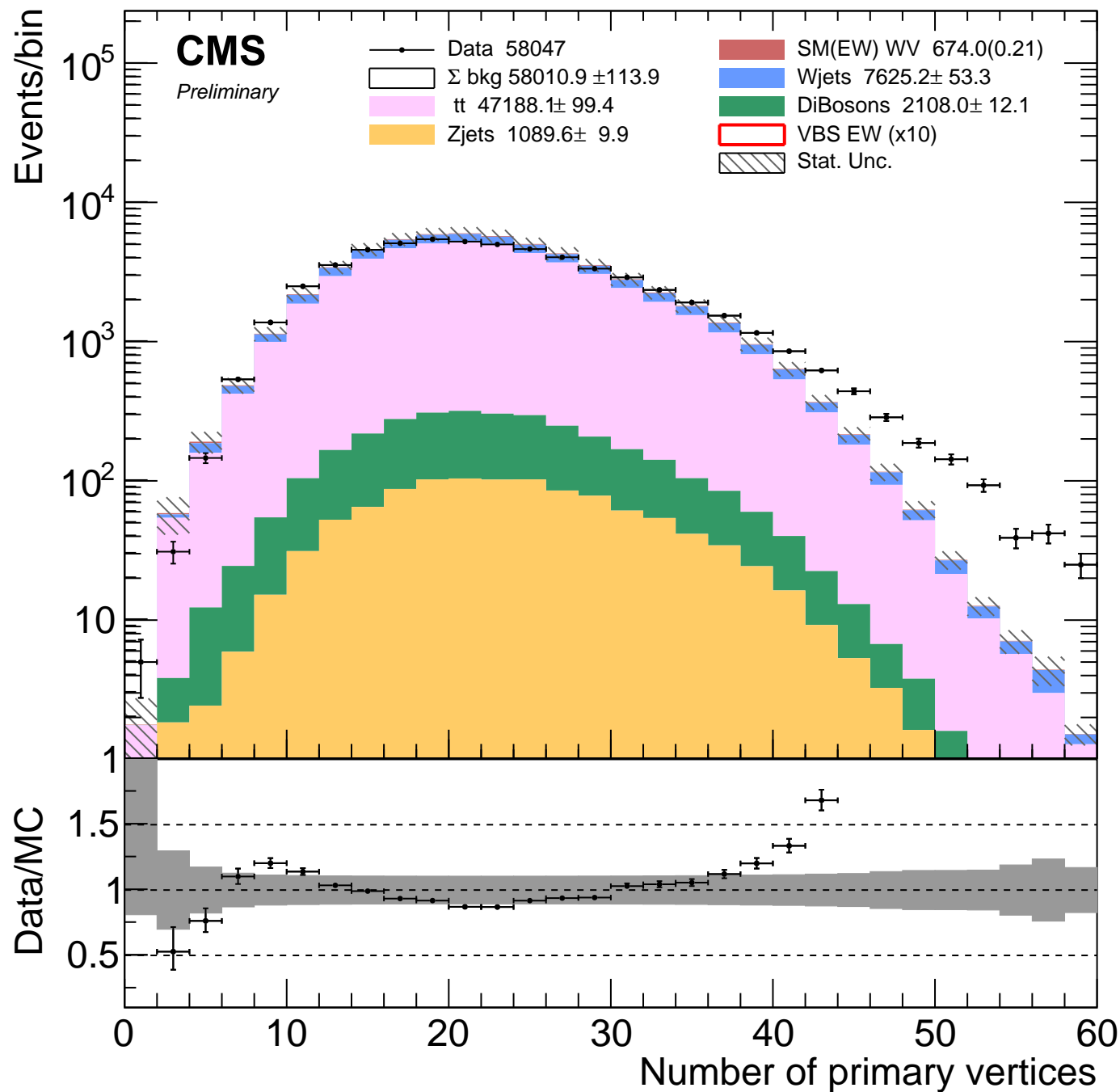
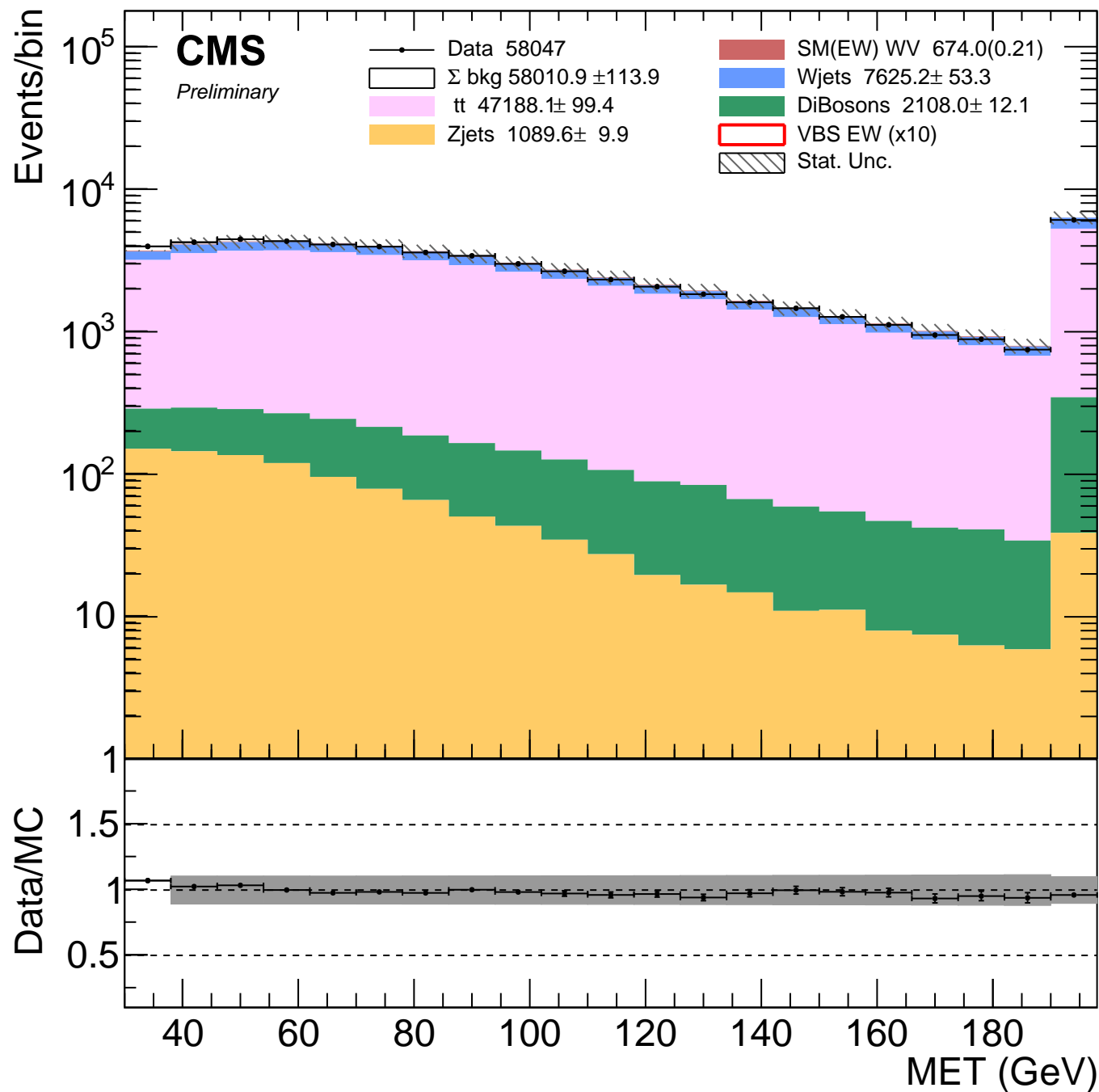


137 fb⁻¹ (13 TeV)



137 fb⁻¹ (13 TeV)



137 fb⁻¹ (13 TeV)

Events/bin

CMS

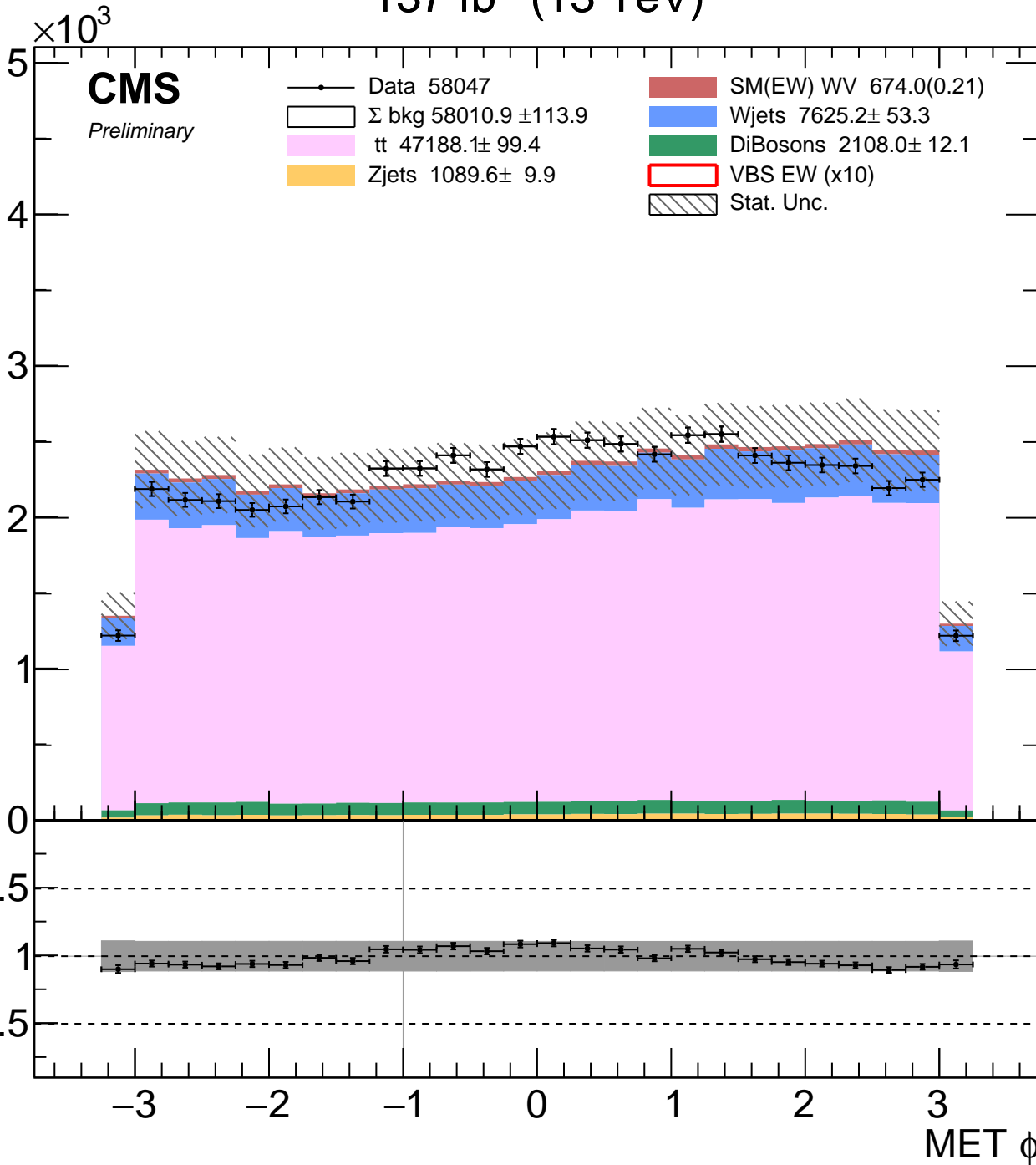
Preliminary

—•— Data 58047
 □ Σ bkg 58010.9 \pm 113.9
 ■ tt 47188.1 \pm 99.4
 ■ Zjets 1089.6 \pm 9.9

■ SM(EW) WV 674.0(0.21)
 ■ Wjets 7625.2 \pm 53.3
 ■ DiBosons 2108.0 \pm 12.1
 □ VBS EW (x10)
 ▨ Stat. Unc.

