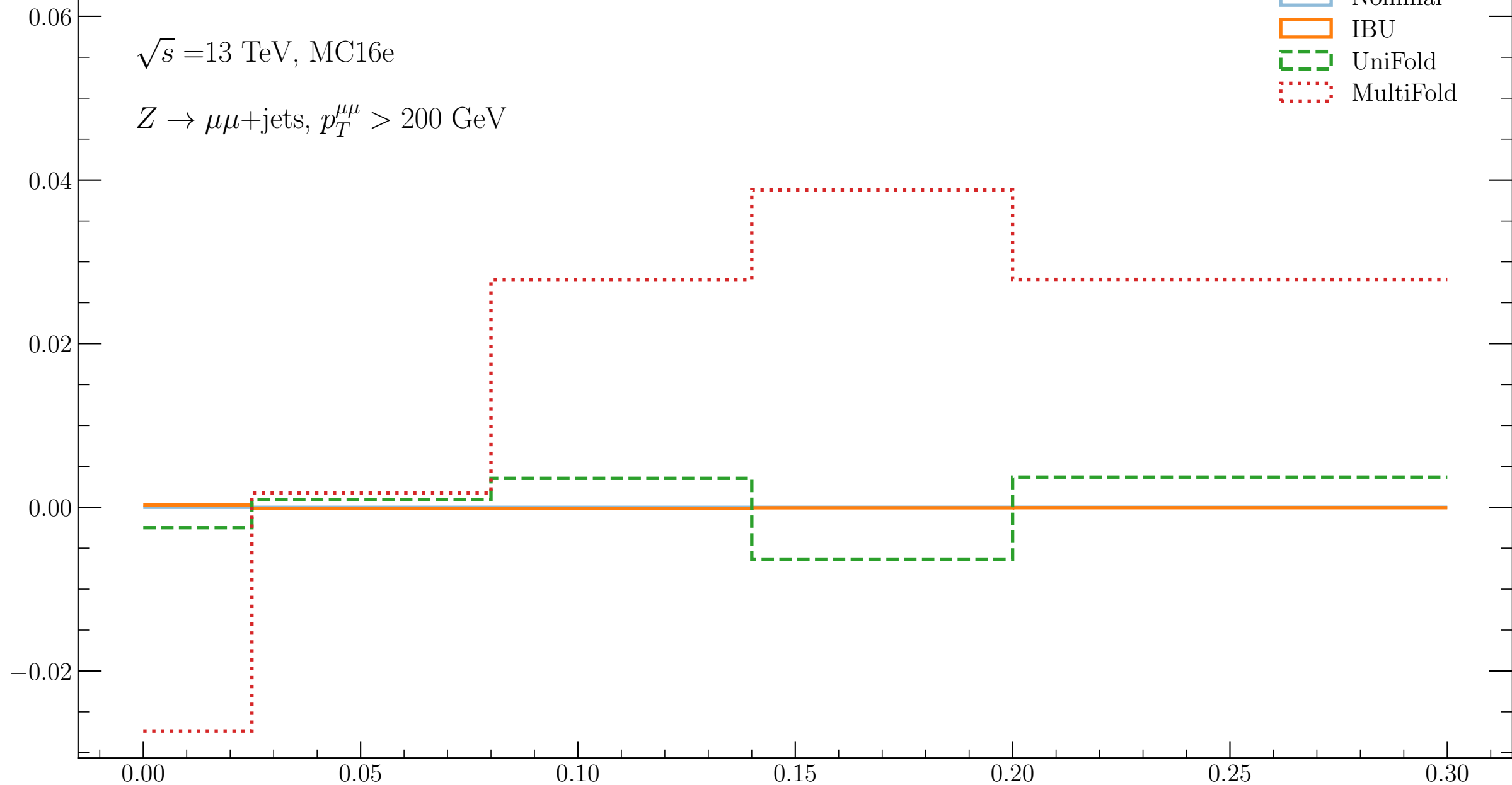
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_3

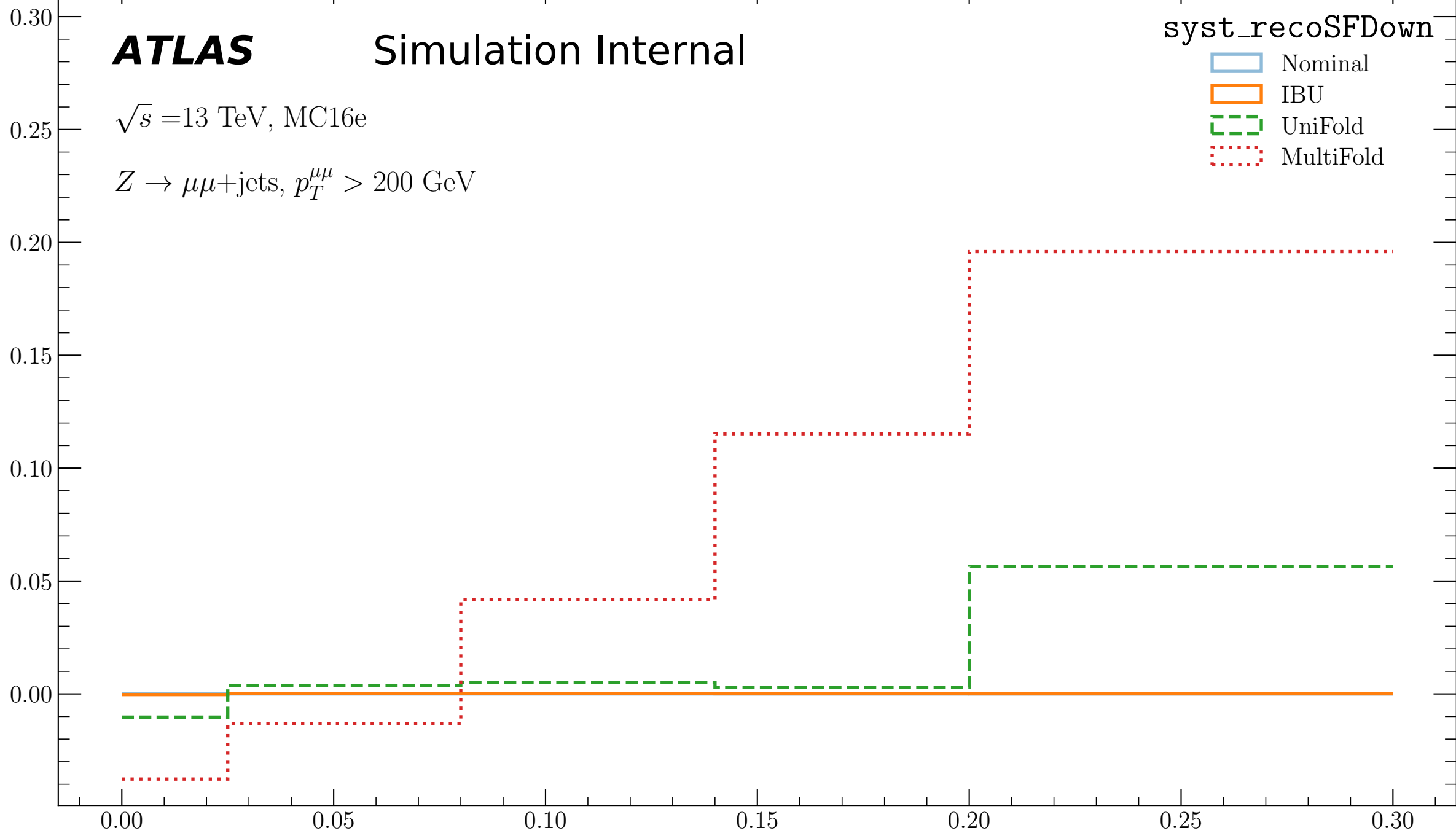
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_3

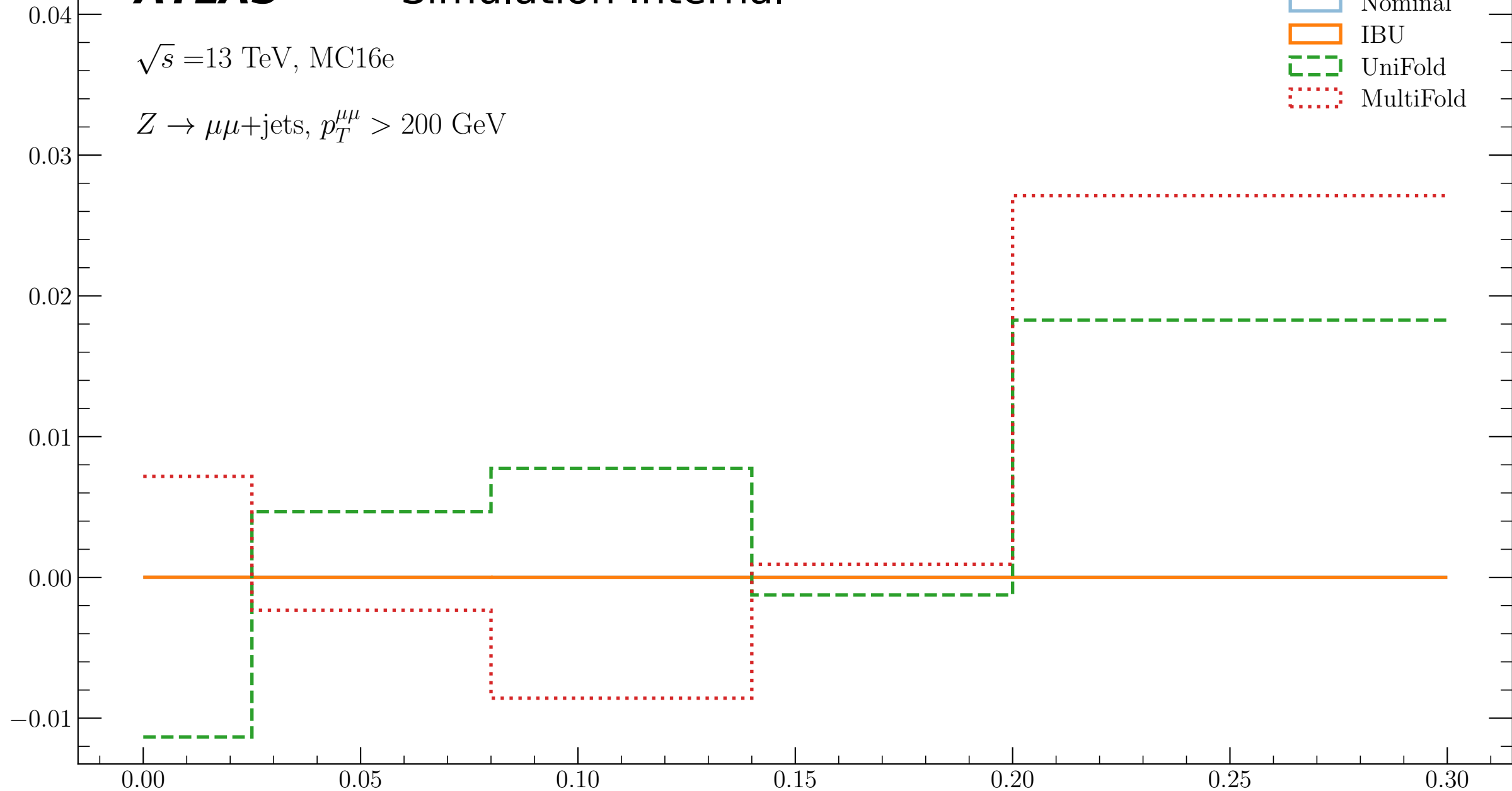
ATLAS

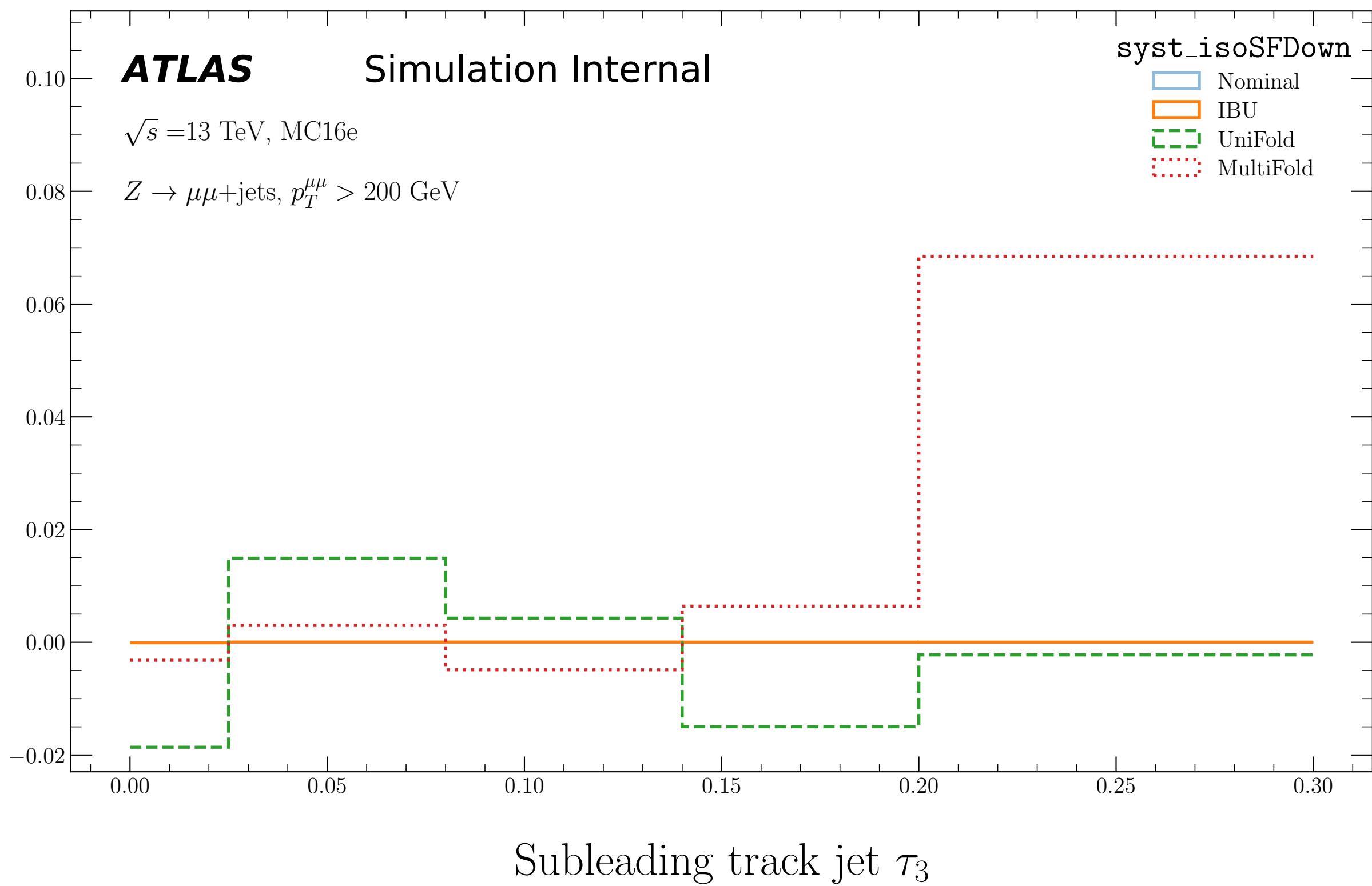
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_3



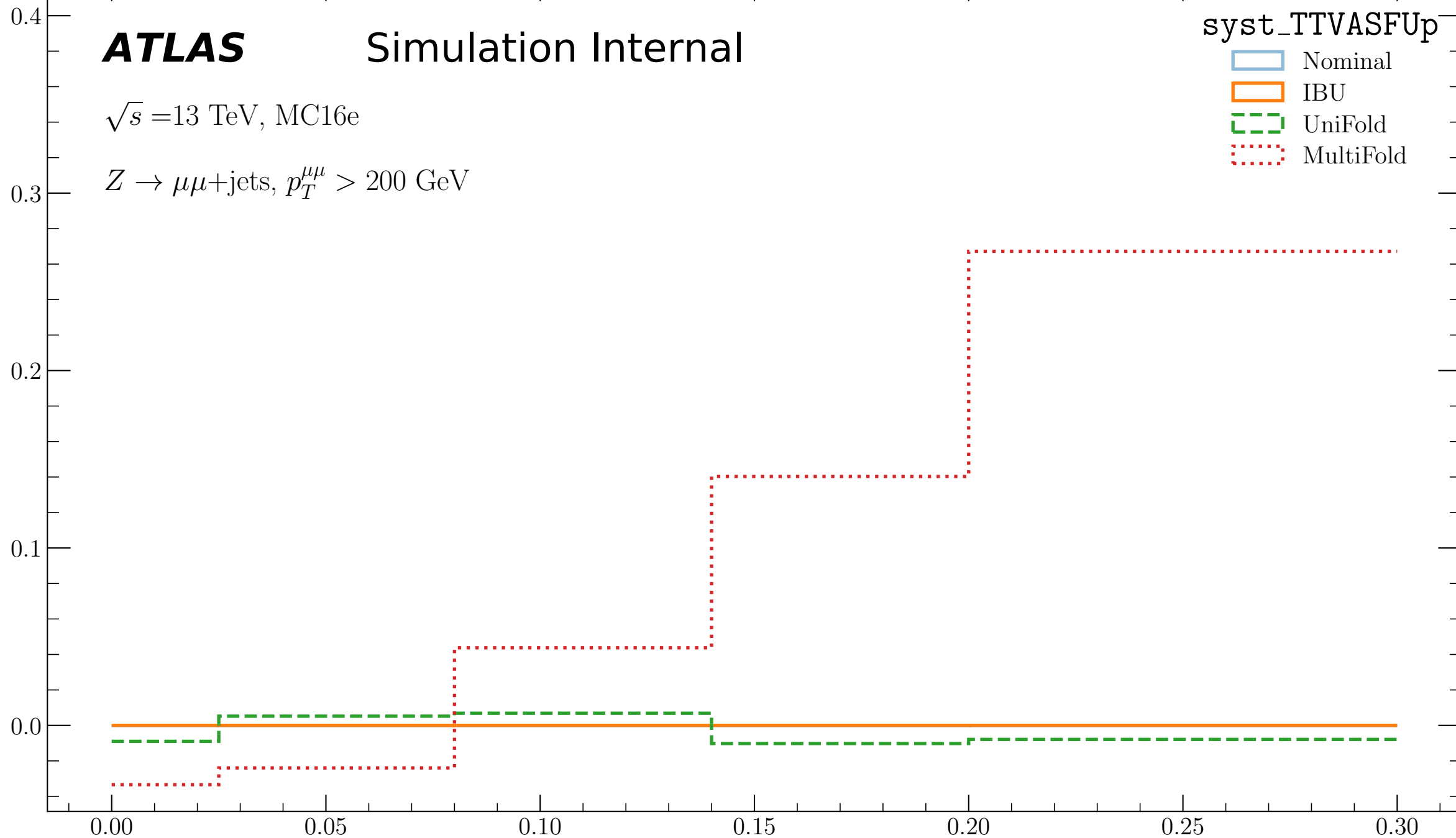
ATLAS

Simulation Internal

 $\sqrt{s}=13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_3

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

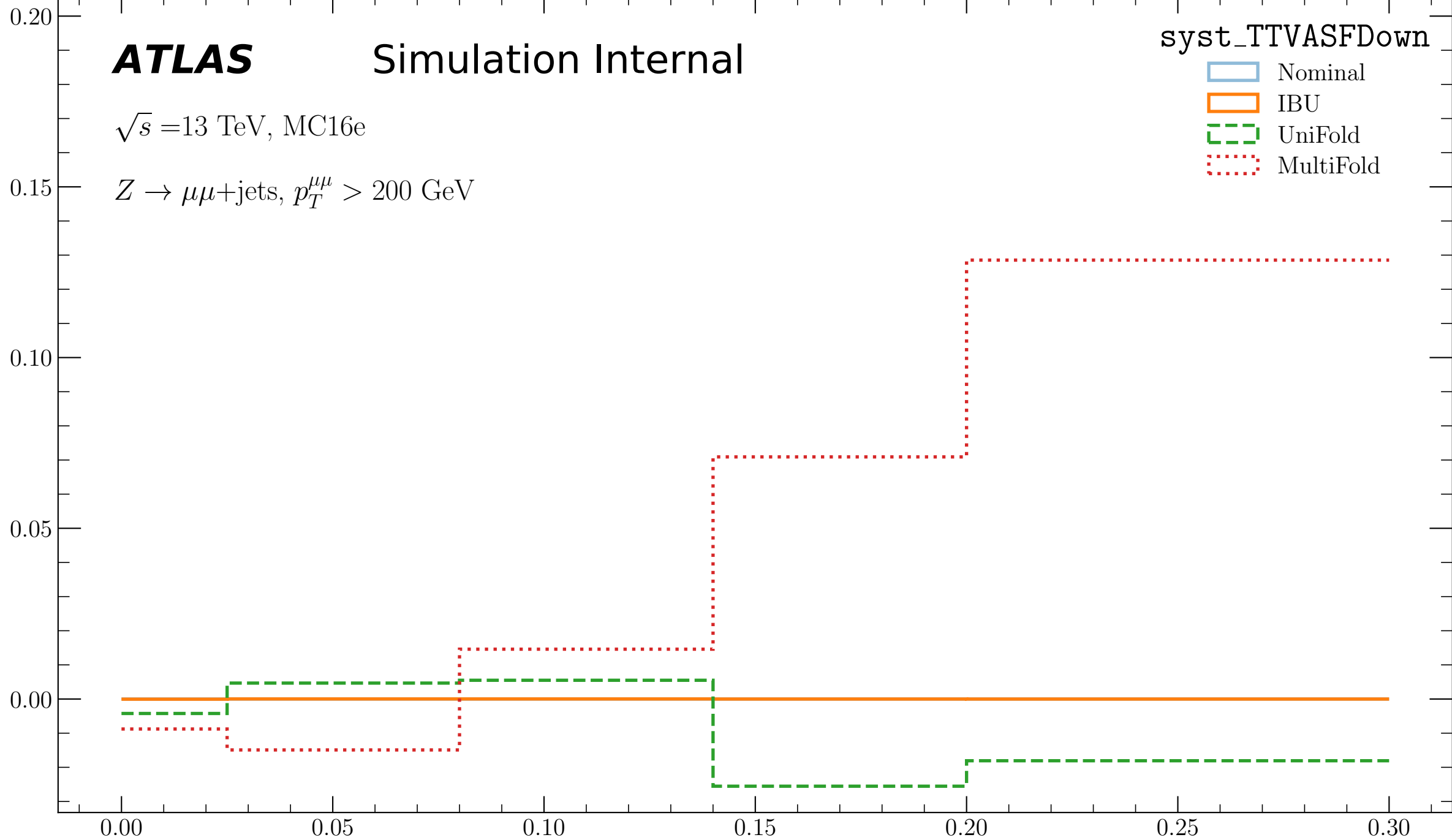
syst_TTVASFDn

Nominal

IBU

UniFold

MultiFold

Subleading track jet τ_3

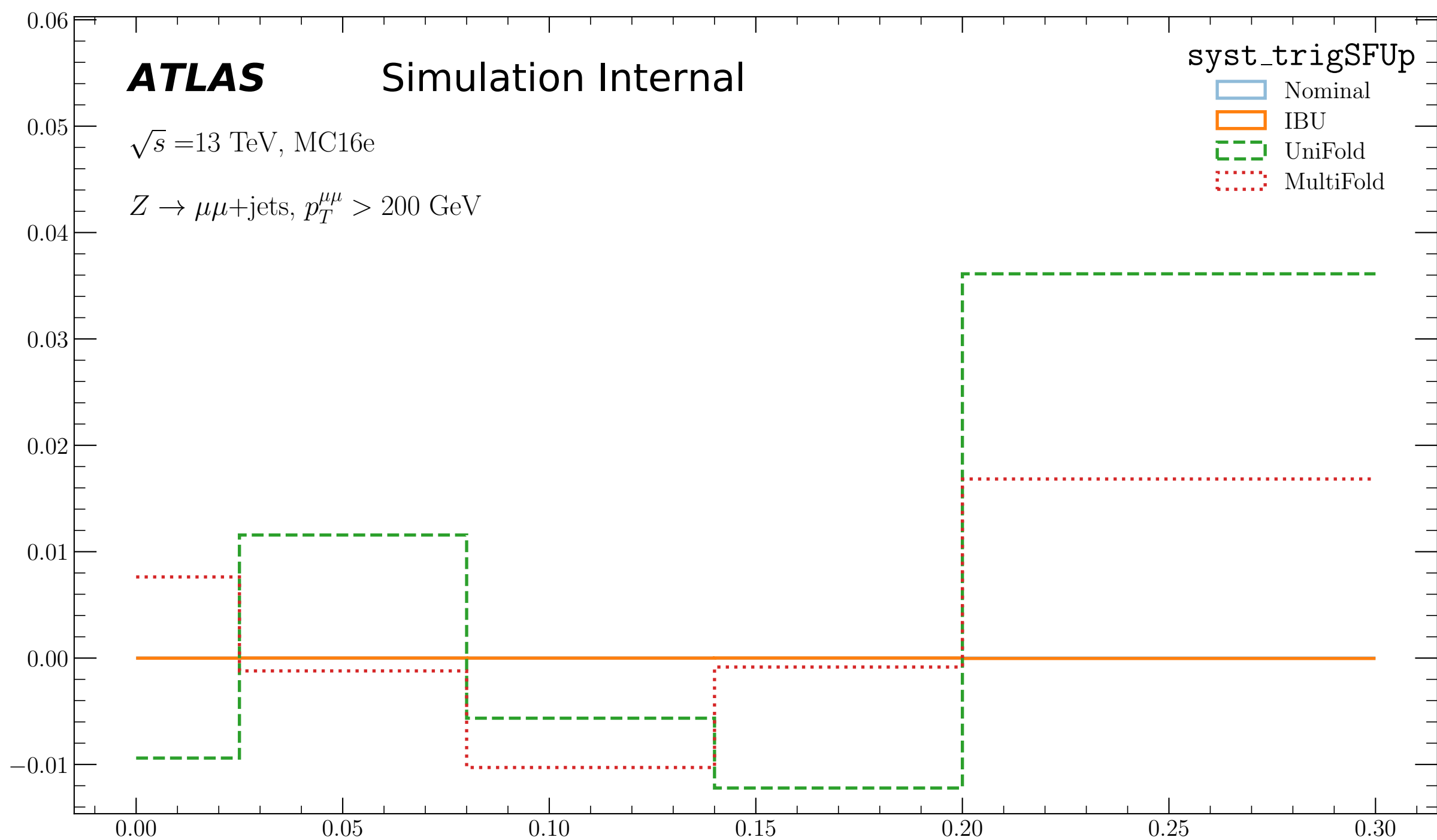
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

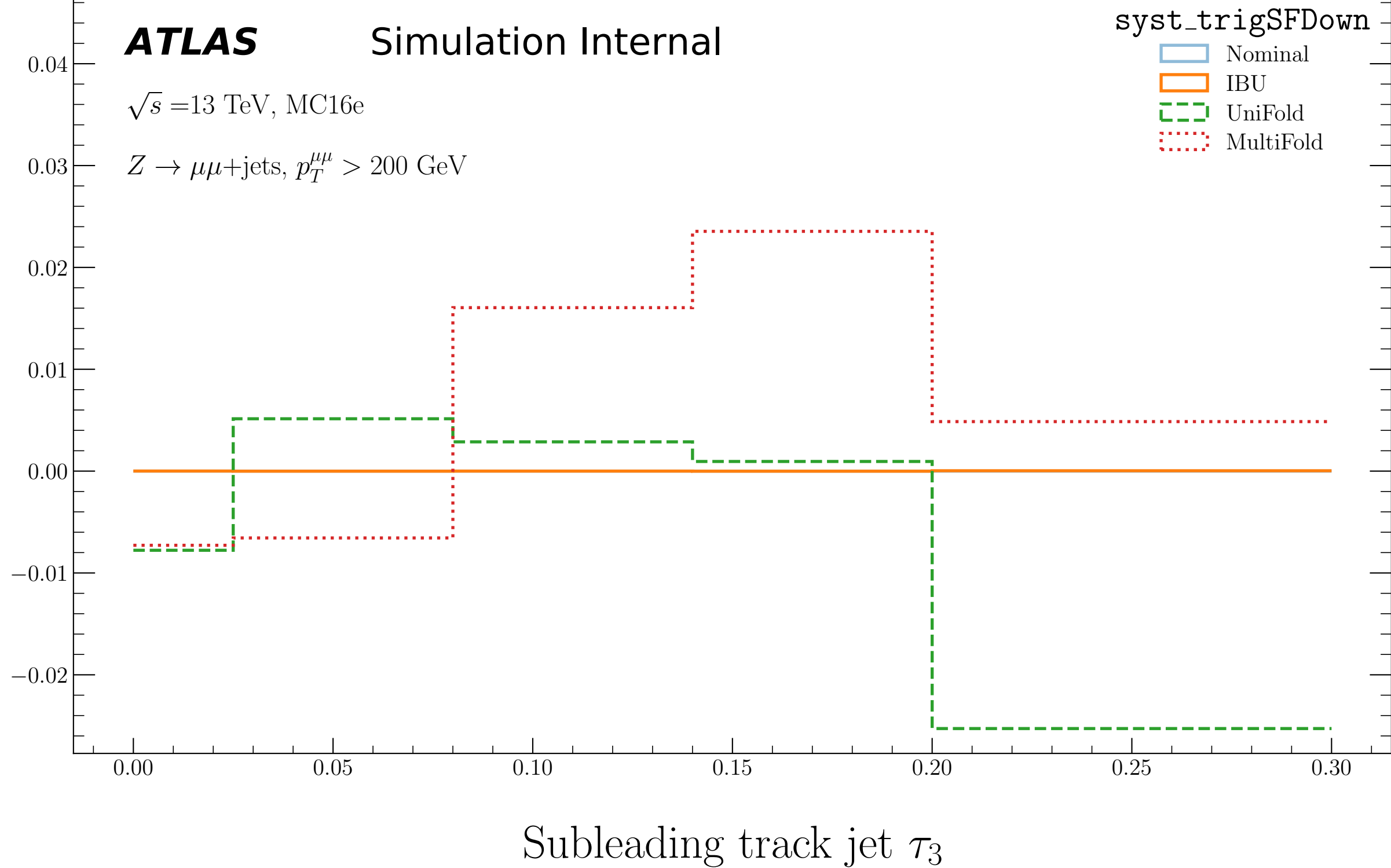
syst_trigSFUp

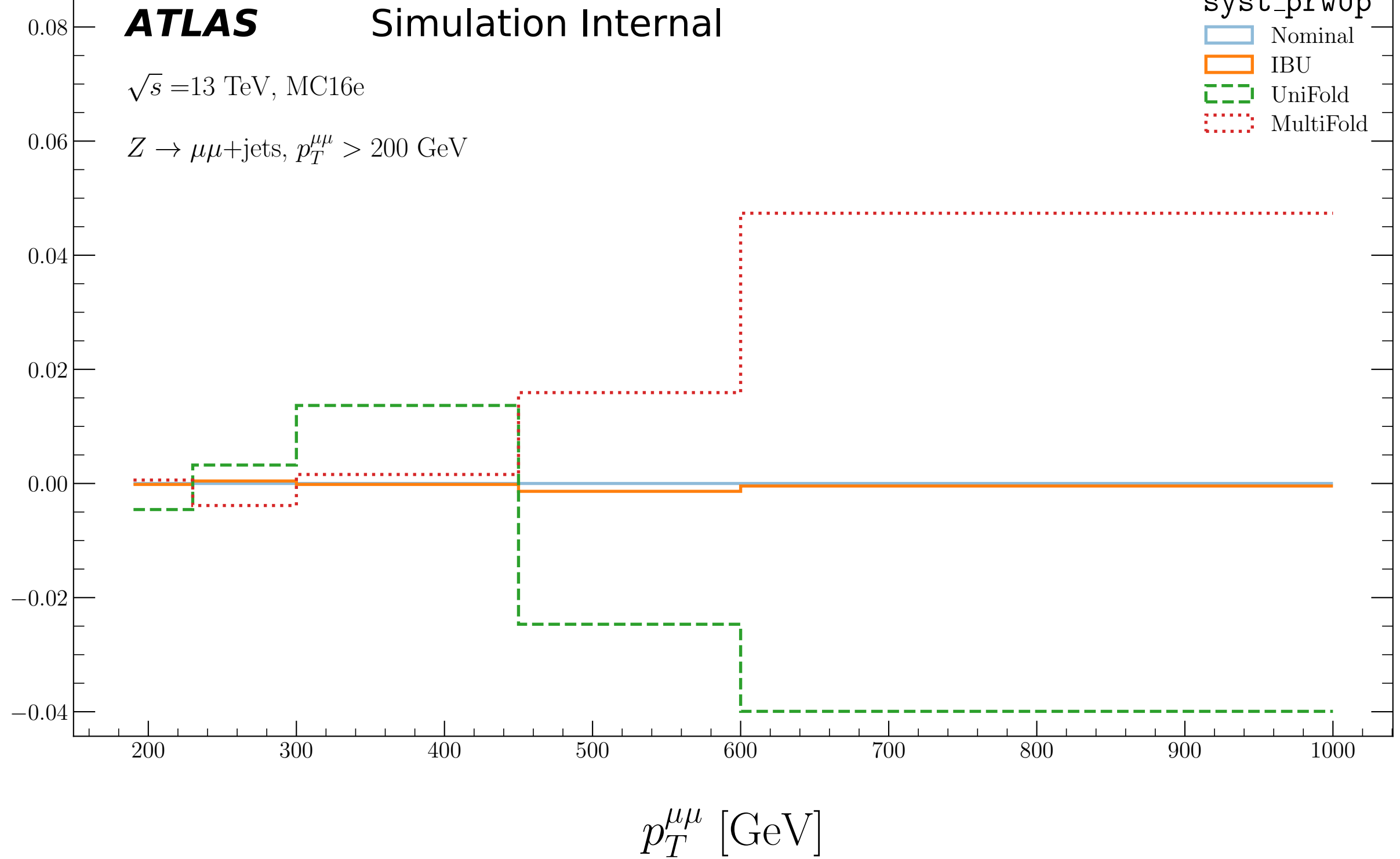
- Nominal
- IBU
- UniFold
- MultiFold

Subleading track jet τ_3

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV



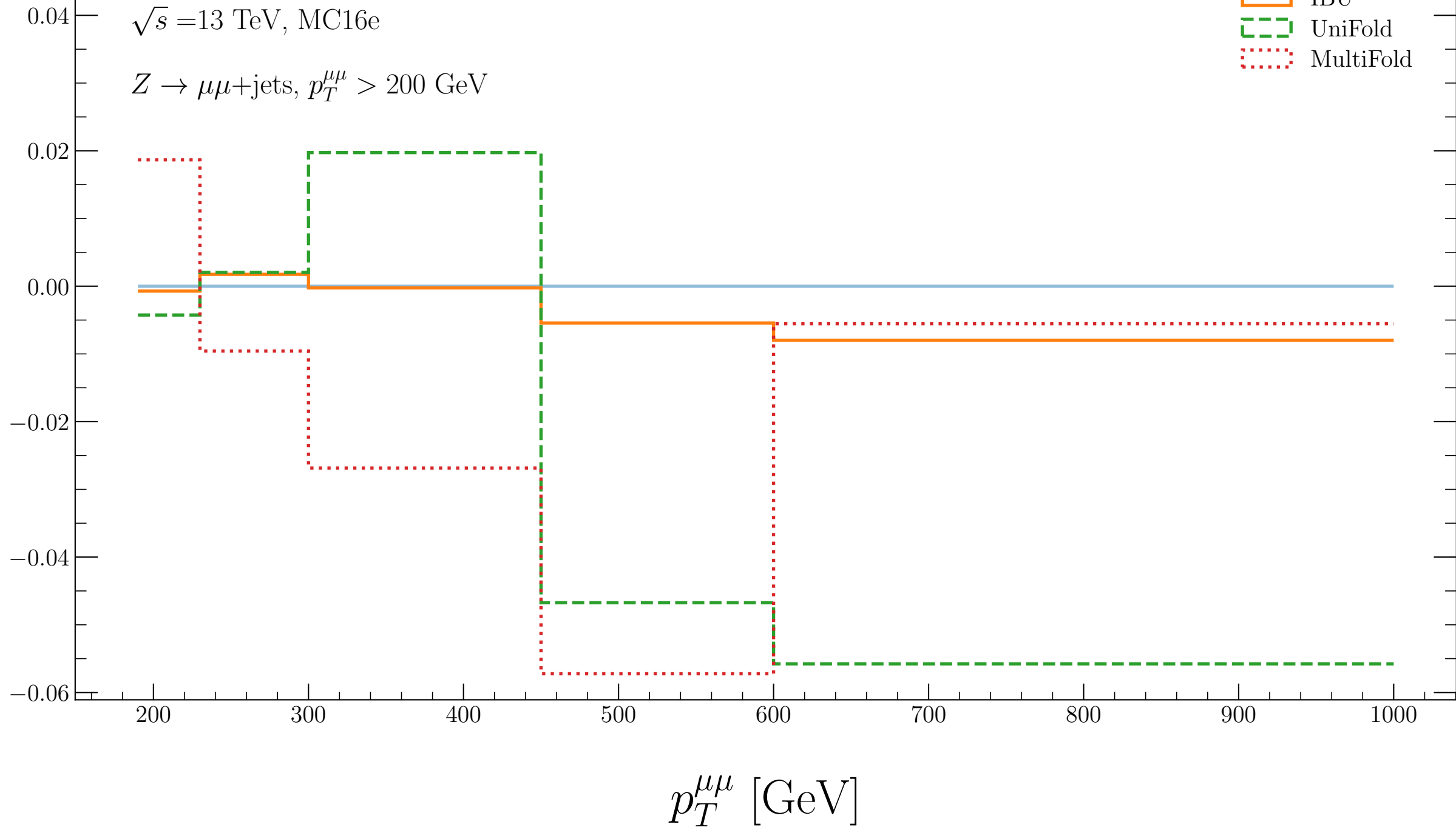
ATLAS

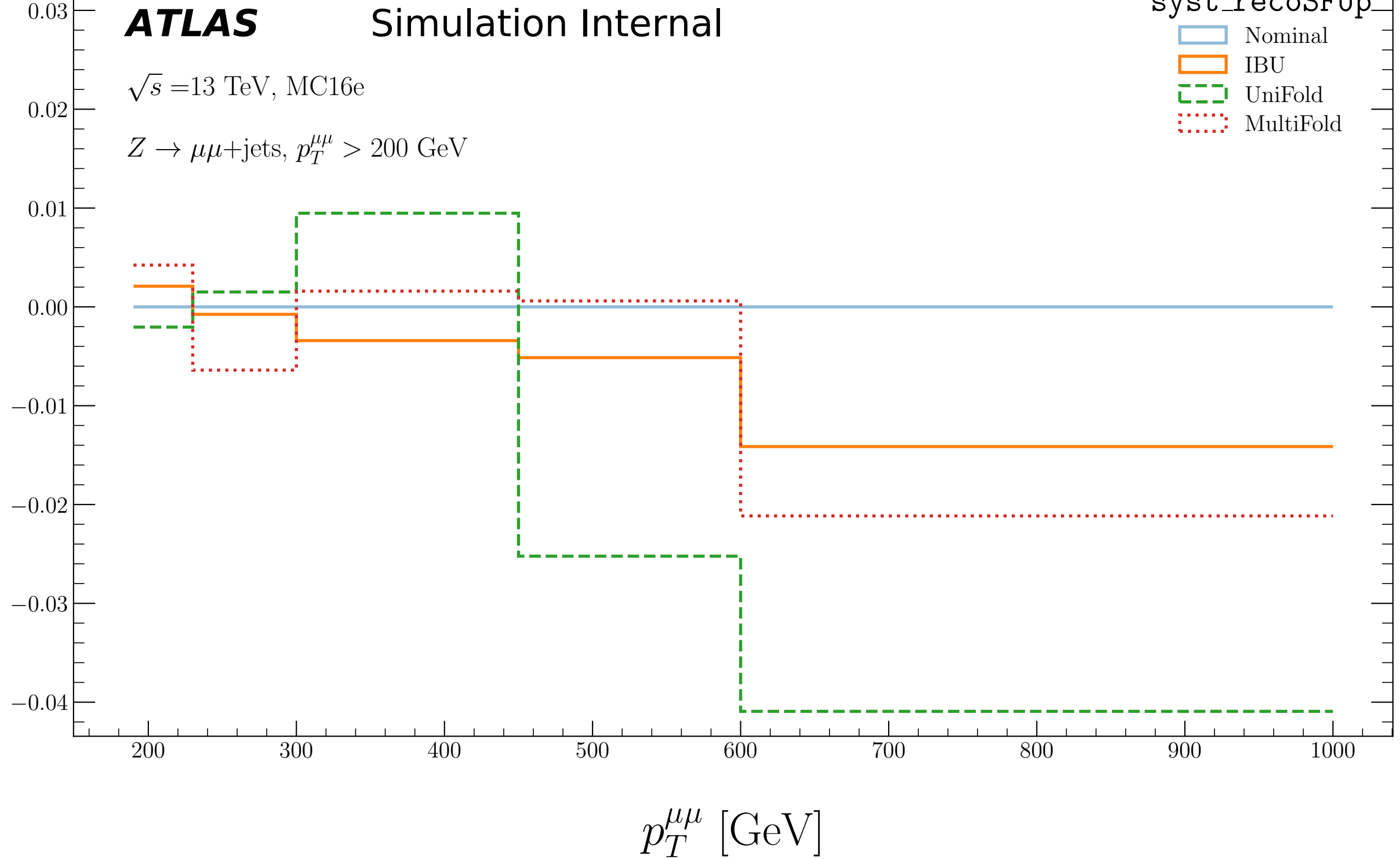
Simulation Internal

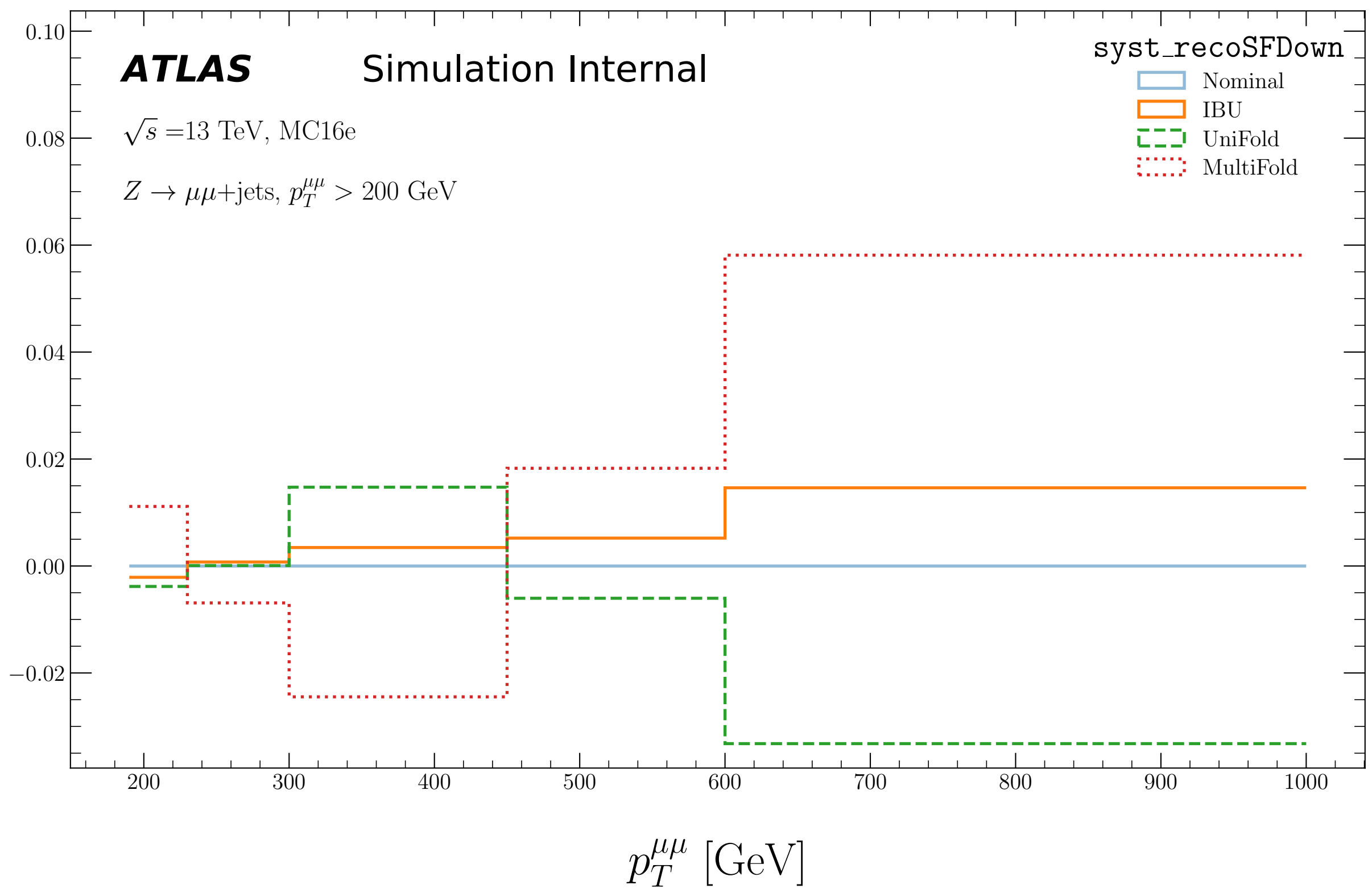
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