Data/MC

MET ϕ



137 fb⁻¹ (13 TeV)

Events/bin

×10³

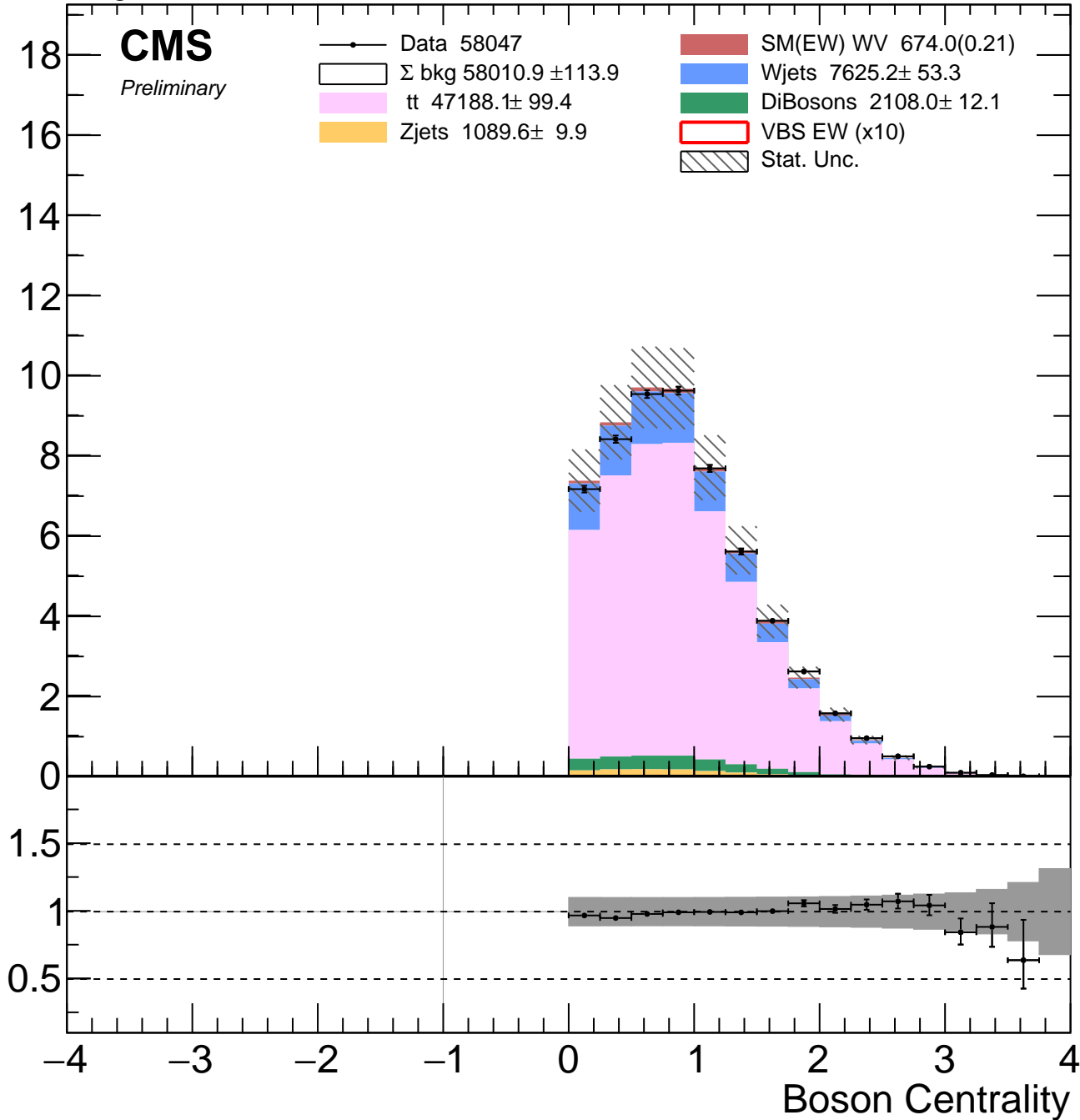
CMS

Preliminary

—•— Data 58047
□ Σ bkg 58010.9 ± 113.9
■ tt 47188.1 ± 99.4
■ Zjets 1089.6 ± 9.9

■ SM(EW) WV 674.0(0.21)
■ Wjets 7625.2 ± 53.3
■ DiBosons 2108.0 ± 12.1
□ VBS EW (x10)
▨ Stat. Unc.

Data/MC



137 fb⁻¹ (13 TeV)

×10³

CMS

Preliminary

—•— Data 58047
 □ Σ bkg 58010.9 ± 113.9
 ■ tt 47188.1 ± 99.4
 ■ Zjets 1089.6 ± 9.9

■ SM(EW) WV 674.0(0.21)
 ■ Wjets 7625.2 ± 53.3
 ■ DiBosons 2108.0 ± 12.1
 □ VBS EW (x10)
 ▨ Stat. Unc.

Events/bin

Data/MC

40

60

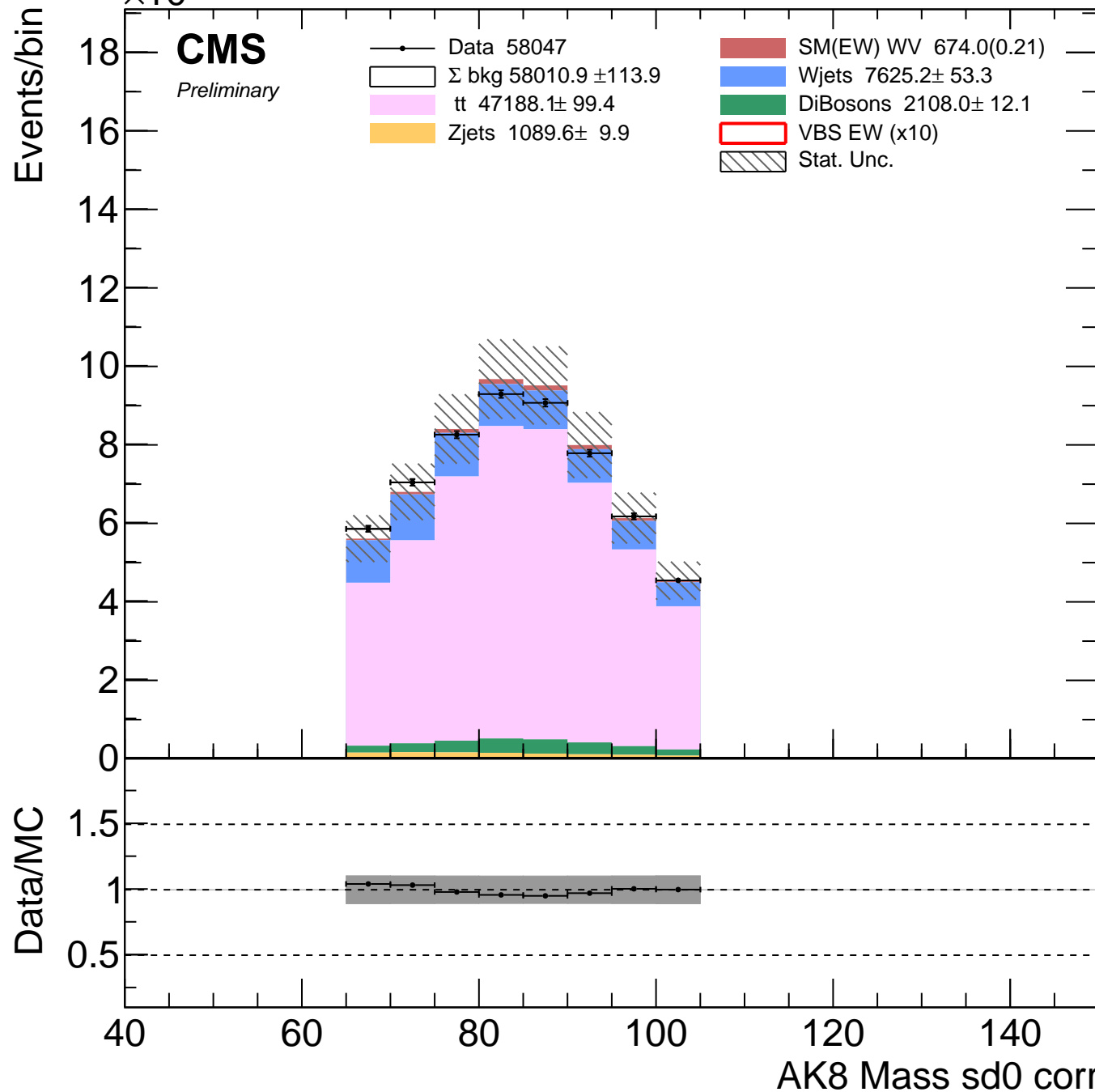
80

100

120

140

AK8 Mass sd0 corr



137 fb⁻¹ (13 TeV)

Events/bin

×10³

CMS

Preliminary

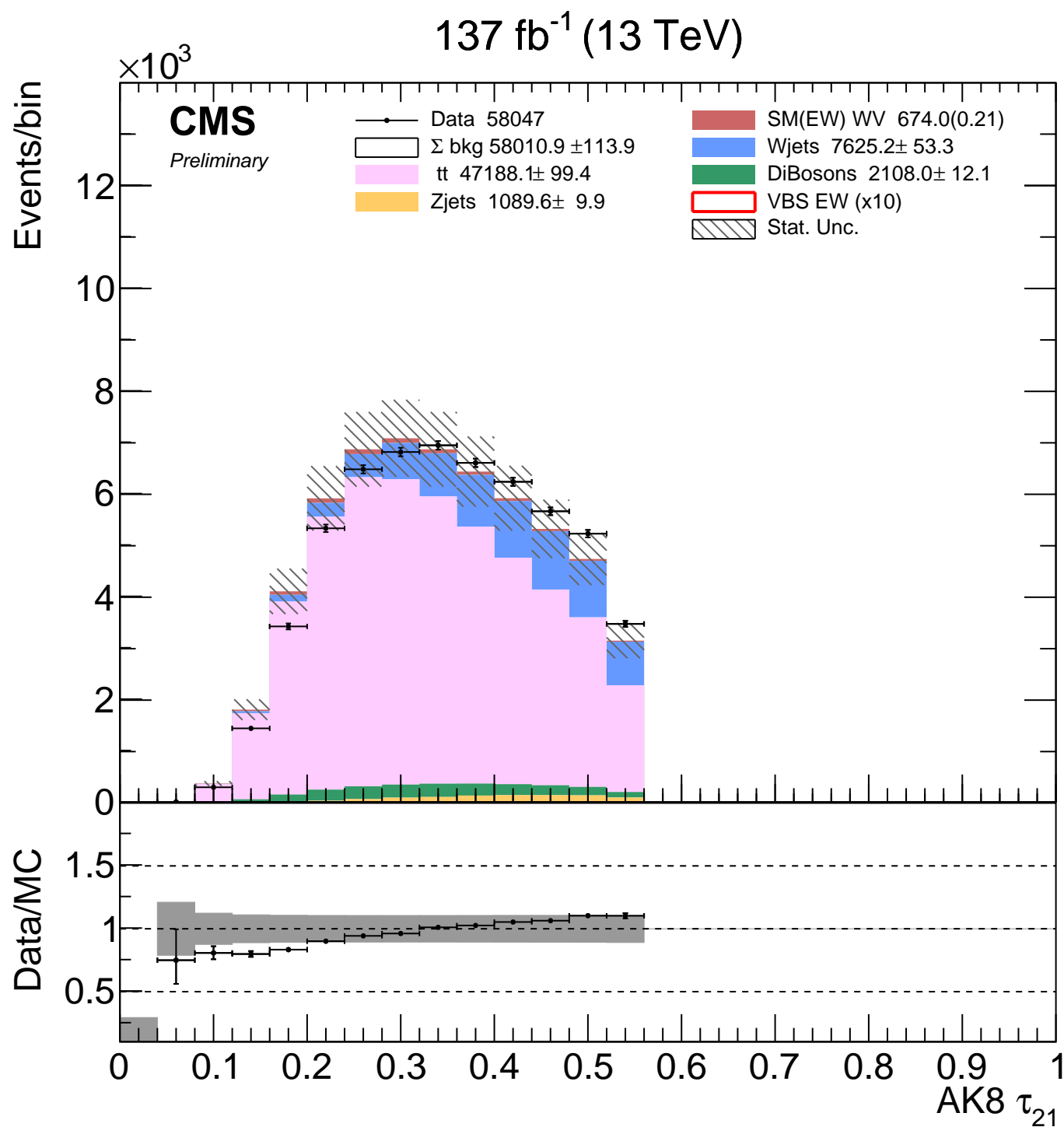
—•— Data 58047
 □ Σ bkg 58010.9 ± 113.9
 ■ tt 47188.1 ± 99.4
 ■ Zjets 1089.6 ± 9.9