- Nominal
- IBU
- UniFold
- MultiFold







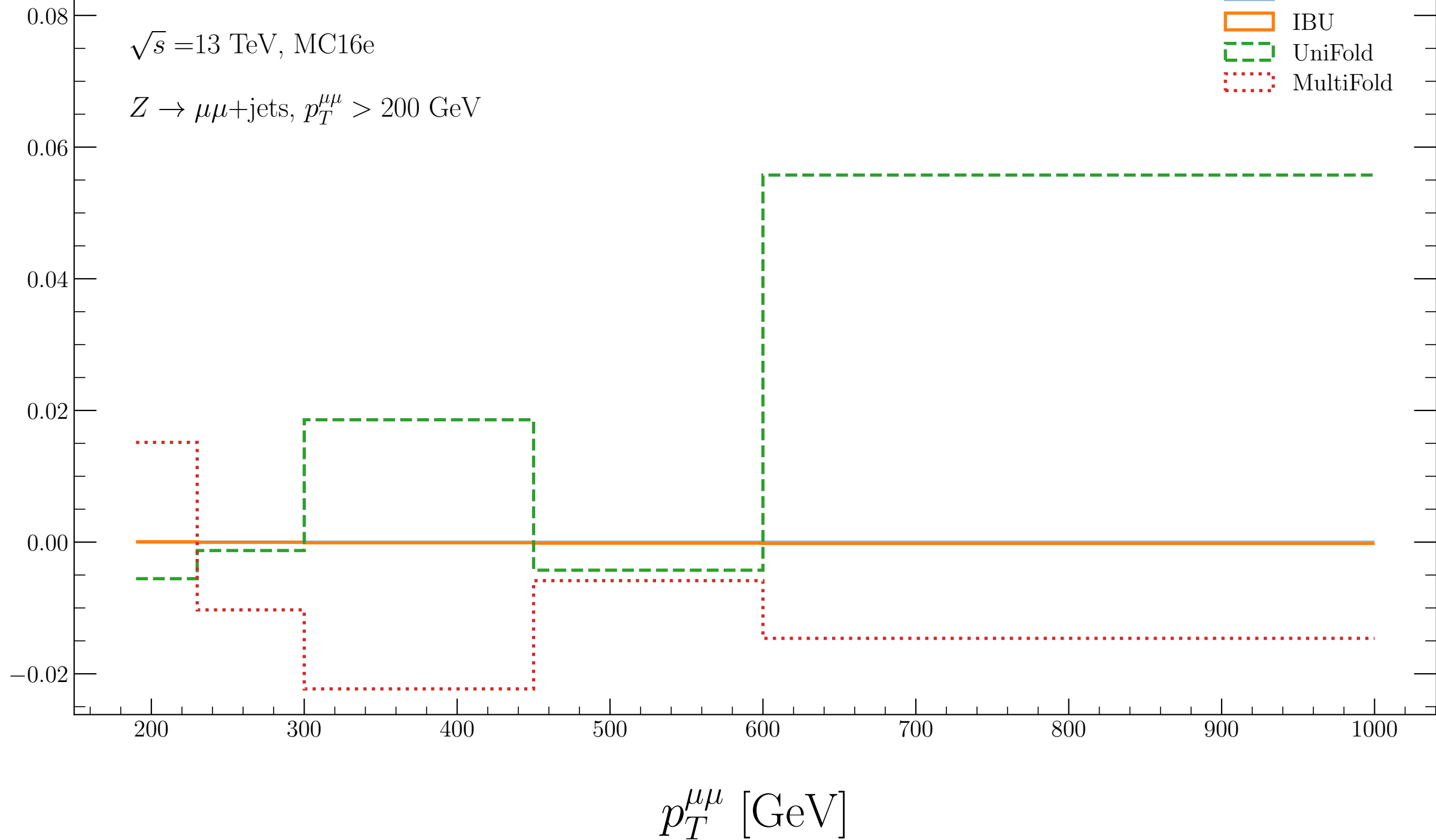
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold



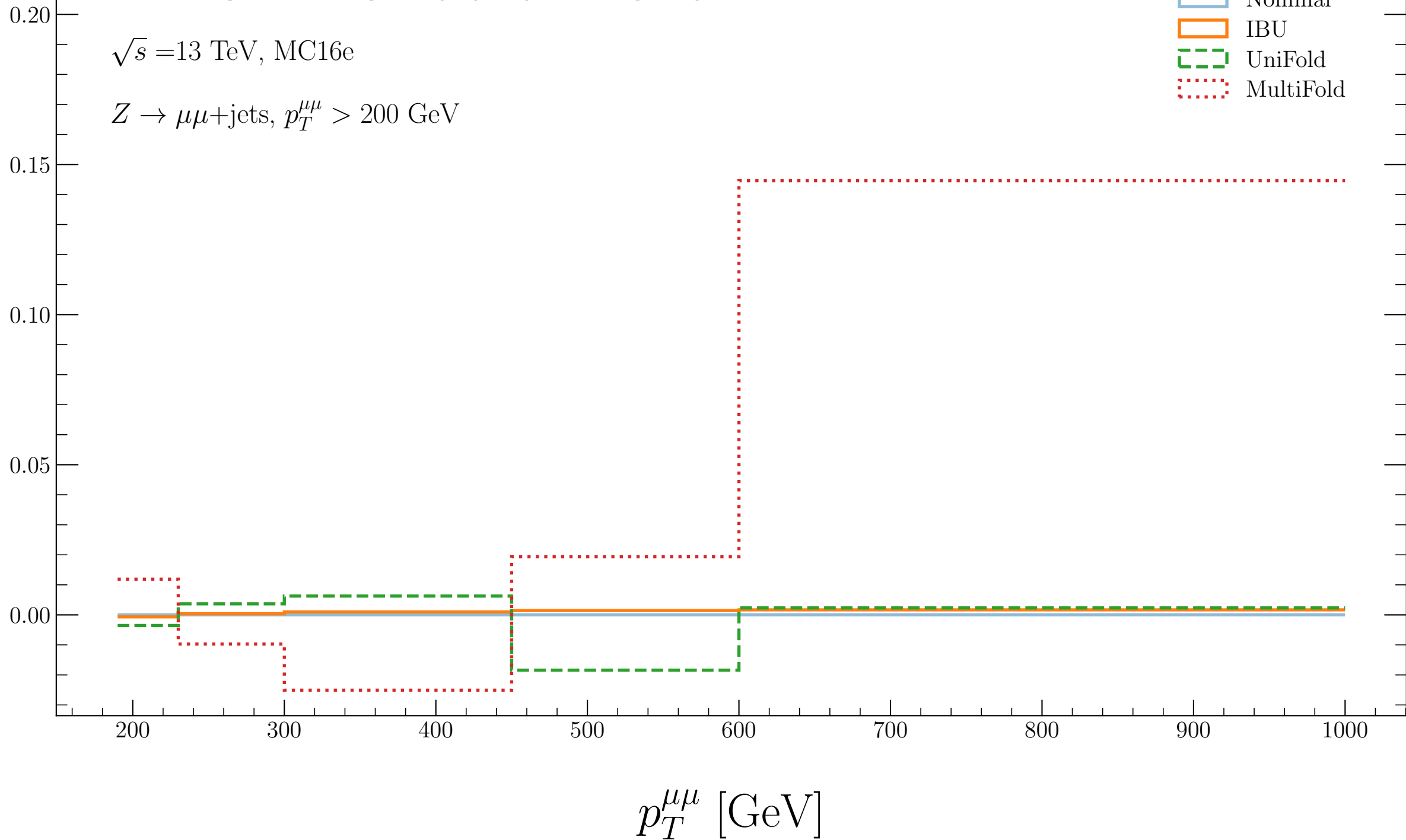
ATLAS

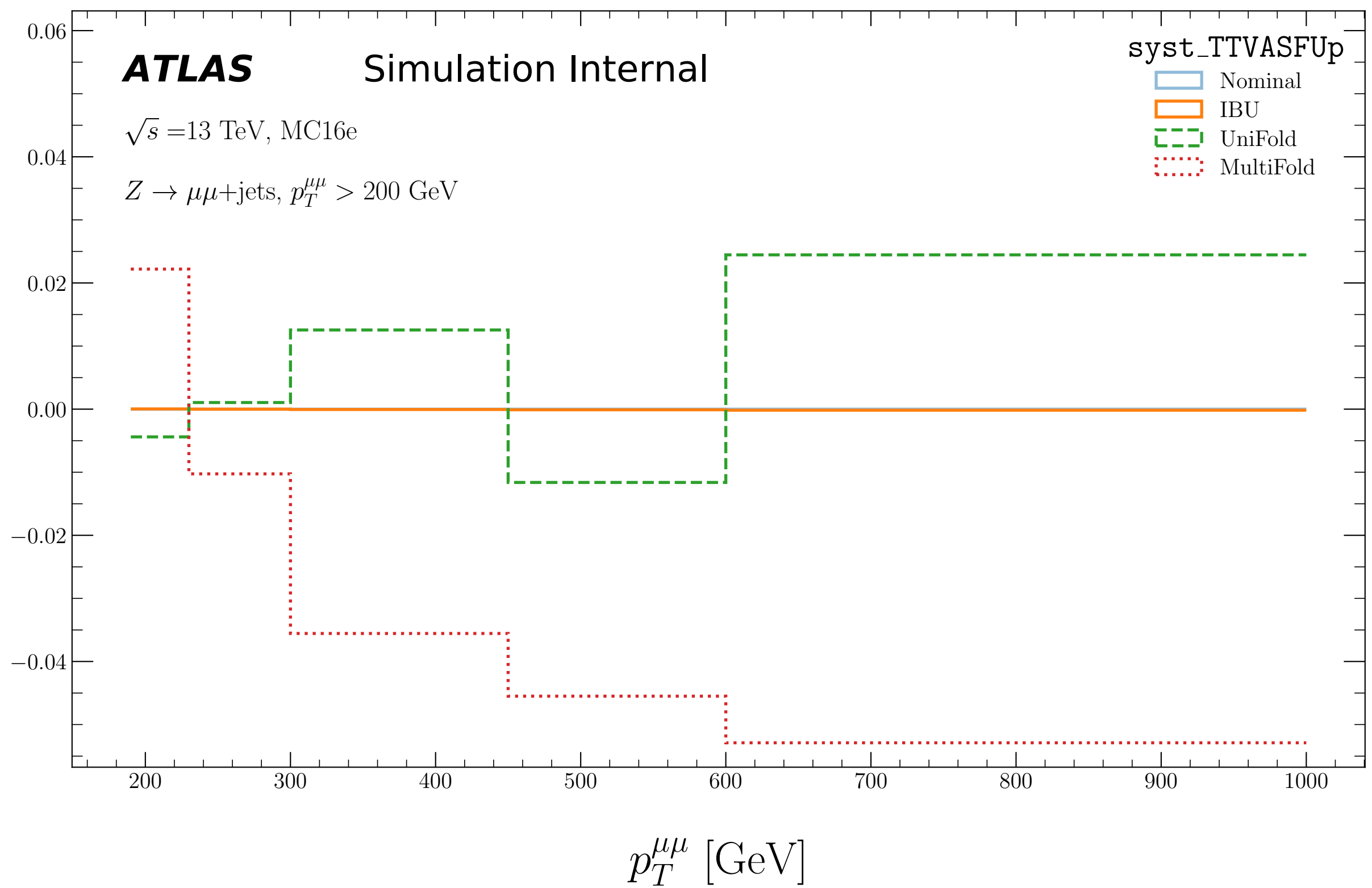
Simulation Internal

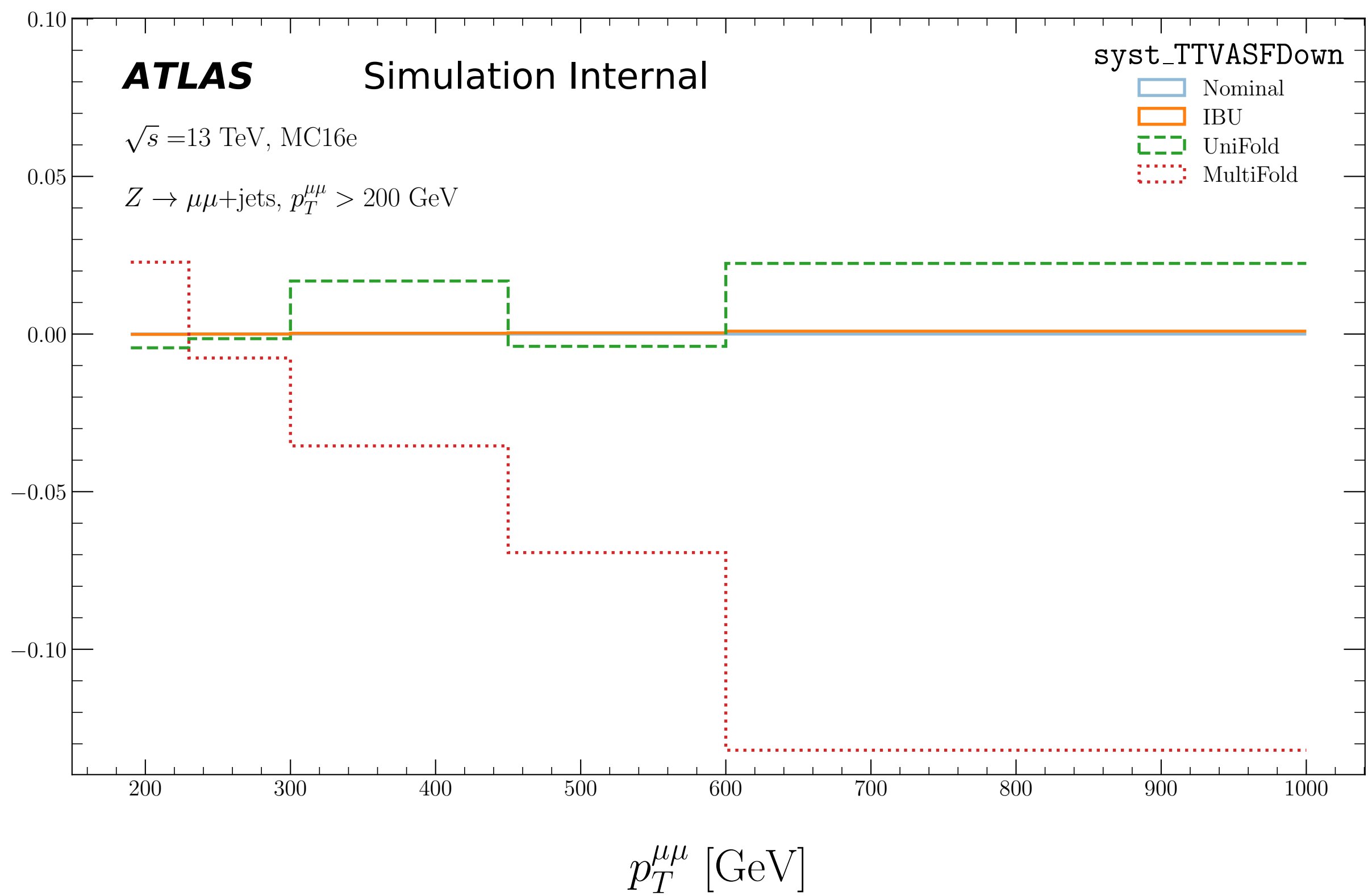
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

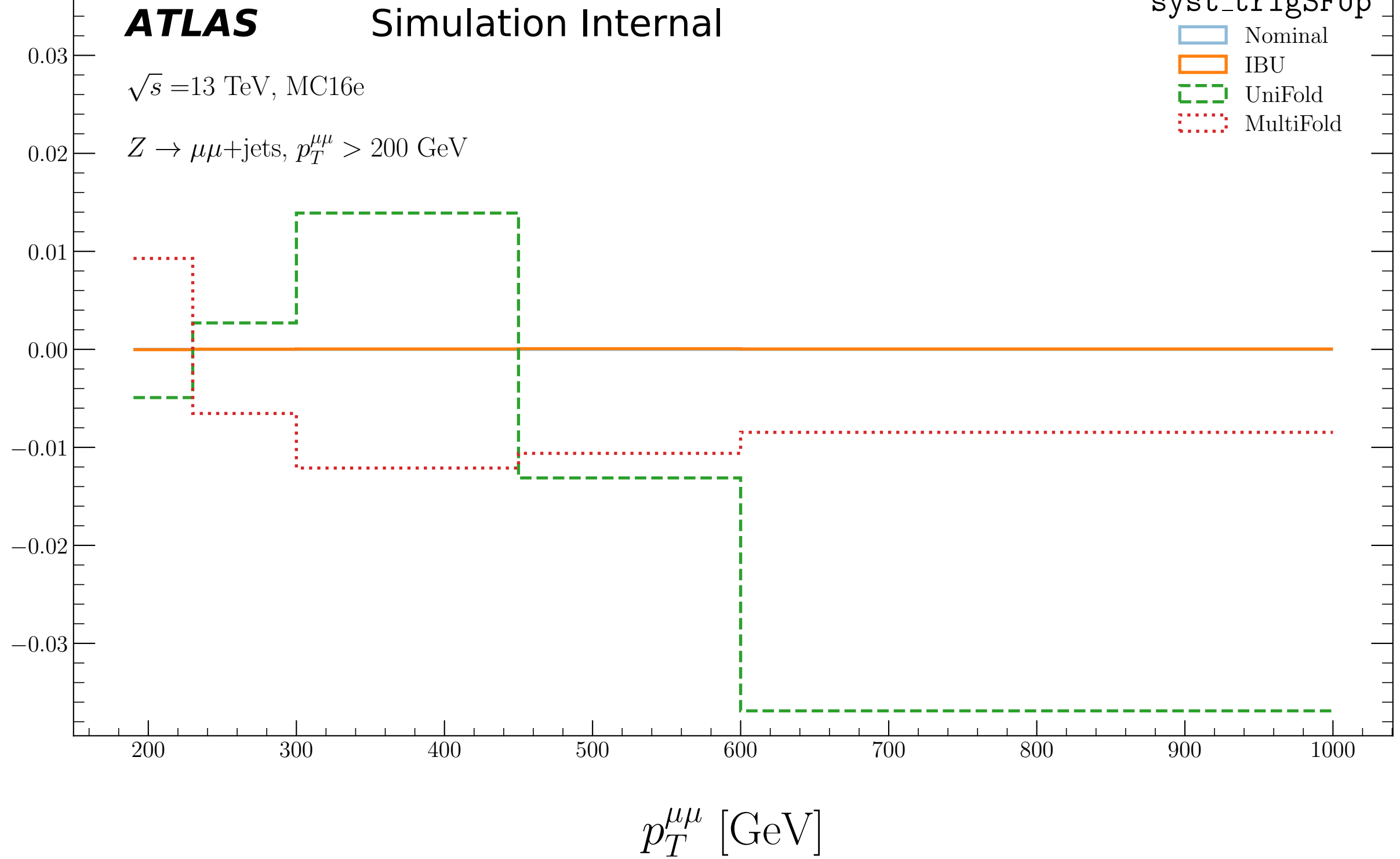
syst_isoSFDown

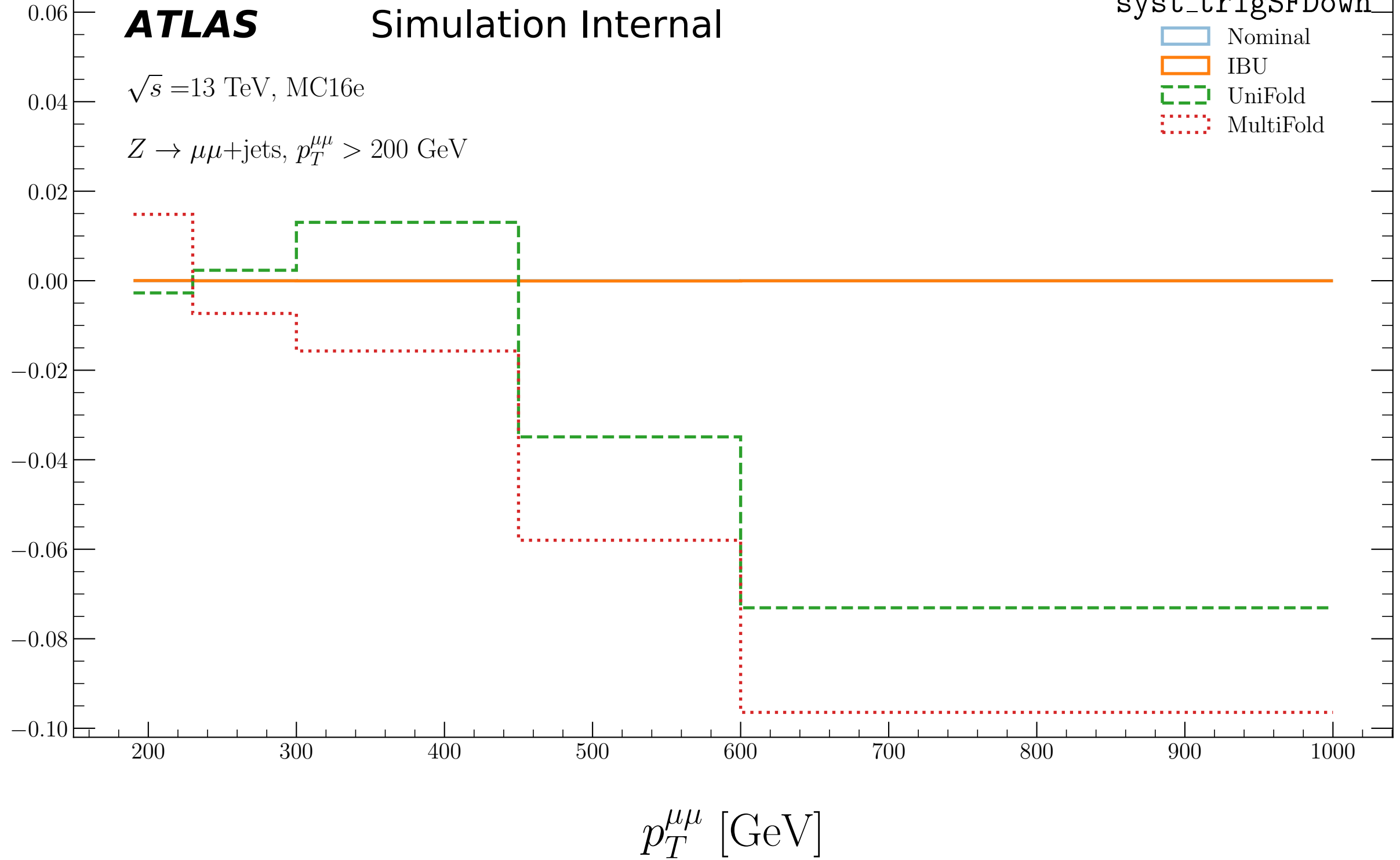
- Nominal
- IBU
- UniFold
- MultiFold











ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

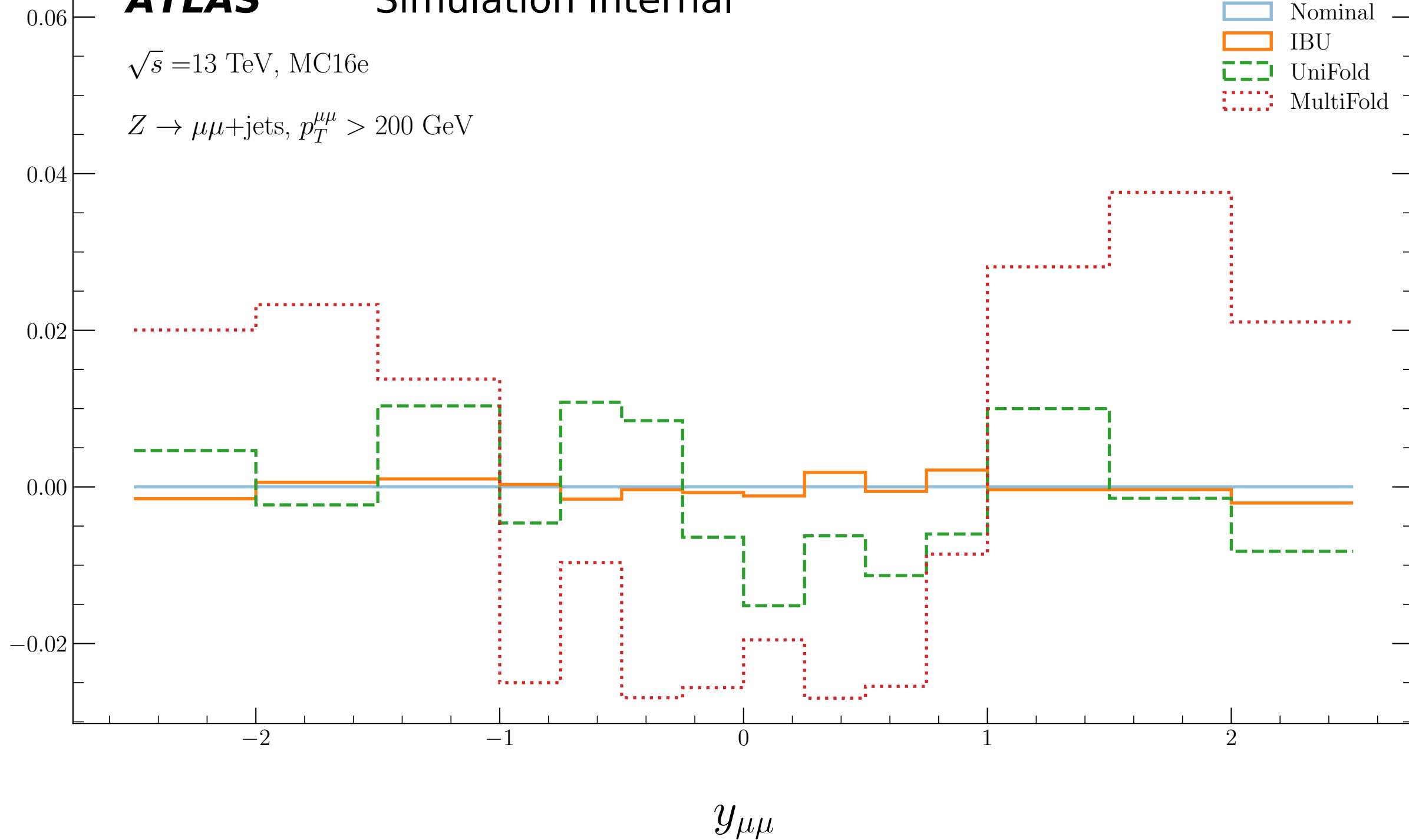
syst_prwUp

Nominal

IBU

UniFold

MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

- Nominal
- IBU
- UniFold
- MultiFold

0.10
0.08
0.06
0.04
0.02
0.00
-0.02
-0.04

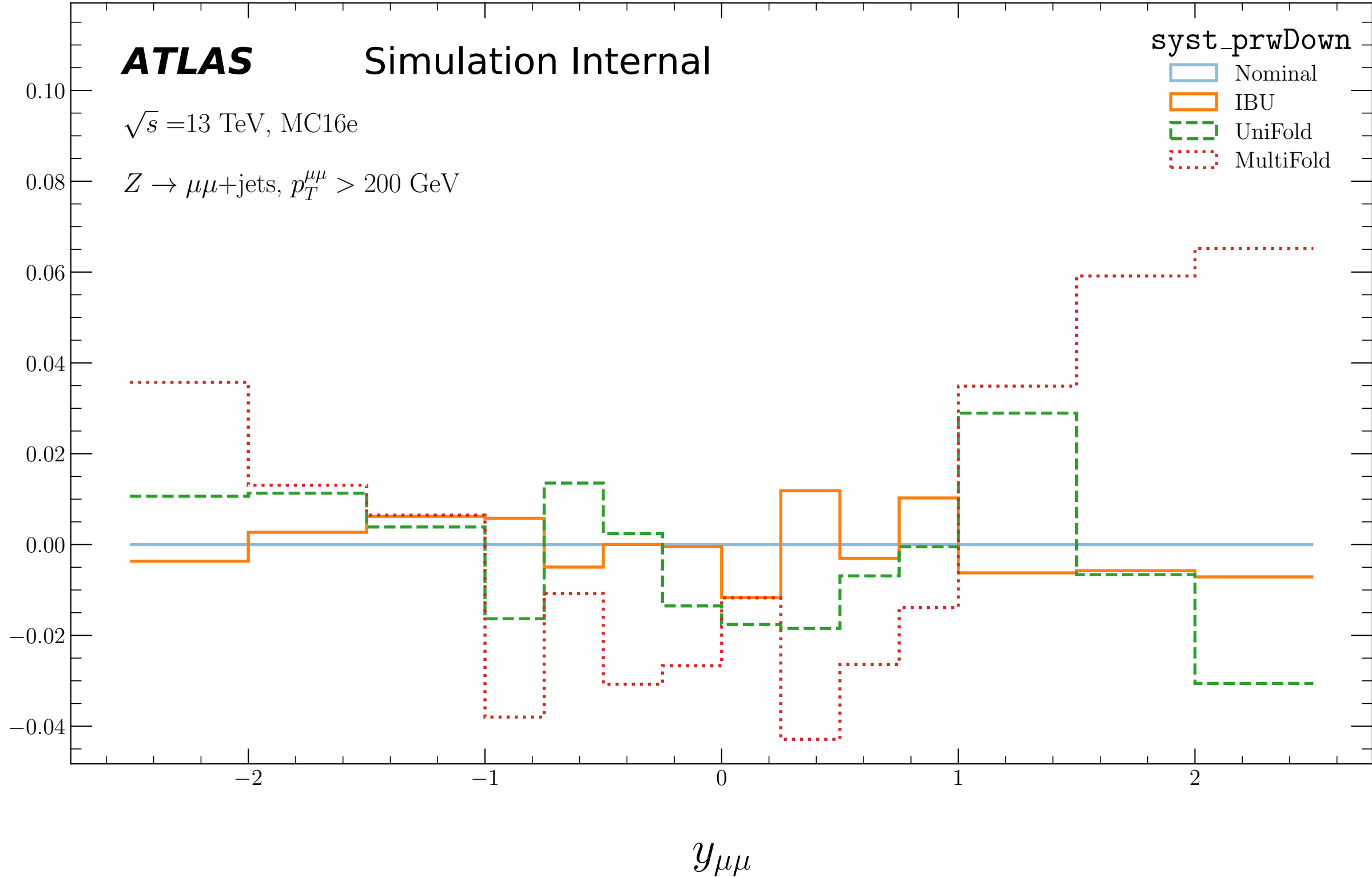
-2

-1

0

1

2

 $y_{\mu\mu}$ 

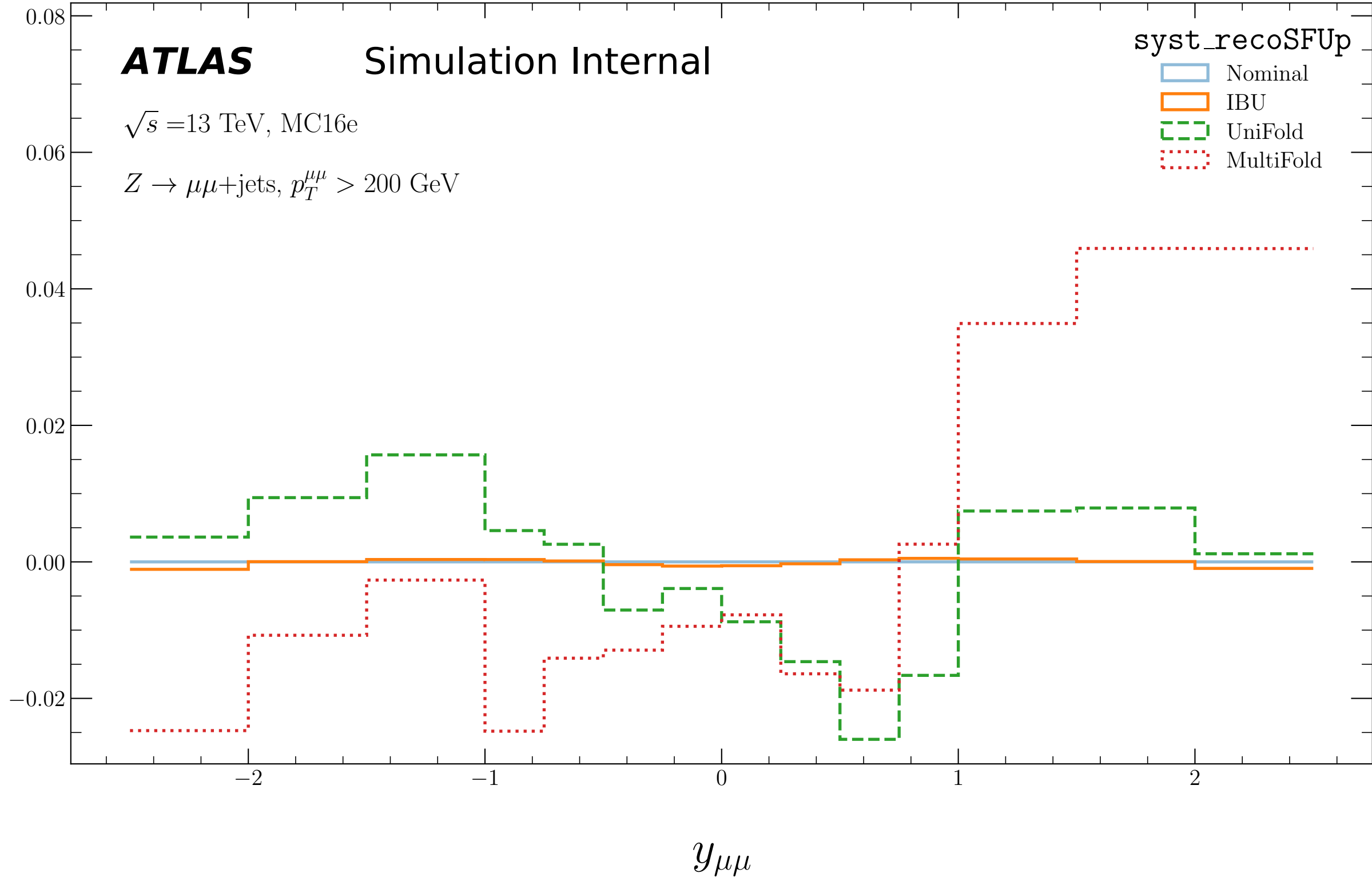
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