■ SM(EW) WV 674.0(0.21)
 ■ Wjets 7625.2 ± 53.3
 ■ DiBosons 2108.0 ± 12.1
 □ VBS EW (x10)
 ▨ Stat. Unc.

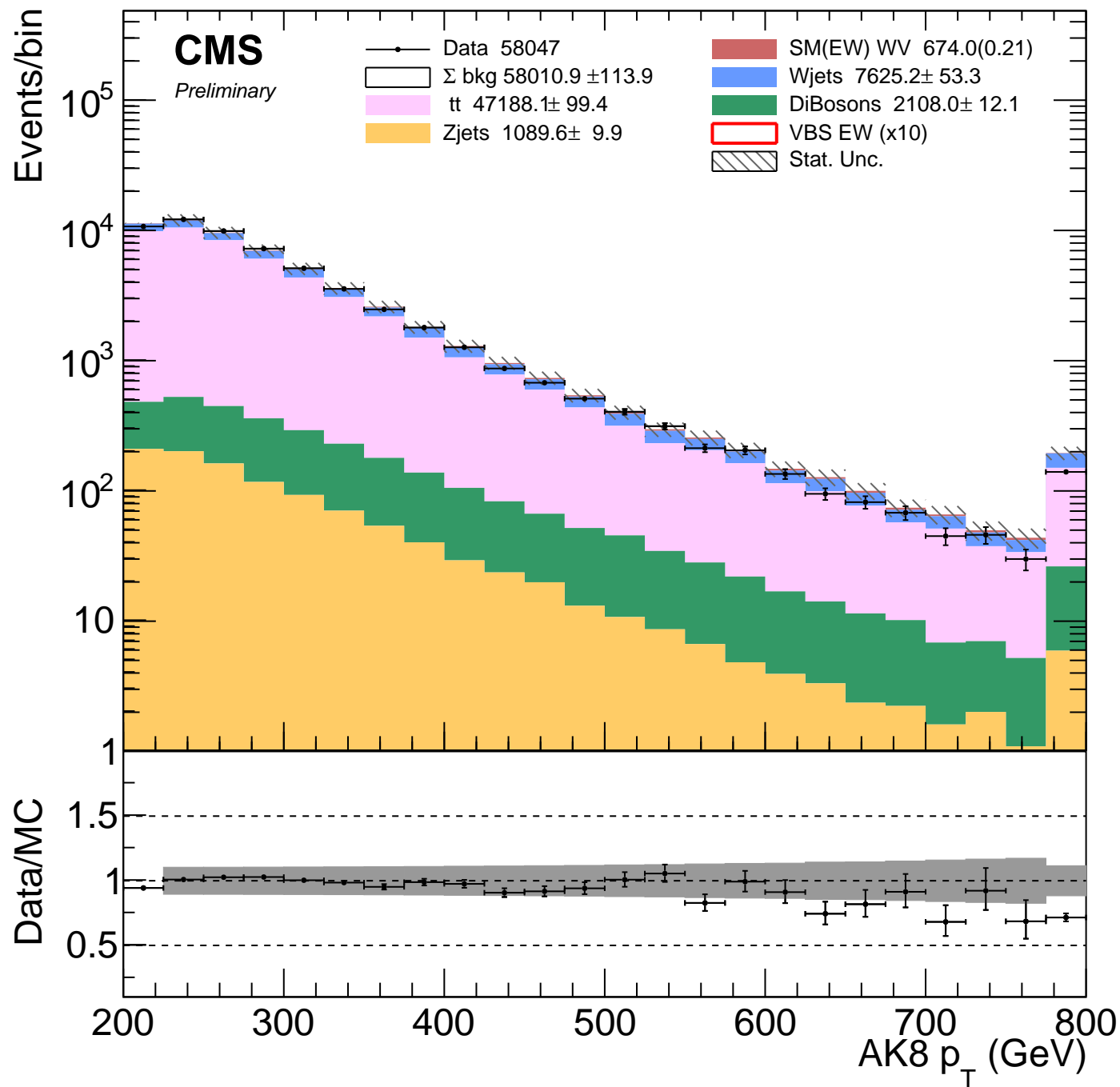
Data/MC

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

AK8 τ_{21}



137 fb⁻¹ (13 TeV)



137 fb⁻¹ (13 TeV)

Events/bin

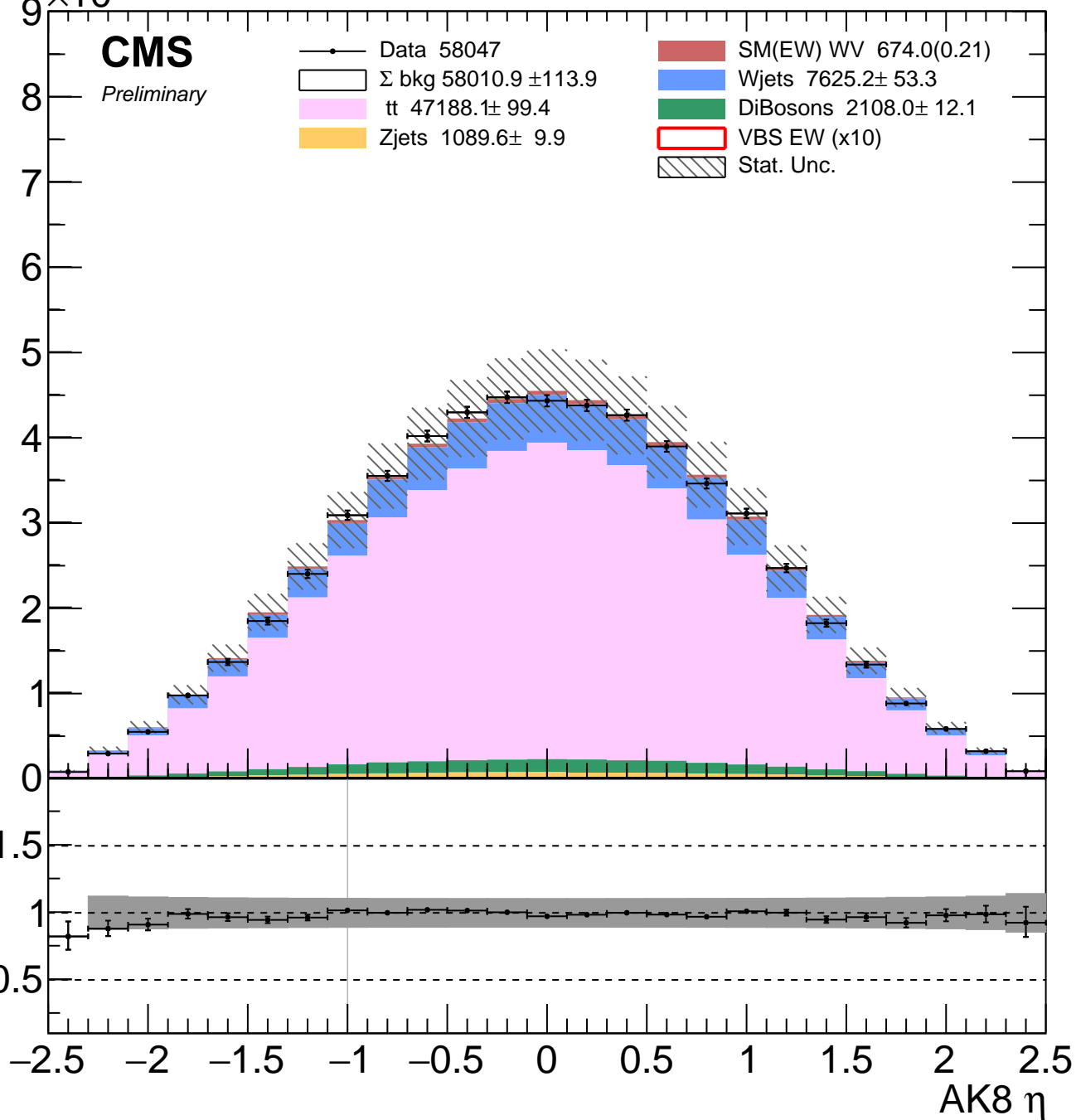
CMS

Preliminary

—•— Data 58047
□ Σ bkg 58010.9 \pm 113.9
■ tt 47188.1 \pm 99.4
■ Zjets 1089.6 \pm 9.9

■ SM(EW) WV 674.0(0.21)
■ Wjets 7625.2 \pm 53.3
■ DiBosons 2108.0 \pm 12.1
□ VBS EW (x10)
▨ Stat. Unc.