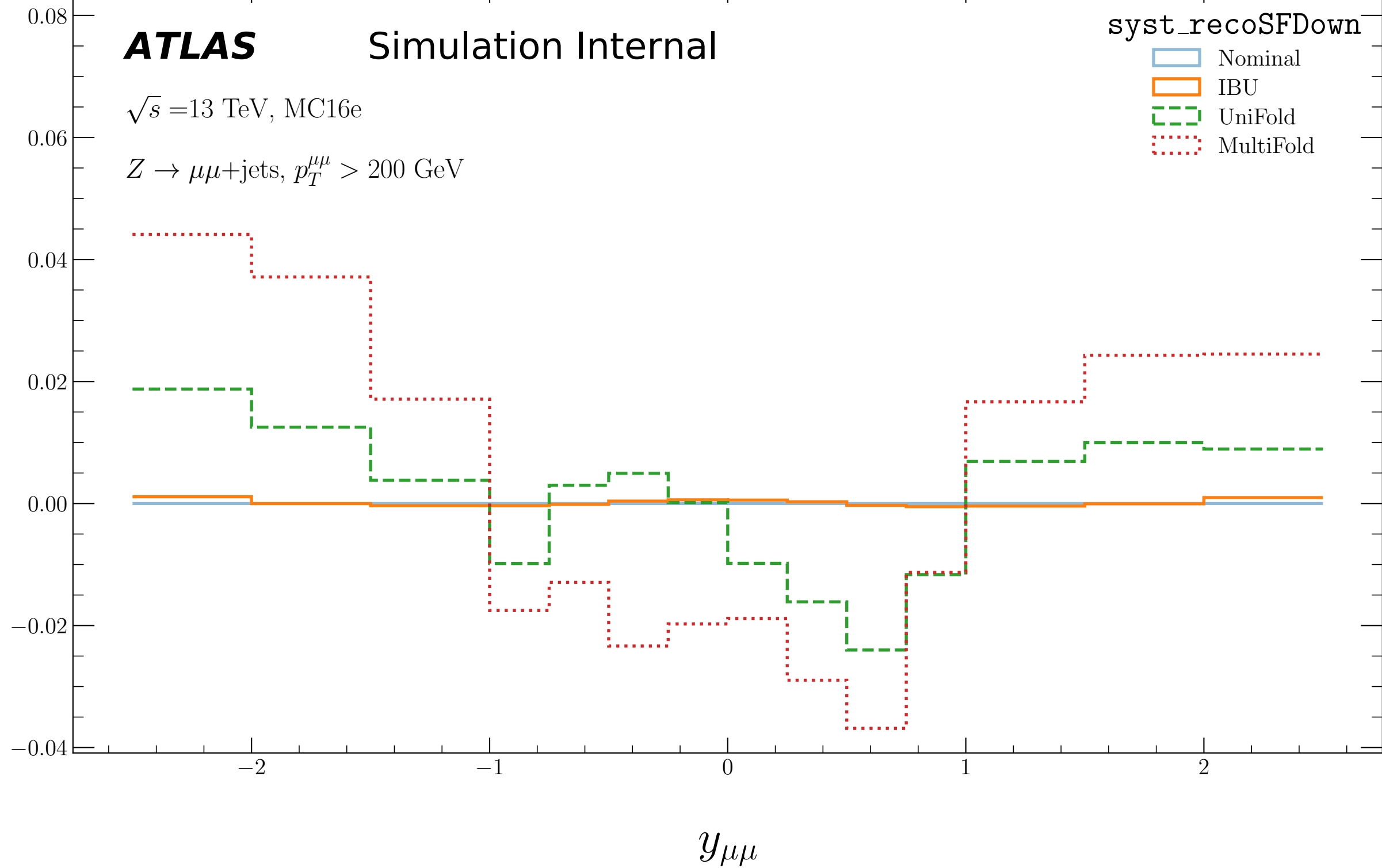
syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

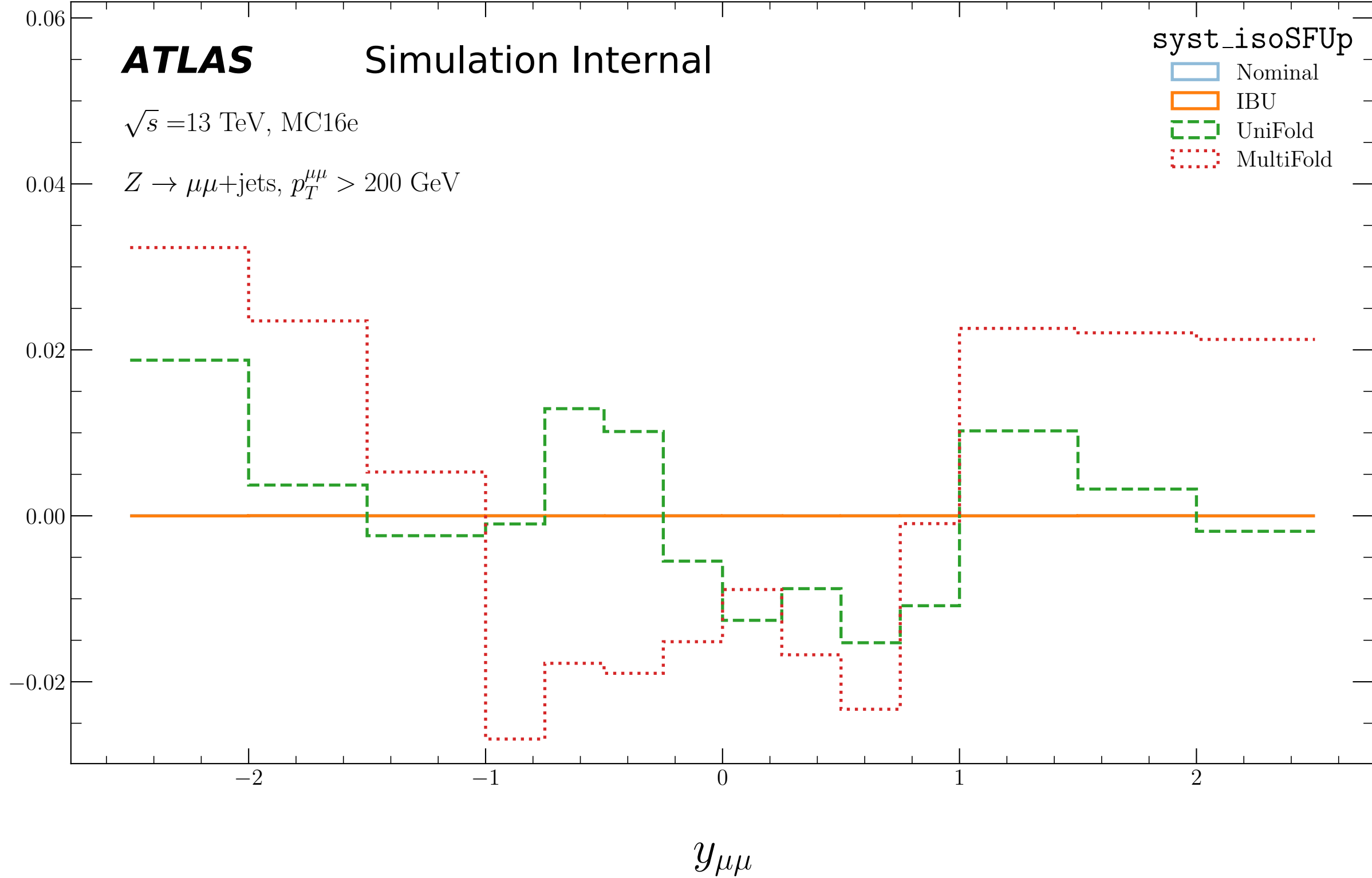
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold

0.08
0.06
0.04
0.02
0.00
-0.02

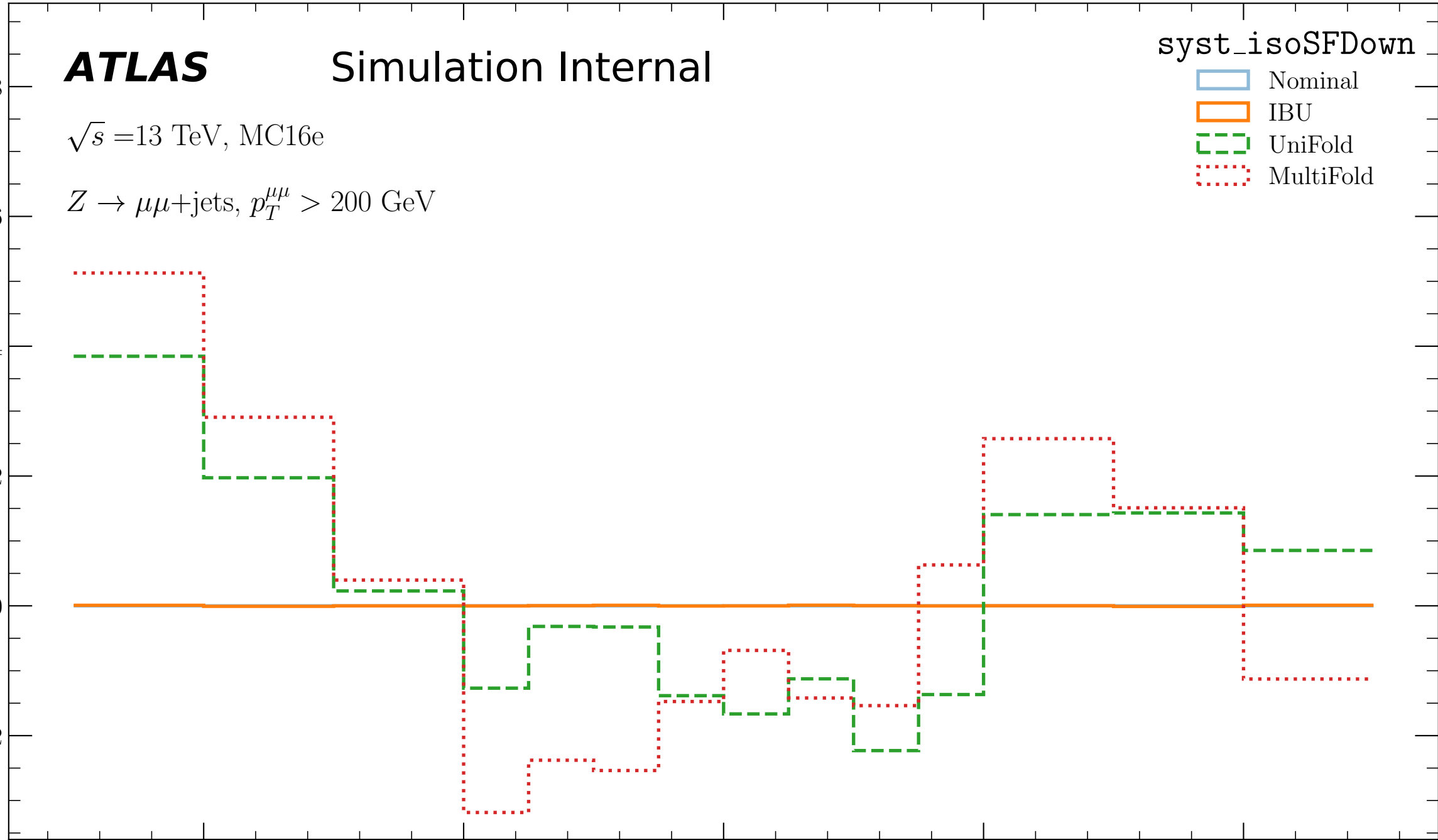
-2

-1

0

1

2

 $y_{\mu\mu}$ 

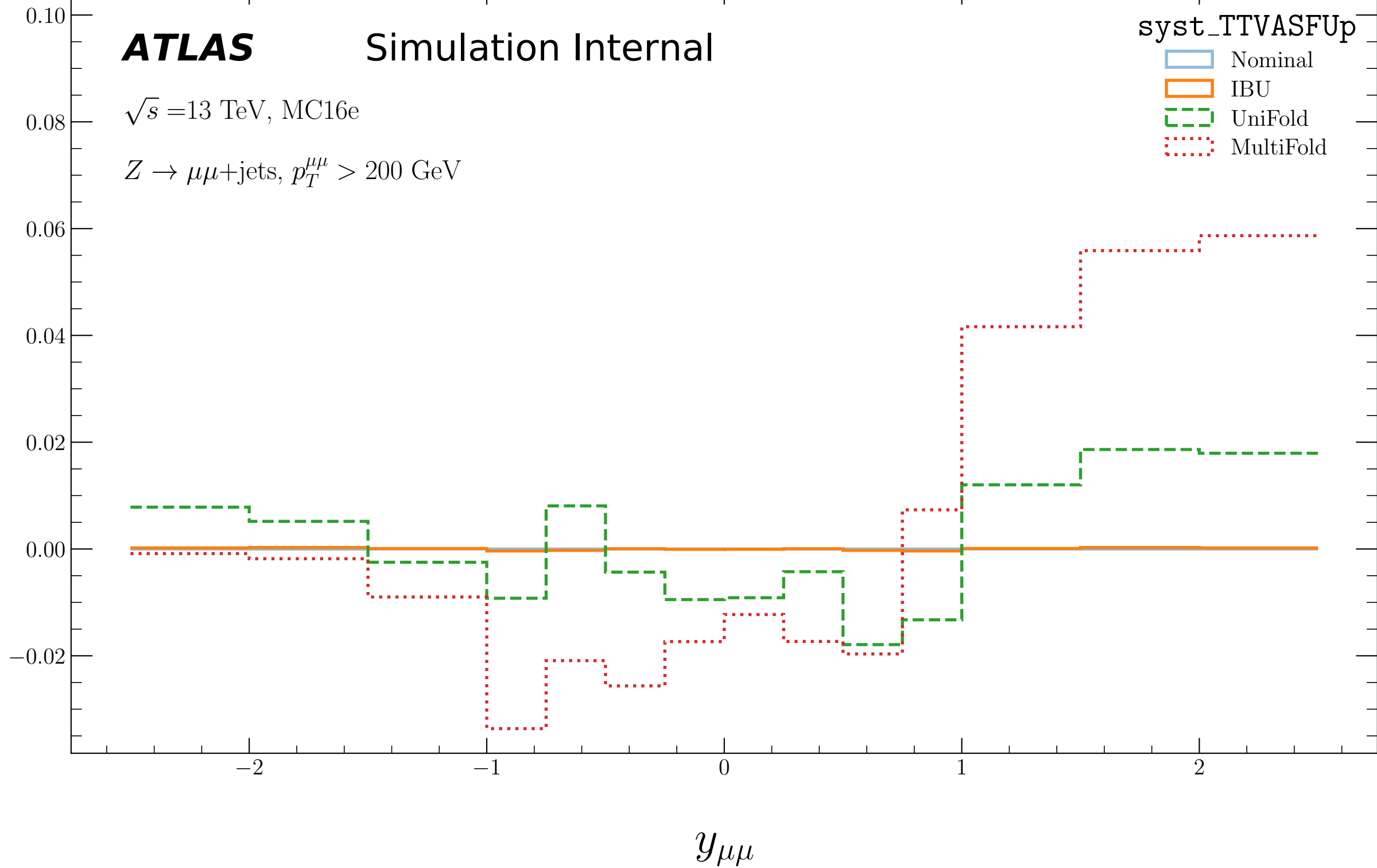
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

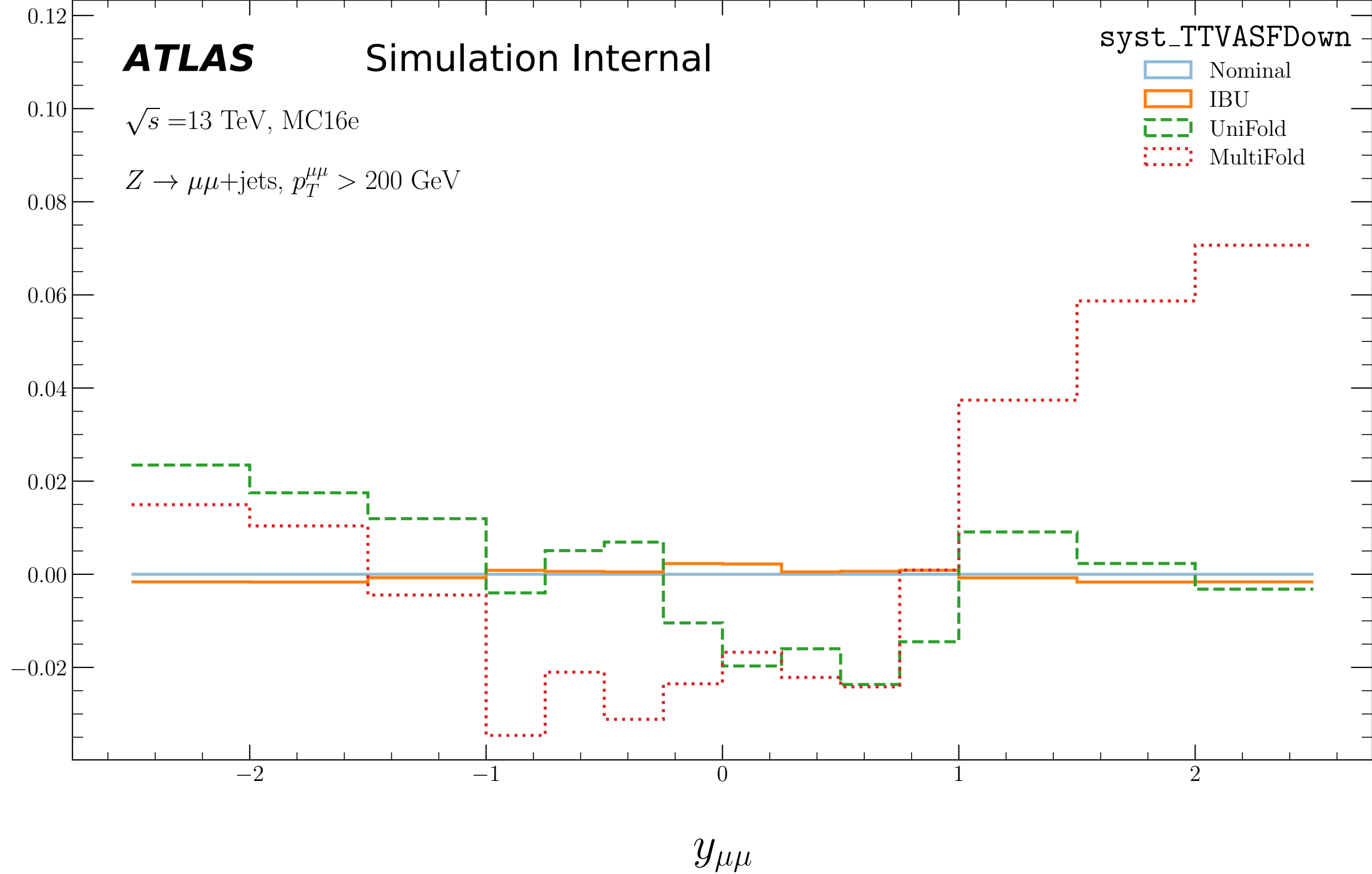
syst_TTVASFU

- Nominal
- IBU
- UniFold
- MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

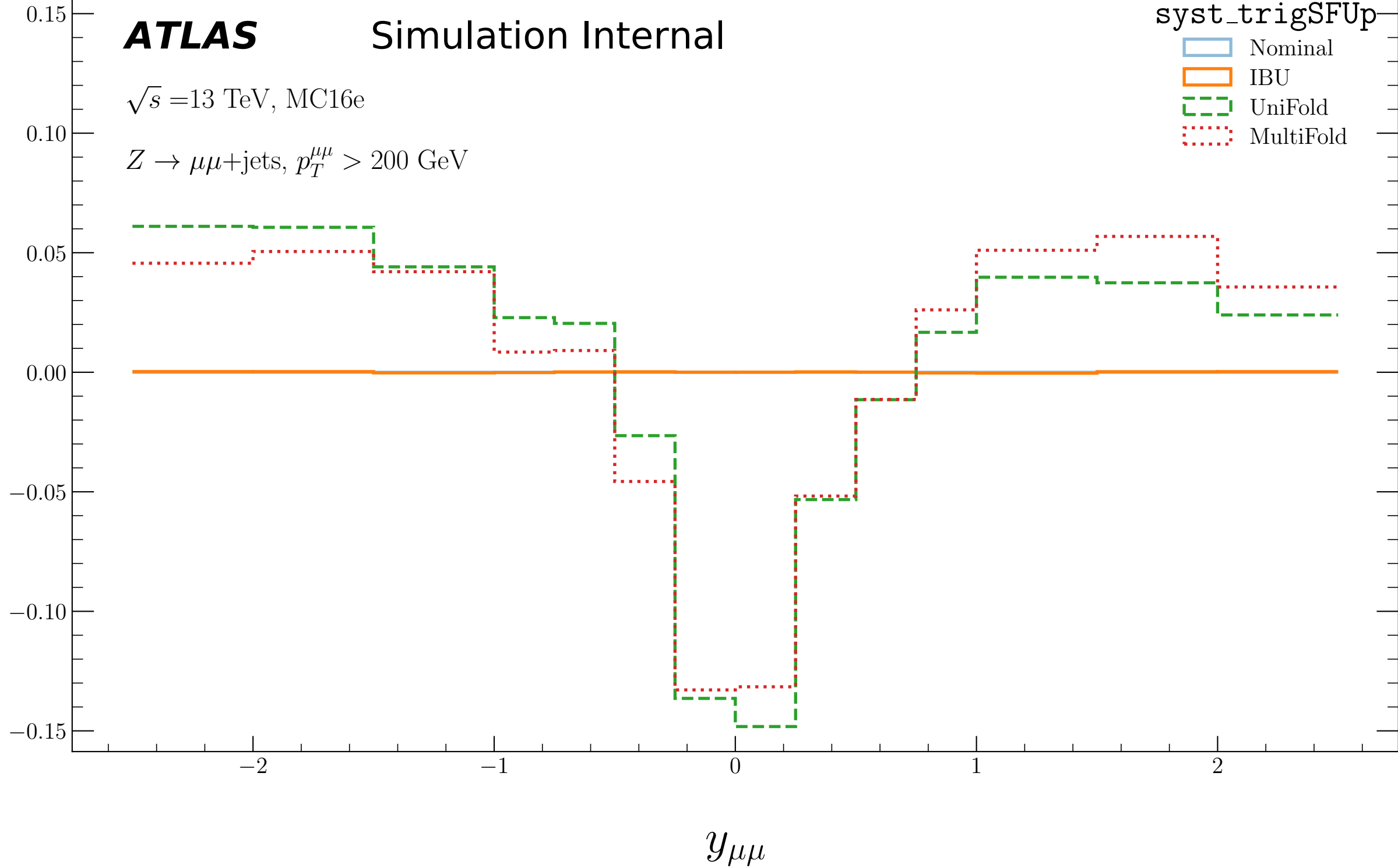
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

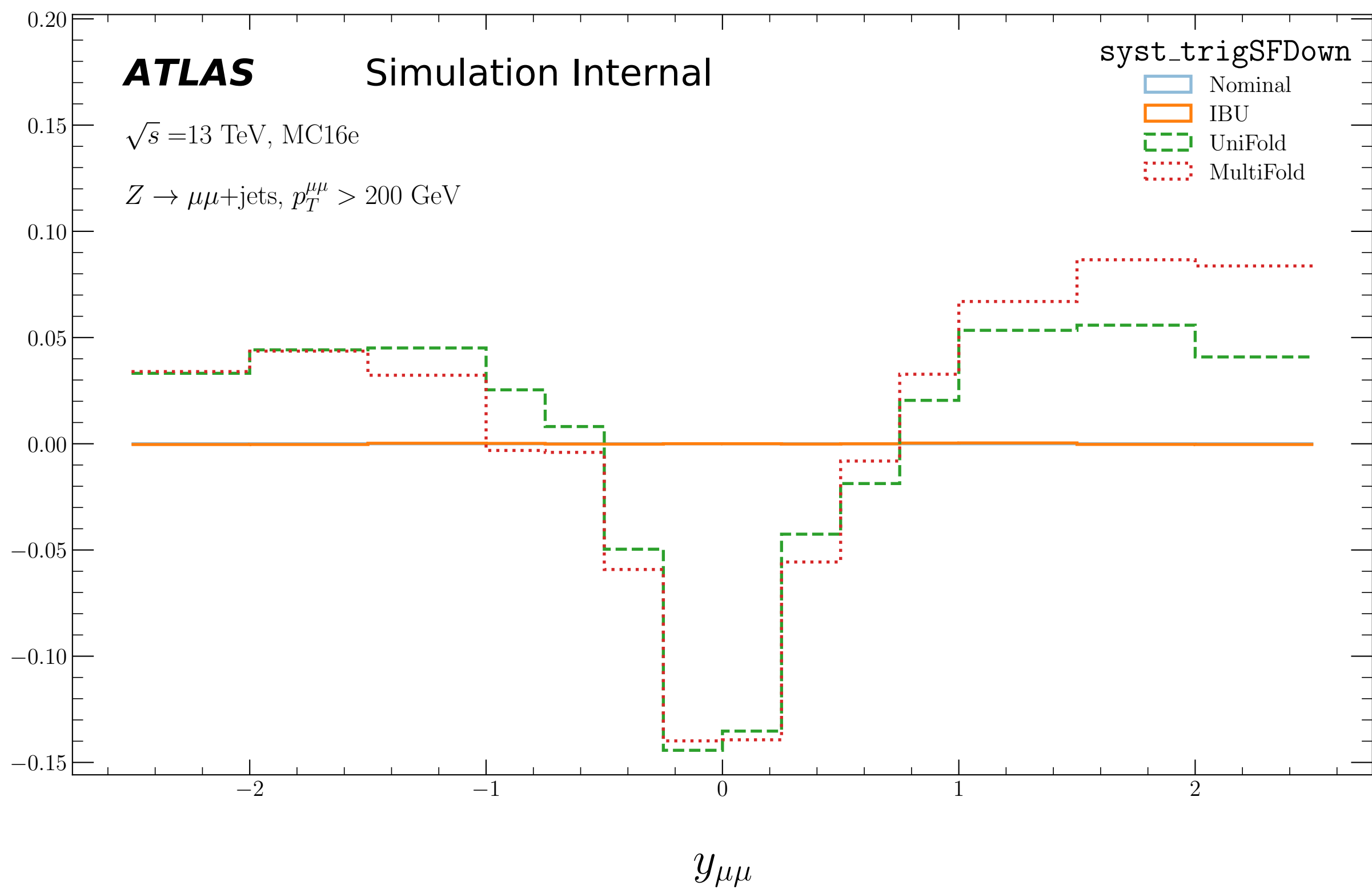
syst_trigSFUp

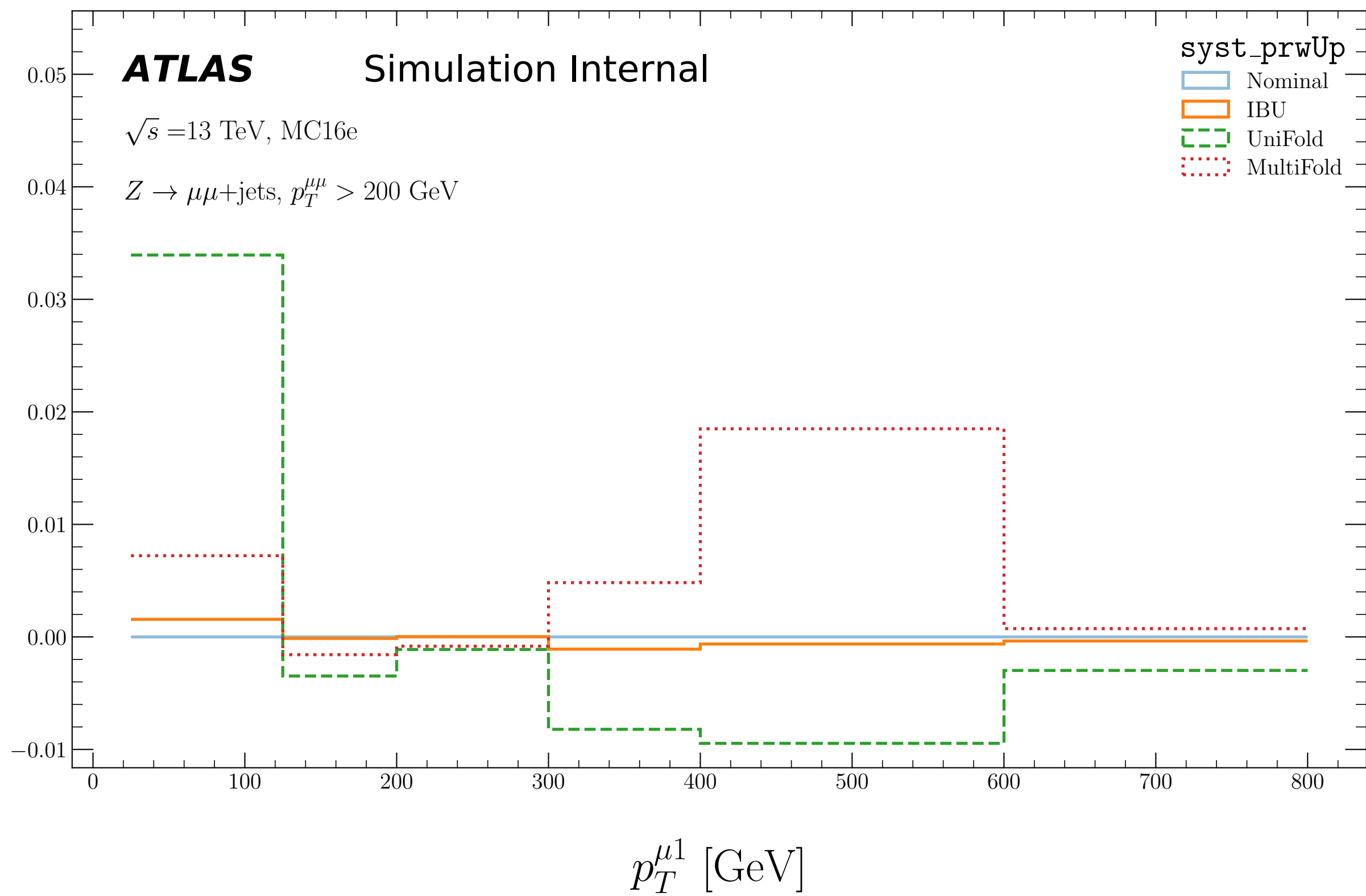
- Nominal
- IBU
- UniFold
- MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV



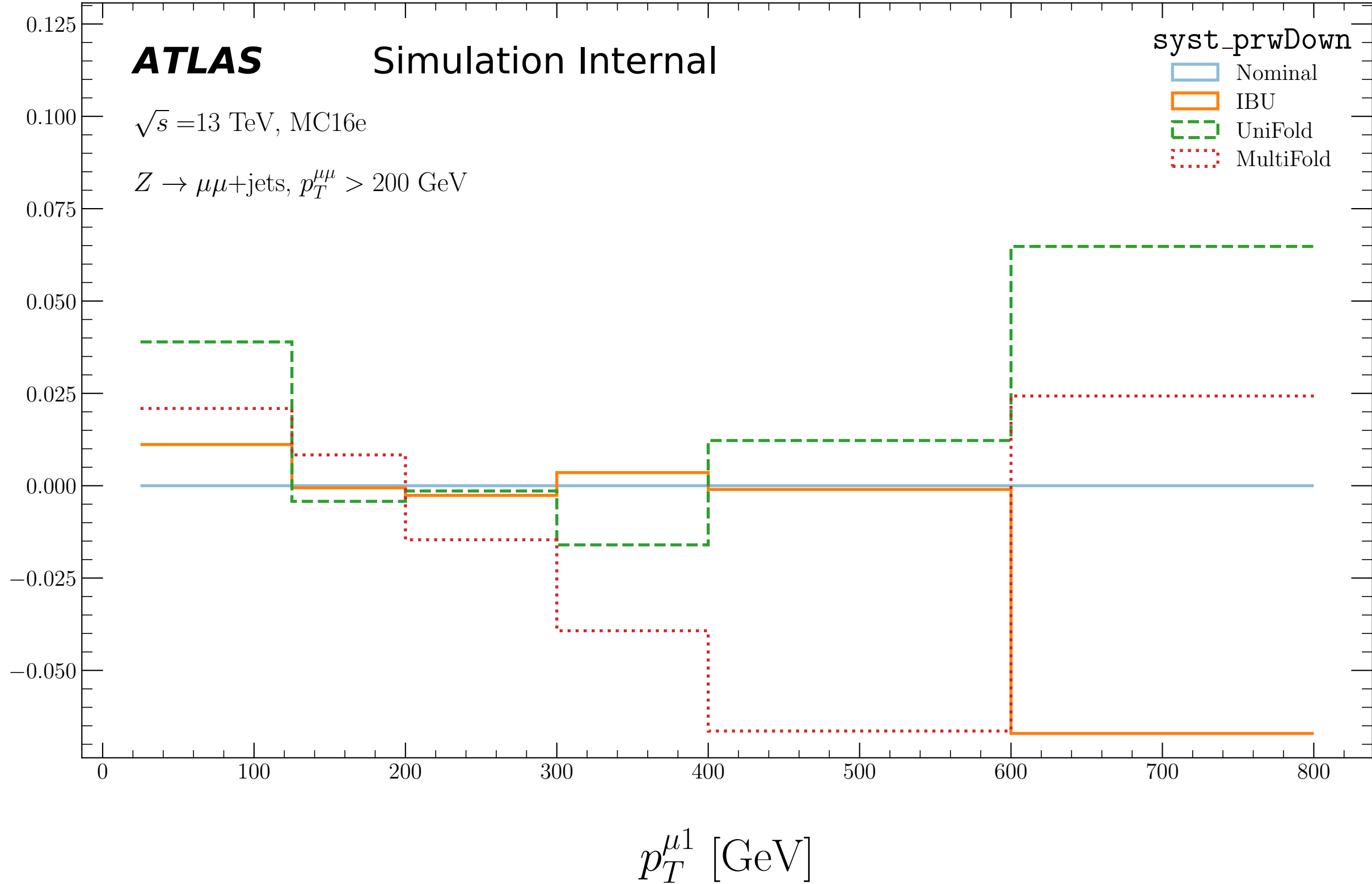
ATLAS

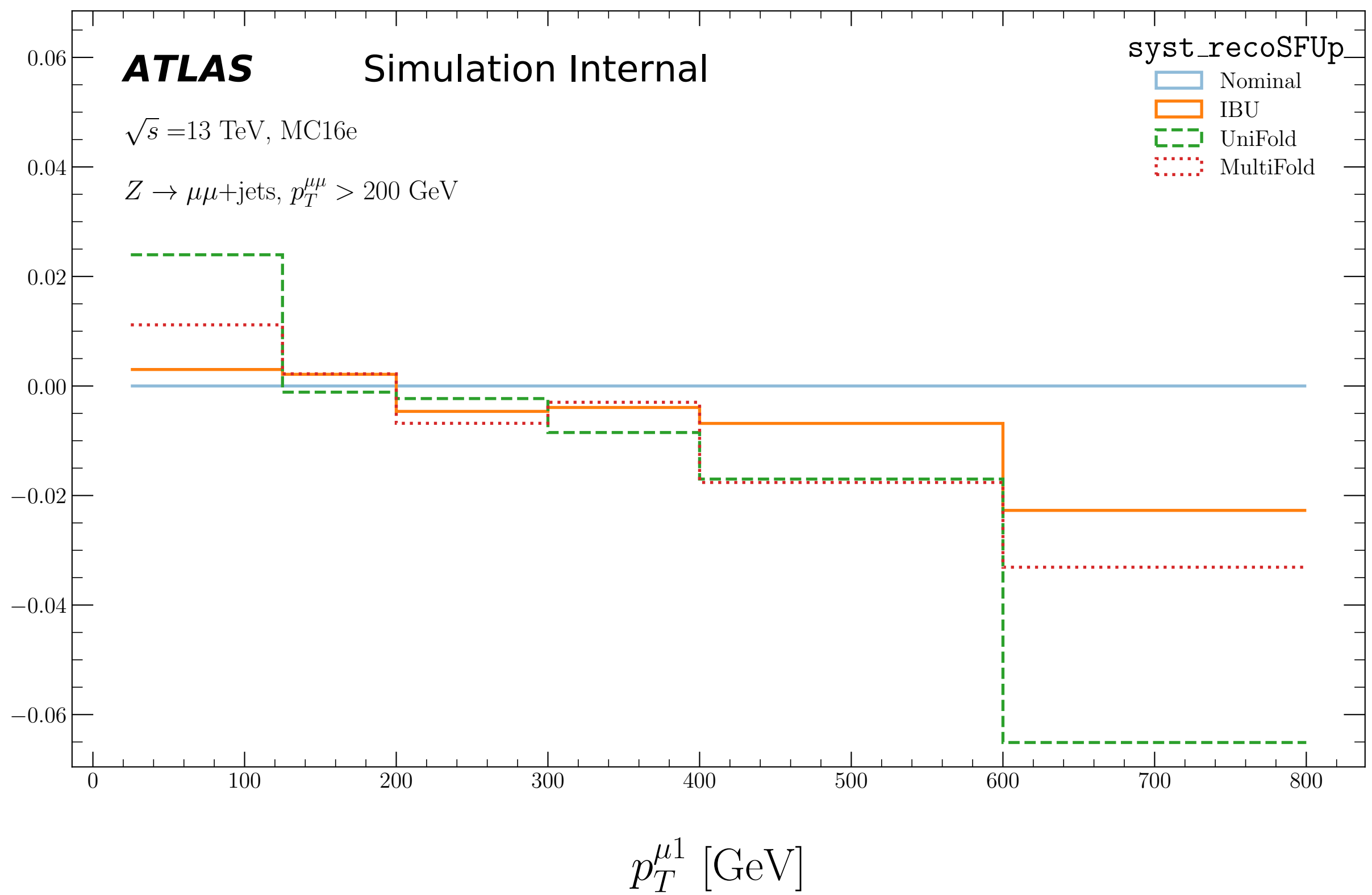
Simulation Internal

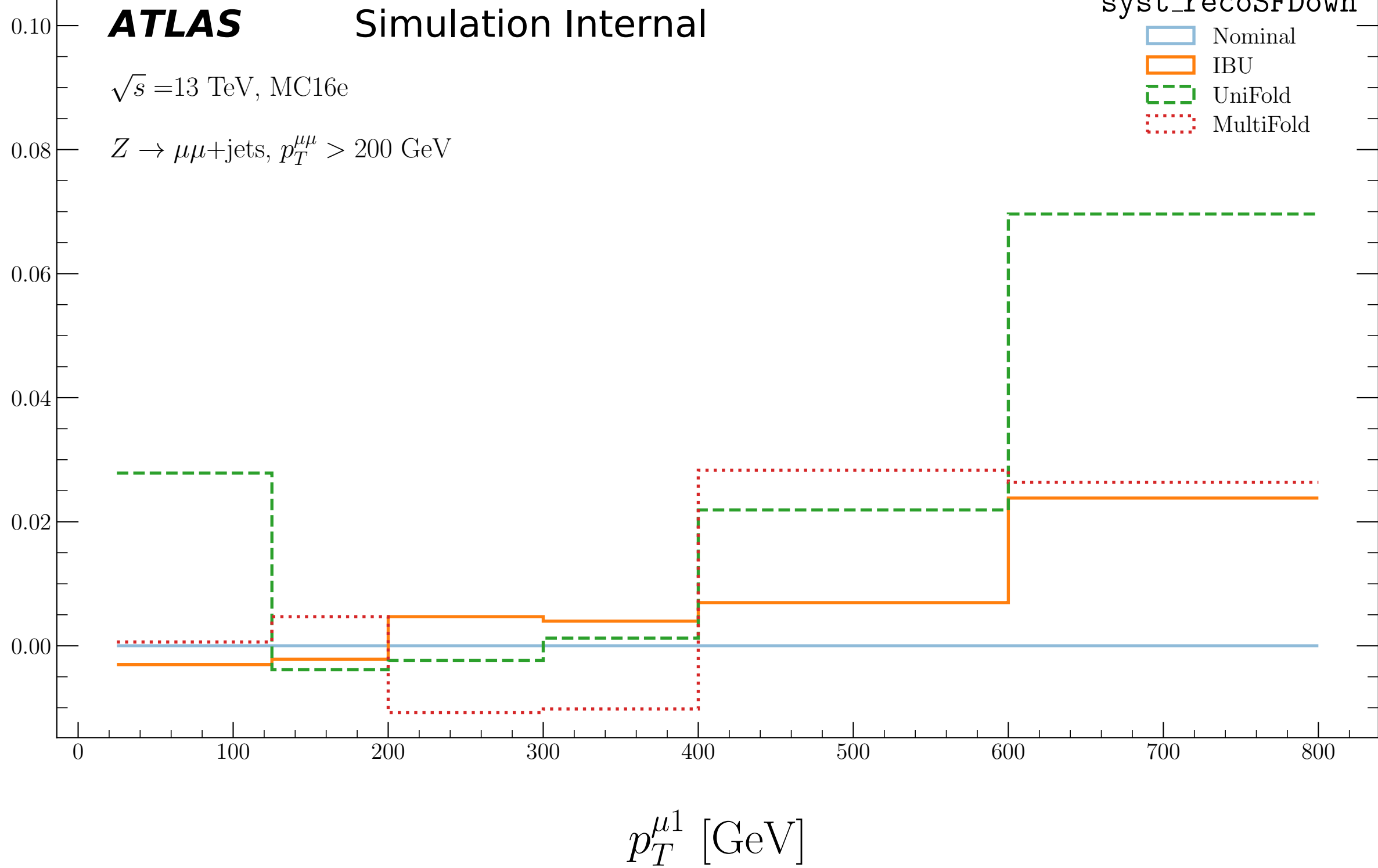
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

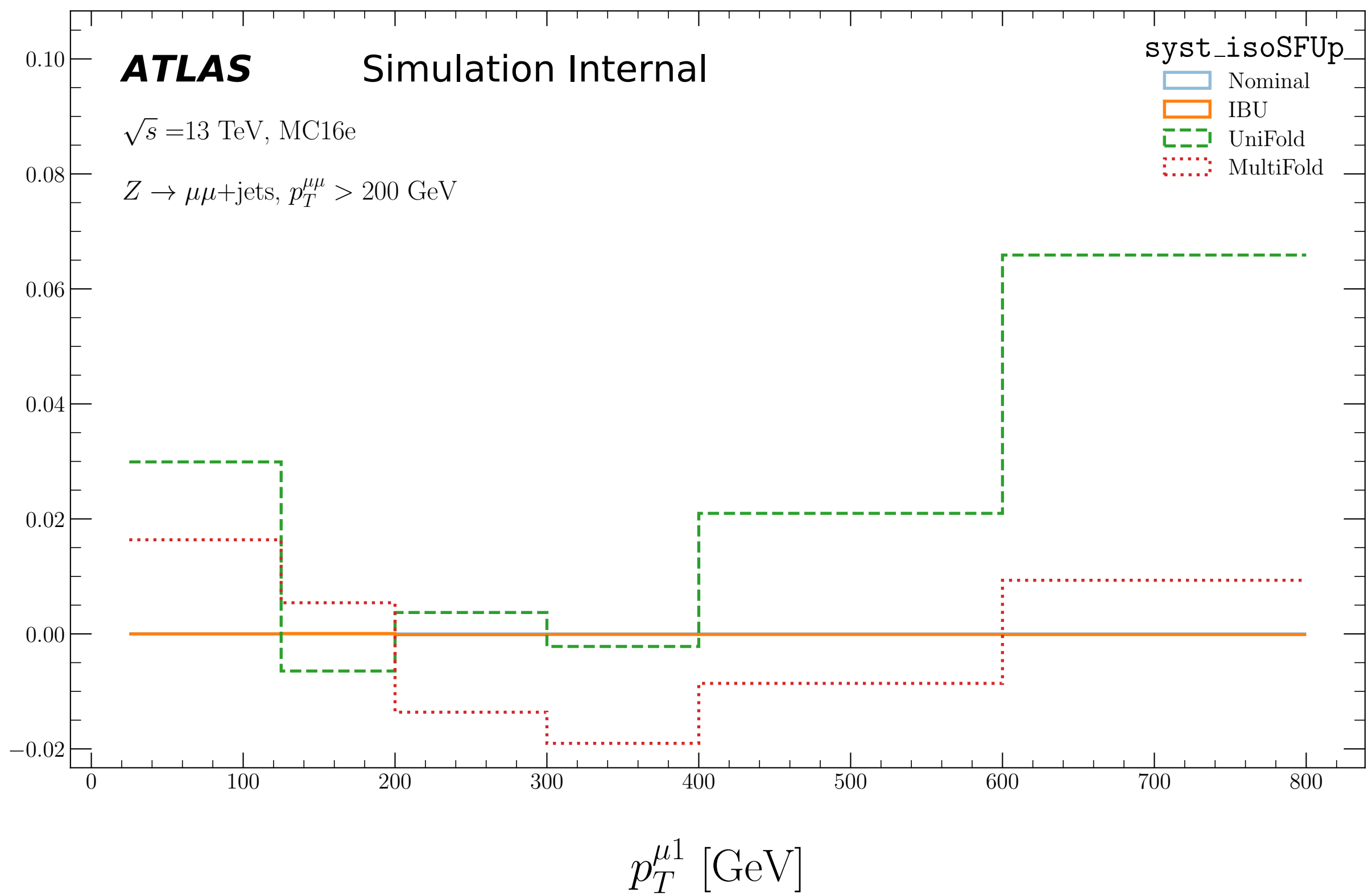
syst_prwDown

- Nominal
- IBU
- UniFold
- MultiFold









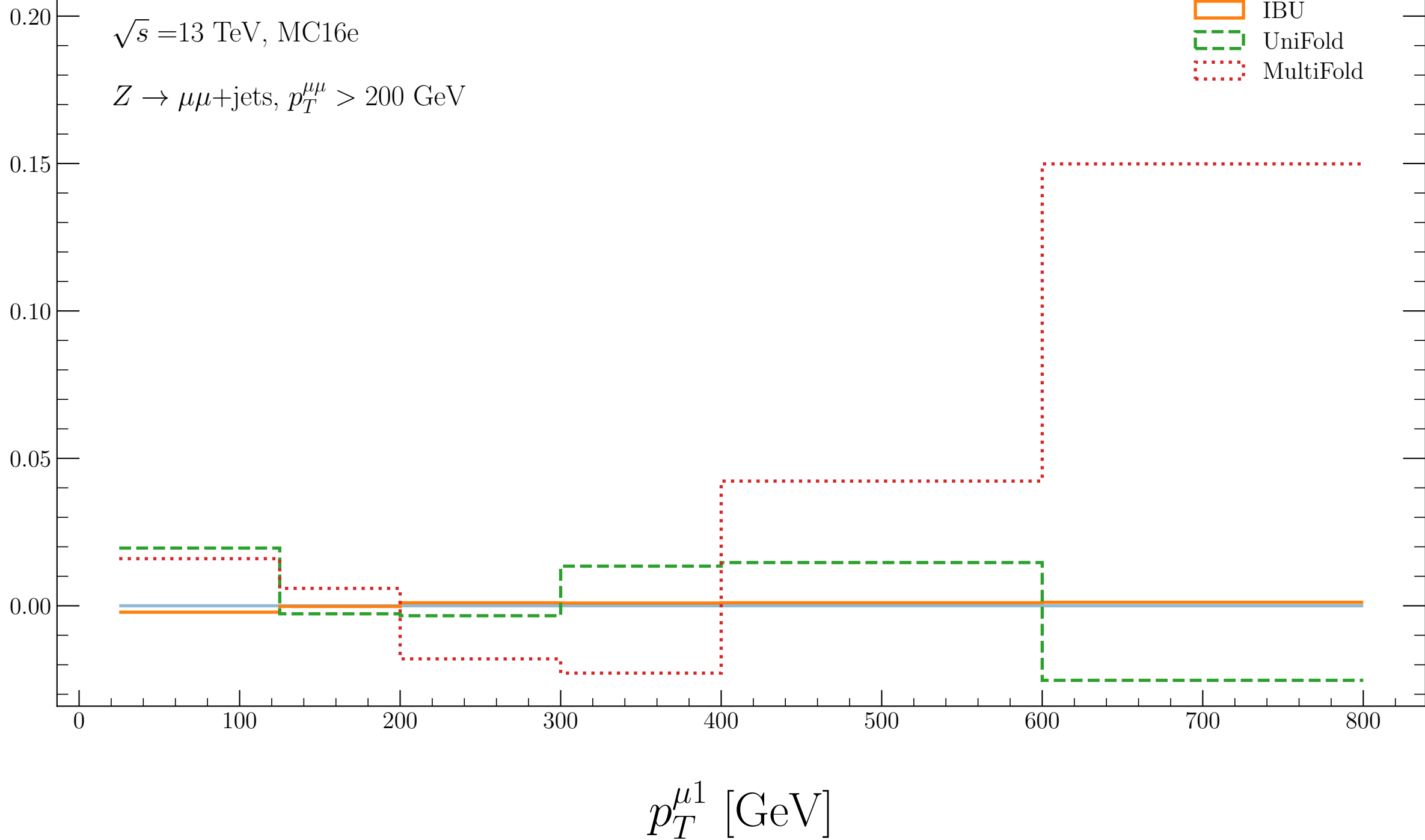
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold



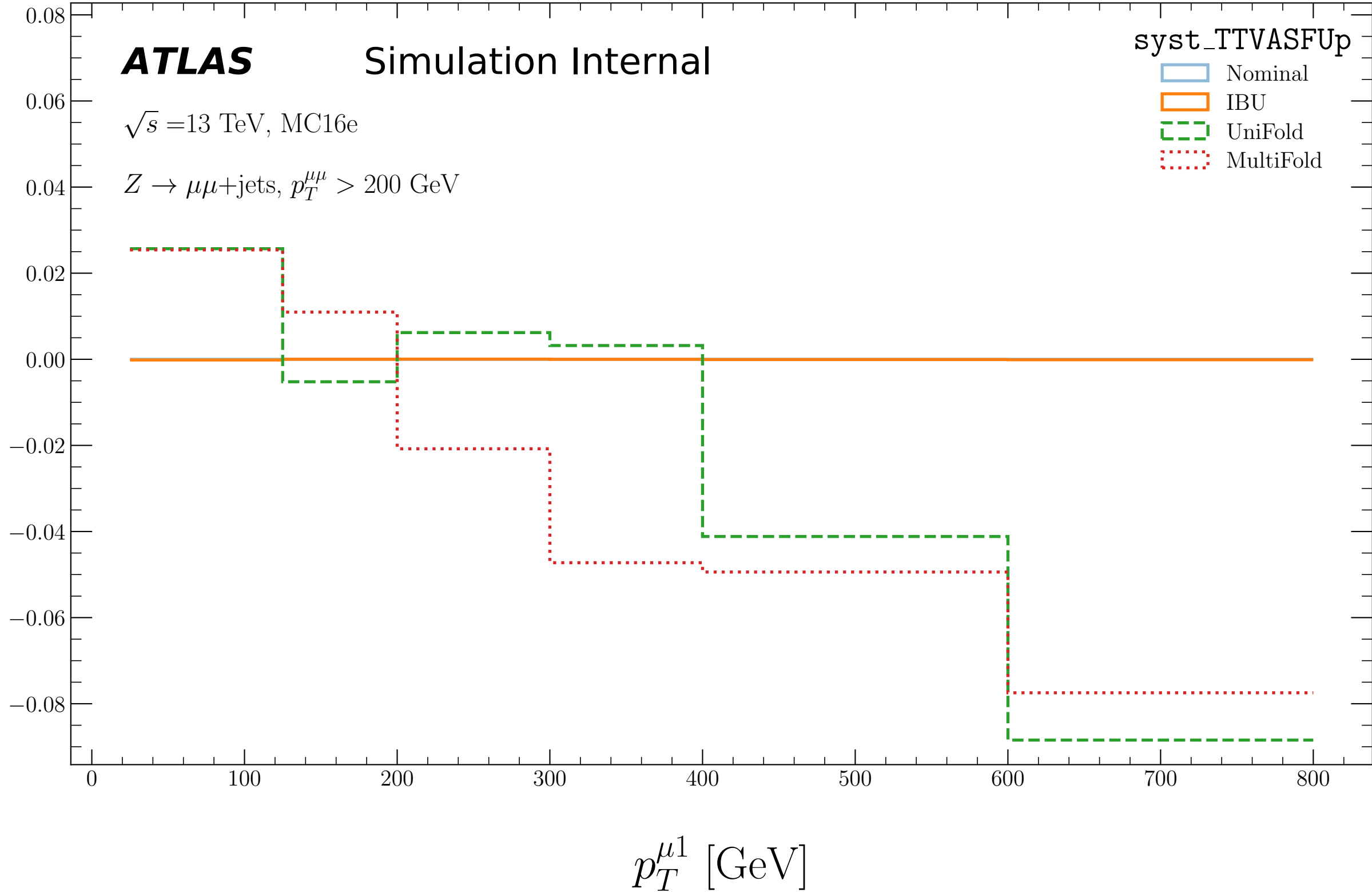
ATLAS

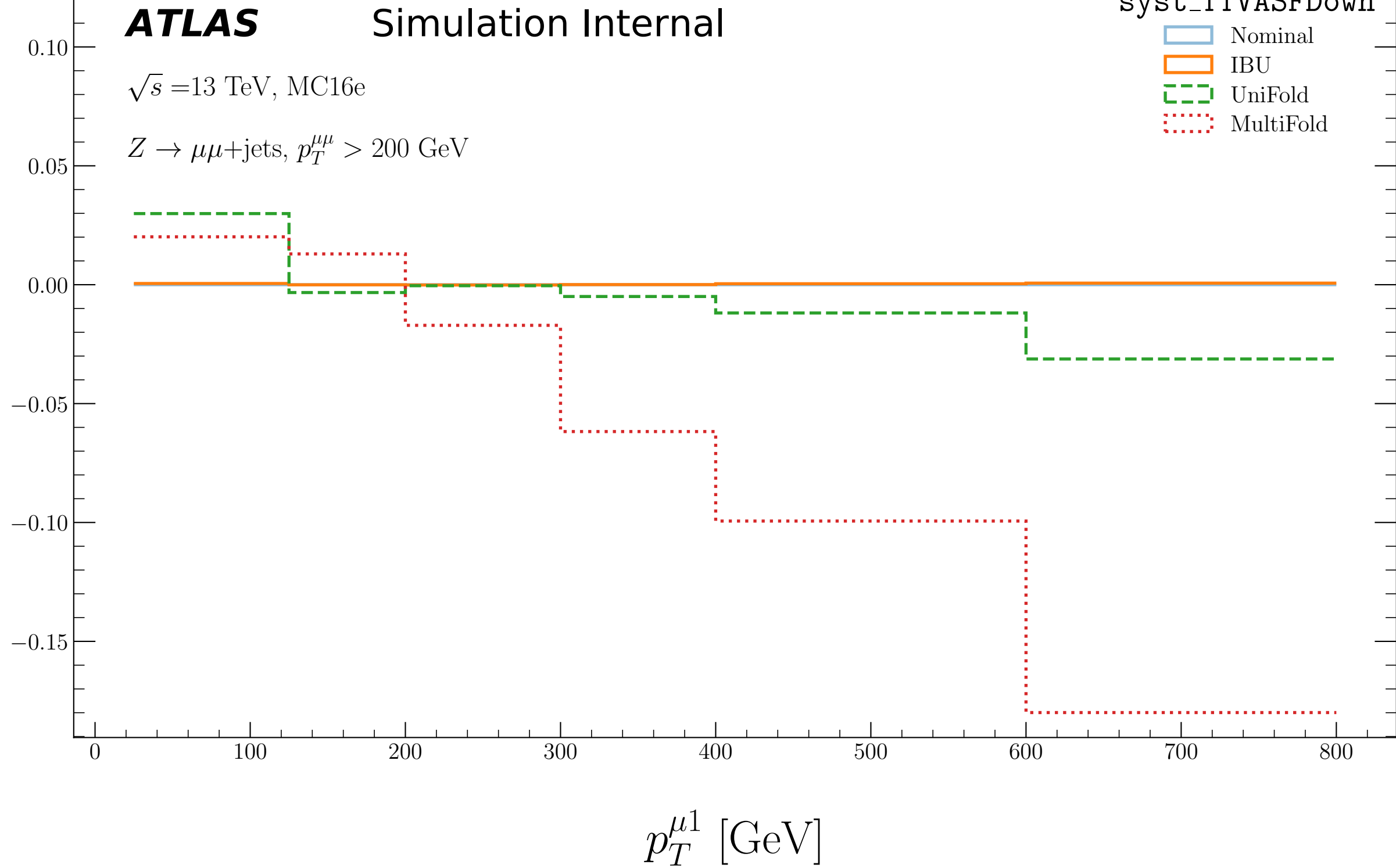
Simulation Internal

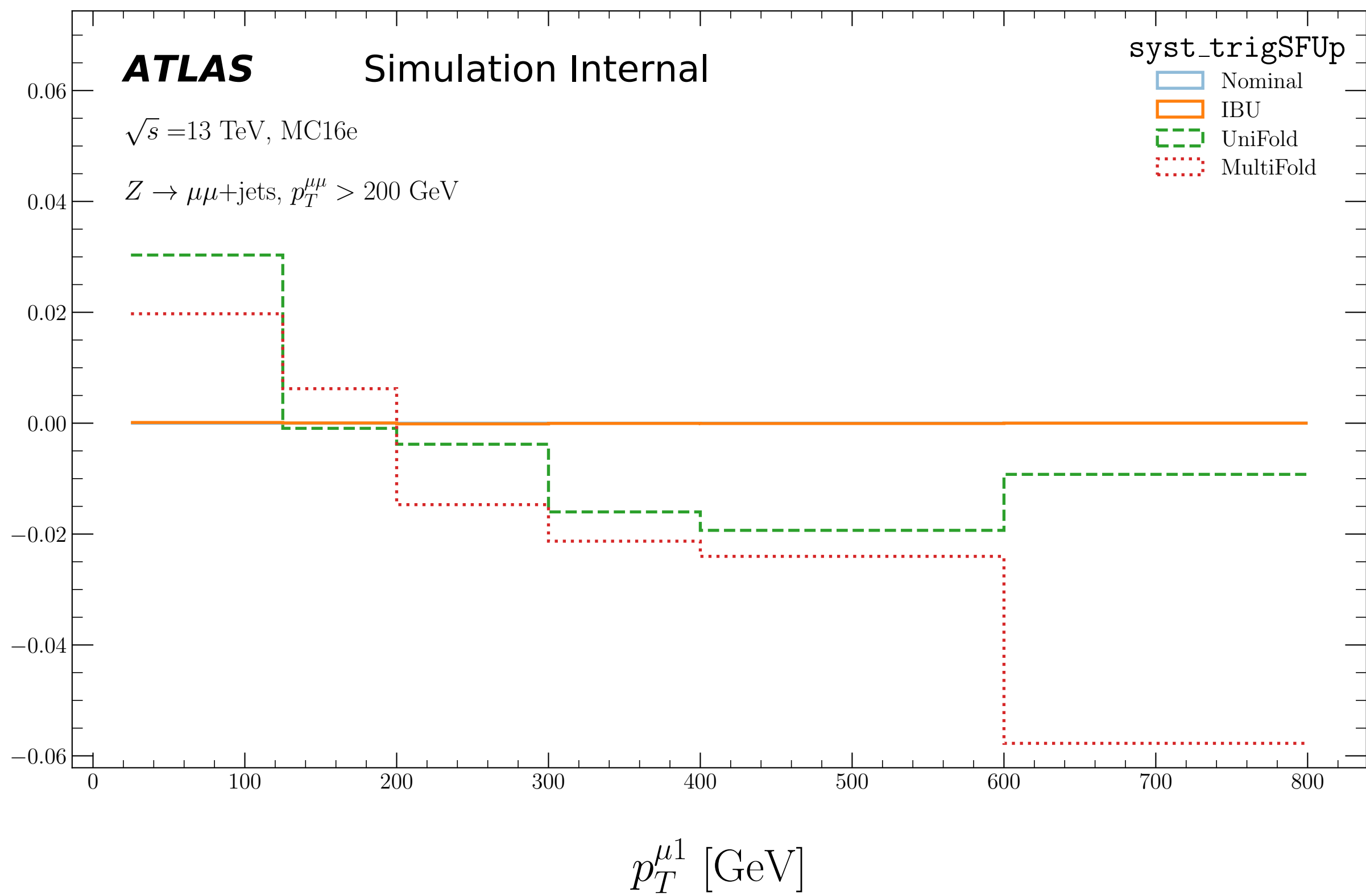
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

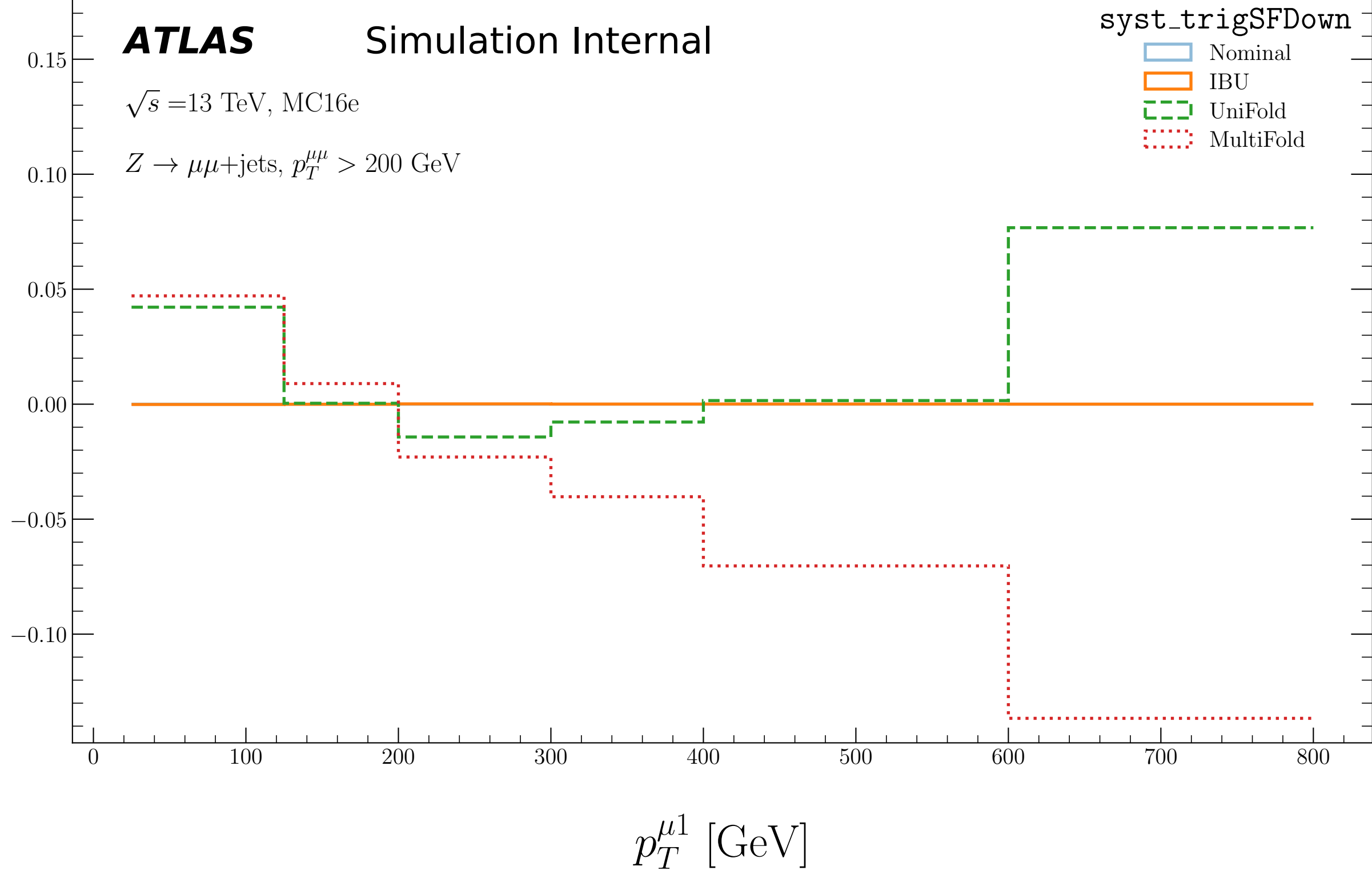






ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

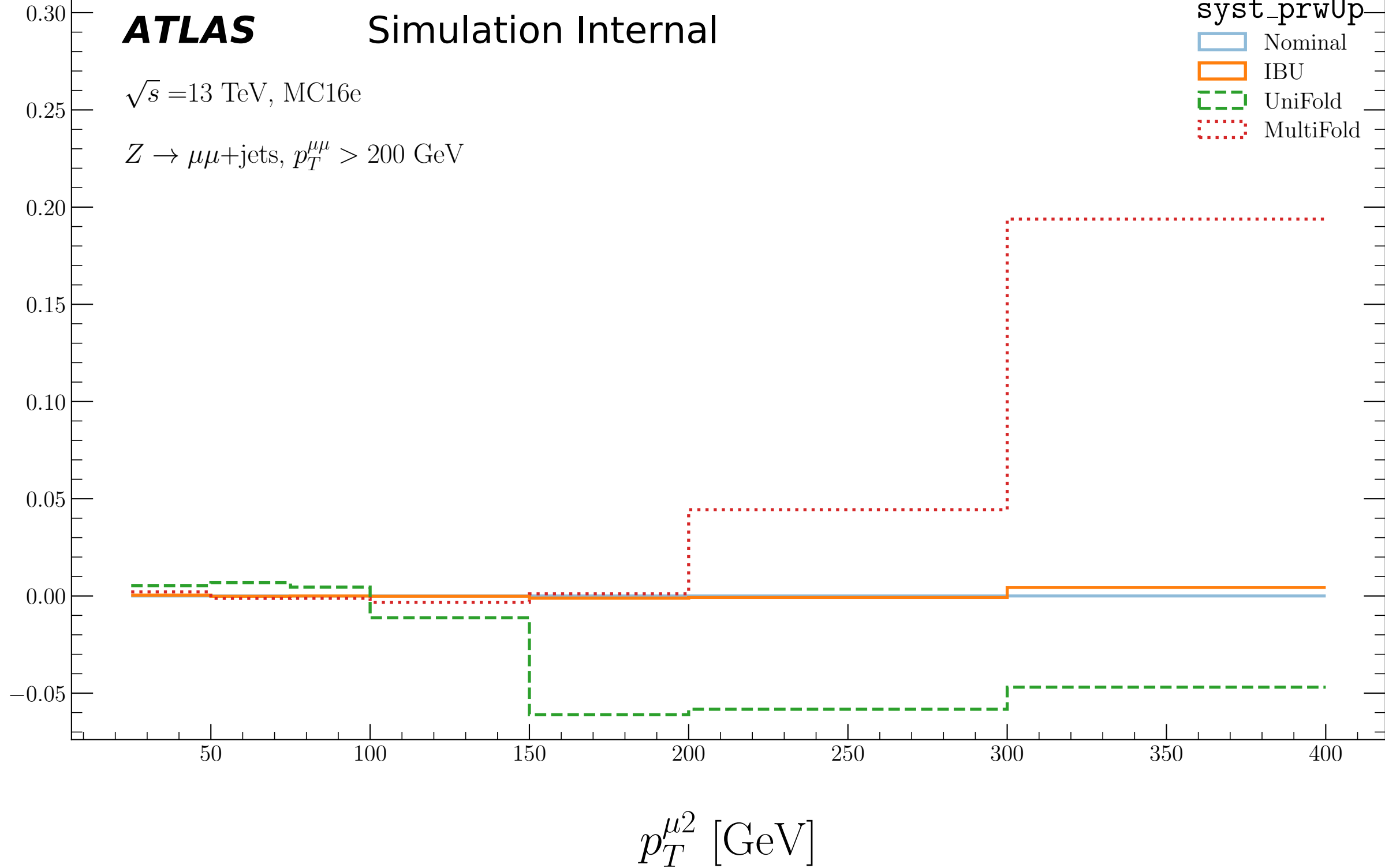
ATLAS

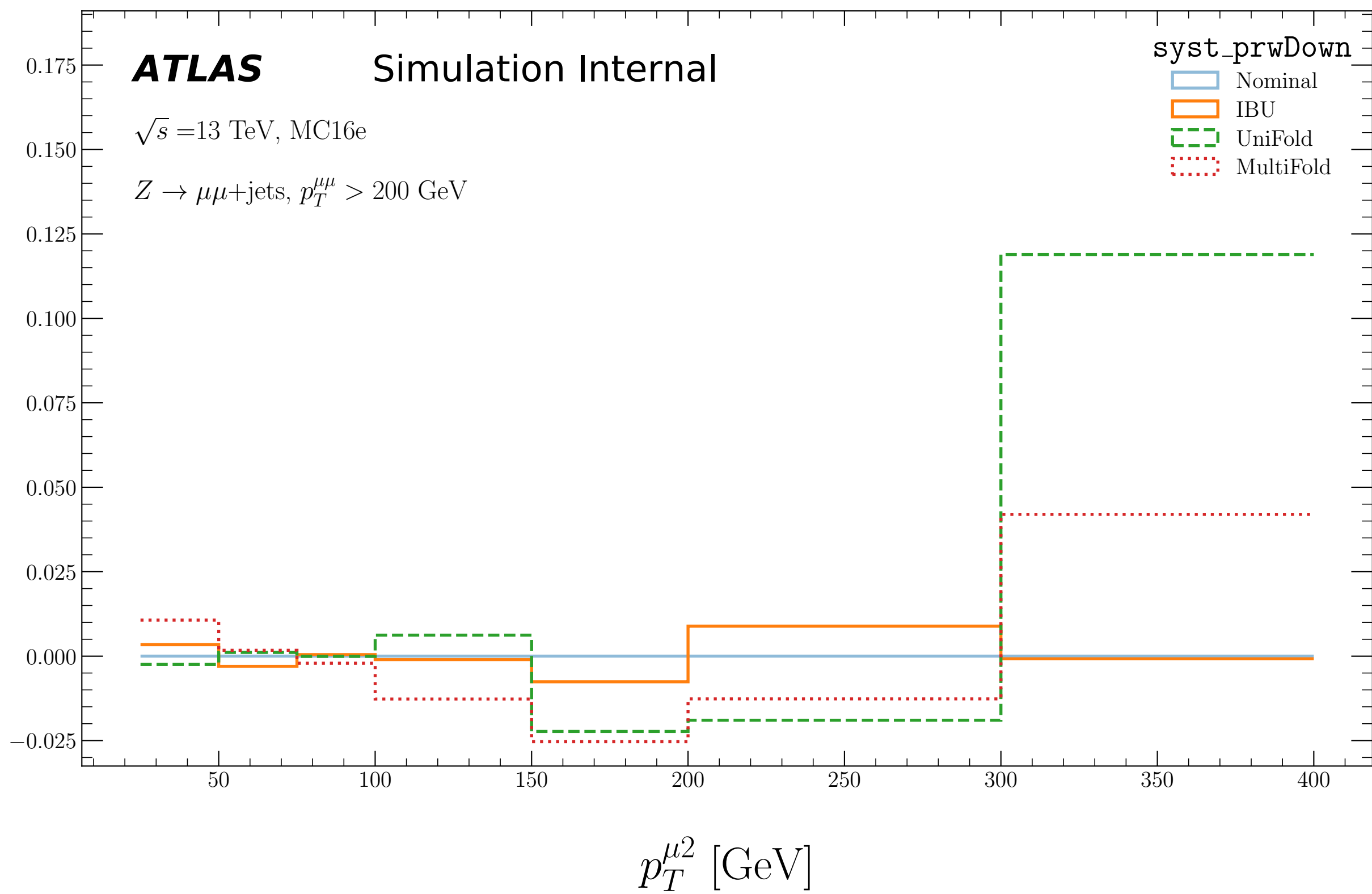
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwUp

- Nominal
- IBU
- UniFold
- MultiFold





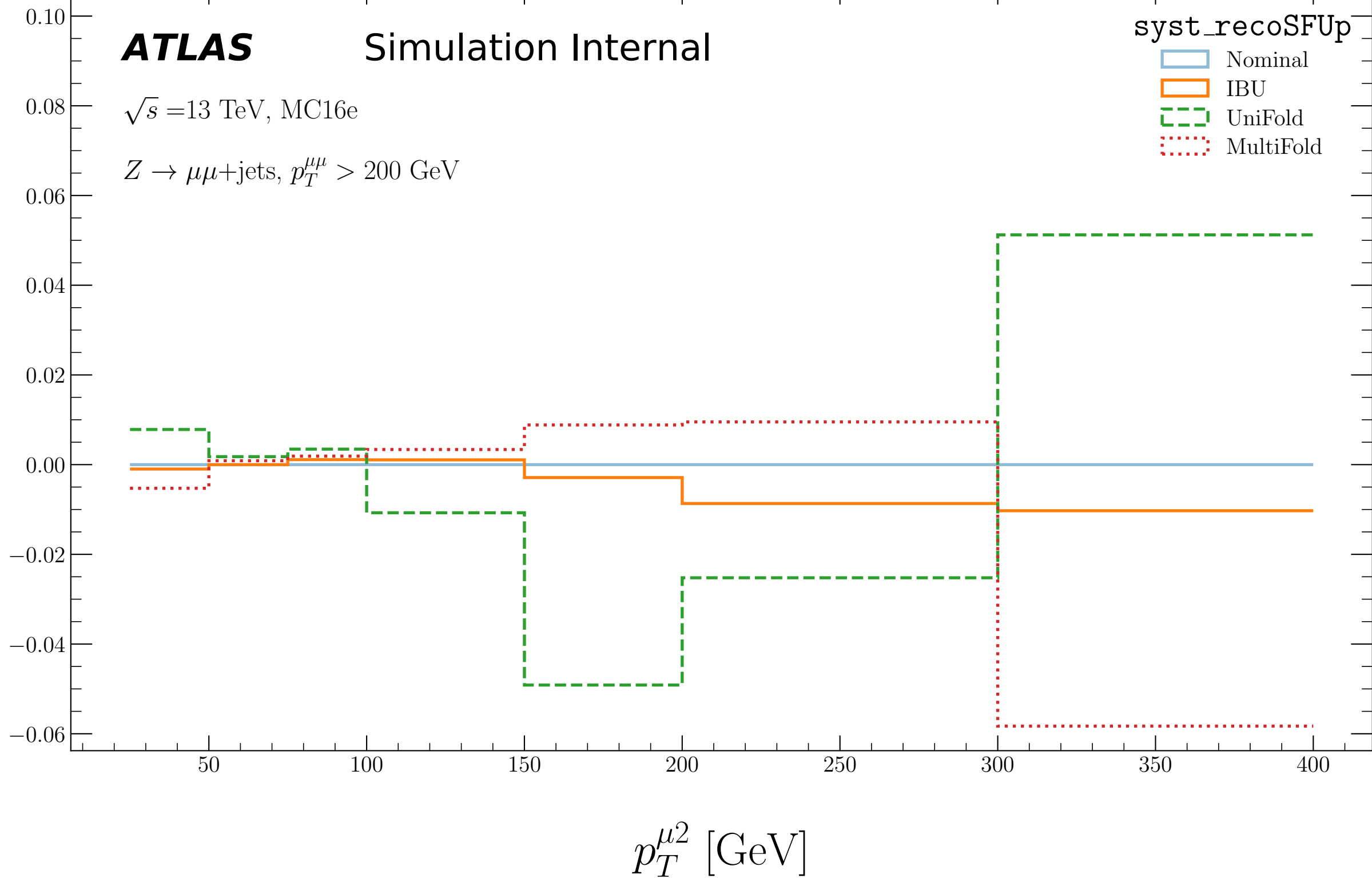
ATLAS

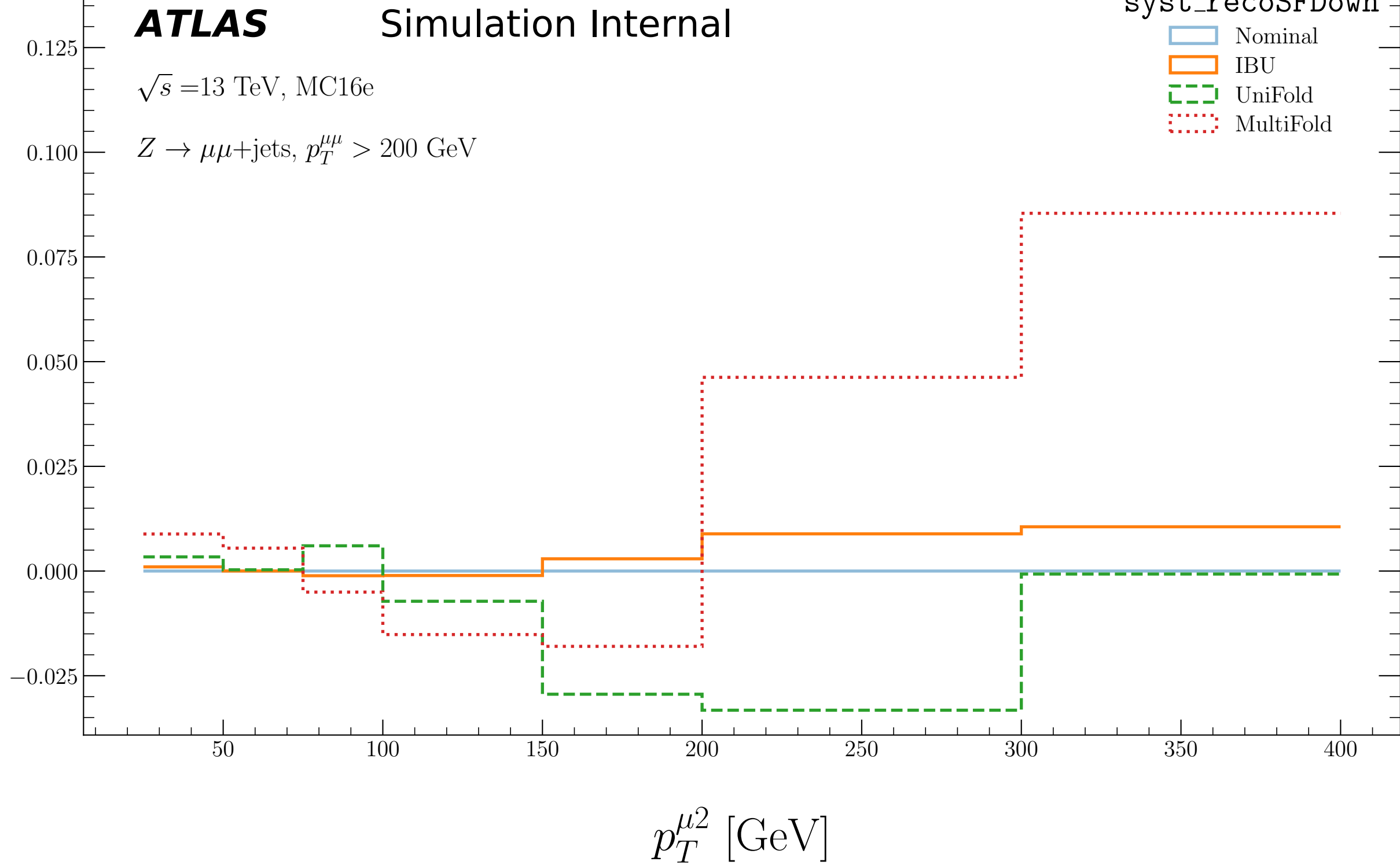
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold





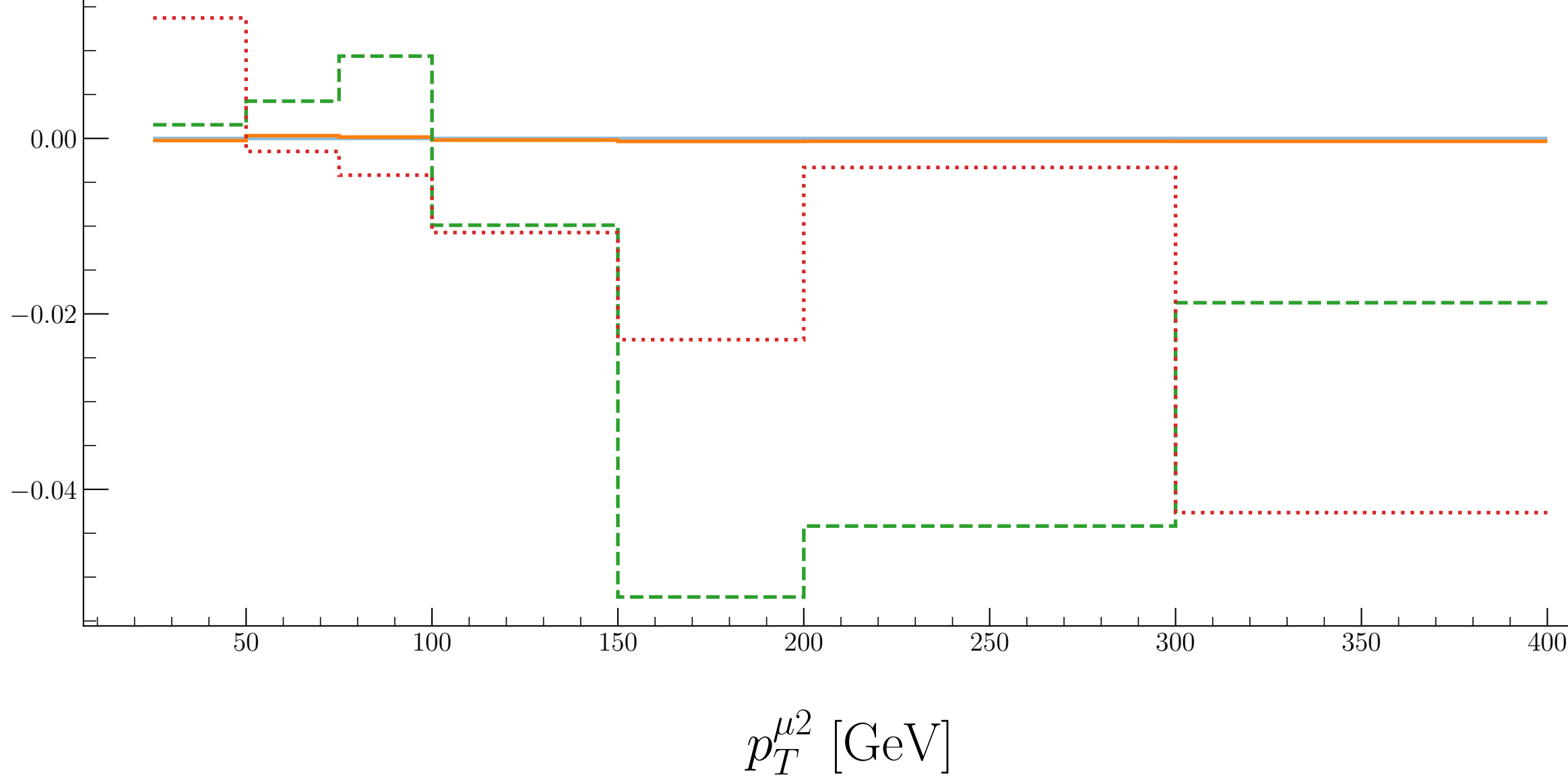
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold



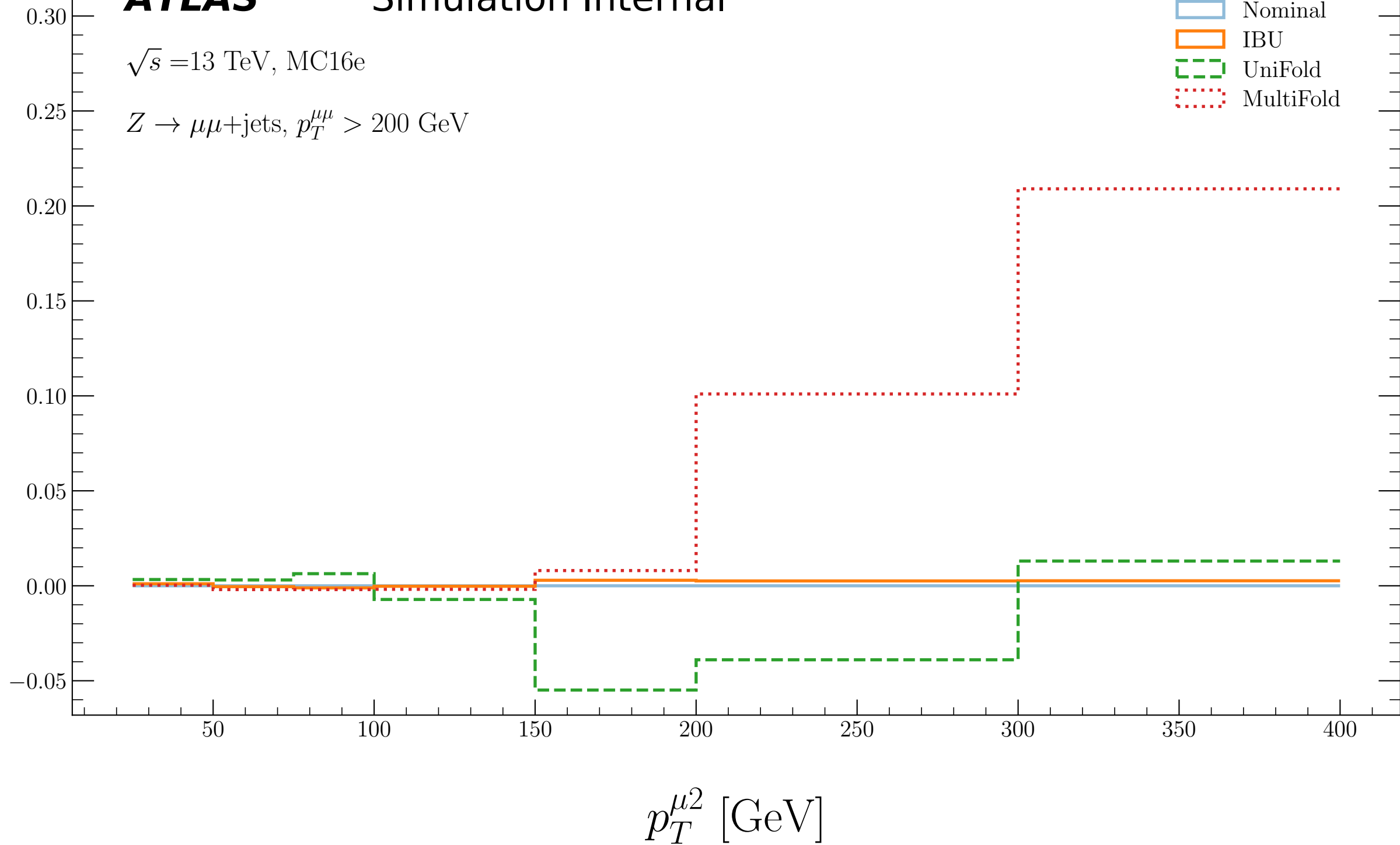
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold



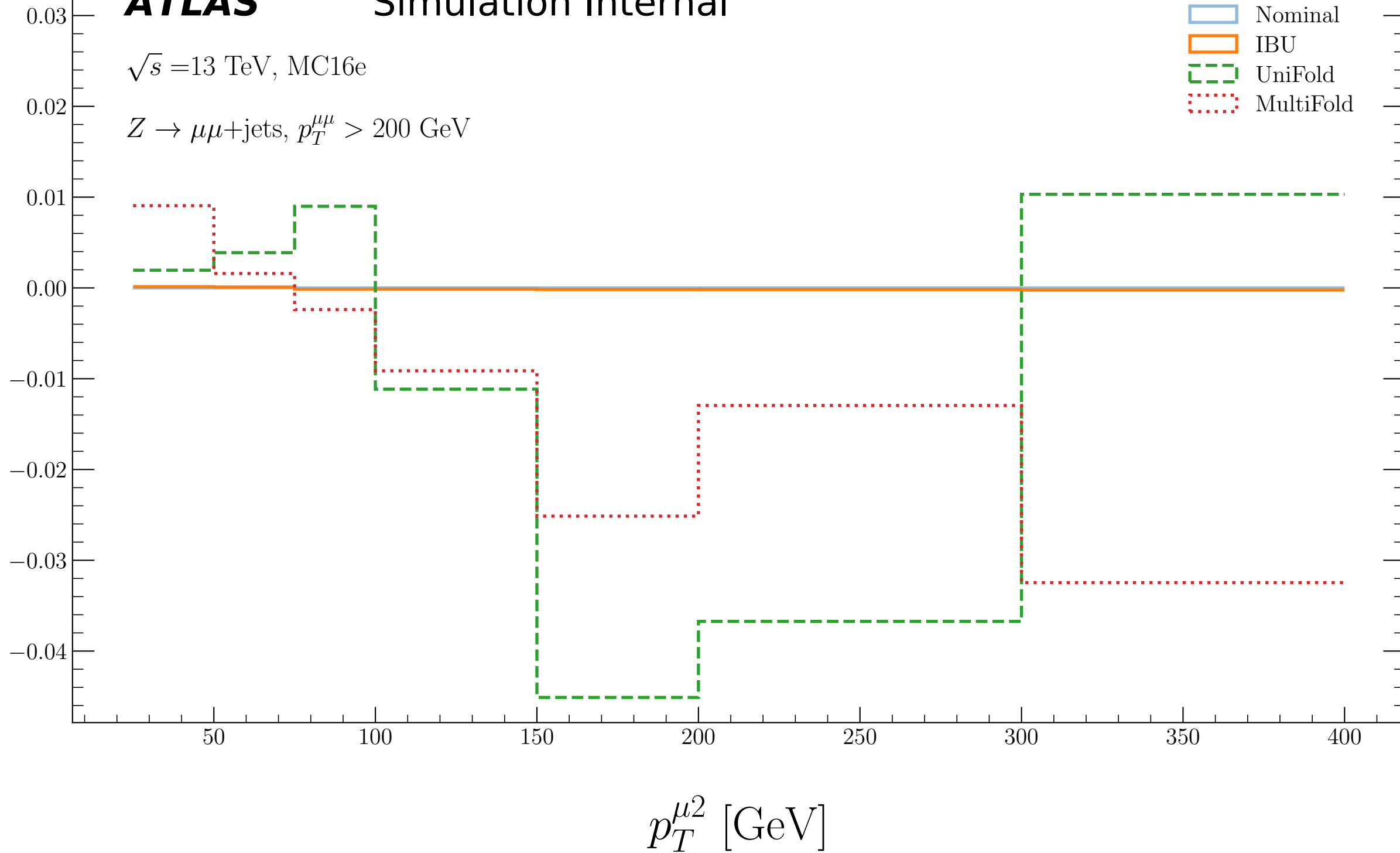
ATLAS

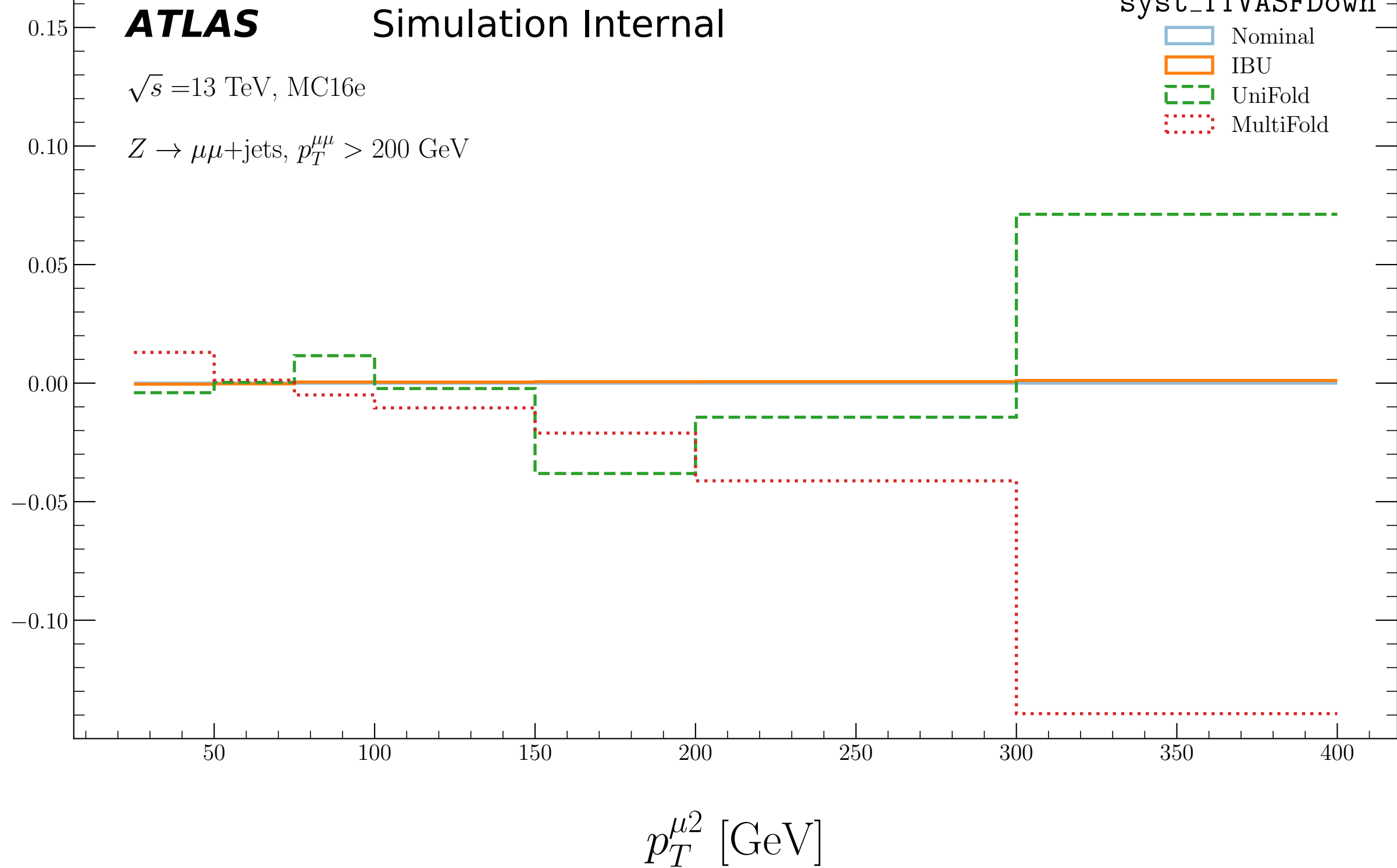
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold





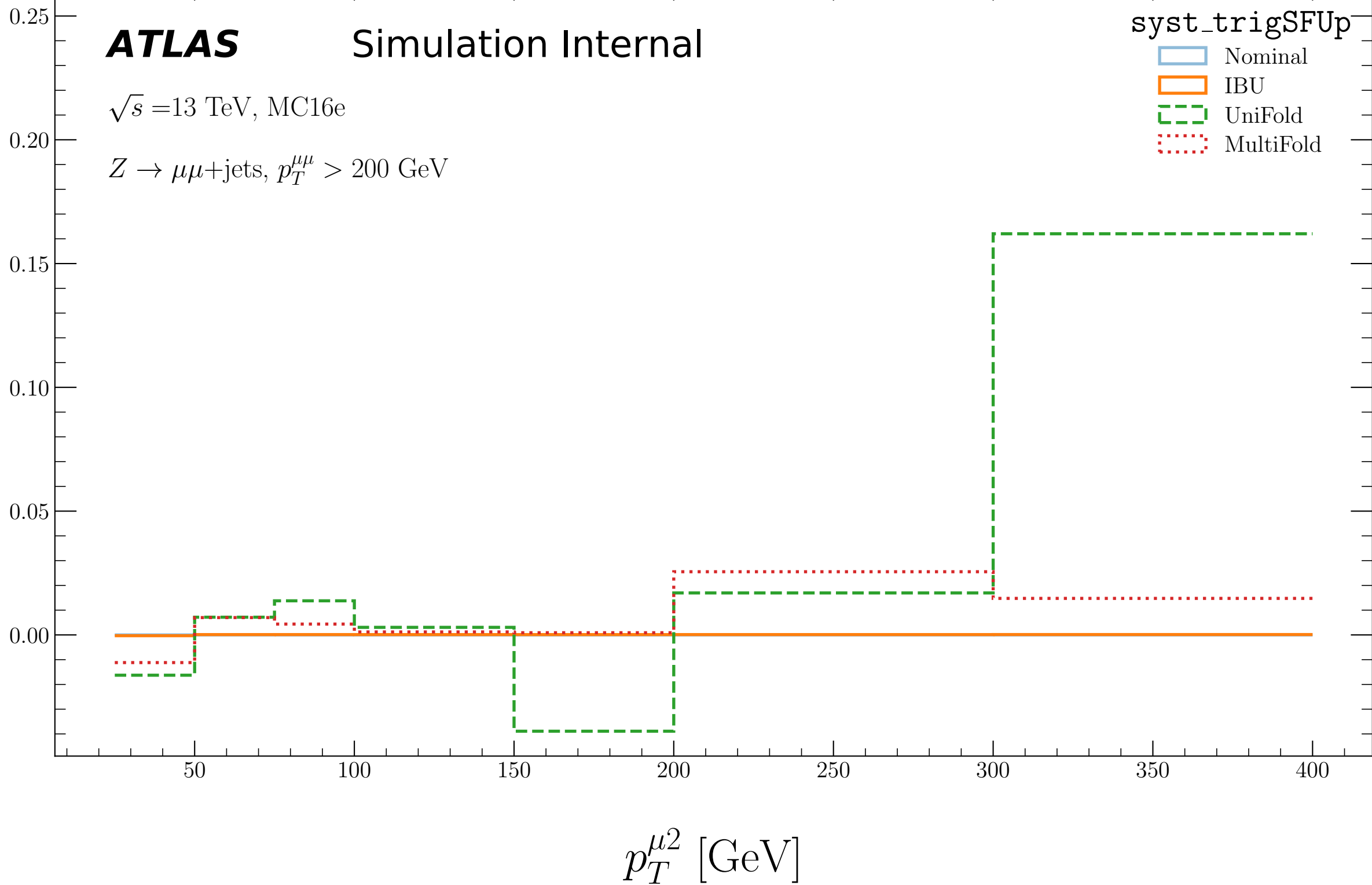
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

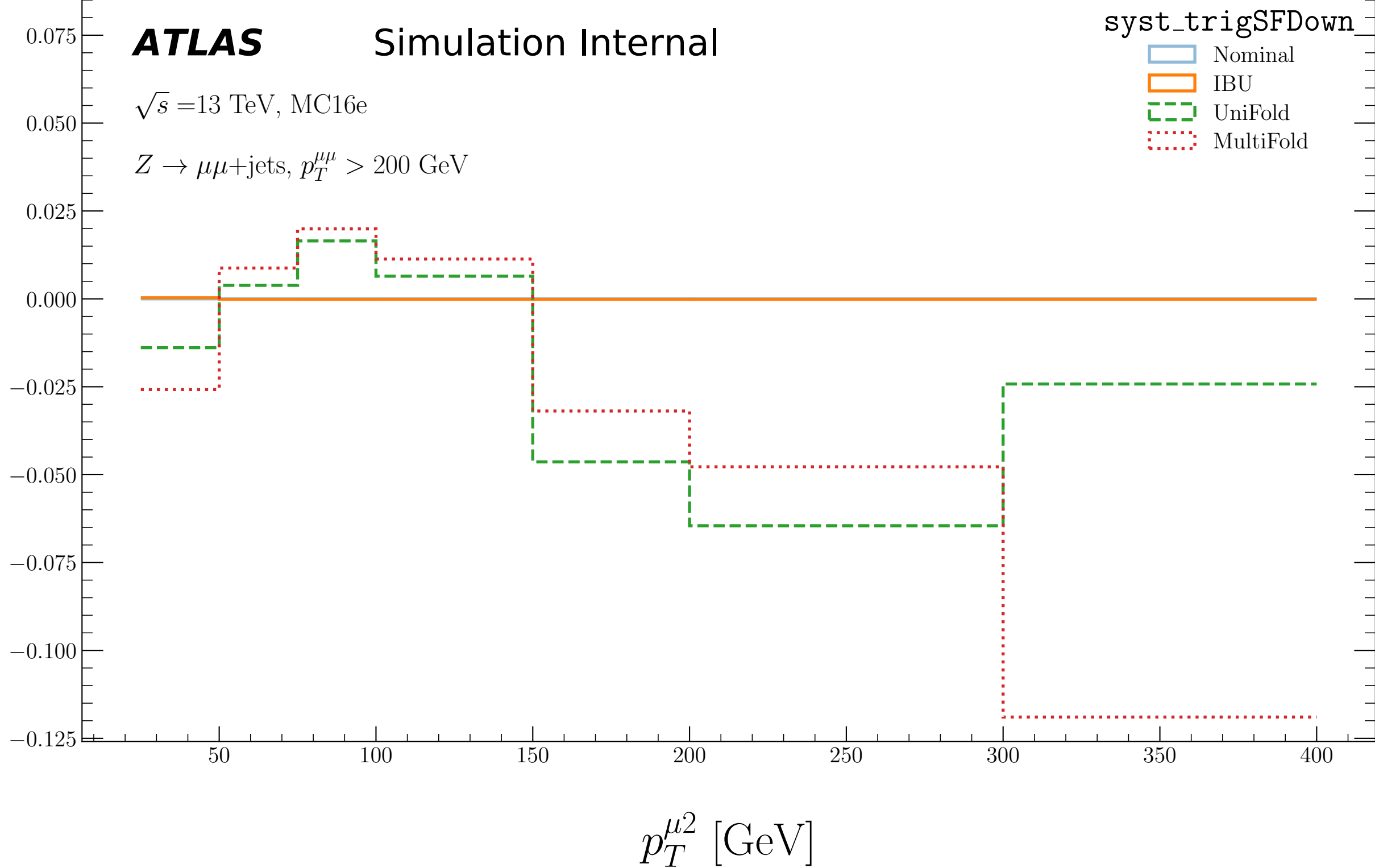
syst_trigSFUp

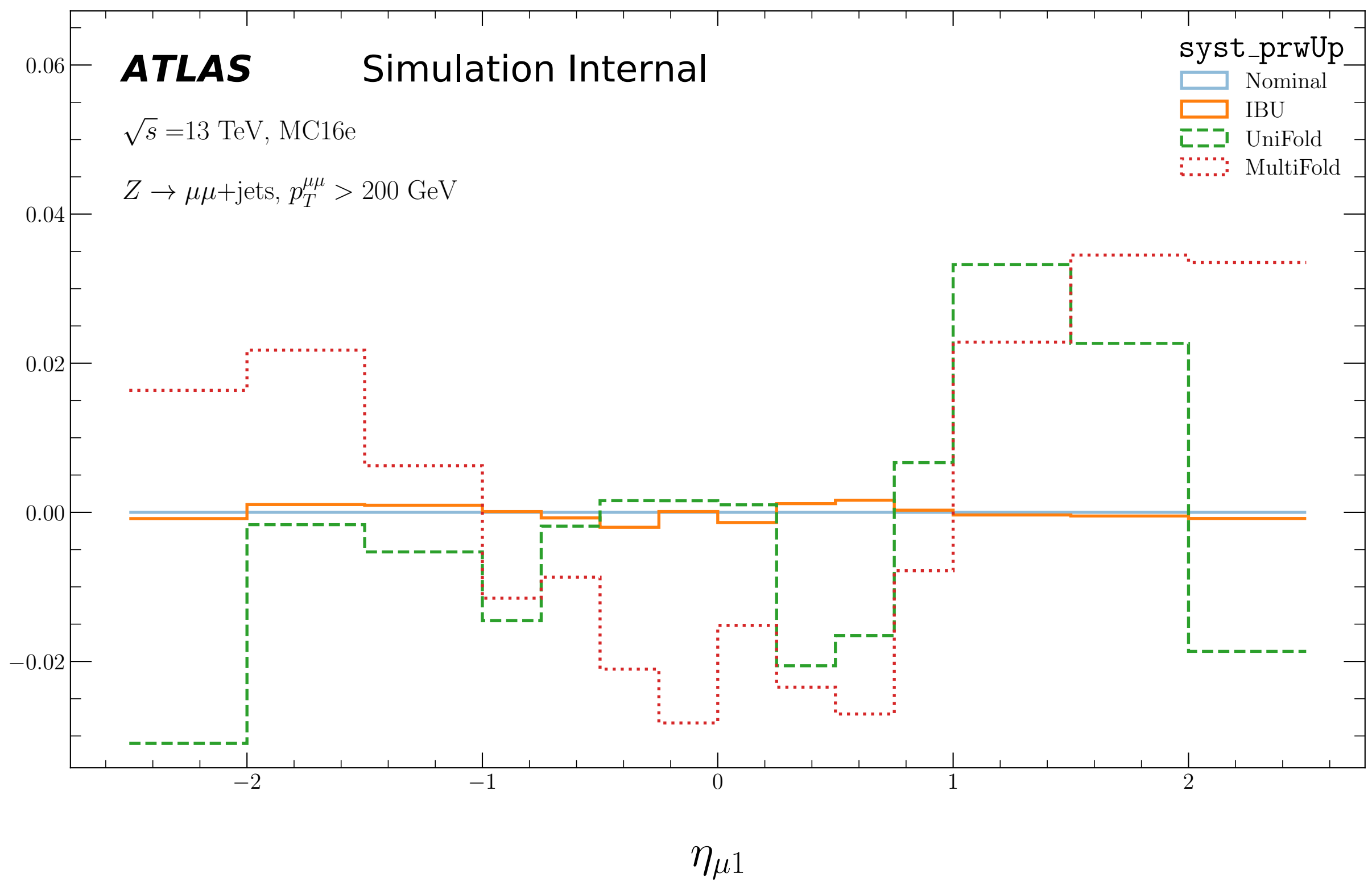
- Nominal
- IBU
- UniFold
- MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

- Nominal
- IBU
- UniFold
- MultiFold

0.10
0.08
0.06
0.04
0.02
0.00
-0.02
-0.04

 $\eta_{\mu 1}$

-2

-1

0

1

2

-0.04

-0.02

0.00

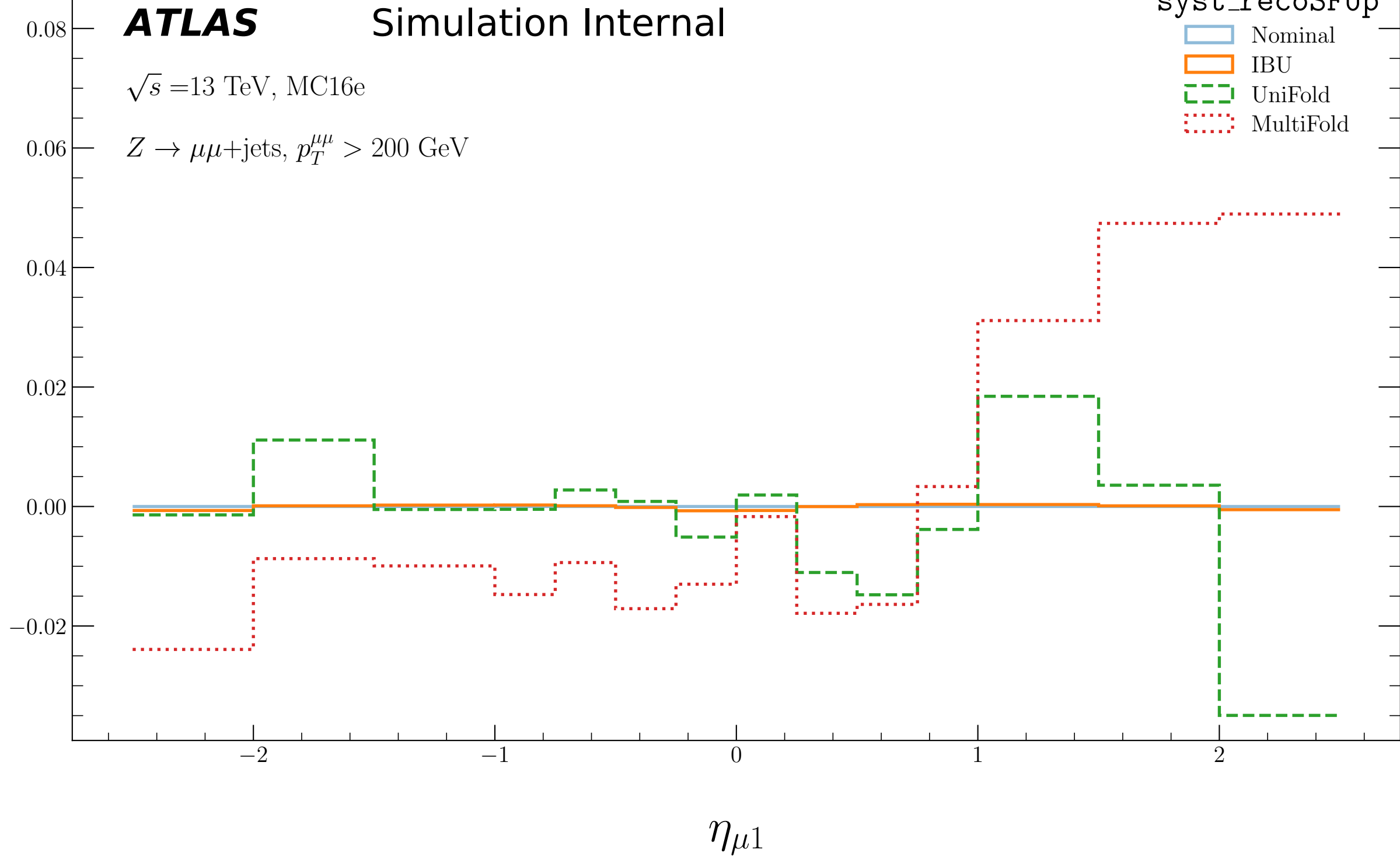
0.02

0.04

0.06

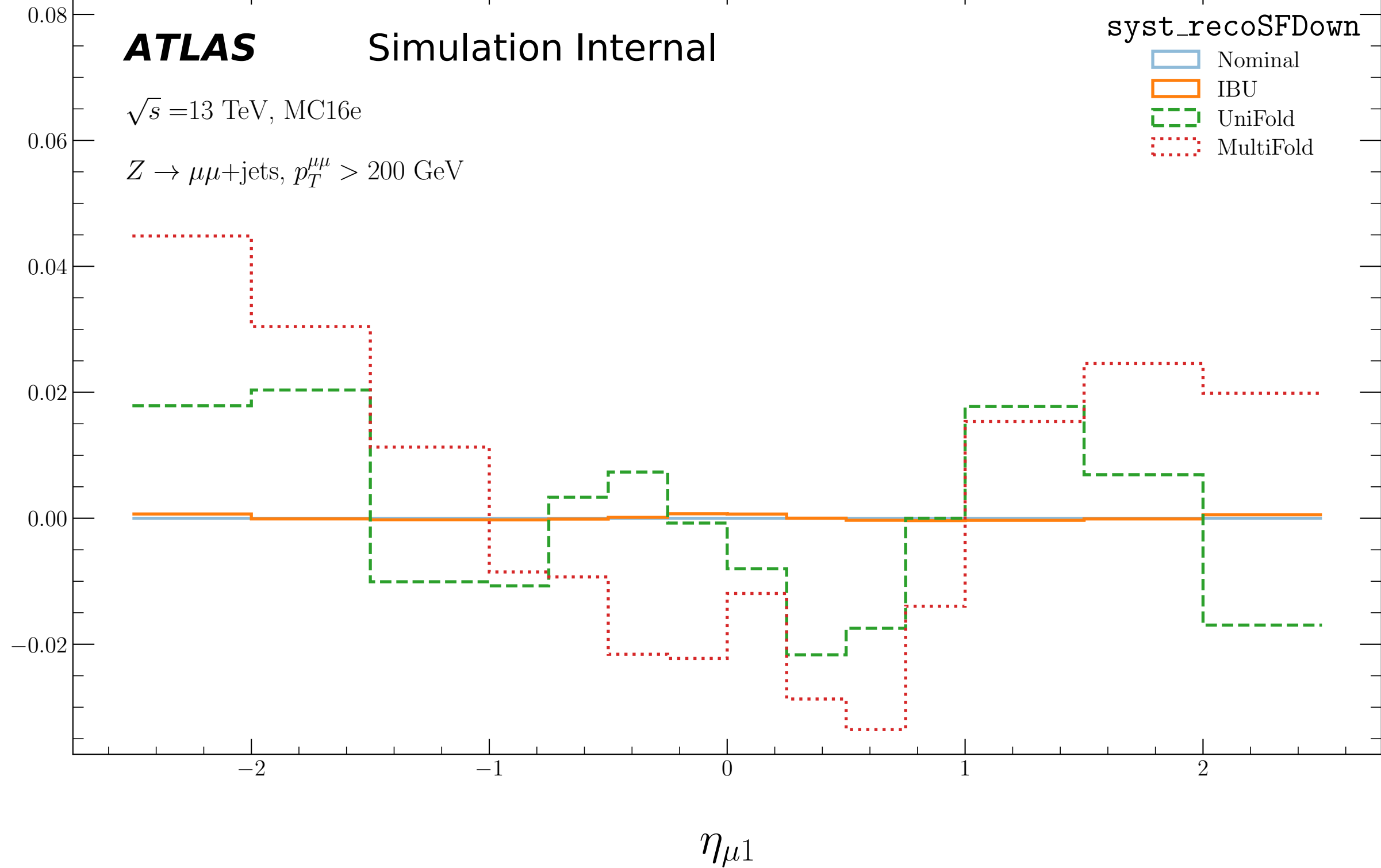
0.08

0.10



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

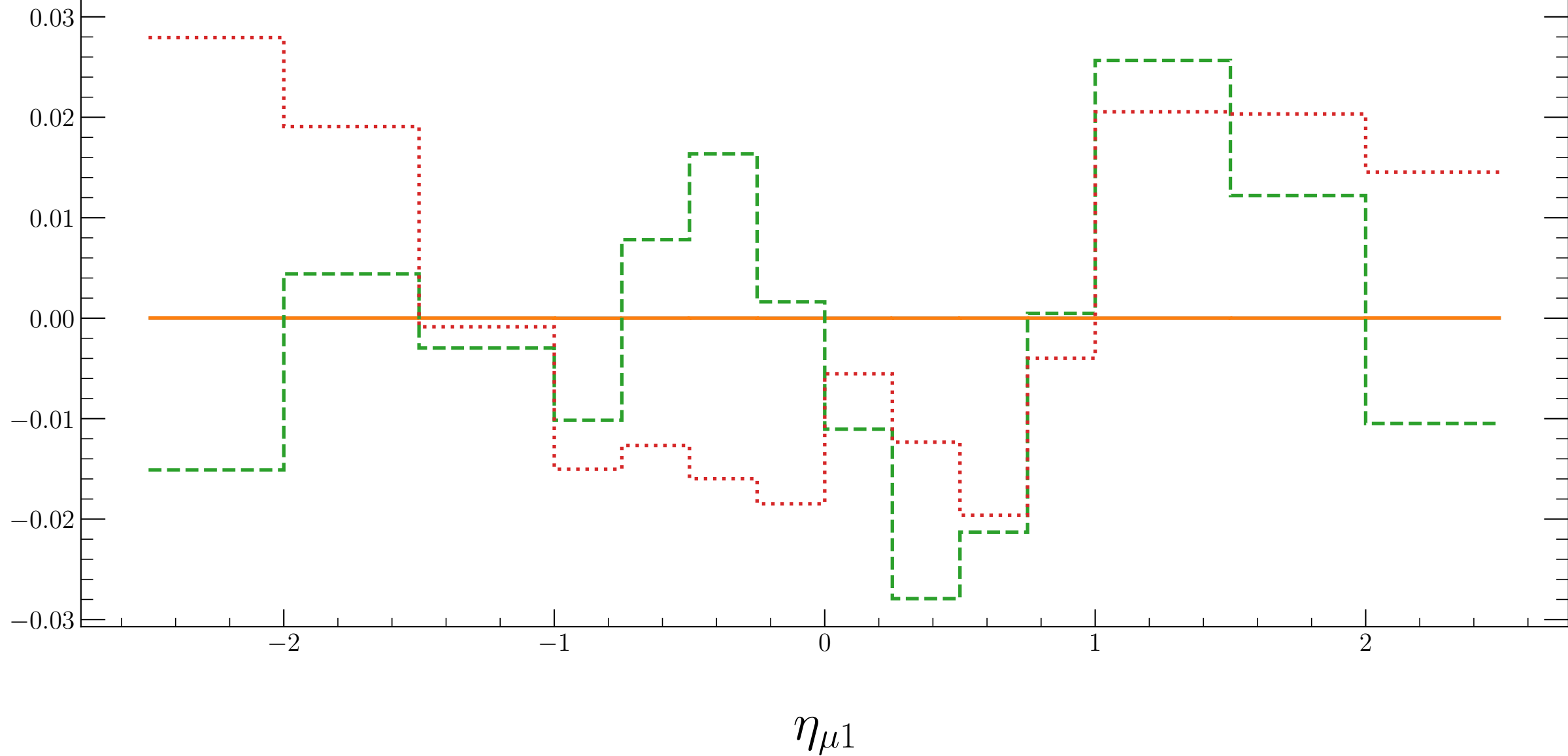
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold



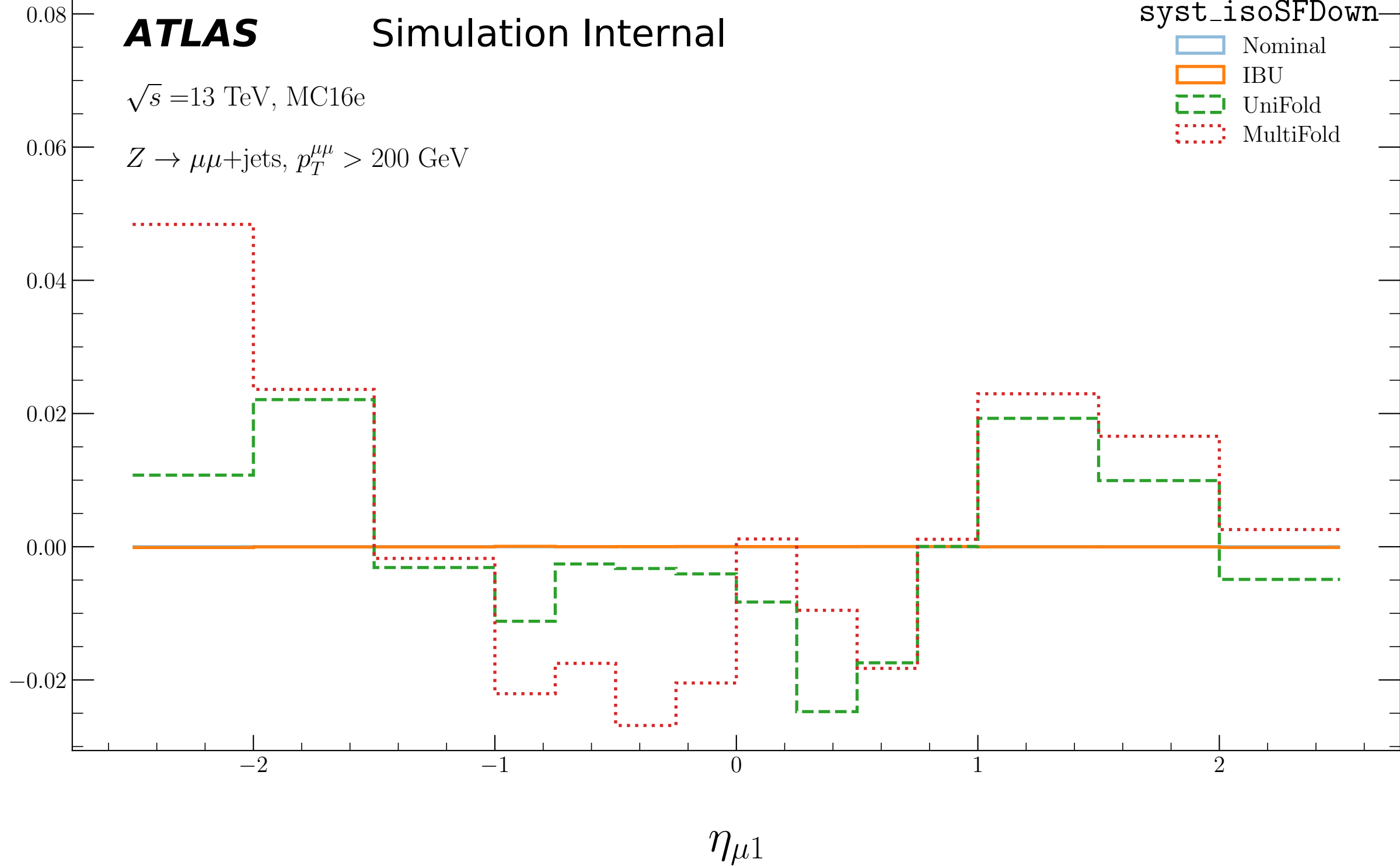
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