Data/MC



137 fb⁻¹ (13 TeV)

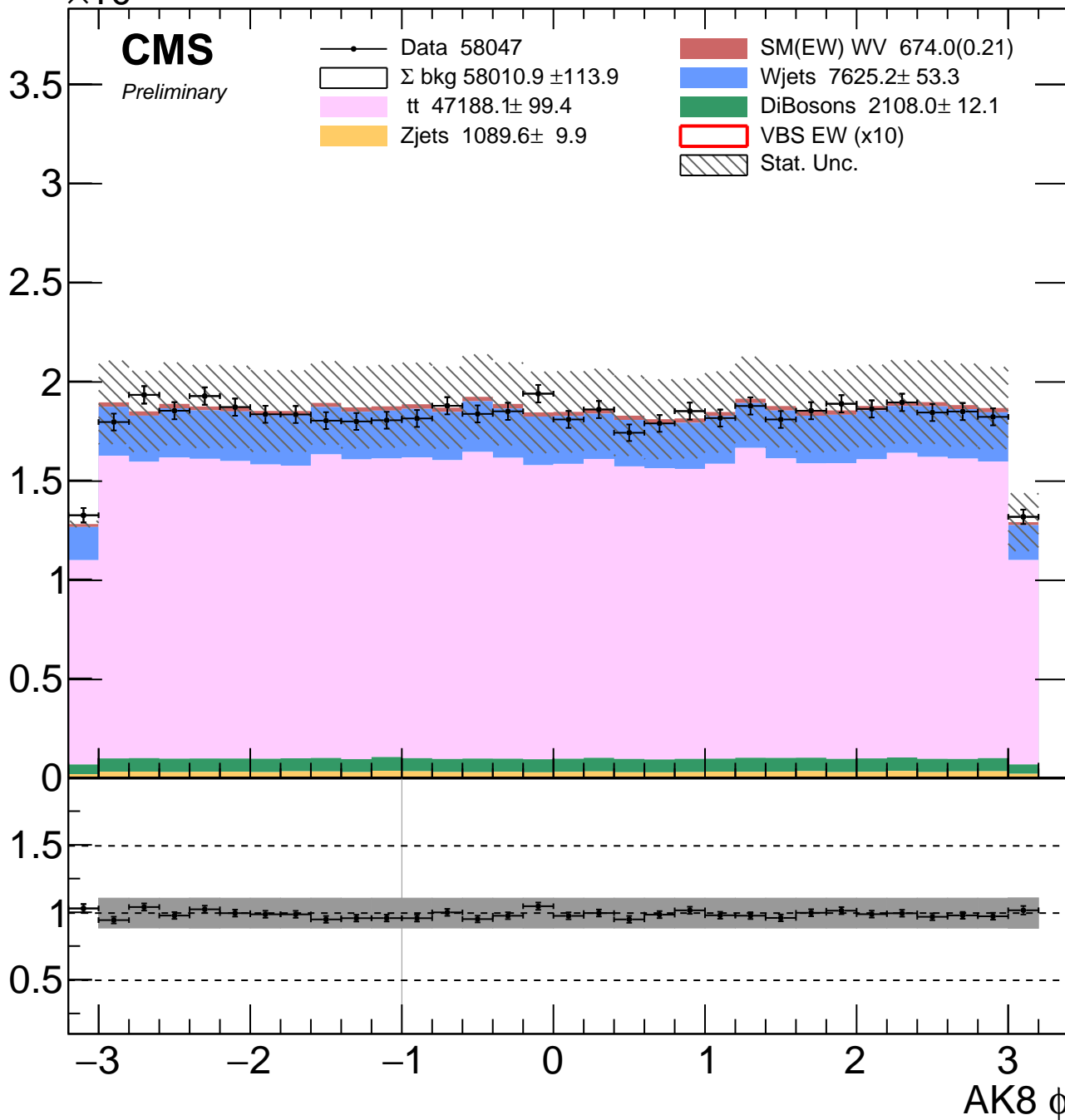
×10³

CMS

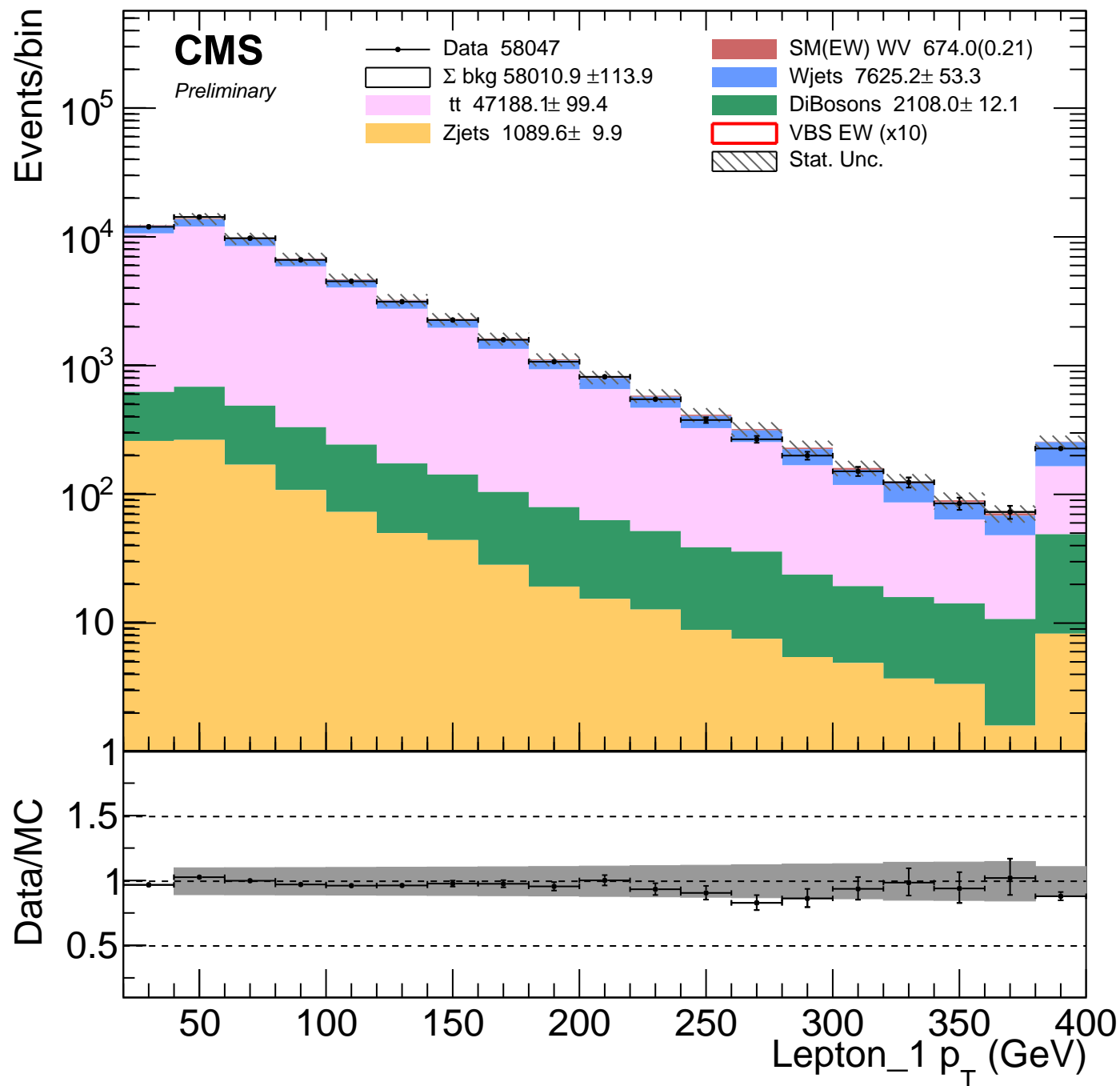
Preliminary

—•— Data 58047
 □ Σ bkg 58010.9 ± 113.9
 ■ tt 47188.1 ± 99.4
 ■ Zjets 1089.6 ± 9.9

■ SM(EW) WV 674.0(0.21)
 ■ Wjets 7625.2 ± 53.3
 ■ DiBosons 2108.0 ± 12.1
 □ VBS EW (x10)
 ▨ Stat. Unc.



137 fb⁻¹ (13 TeV)



137 fb⁻¹ (13 TeV)

Events/bin

CMS

Preliminary

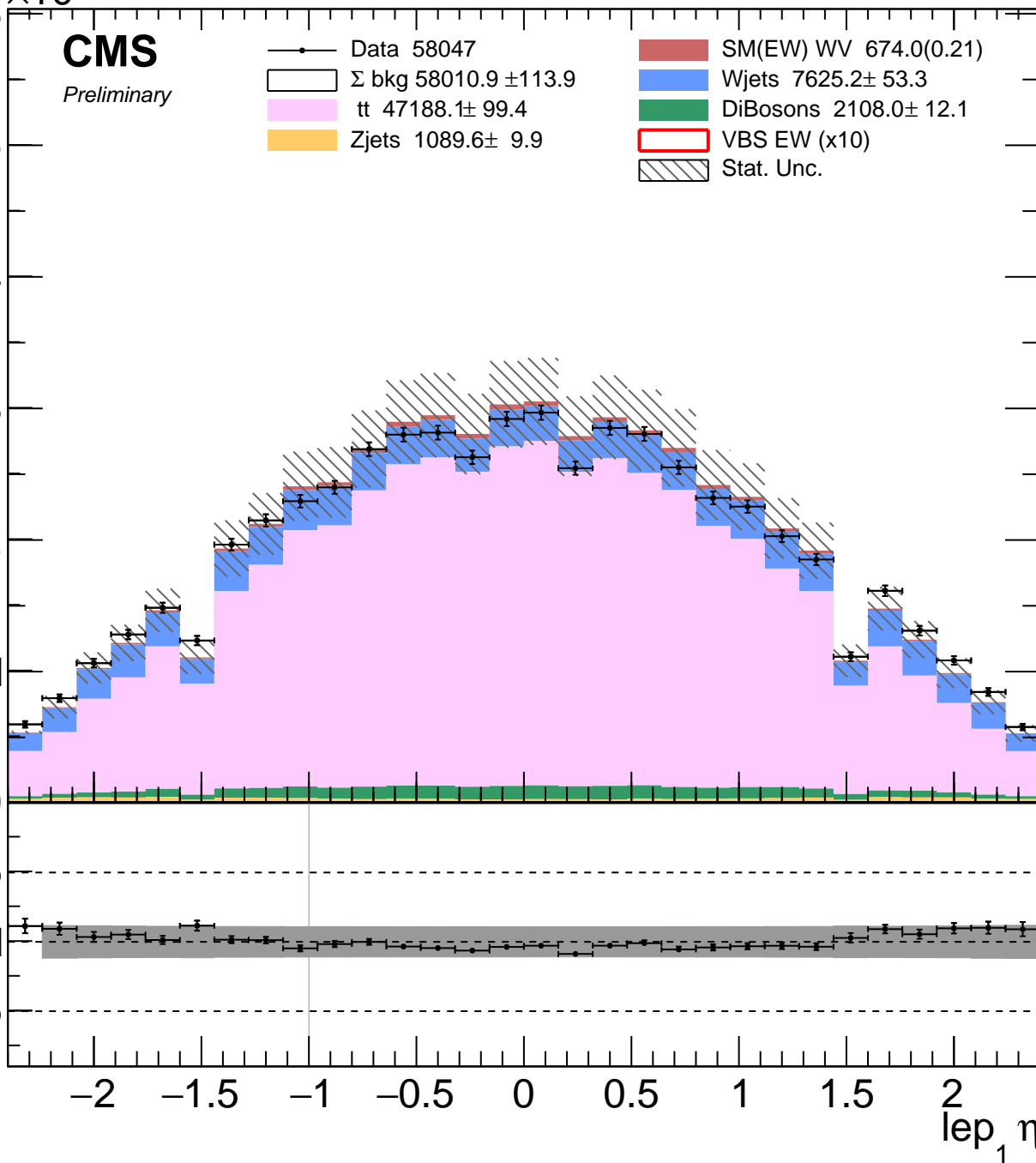
—•— Data 58047
 □ Σ bkg 58010.9 \pm 113.9
 ■ tt 47188.1 \pm 99.4
 ■ Zjets 1089.6 \pm 9.9

■ SM(EW) WV 674.0(0.21)
 ■ Wjets 7625.2 \pm 53.3
 ■ DiBosons 2108.0 \pm 12.1
 □ VBS EW (x10)
 ▨ Stat. Unc.