0.08
0.06
0.04
0.02
0.00
-0.02

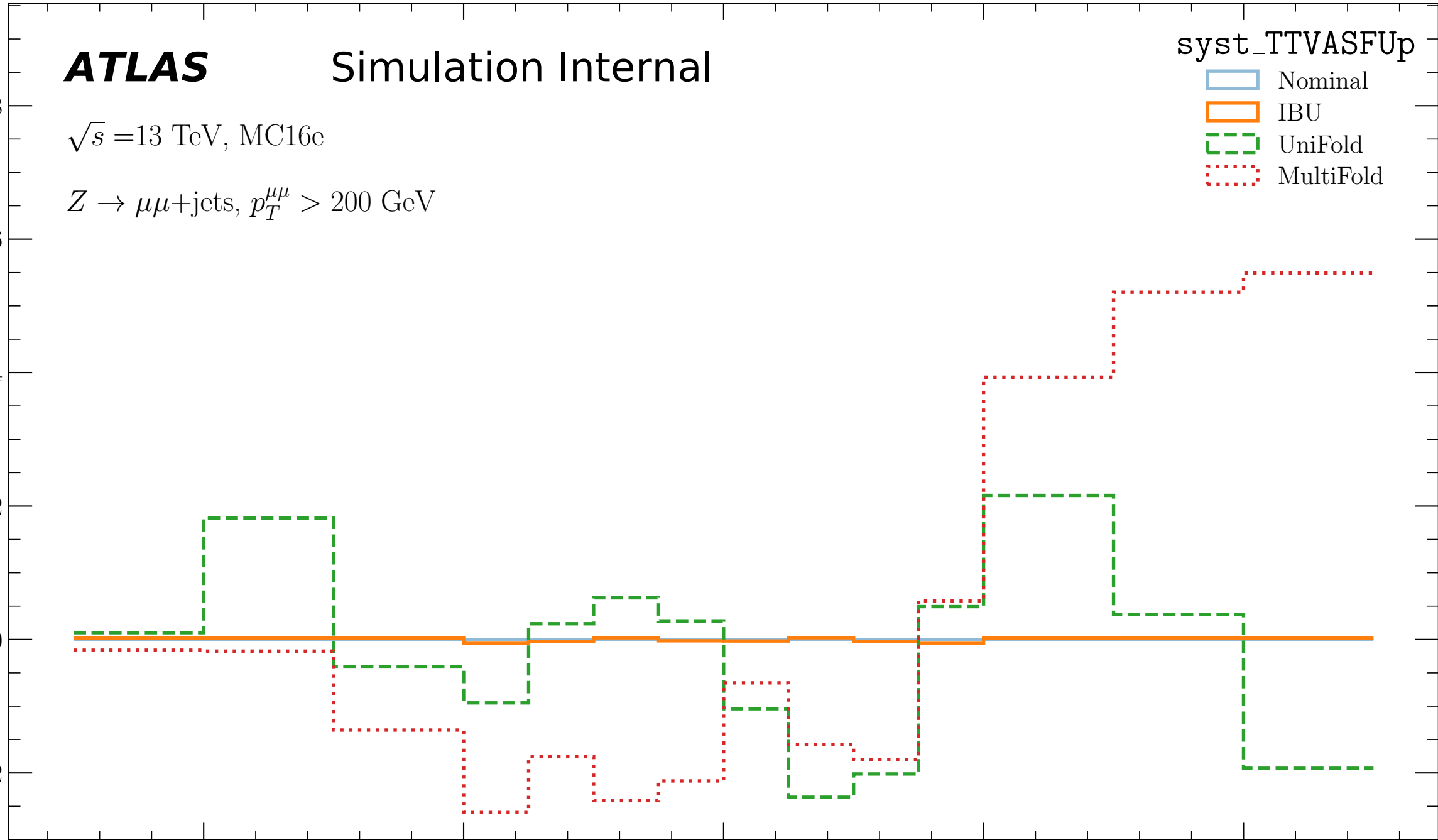
-2

-1

0

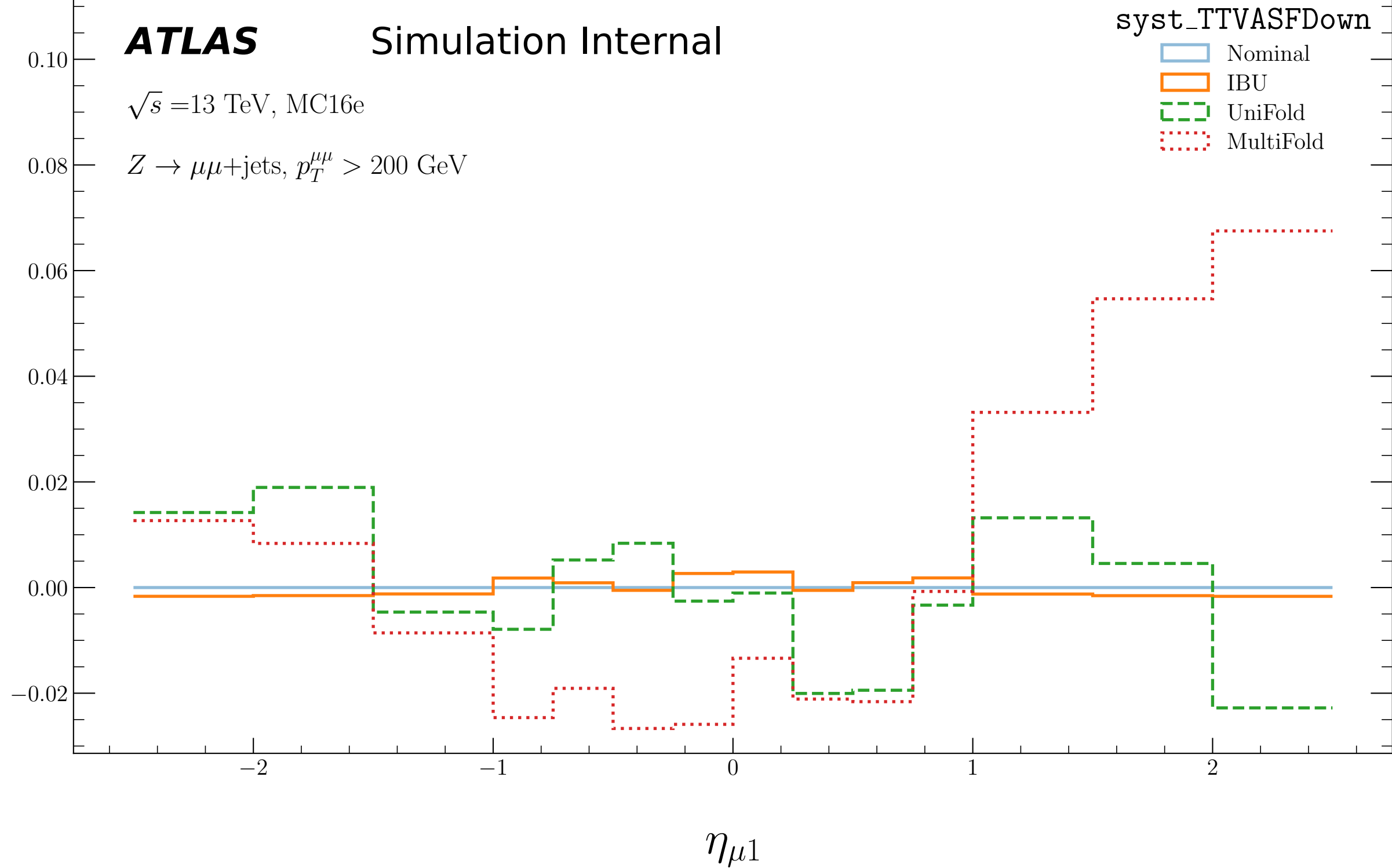
1

2

 $\eta_{\mu 1}$ 

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

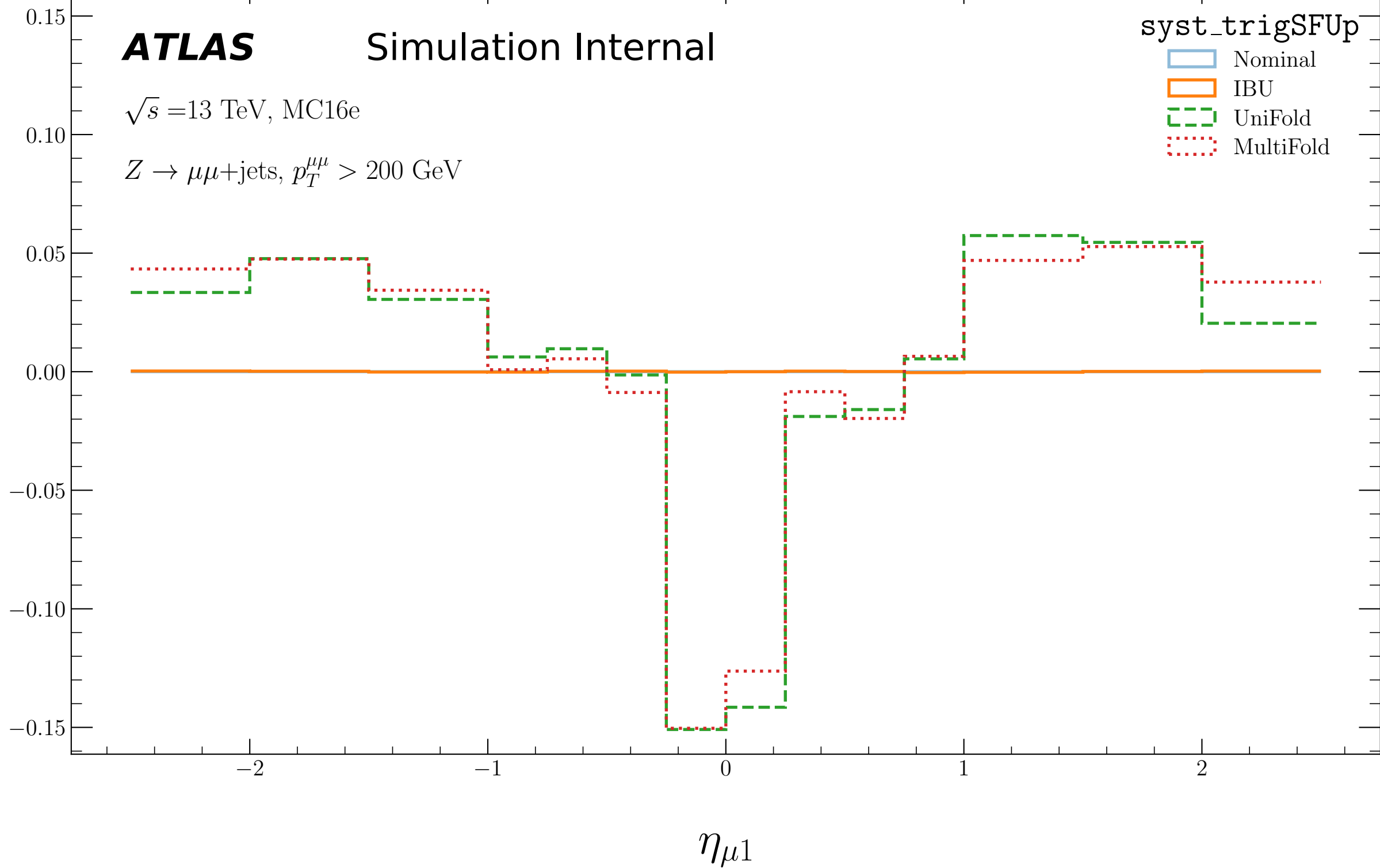
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

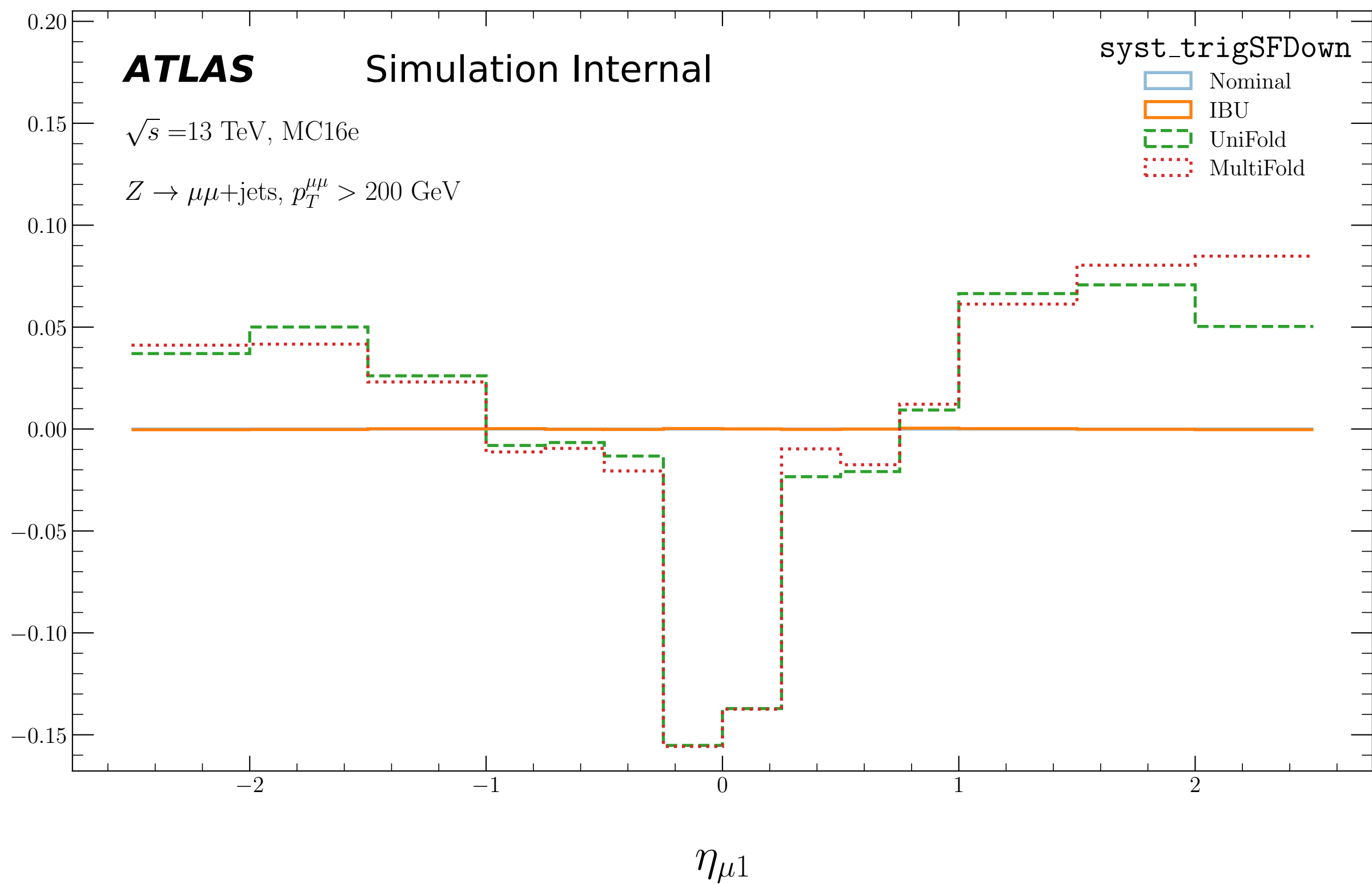
syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwUp

Nominal

IBU

UniFold

MultiFold

0.08
0.06
0.04
0.02
0.00
-0.02

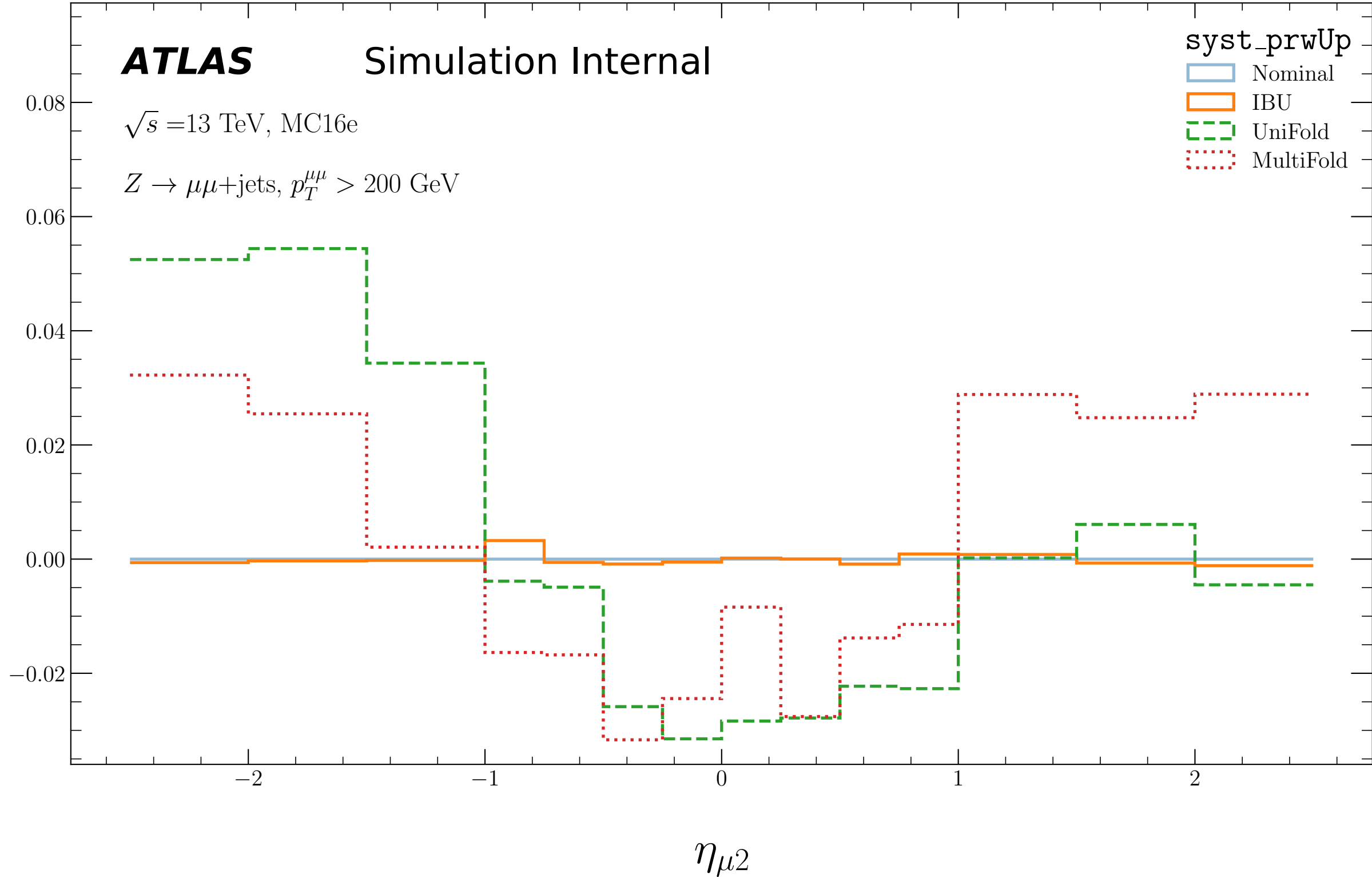
-2

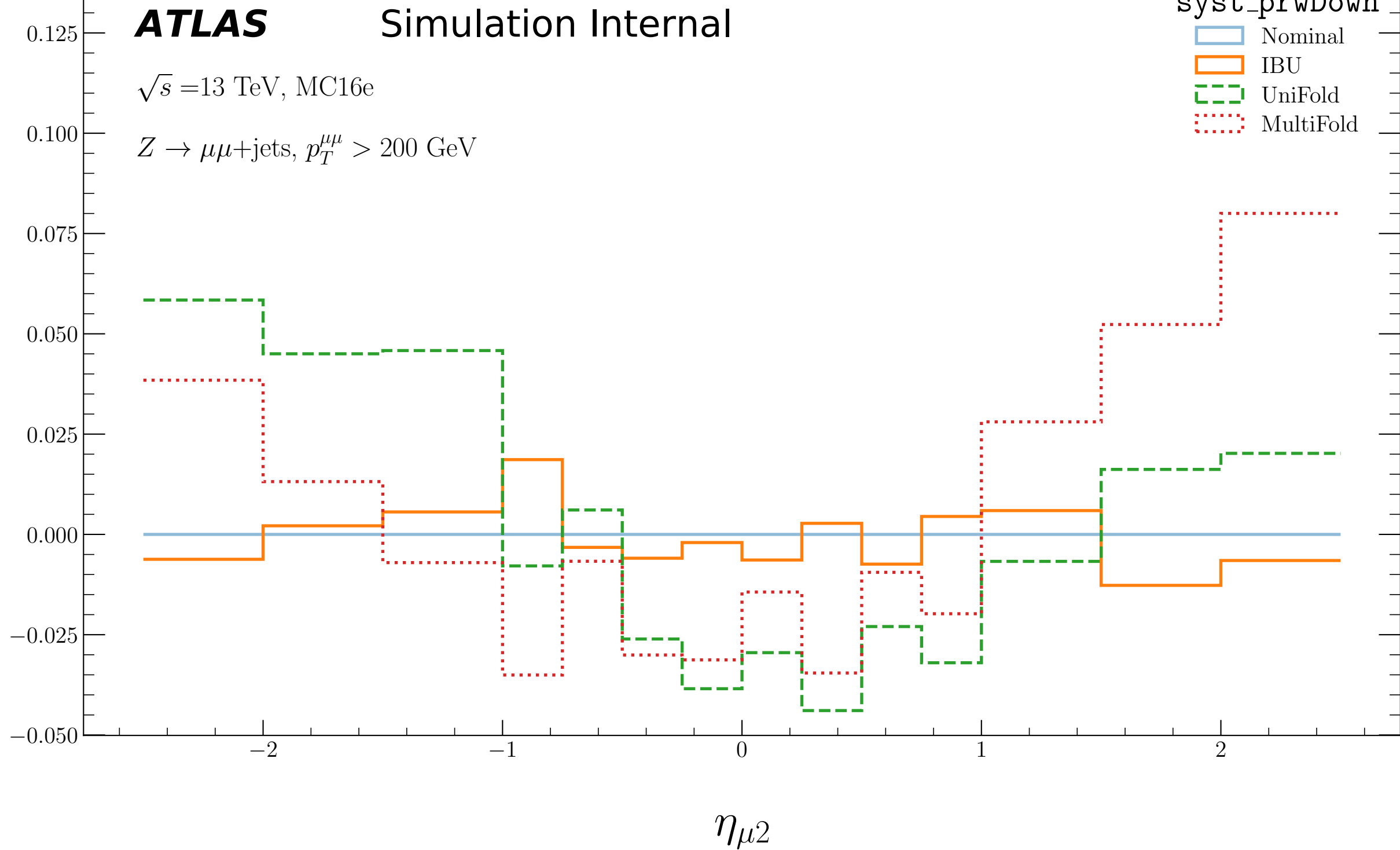
-1

0

1

2

 $\eta_{\mu 2}$ 



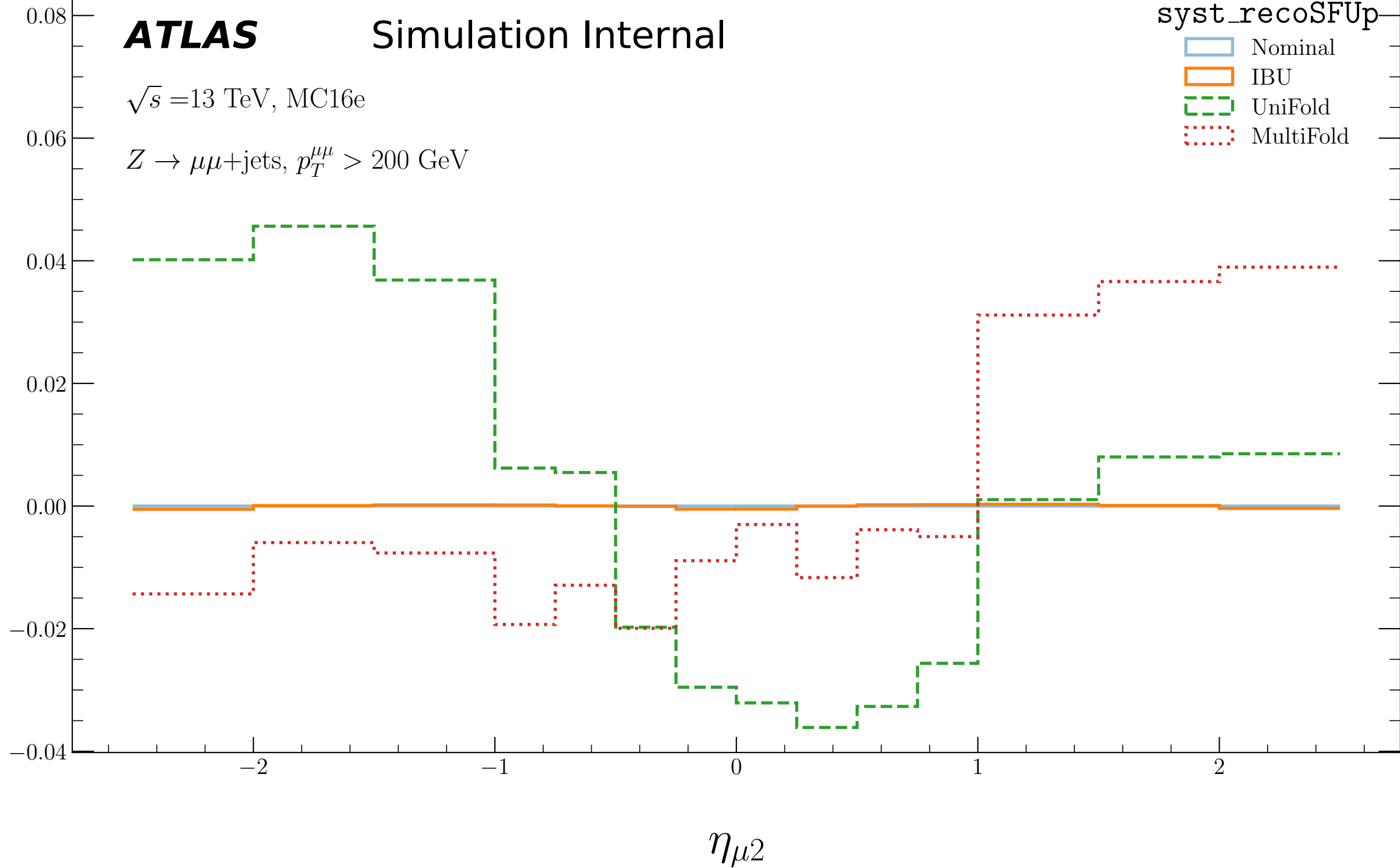
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

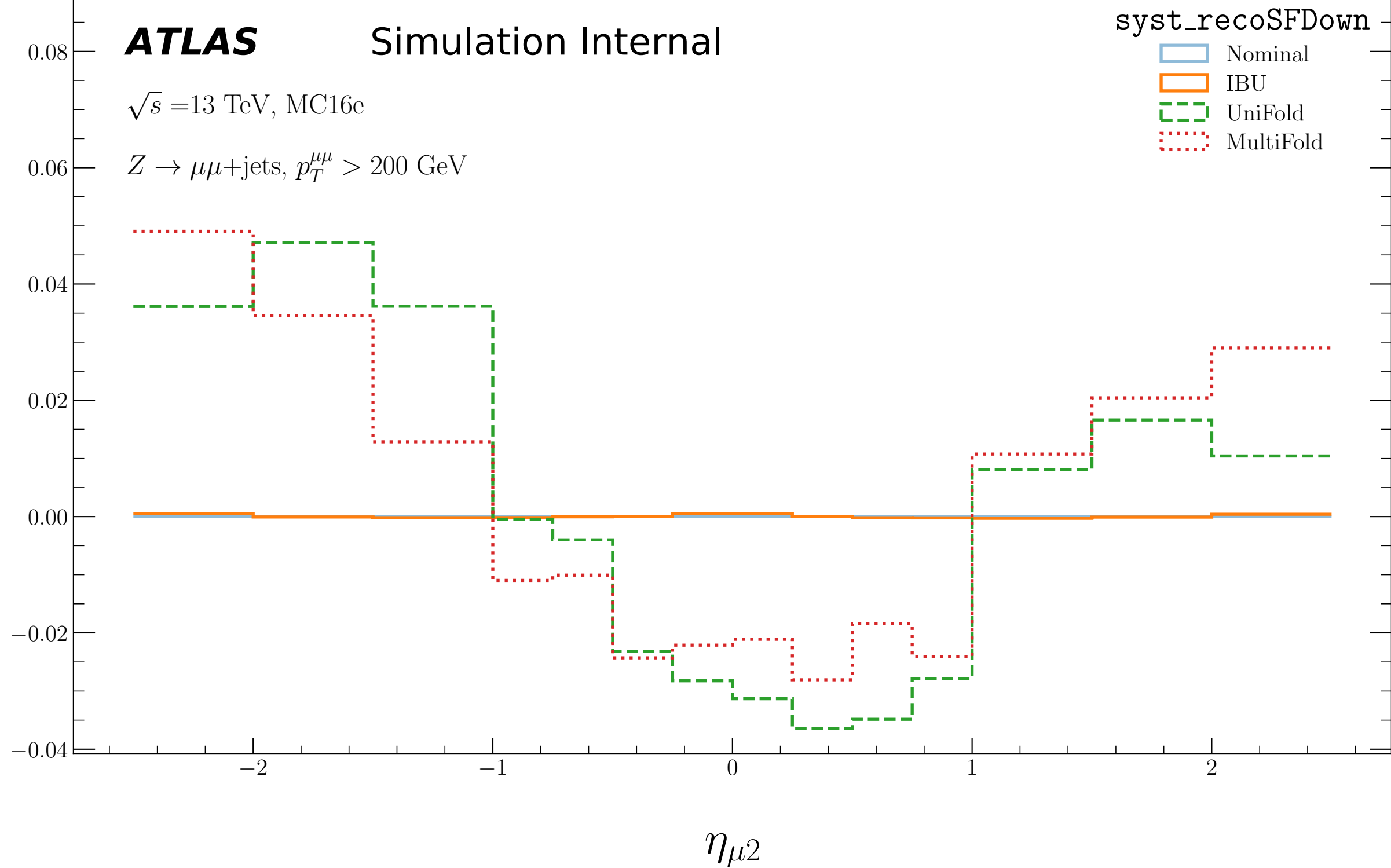
syst_recoSFUp

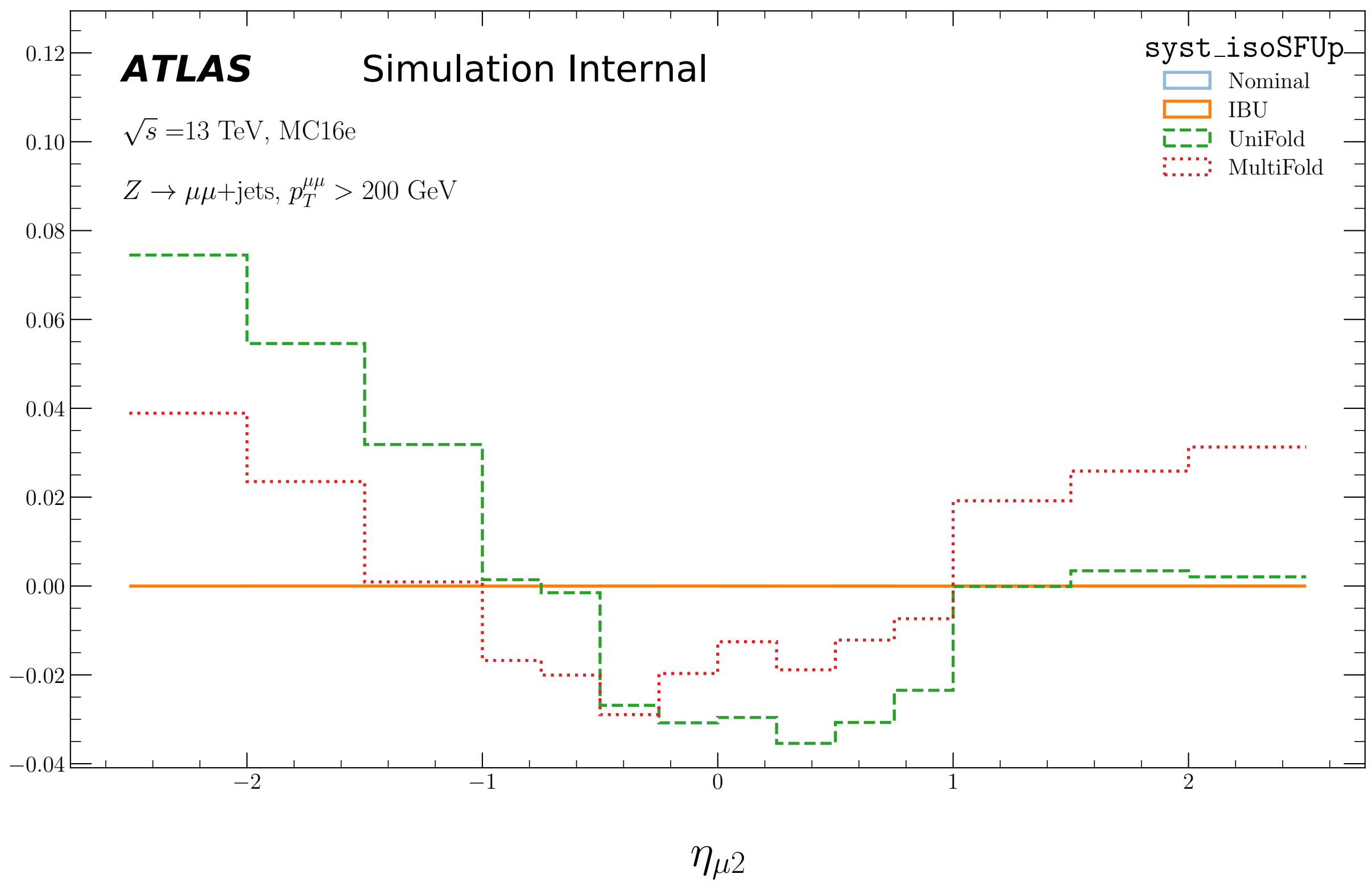
- Nominal
- IBU
- UniFold
- MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV



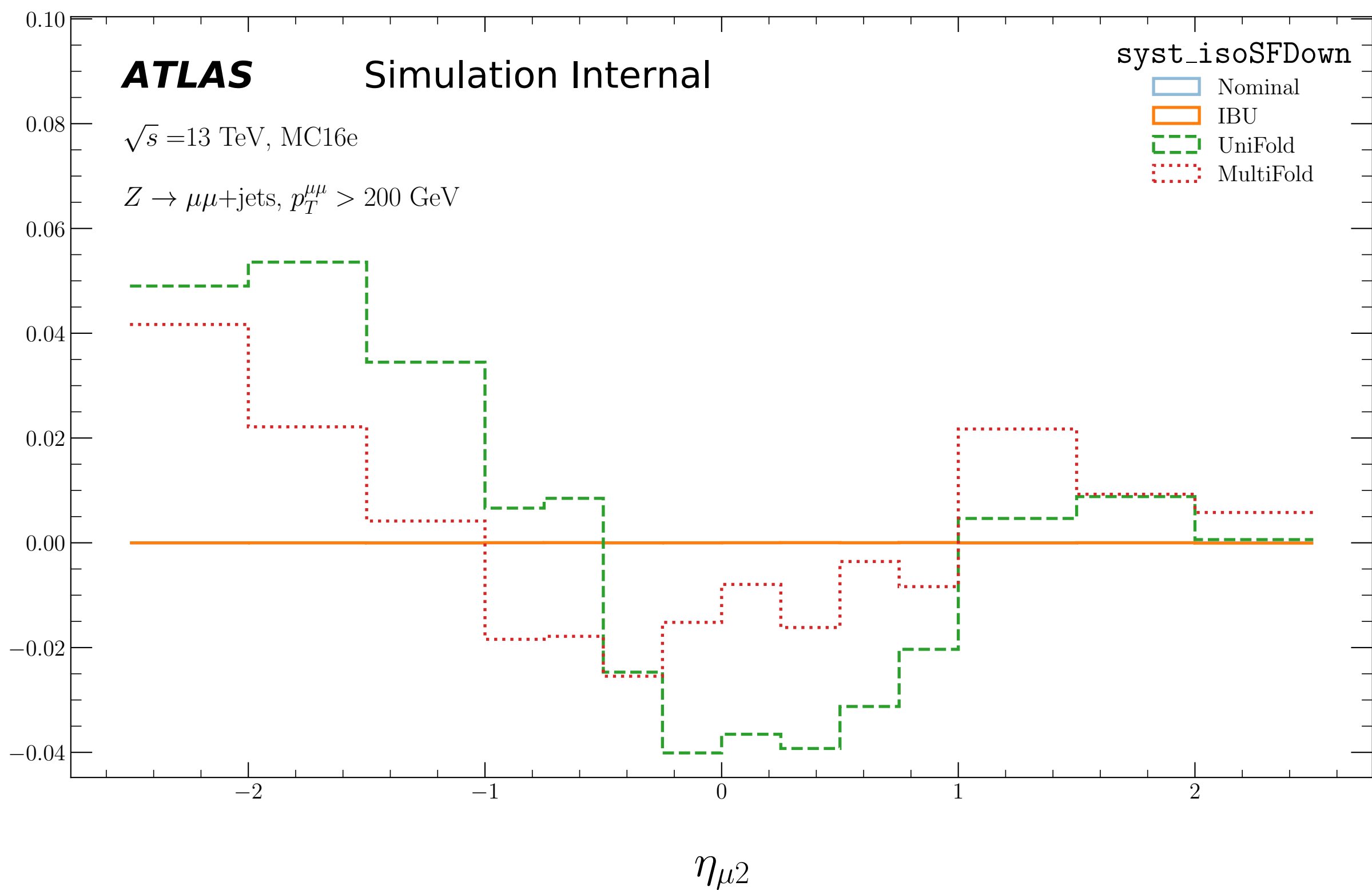
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold



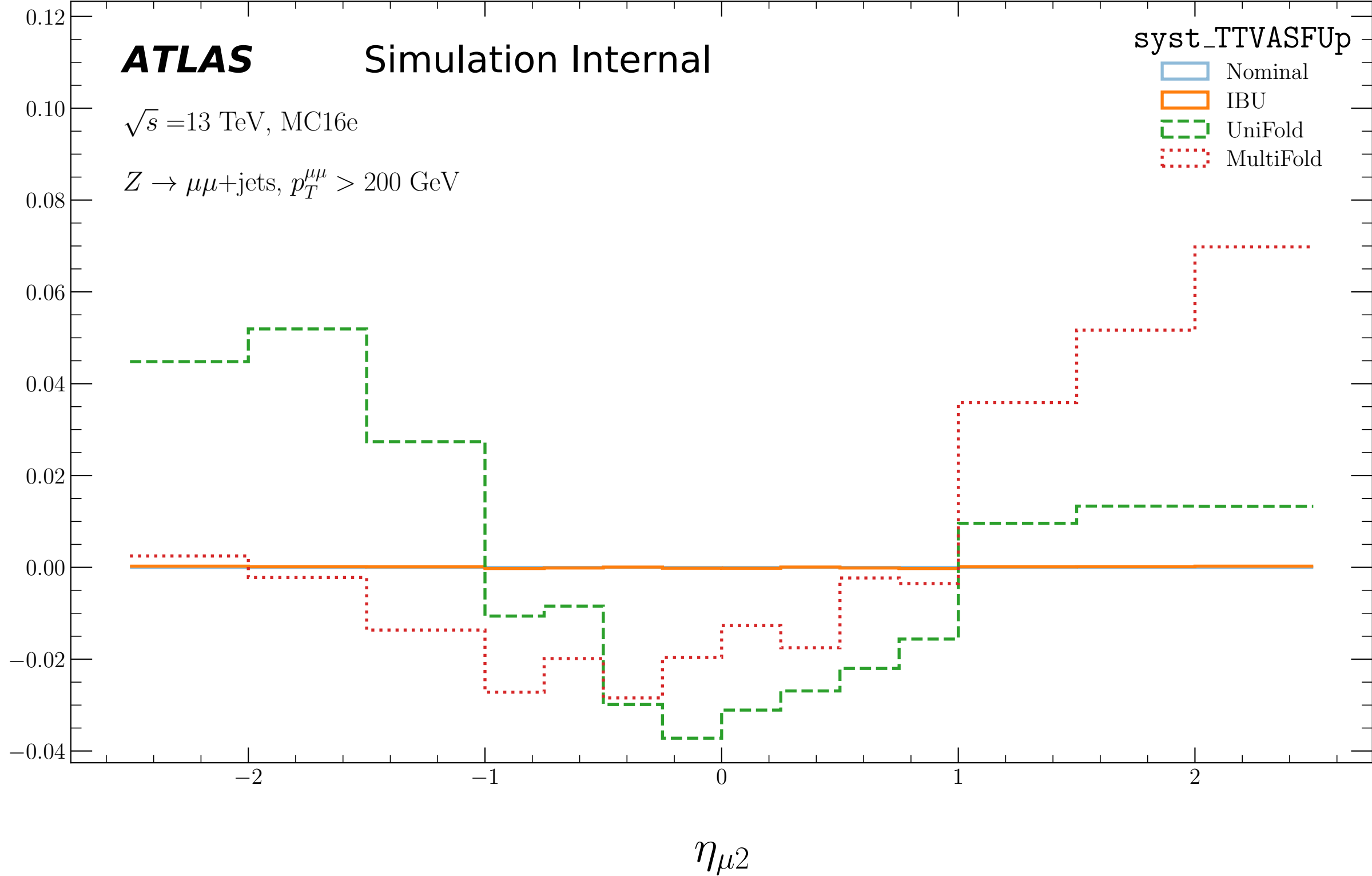
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