Data/MC

1.5
1
0.5

lep₁ η



137 fb⁻¹ (13 TeV)

Events/bin

×10³

CMS

Preliminary

—•— Data 58047
 □ Σ bkg 58010.9 ± 113.9
 ■ tt 47188.1 ± 99.4
 ■ Zjets 1089.6 ± 9.9

■ SM(EW) WV 674.0(0.21)
 ■ Wjets 7625.2 ± 53.3
 ■ DiBosons 2108.0 ± 12.1
 □ VBS EW (x10)
 ▨ Stat. Unc.

3.5

3

2.5

2

1.5

1

0.5

Data/MC

1.5

1

0.5

-3

-2

-1

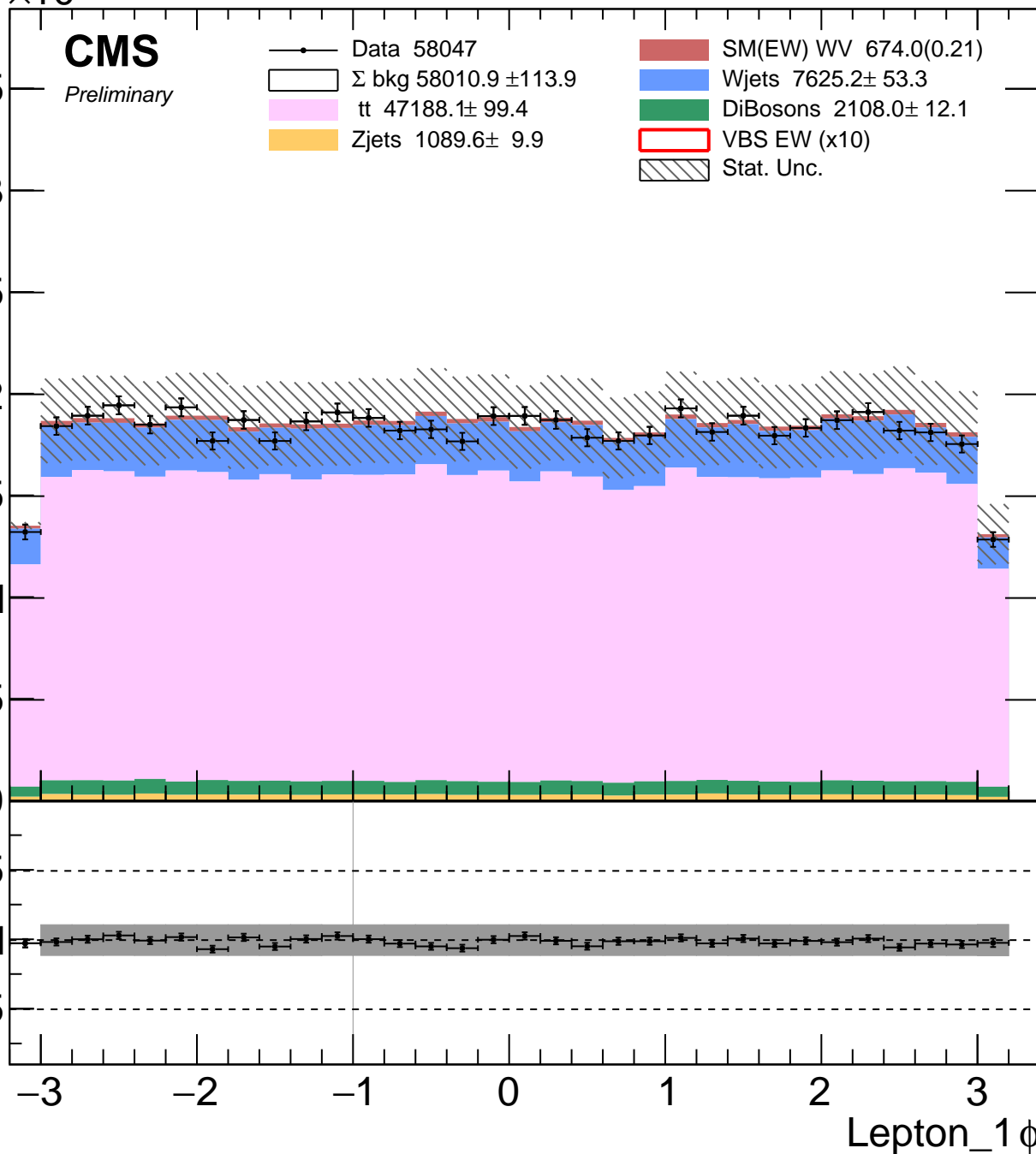
0

1

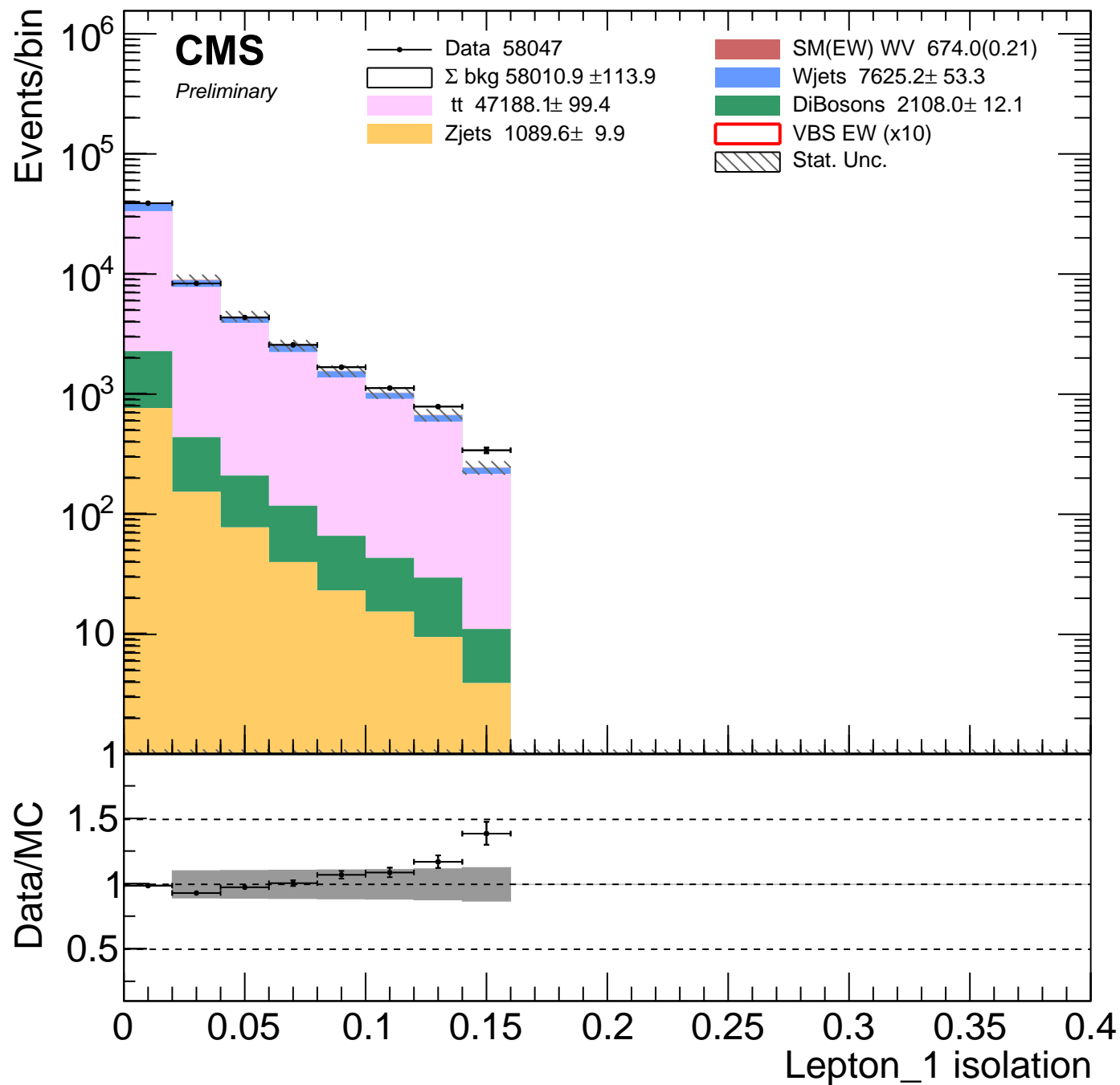
2

3

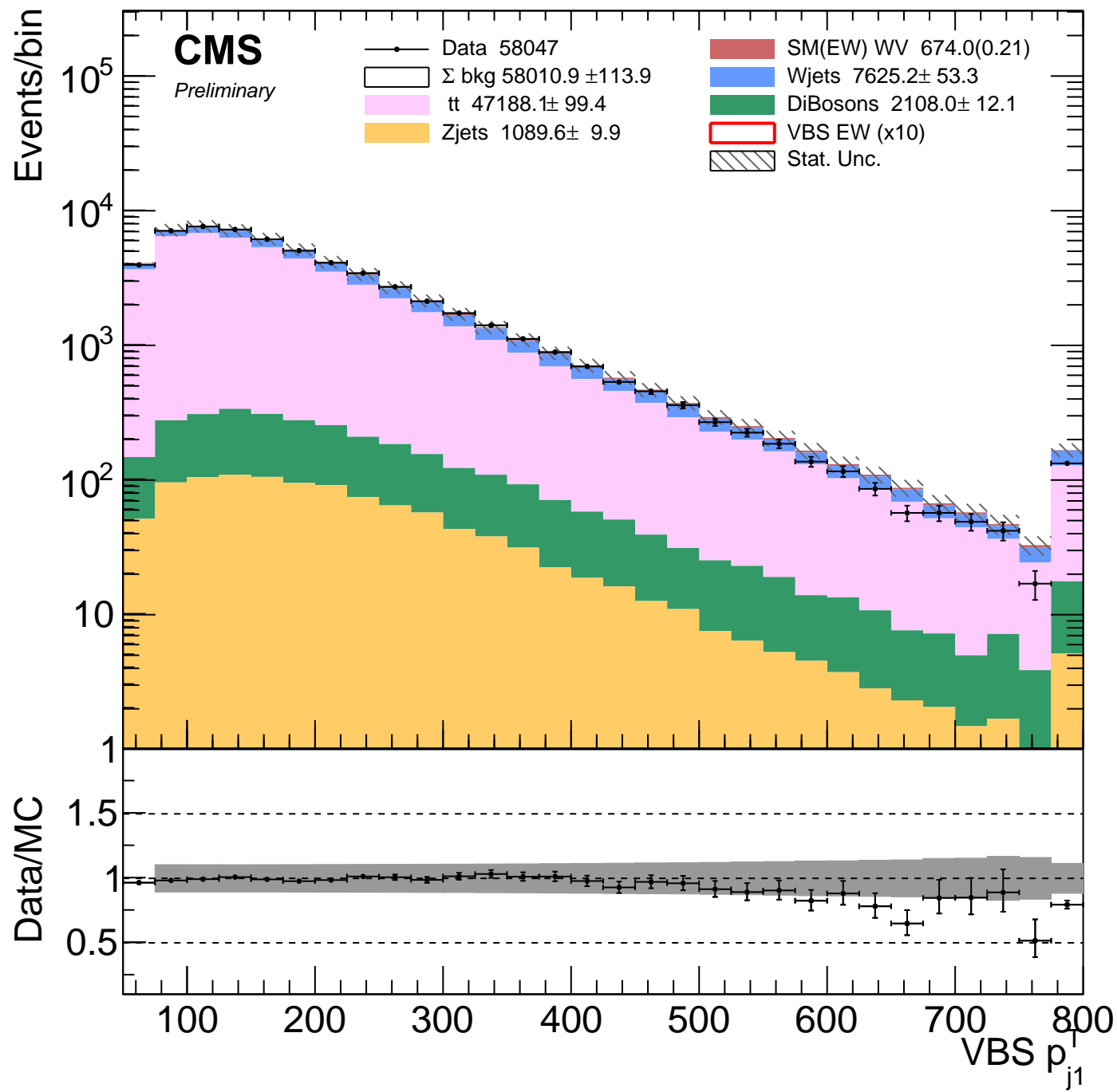
Lepton_1 ϕ



137 fb⁻¹ (13 TeV)



137 fb⁻¹ (13 TeV)



137 fb⁻¹ (13 TeV)

×10³

CMS

Preliminary

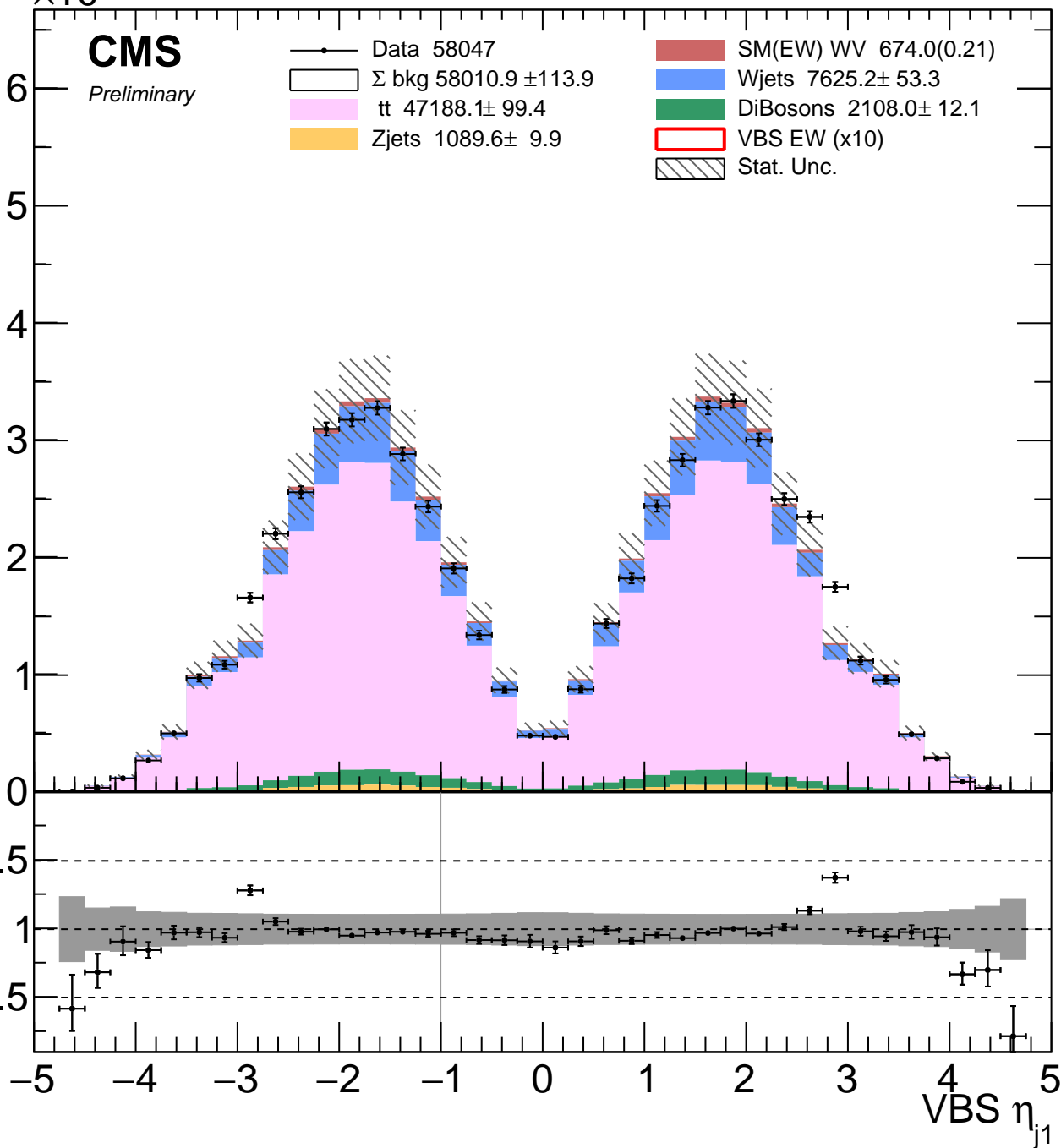
—•— Data 58047
 □ Σ bkg 58010.9 ± 113.9
 ■ tt 47188.1 ± 99.4
 ■ Zjets 1089.6 ± 9.9

■ SM(EW) WV 674.0(0.21)
 ■ Wjets 7625.2 ± 53.3
 ■ DiBosons 2108.0 ± 12.1
 □ VBS EW (x10)
 ▨ Stat. Unc.

Events/bin

Data/MC

VBS η_{j1}



137 fb⁻¹ (13 TeV)

Events/bin

$\times 10^3$

CMS

Preliminary

—•— Data 58047
 □ Σ bkg 58010.9 \pm 113.9
 ■ tt 47188.1 \pm 99.4
 ■ Zjets 1089.6 \pm 9.9

■ SM(EW) WV 674.0(0.21)
 ■ Wjets 7625.2 \pm 53.3
 ■ DiBosons 2108.0 \pm 12.1
 □ VBS EW (x10)
 ▨ Stat. Unc.