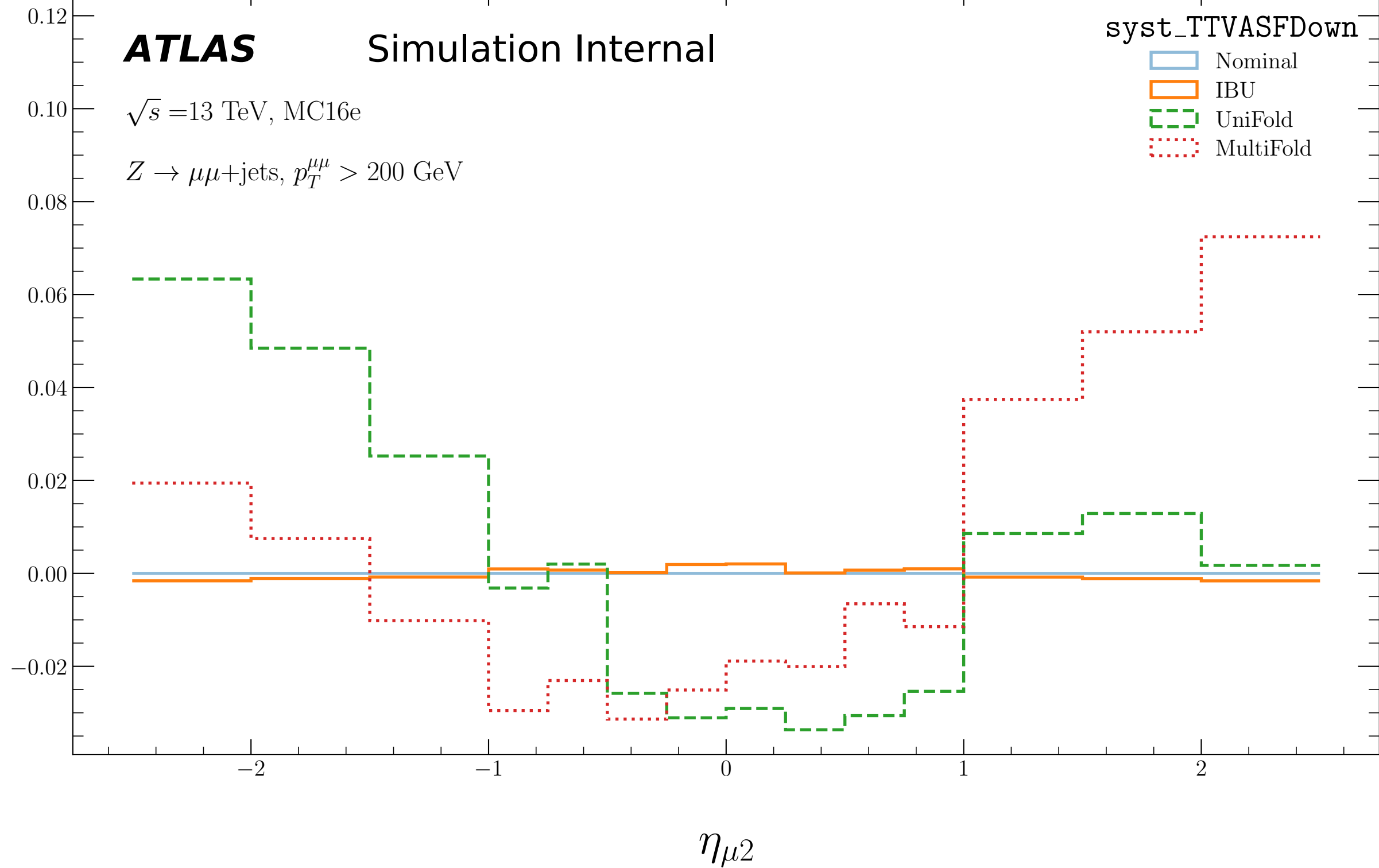
syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

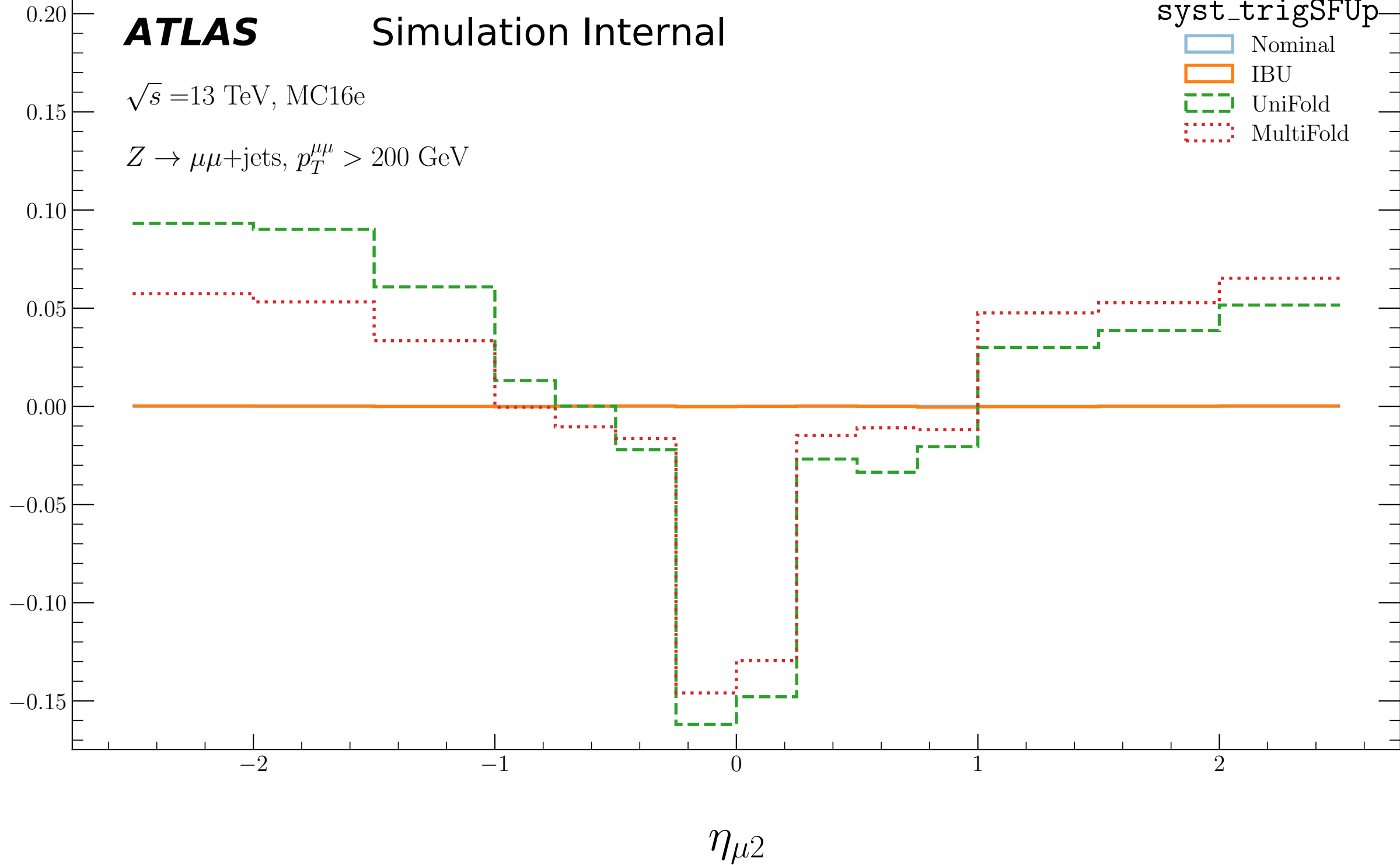
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

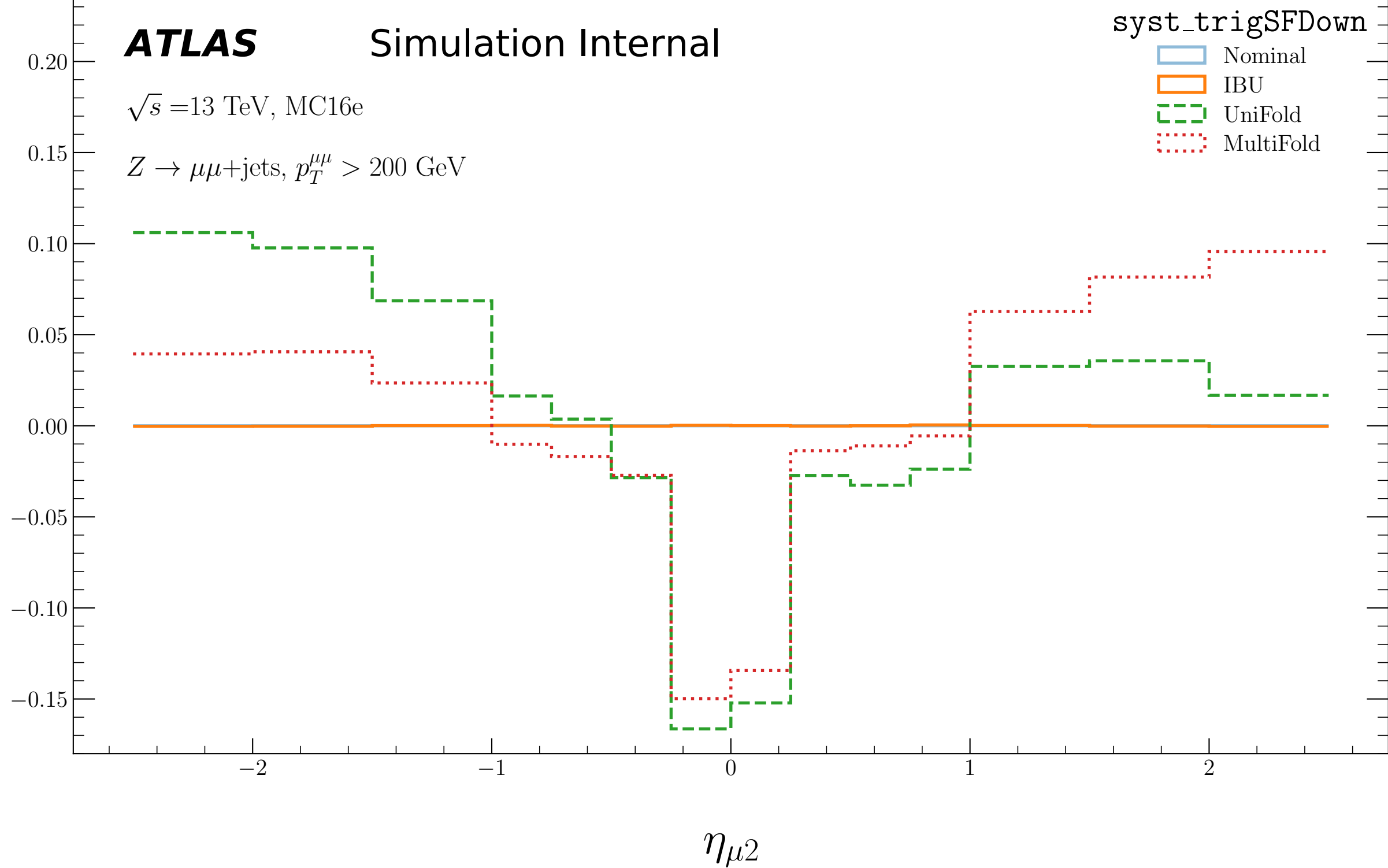
syst_trigSFUp

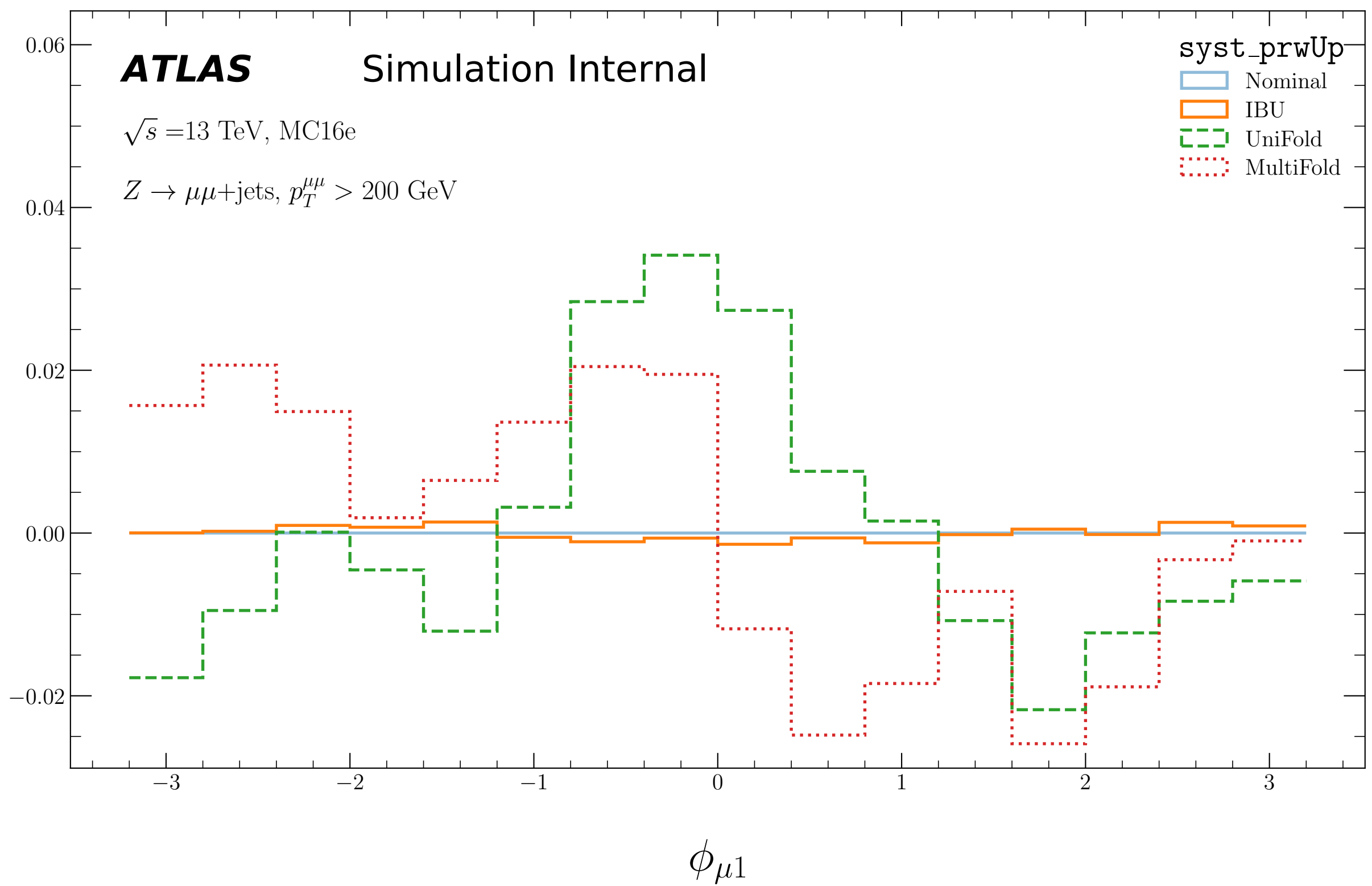
- Nominal
- IBU
- UniFold
- MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

Nominal

IBU

UniFold

MultiFold

0.04
0.02
0.00
-0.02

-3

-2

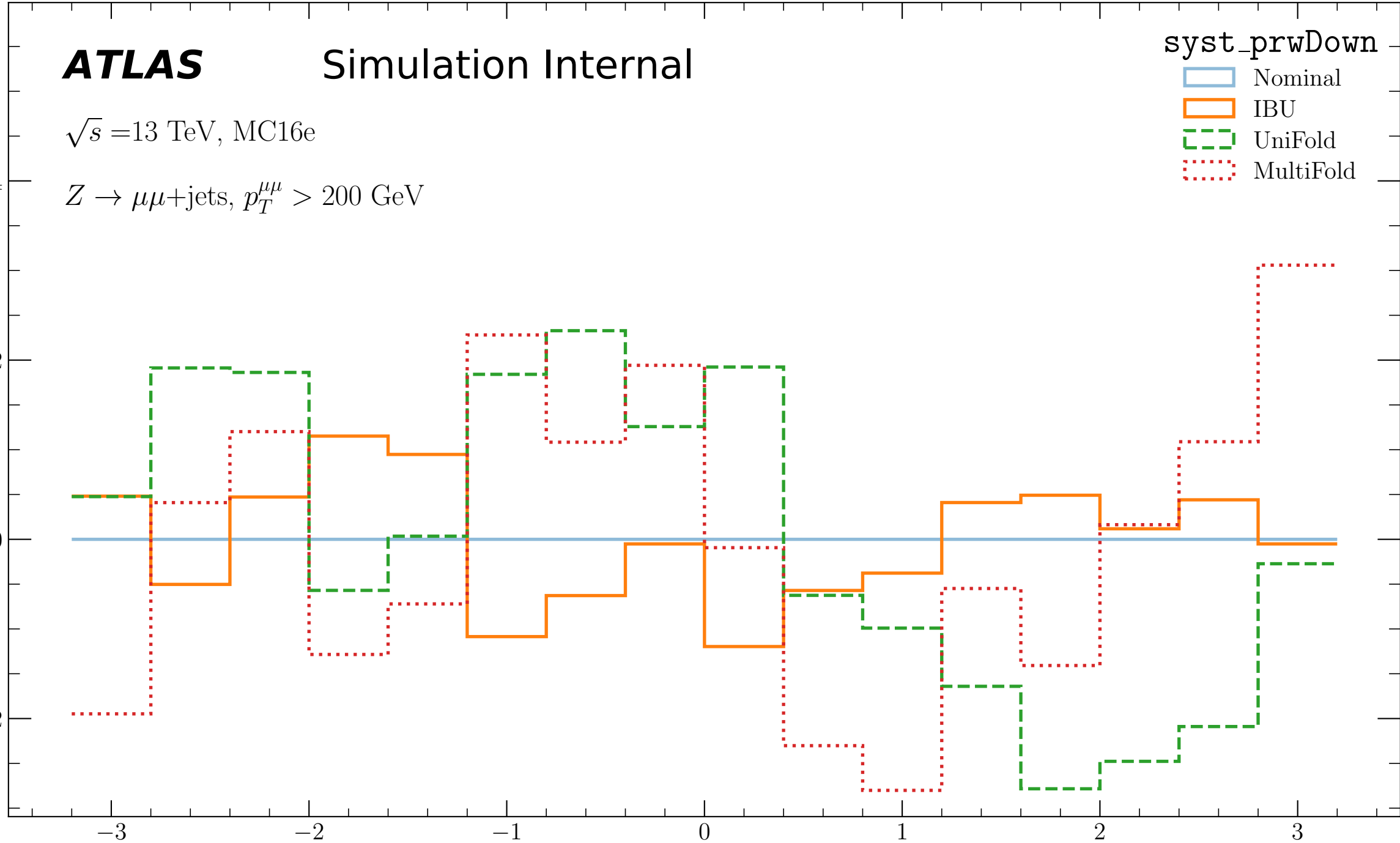
-1

0

1

2

3

 $\phi_{\mu 1}$ 

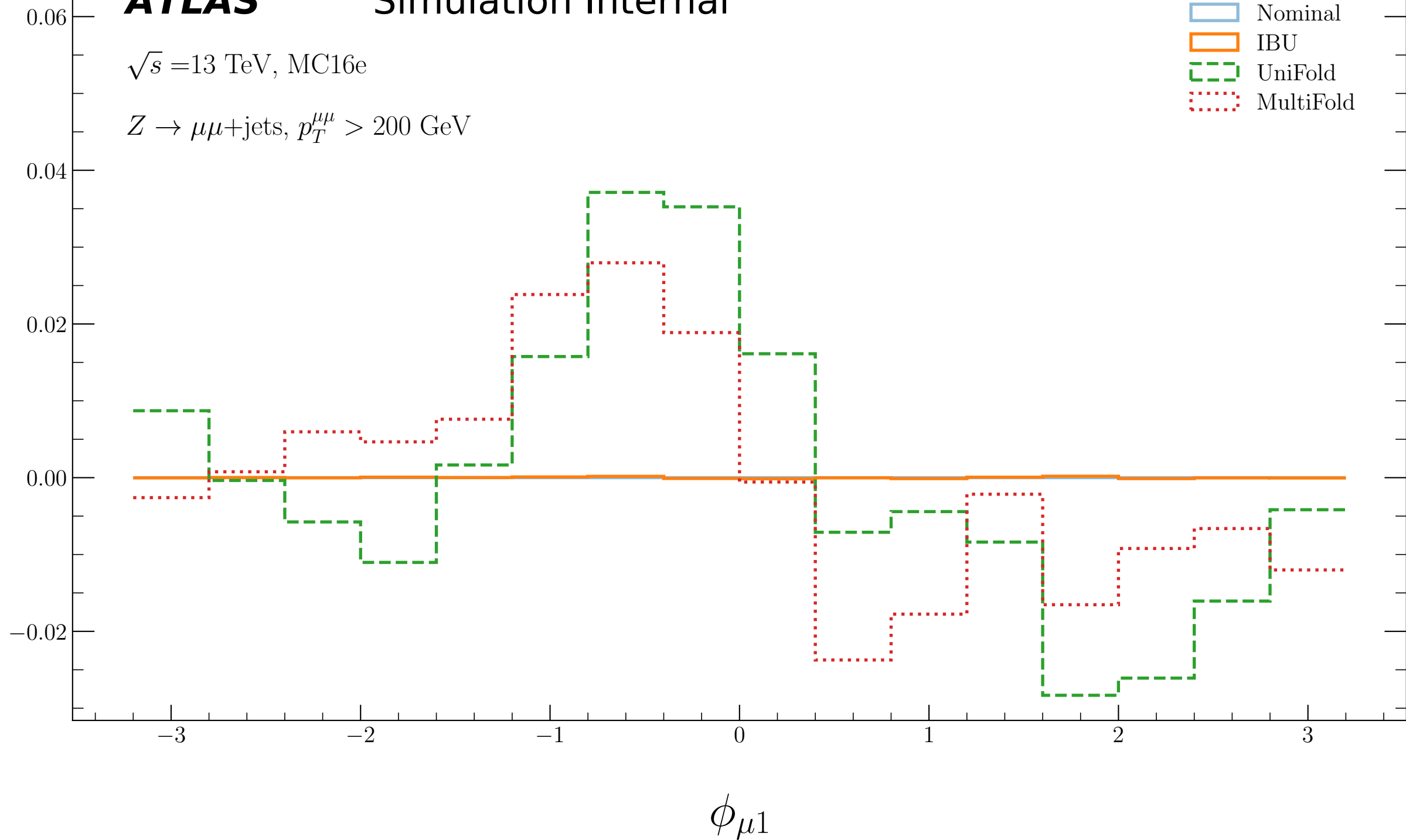
ATLAS

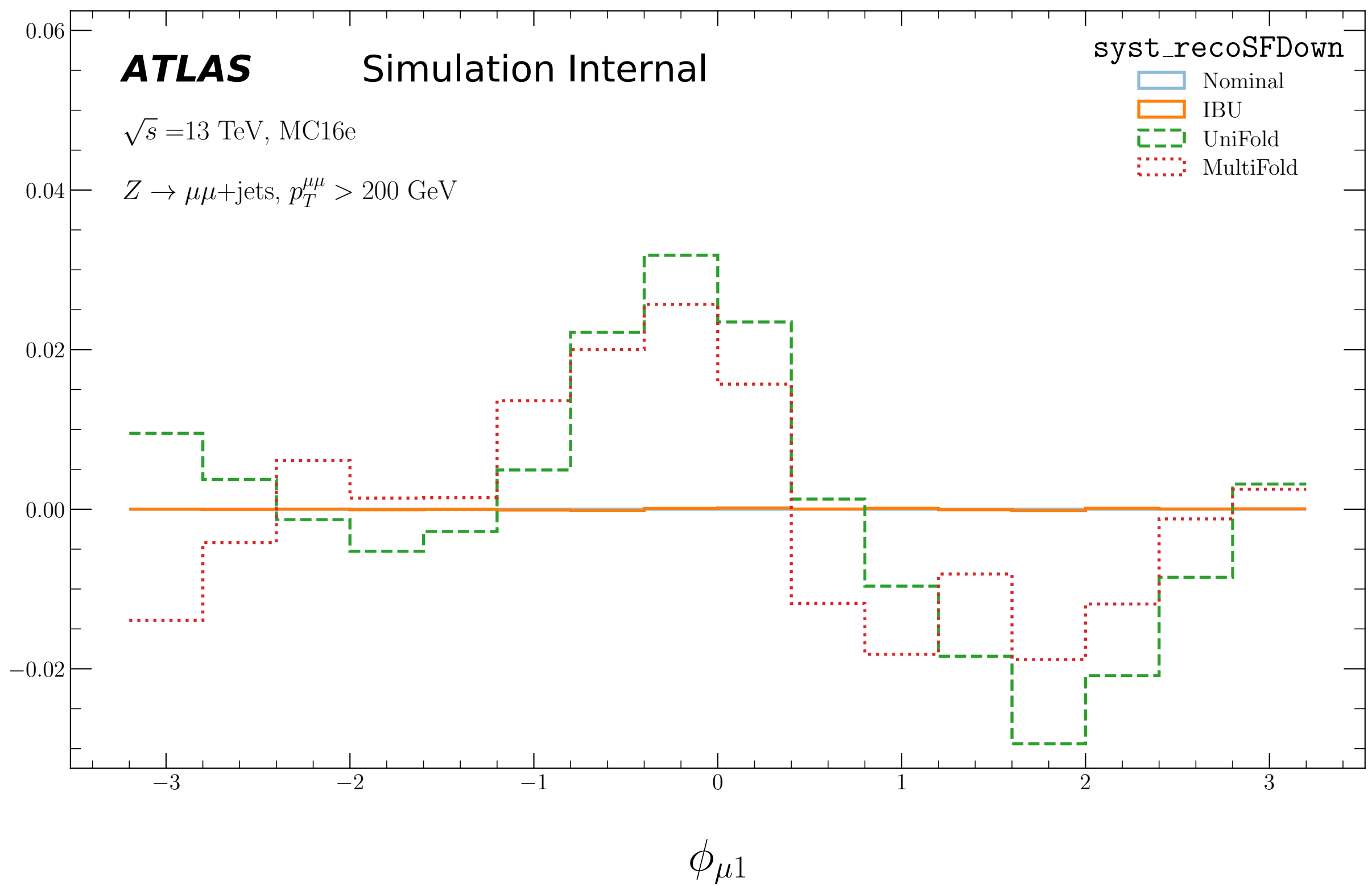
Simulation Internal

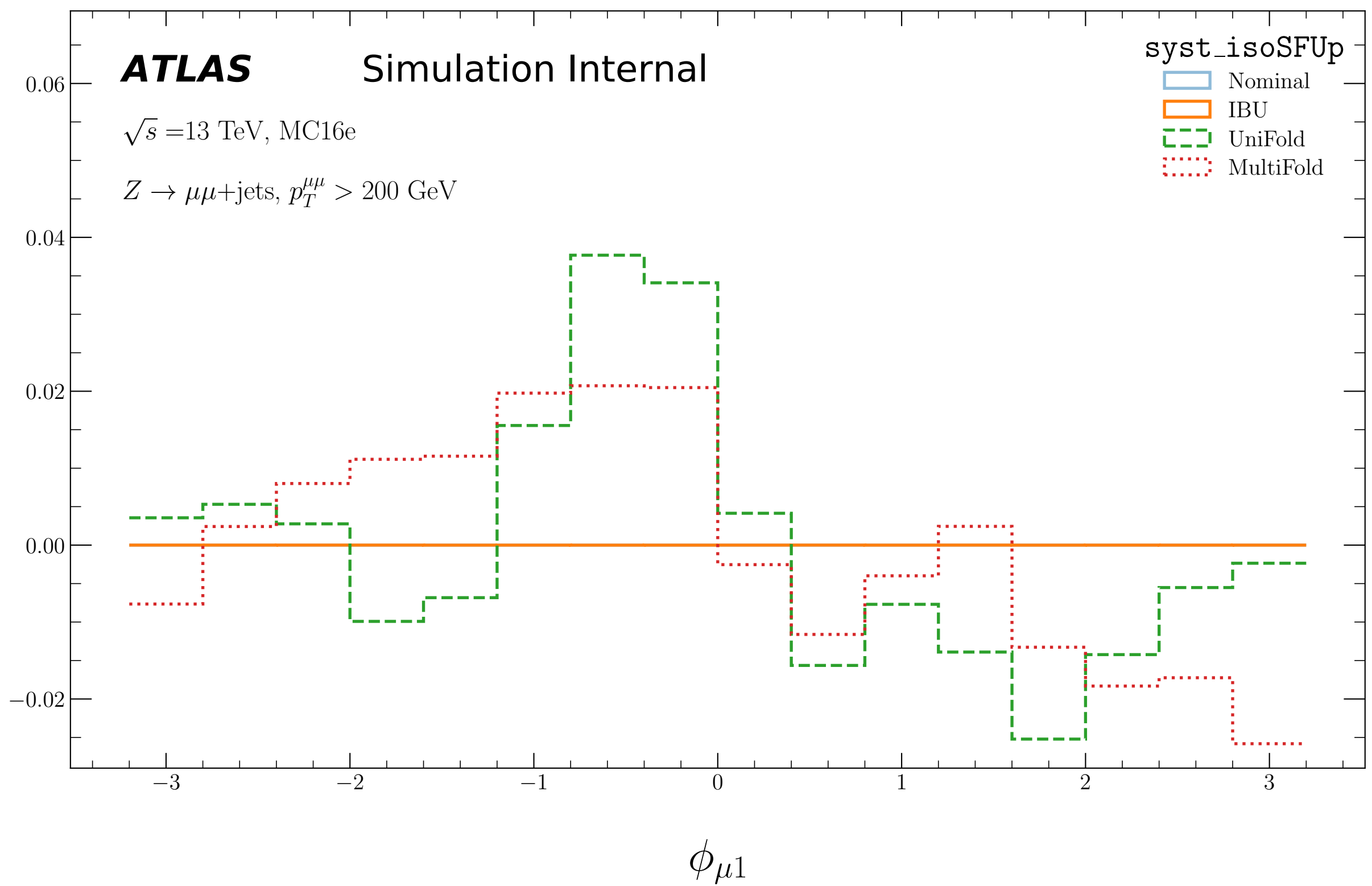
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

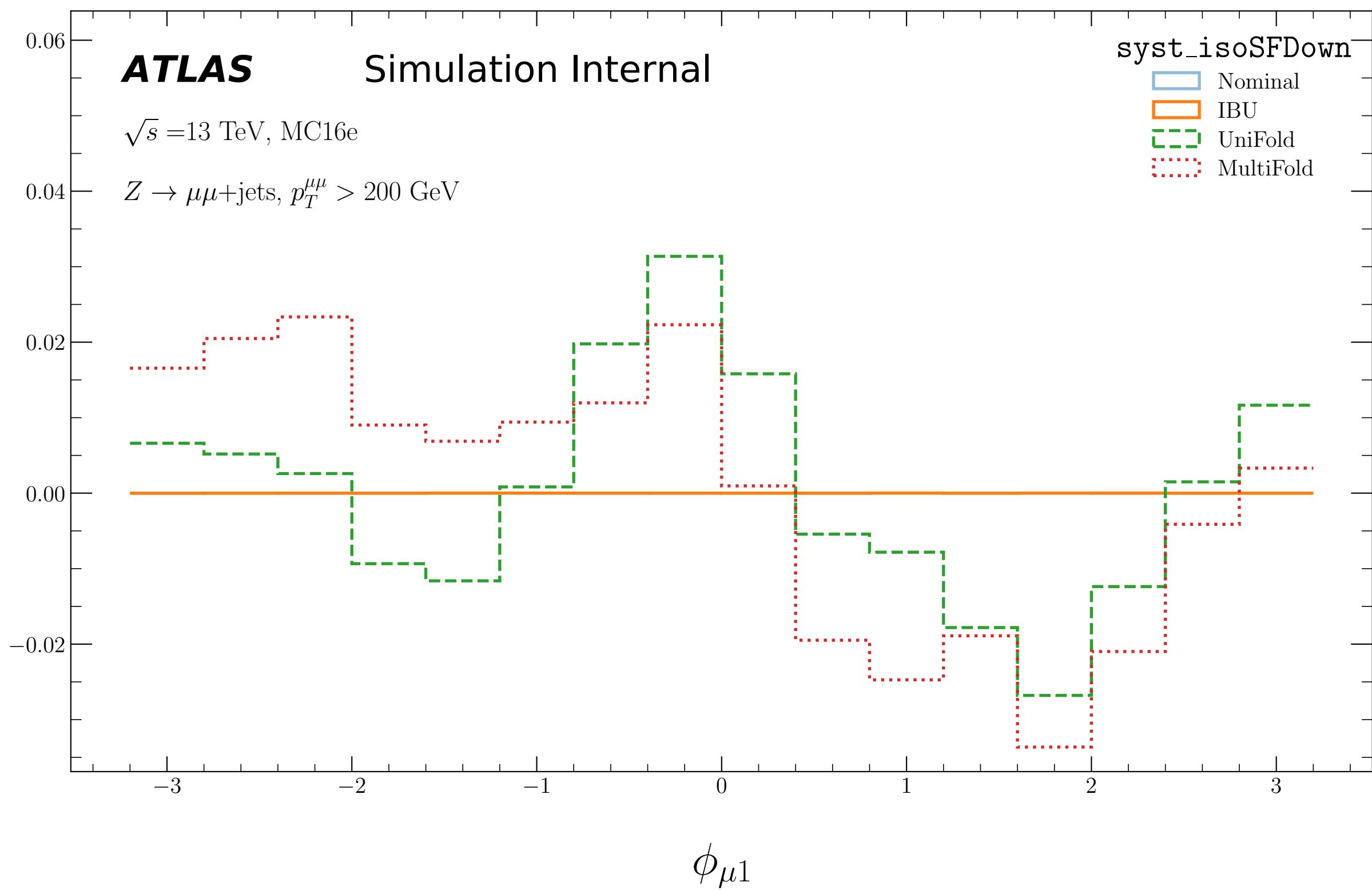
syst_recoSFUp

- Nominal
- IBU
- UniFold
- MultiFold









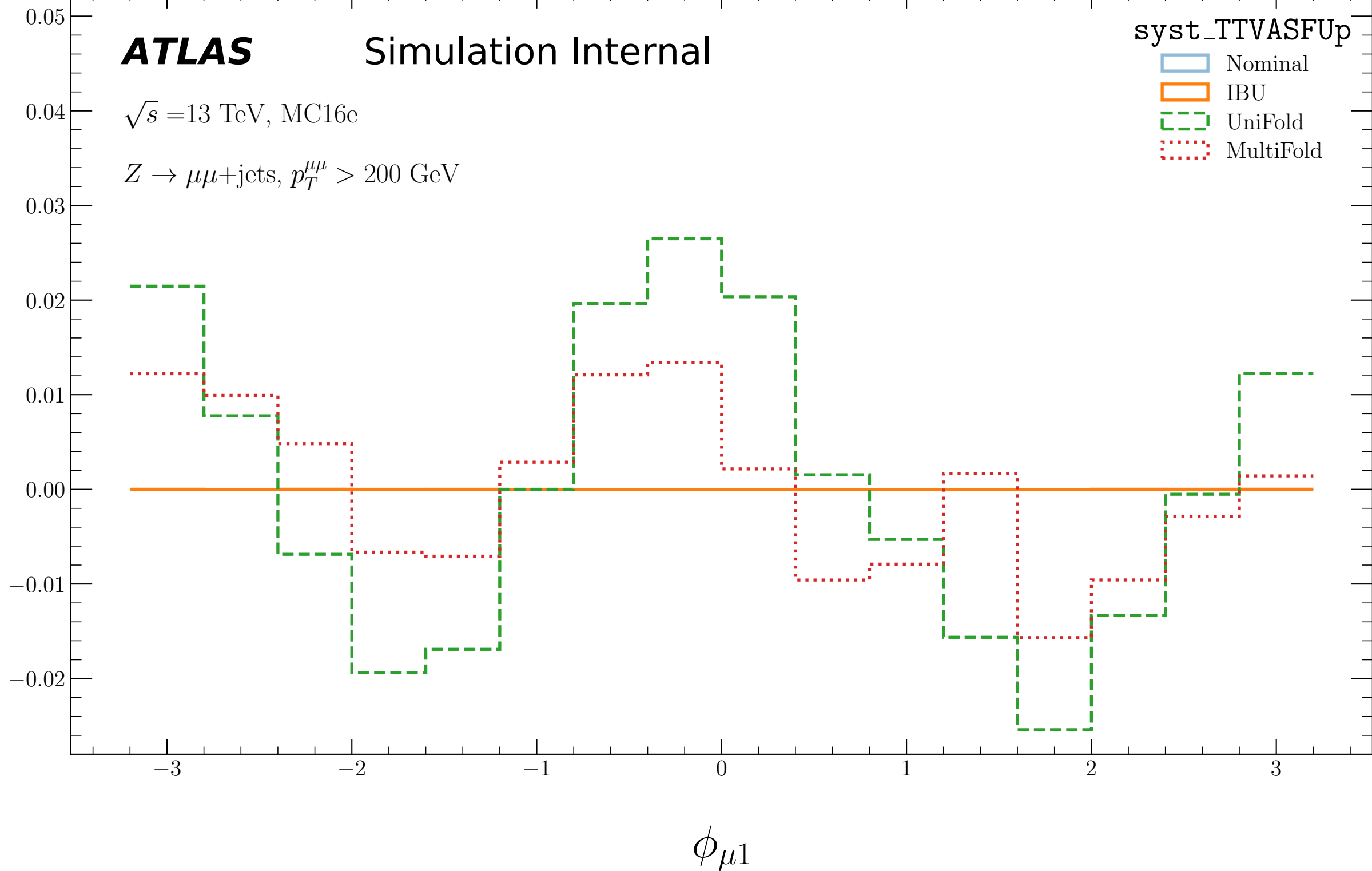
ATLAS

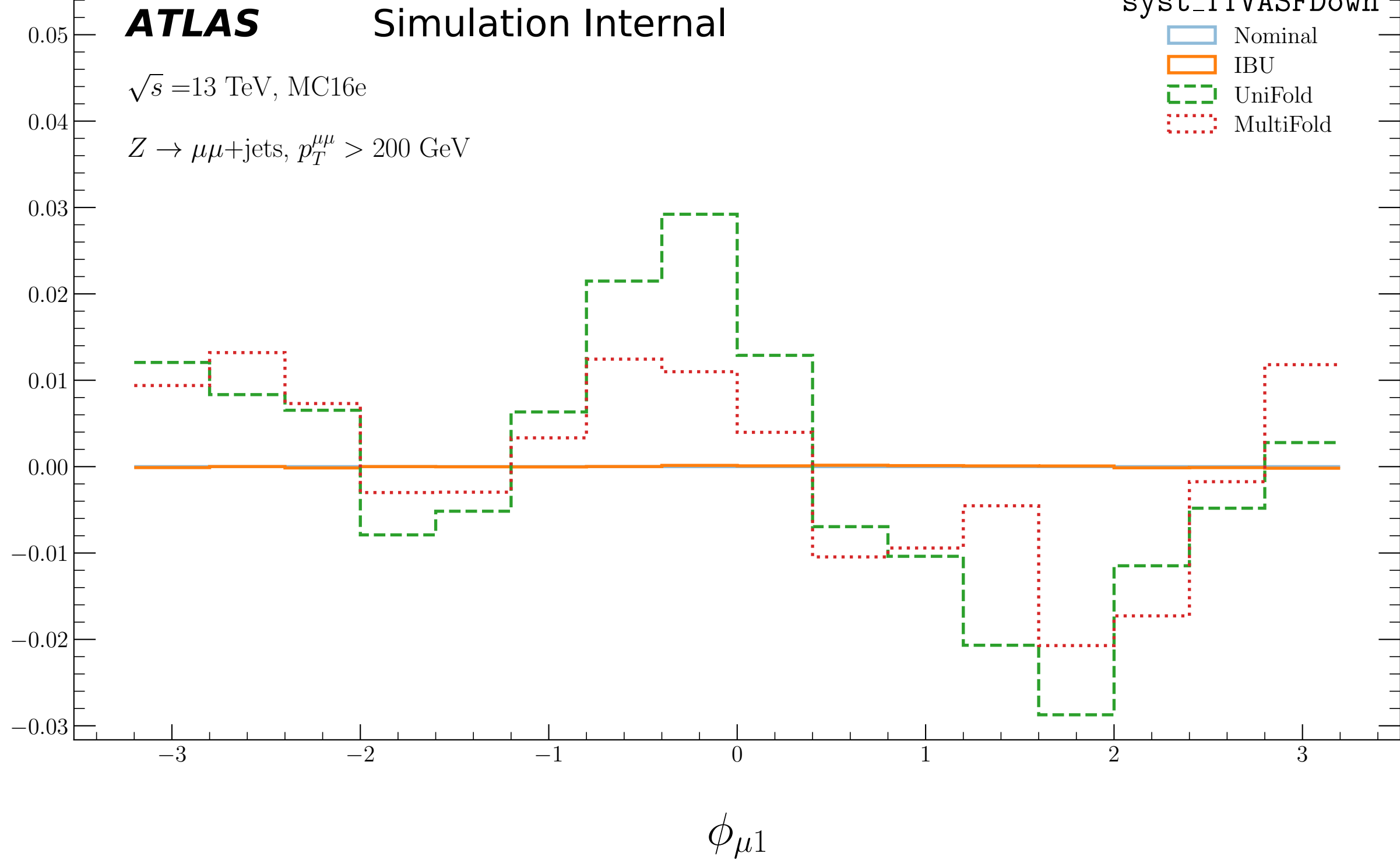
Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold





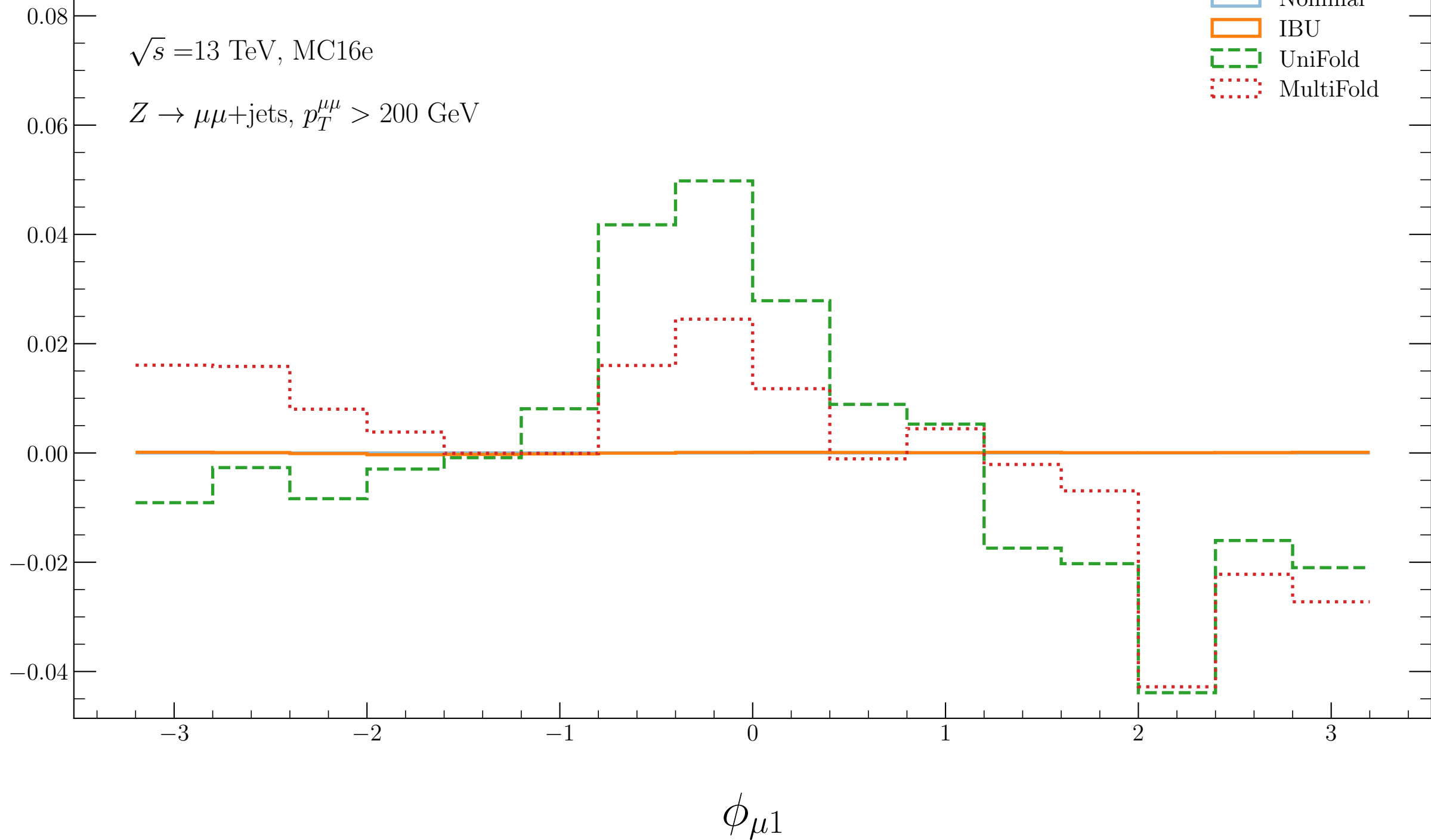
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

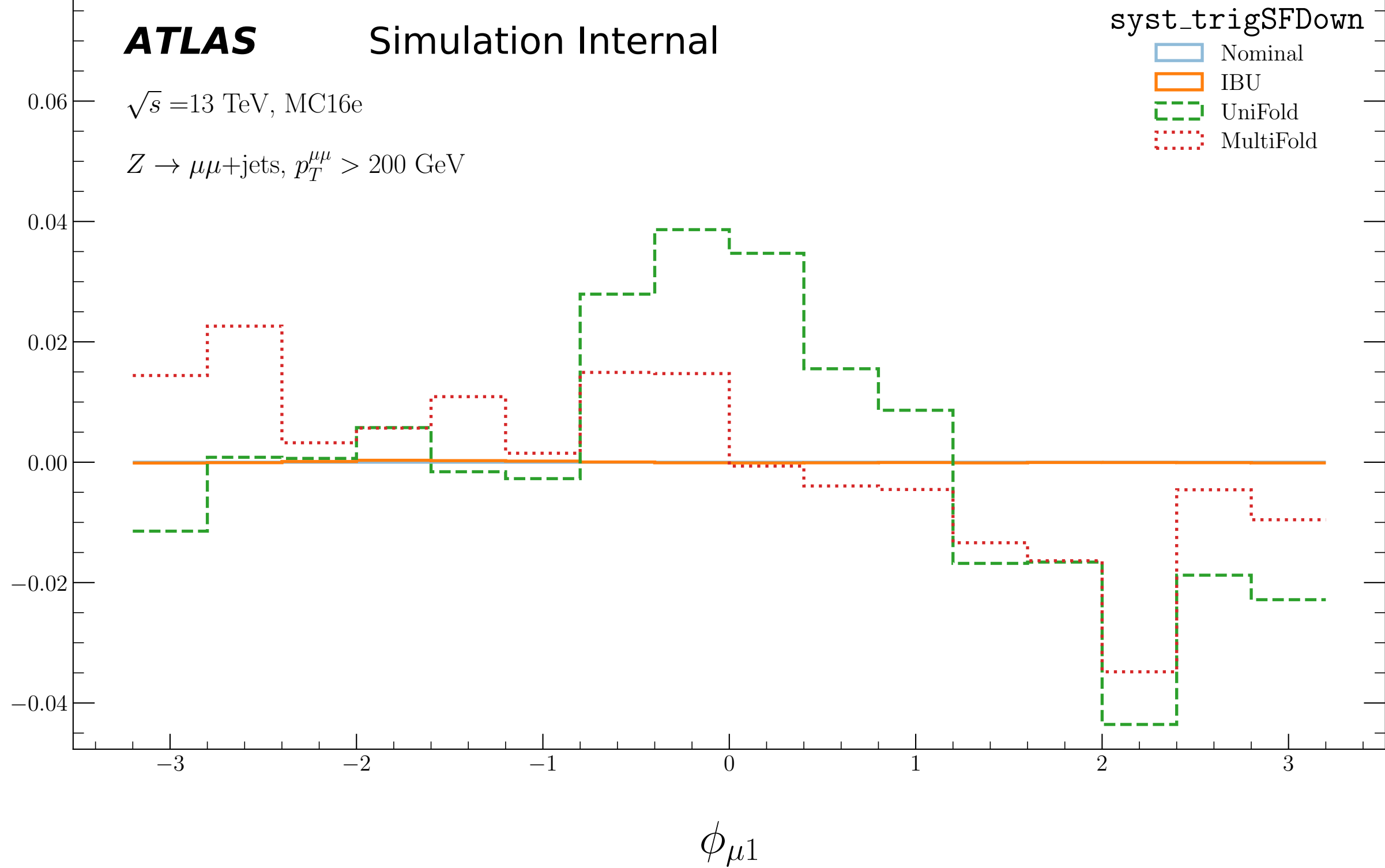
syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

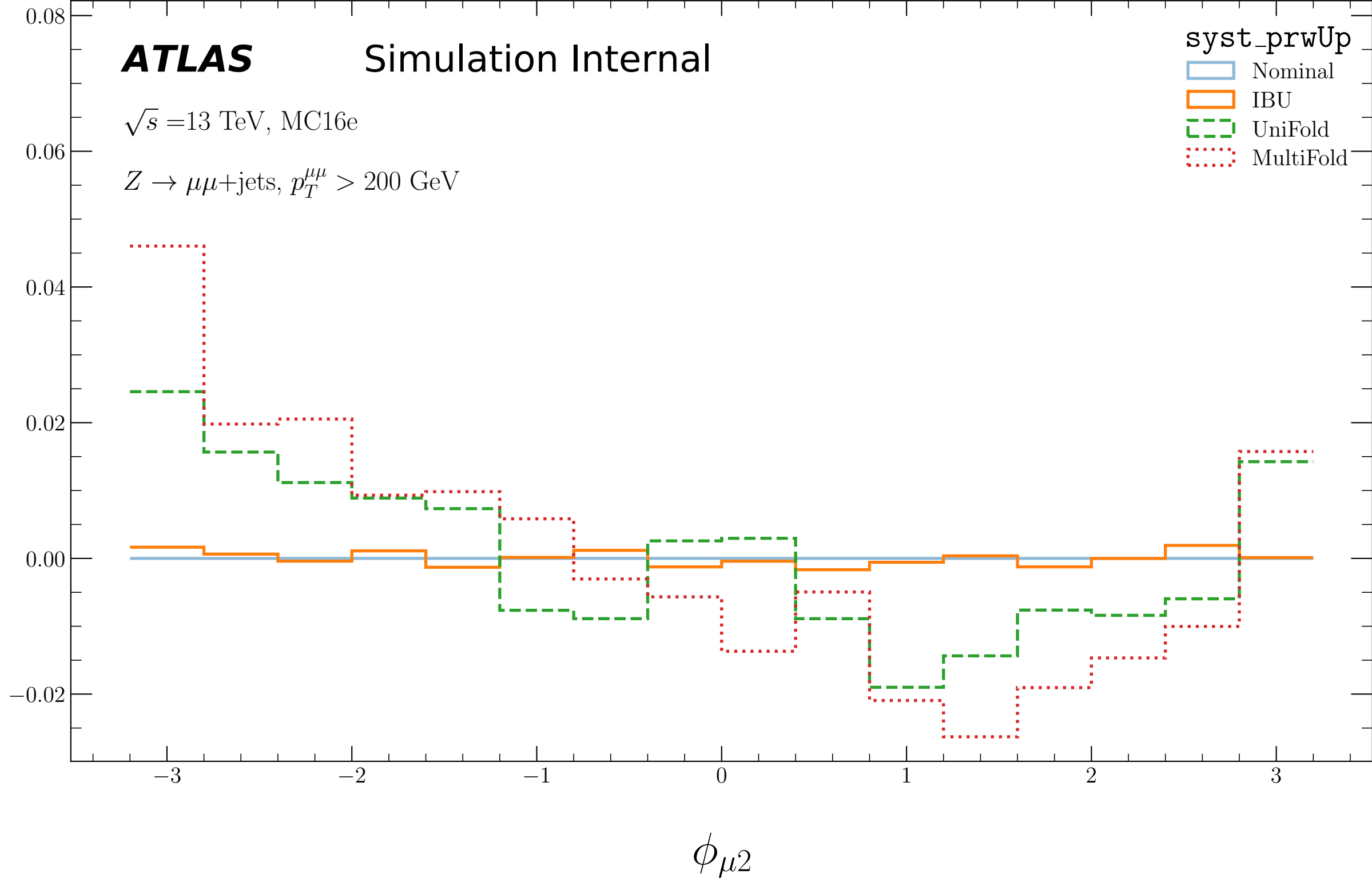
syst_prwUp

Nominal

IBU

UniFold

MultiFold



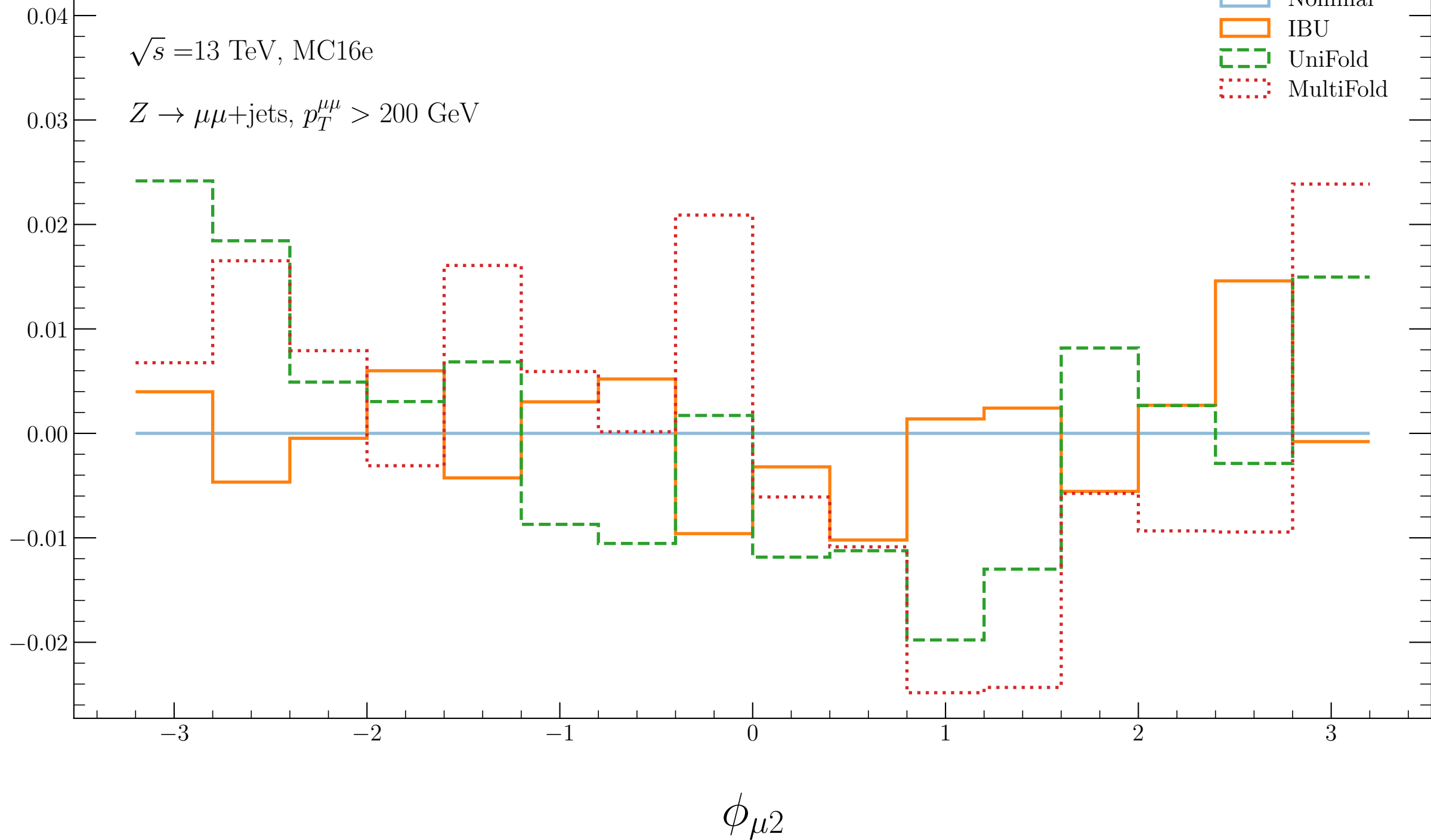
ATLAS

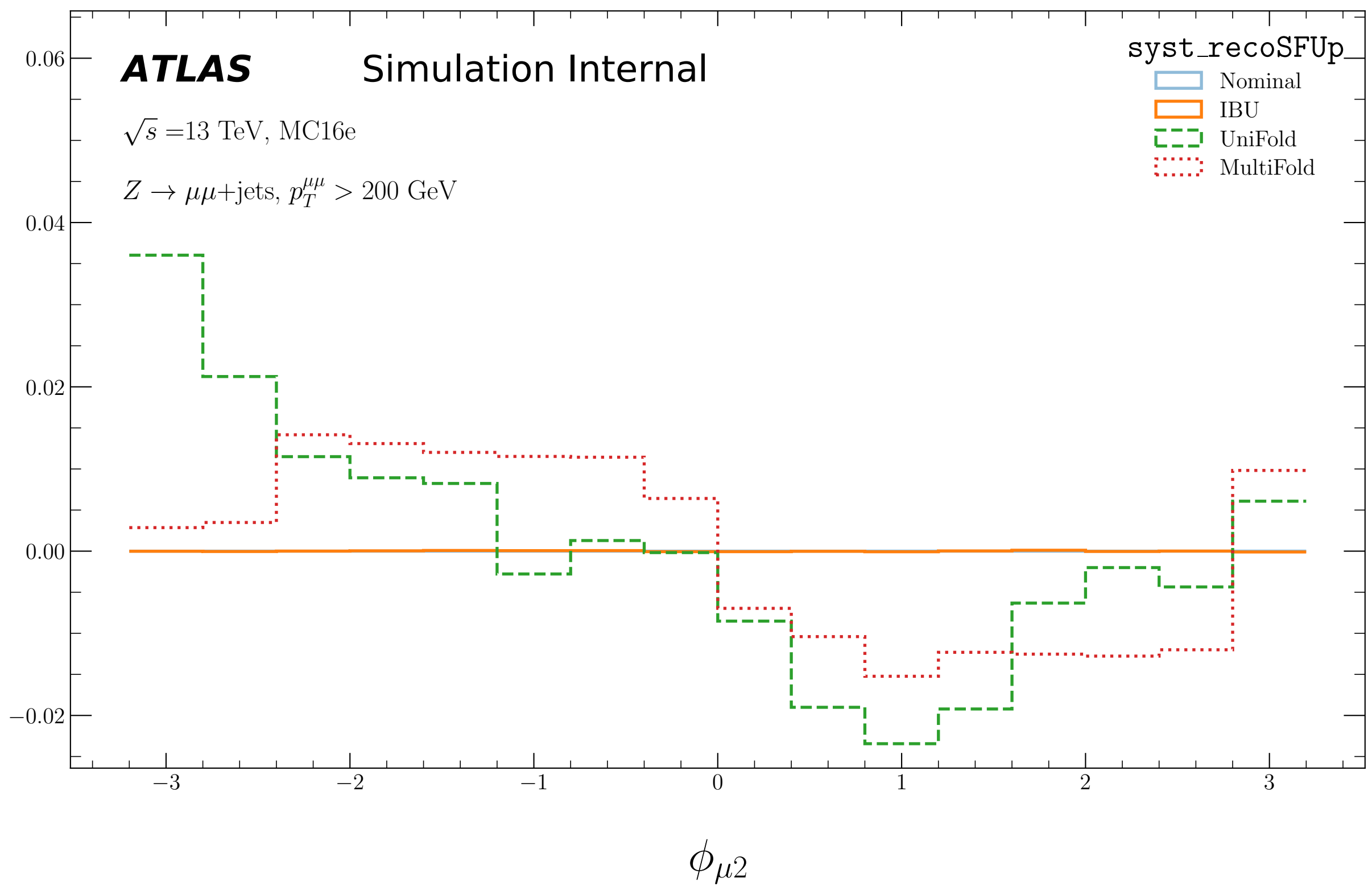
Simulation Internal

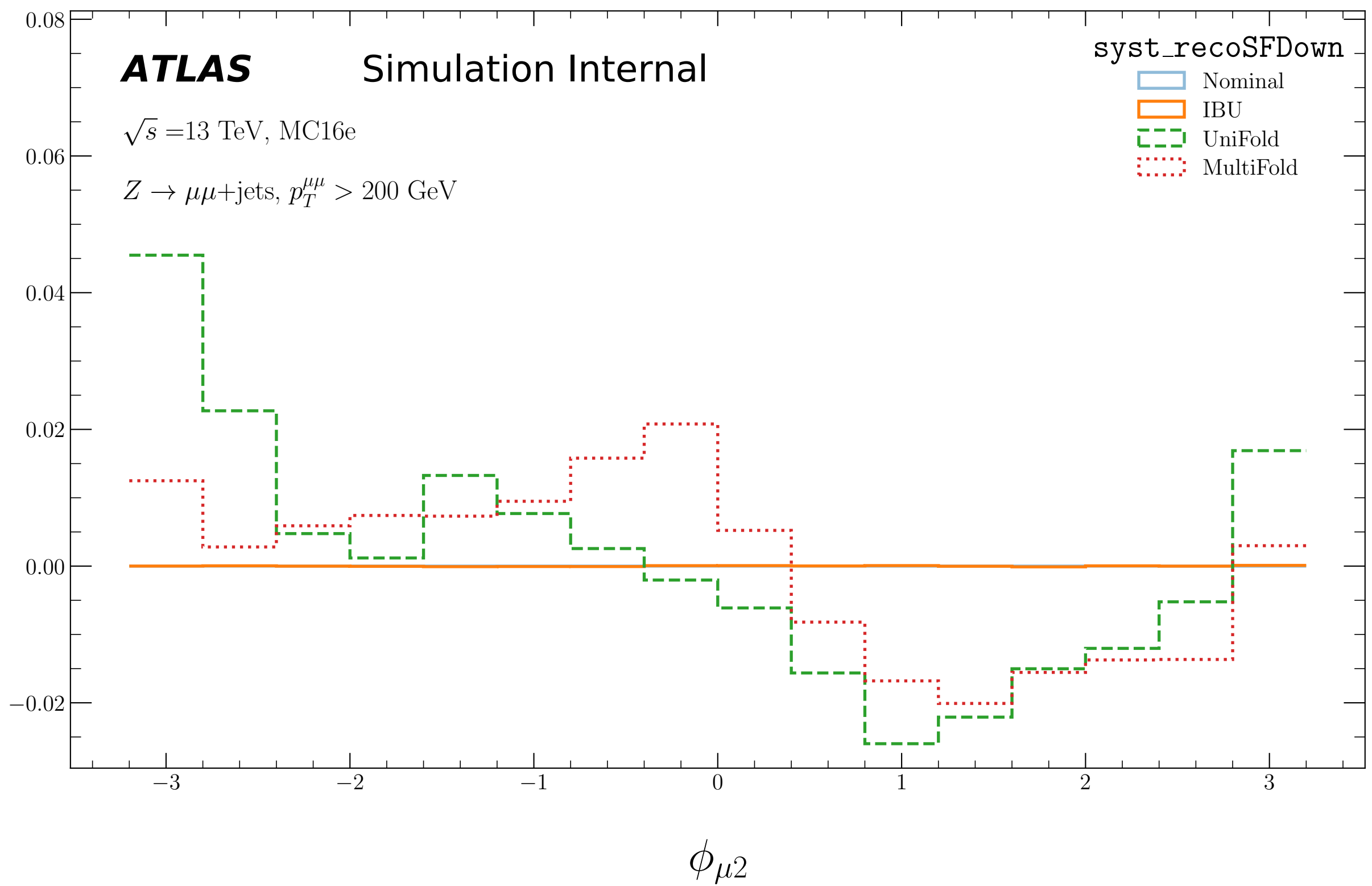
 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_prwDown

- Nominal
- IBU
- UniFold
- MultiFold







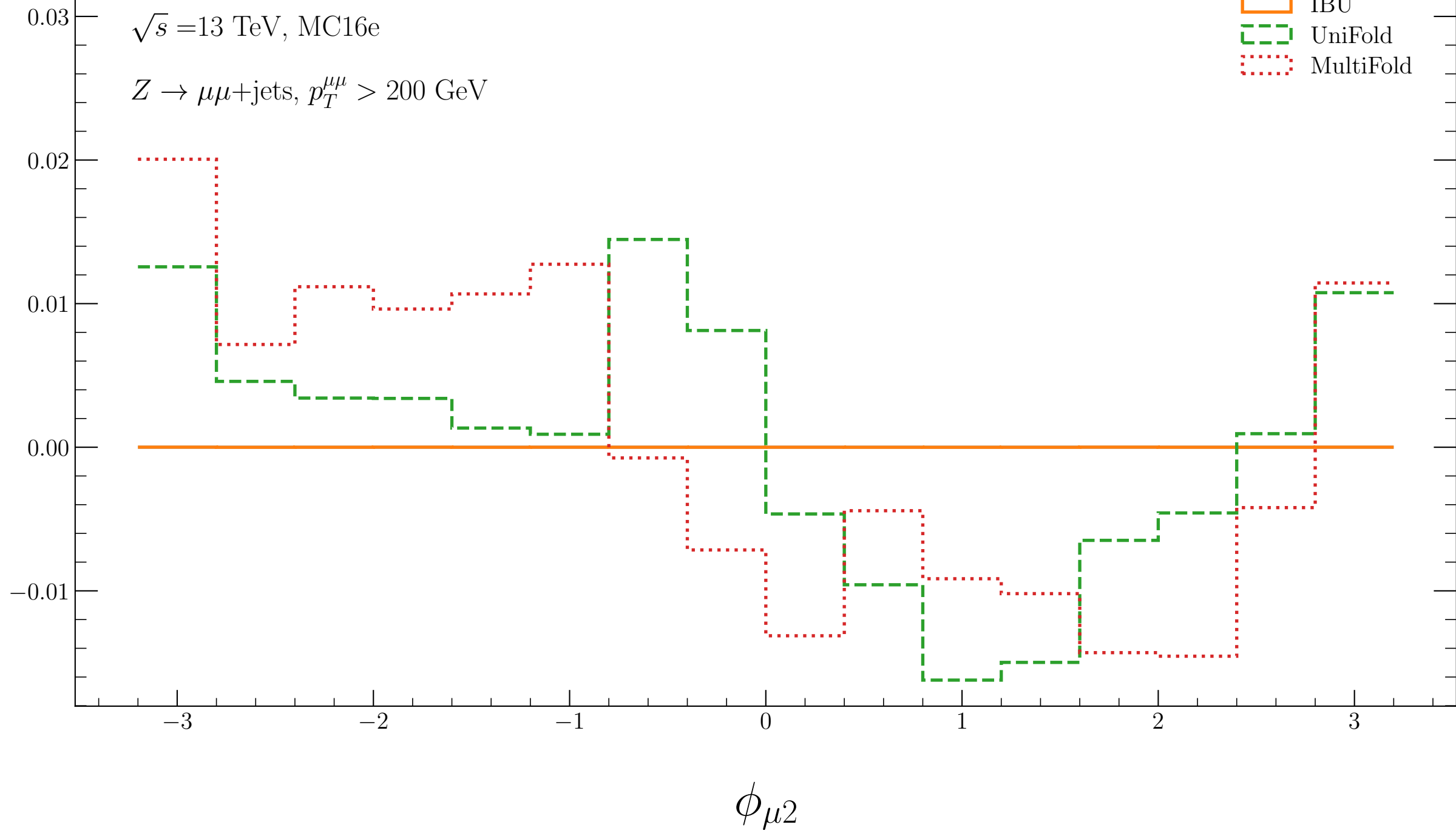
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFUp

- Nominal
- IBU
- UniFold
- MultiFold



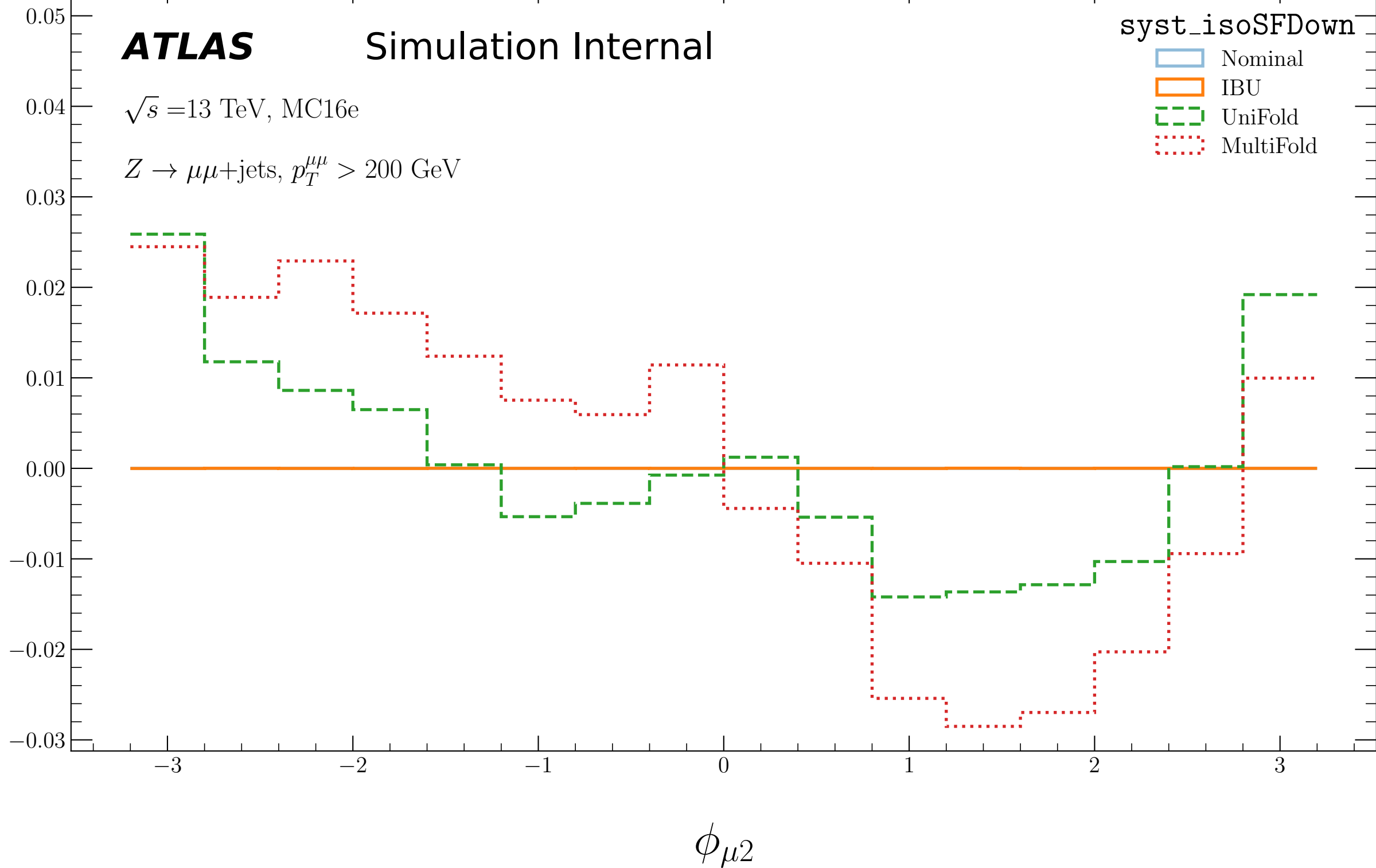
ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_isoSFDown

- Nominal
- IBU
- UniFold
- MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_TTVASFUp

- Nominal
- IBU
- UniFold
- MultiFold

0.03
0.02
0.01
0.00
-0.01
-0.02

-3

-2

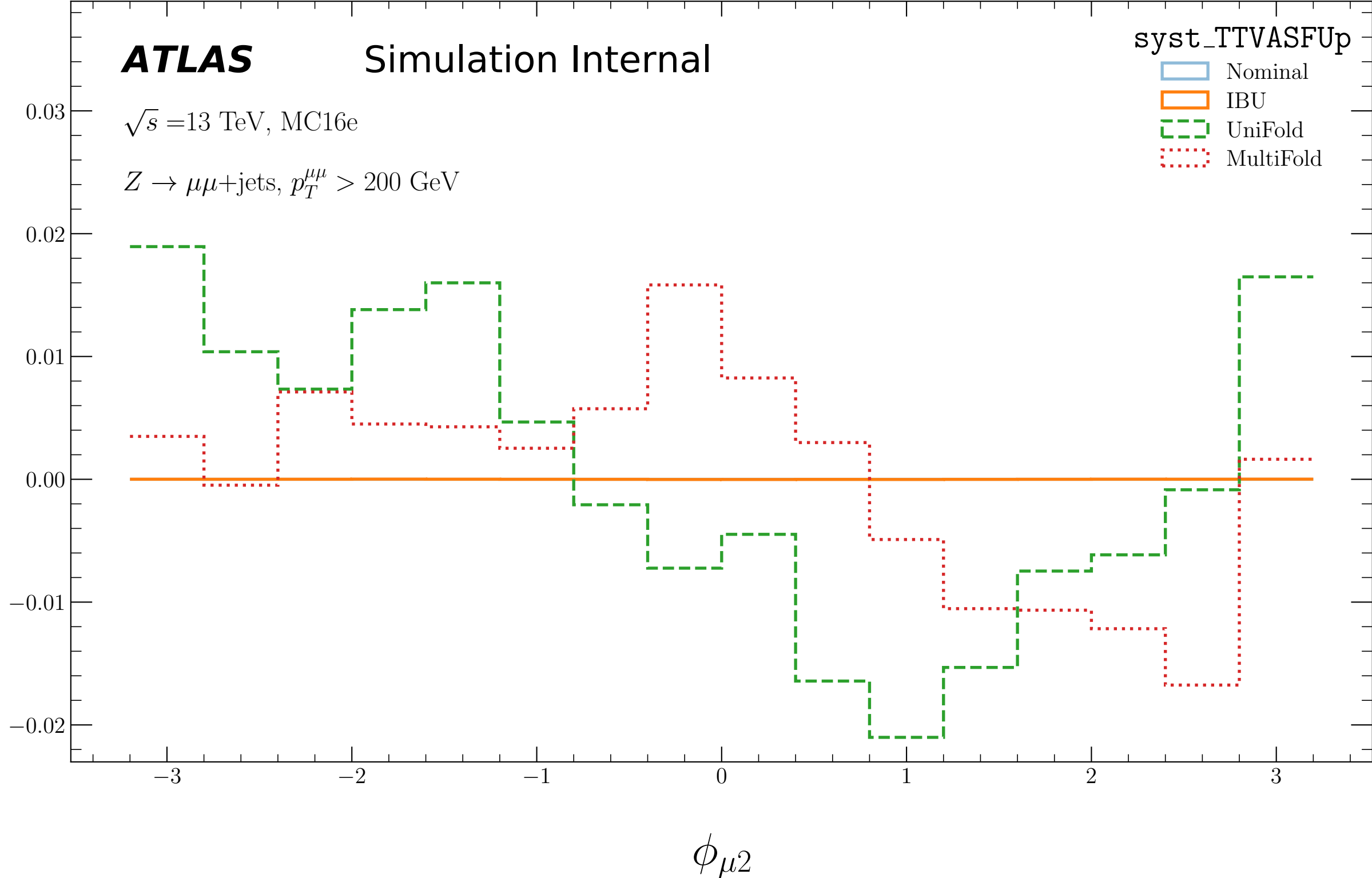
-1

0

1

2

3

 $\phi_{\mu 2}$ 

ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

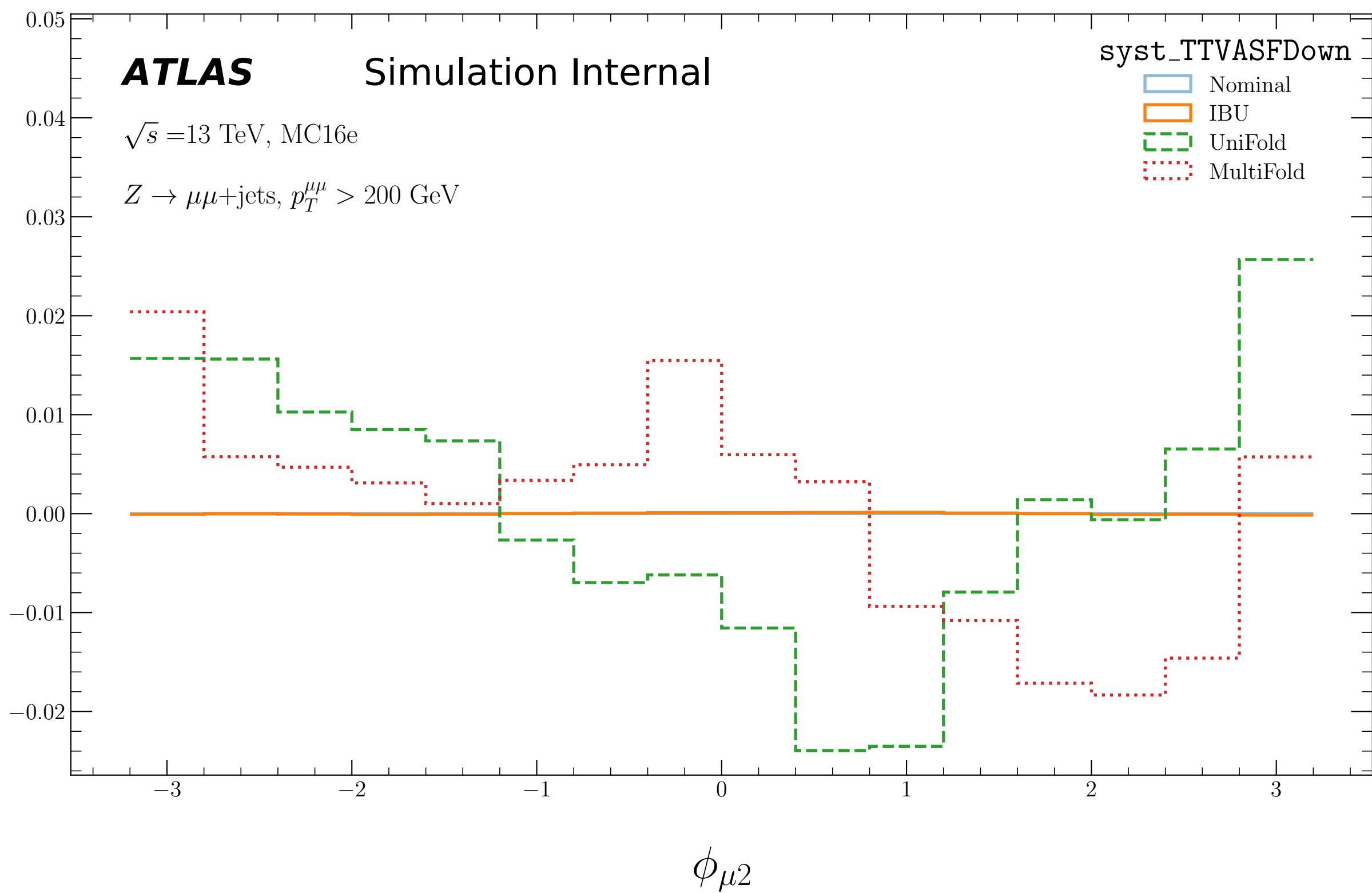
syst_TTVASFDown

Nominal

IBU

UniFold

MultiFold



ATLAS

Simulation Internal

 $\sqrt{s} = 13$ TeV, MC16e $Z \rightarrow \mu\mu + \text{jets}, p_T^{\mu\mu} > 200$ GeV

syst_trigSFUp

- Nominal
- IBU
- UniFold
- MultiFold