3.5

3

2.5

2

1.5

1

0.5

0

Data/MC

1.5

1

0.5

-3

-2

-1

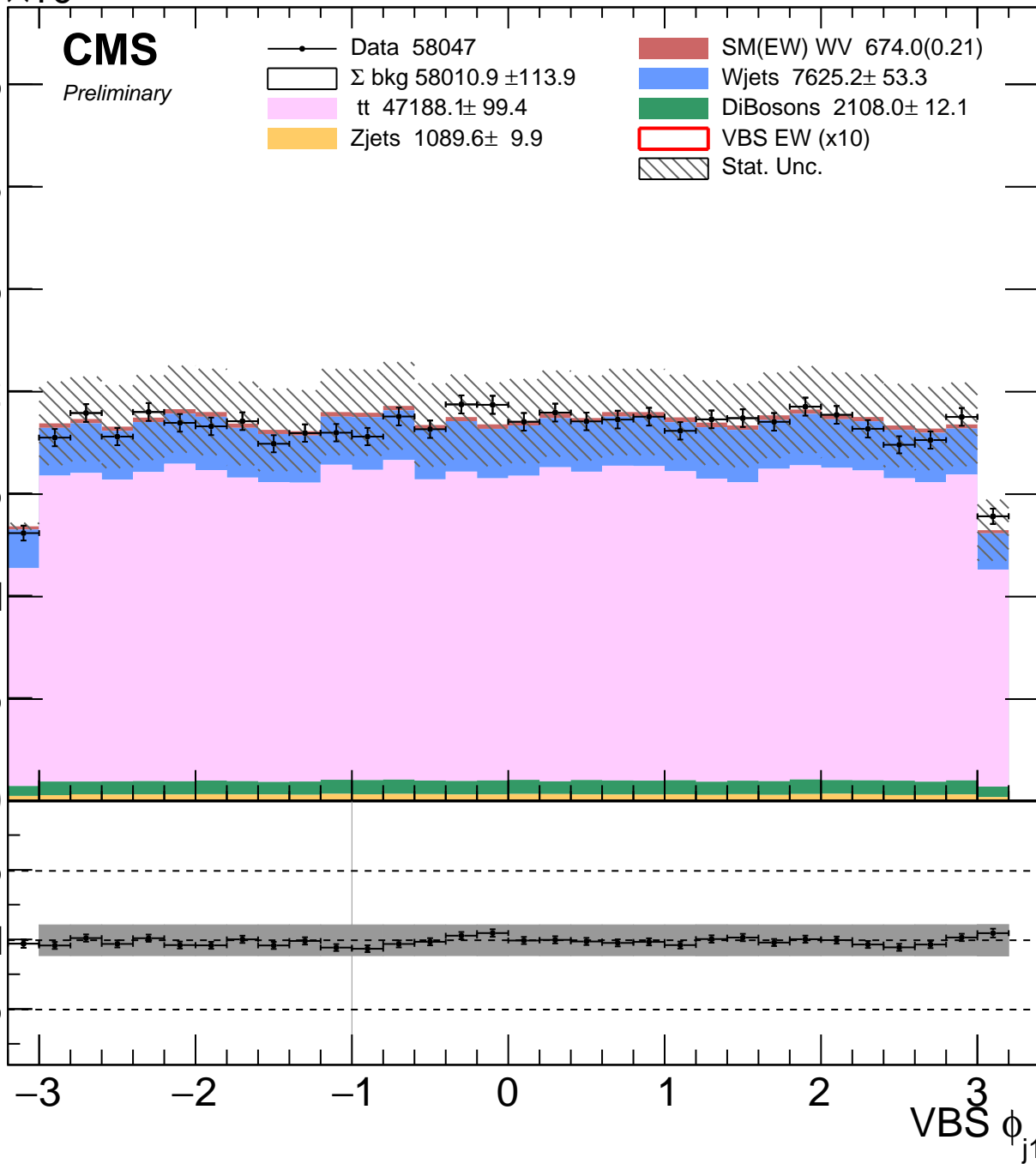
0

1

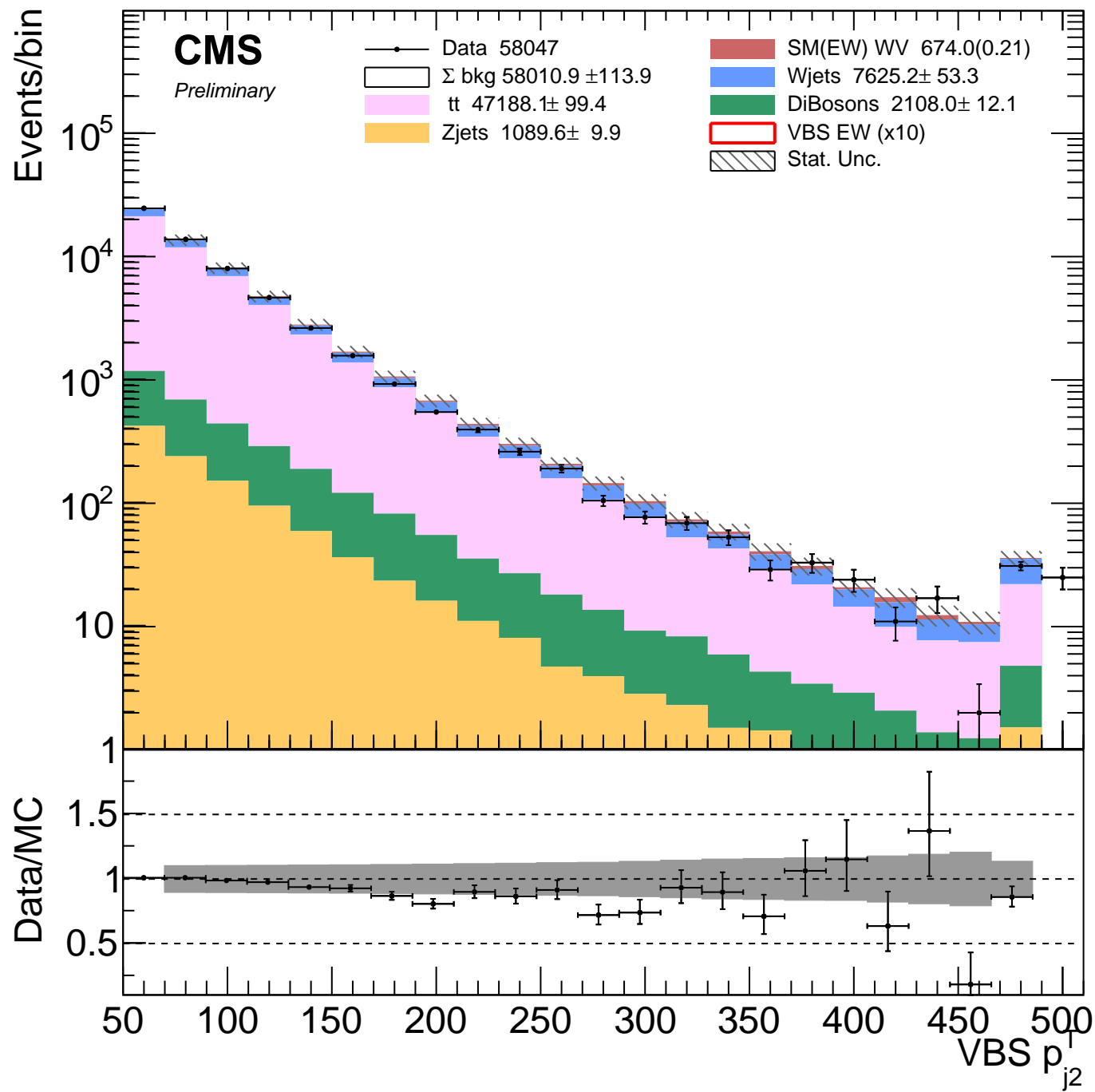
2

3

VBS ϕ_{j1}



137 fb⁻¹ (13 TeV)



137 fb⁻¹ (13 TeV)

Events/bin

CMS

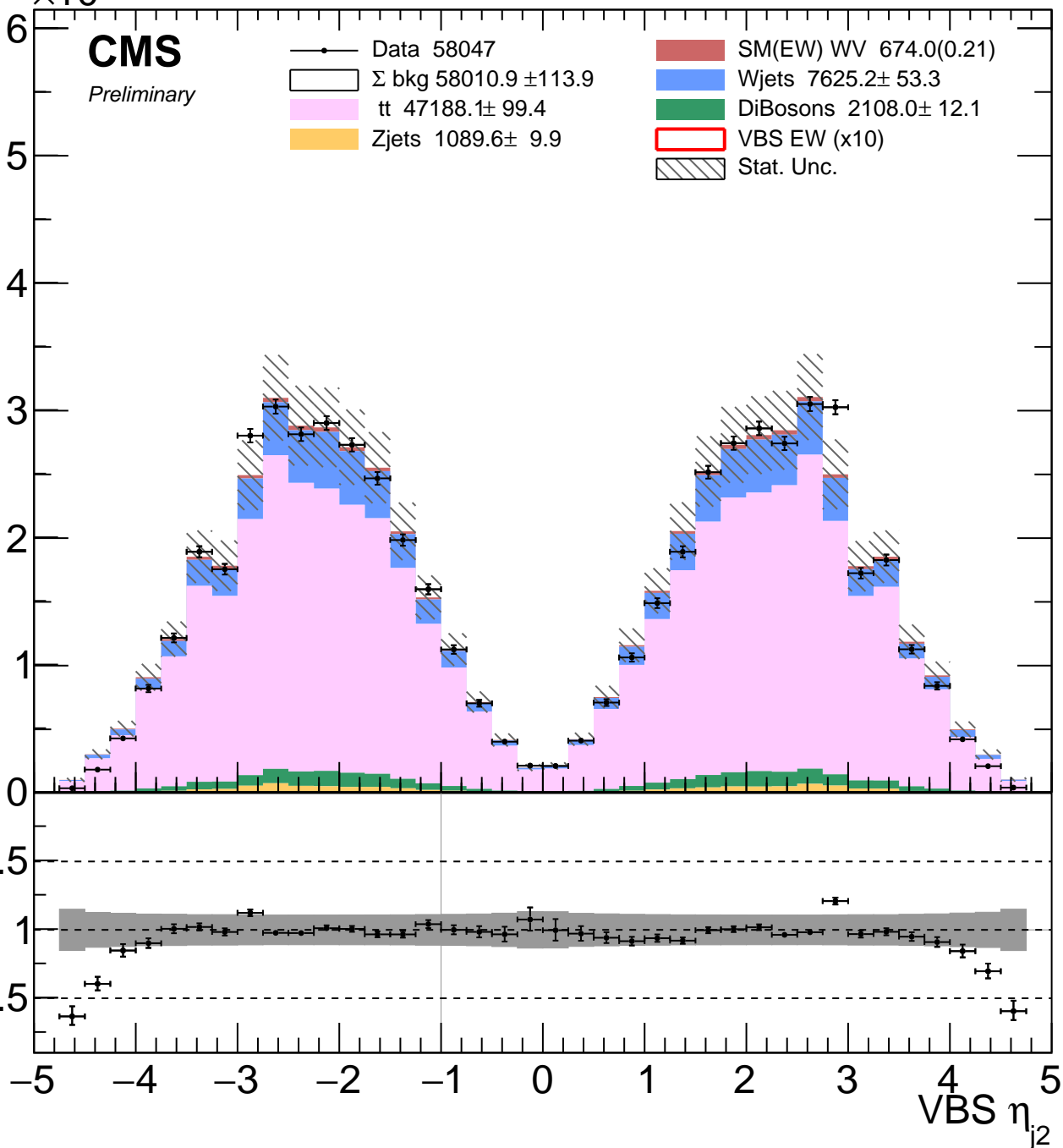
Preliminary

—•— Data 58047
 □ Σ bkg 58010.9 \pm 113.9
 ■ tt 47188.1 \pm 99.4
 ■ Zjets 1089.6 \pm 9.9

■ SM(EW) WV 674.0(0.21)
 ■ Wjets 7625.2 \pm 53.3
 ■ DiBosons 2108.0 \pm 12.1
 □ VBS EW (x10)
 ▨ Stat. Unc.

Data/MC

VBS η_{j2}



137 fb⁻¹ (13 TeV)

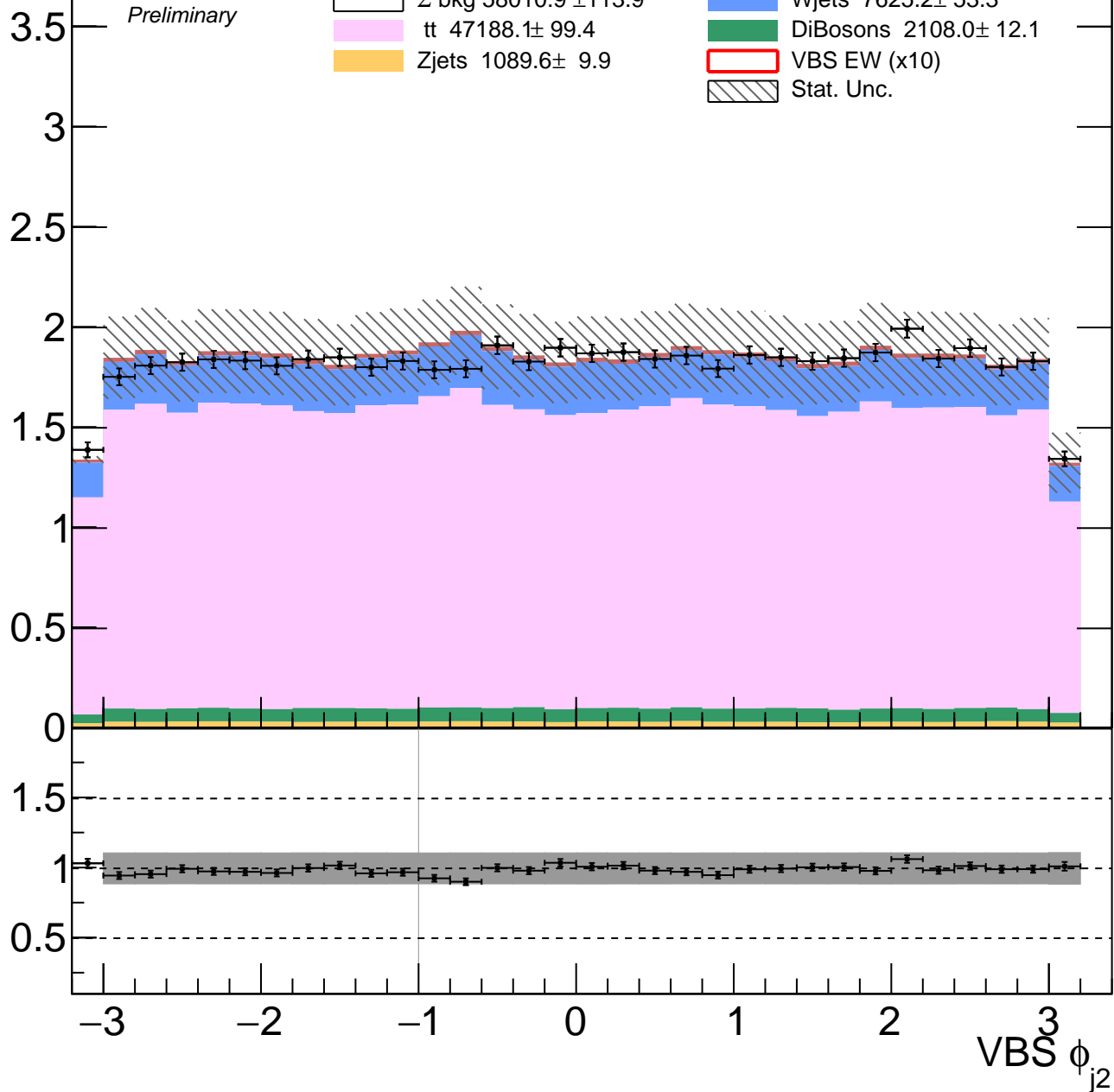
Events/bin

CMS

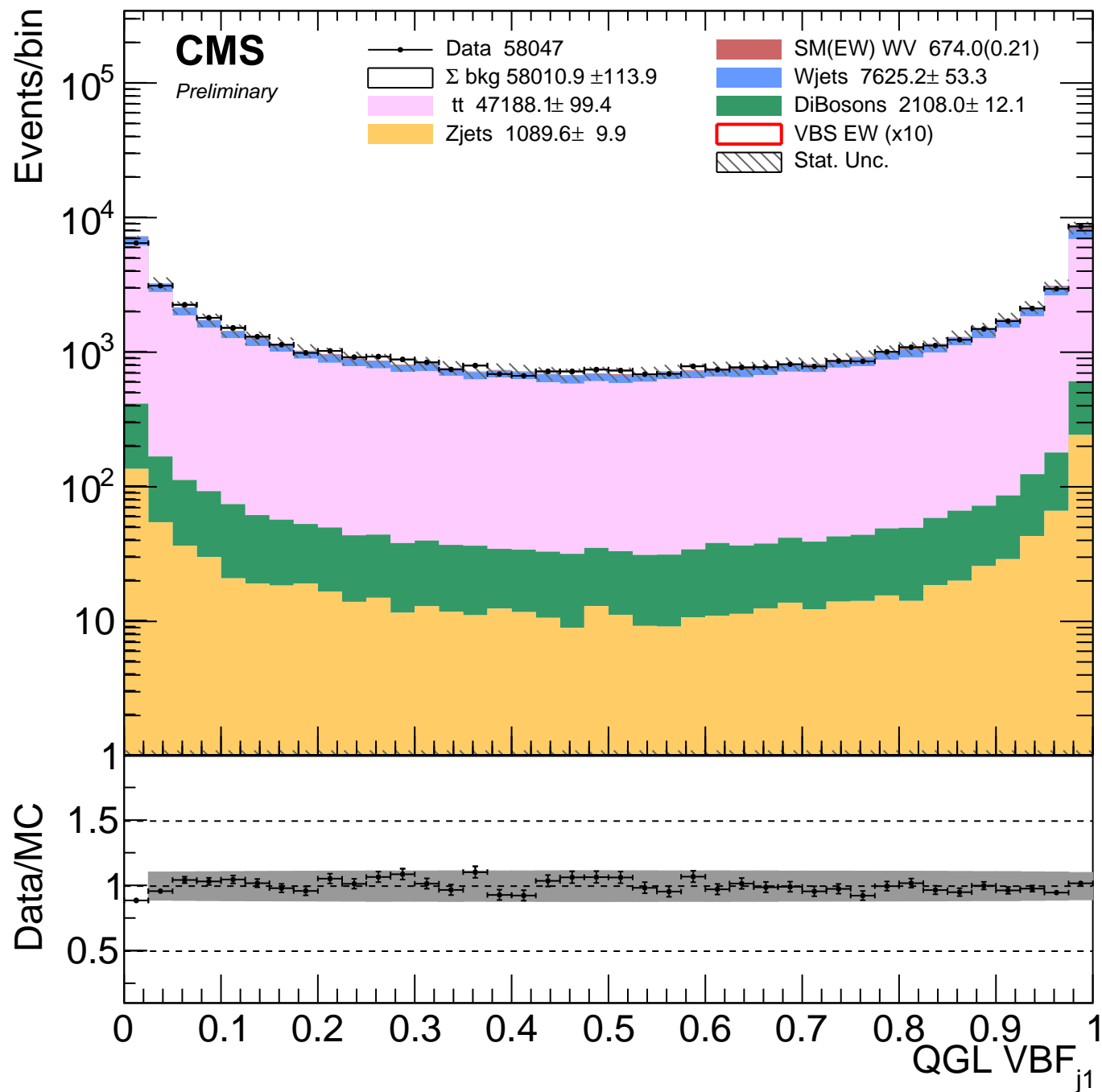
Preliminary

—•— Data 58047
 □ Σ bkg 58010.9 \pm 113.9
 ■ tt 47188.1 \pm 99.4
 ■ Zjets 1089.6 \pm 9.9

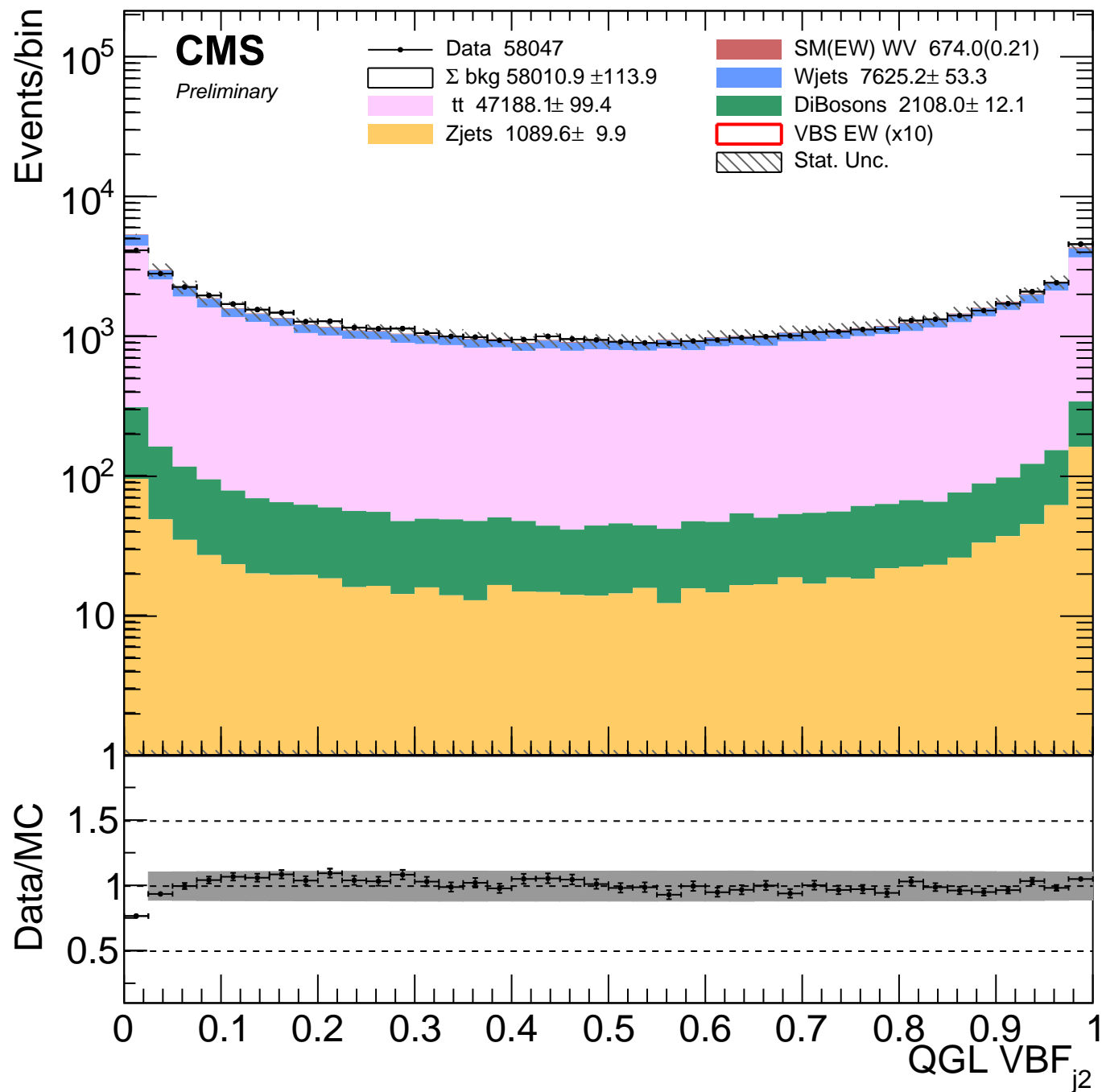
■ SM(EW) WV 674.0(0.21)
 ■ Wjets 7625.2 \pm 53.3
 ■ DiBosons 2108.0 \pm 12.1
 □ VBS EW (x10)
 ▨ Stat. Unc.



137 fb⁻¹ (13 TeV)



137 fb⁻¹ (13 TeV)



137 fb⁻¹ (13 TeV)

Events/bin

$\times 10^3$

CMS

Preliminary

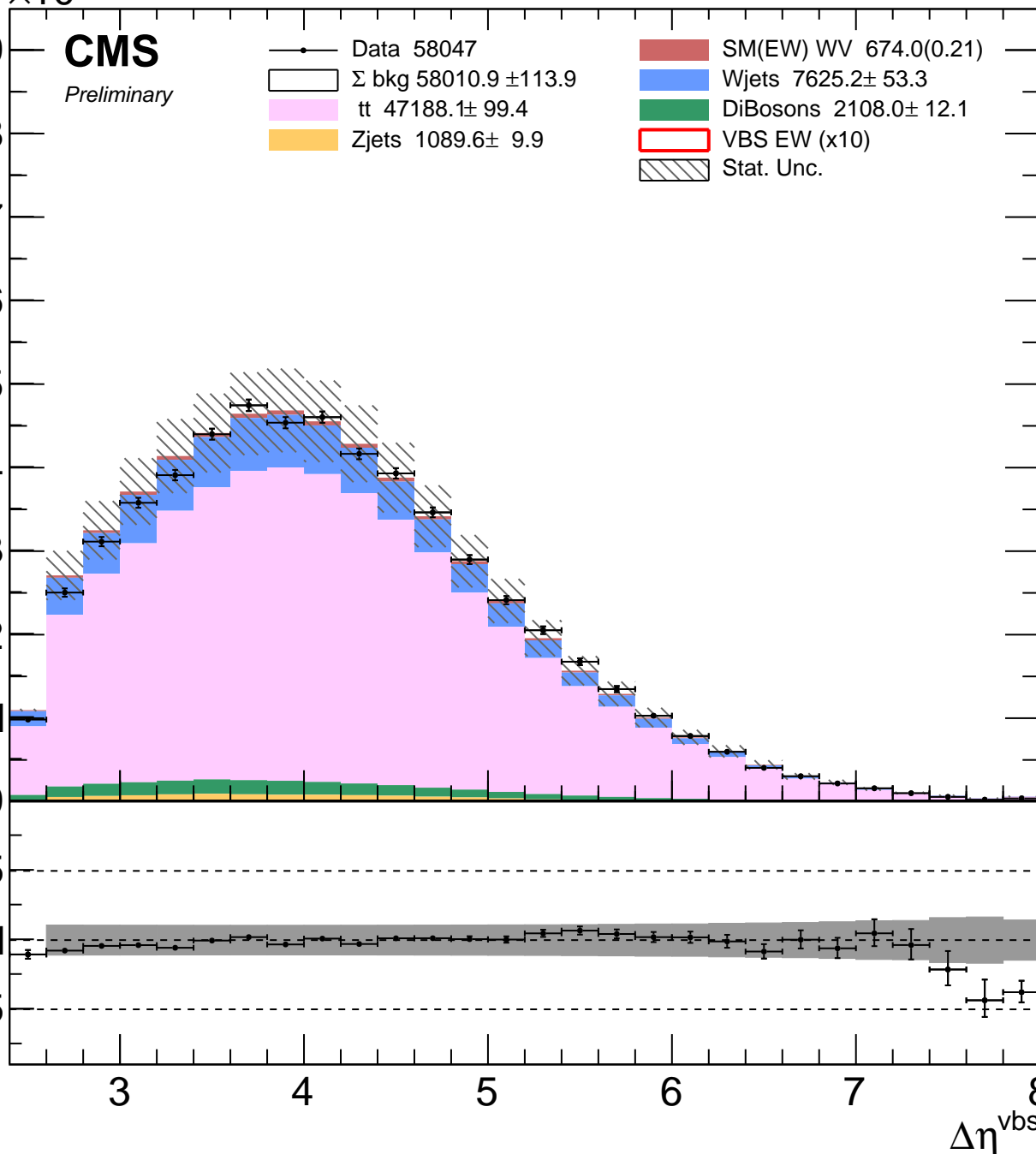
—•— Data 58047
 □ Σ bkg 58010.9 \pm 113.9
 ■ tt 47188.1 \pm 99.4
 ■ Zjets 1089.6 \pm 9.9

■ SM(EW) WV 674.0(0.21)
 ■ Wjets 7625.2 \pm 53.3
 ■ DiBosons 2108.0 \pm 12.1
 □ VBS EW (x10)
 ▨ Stat. Unc.

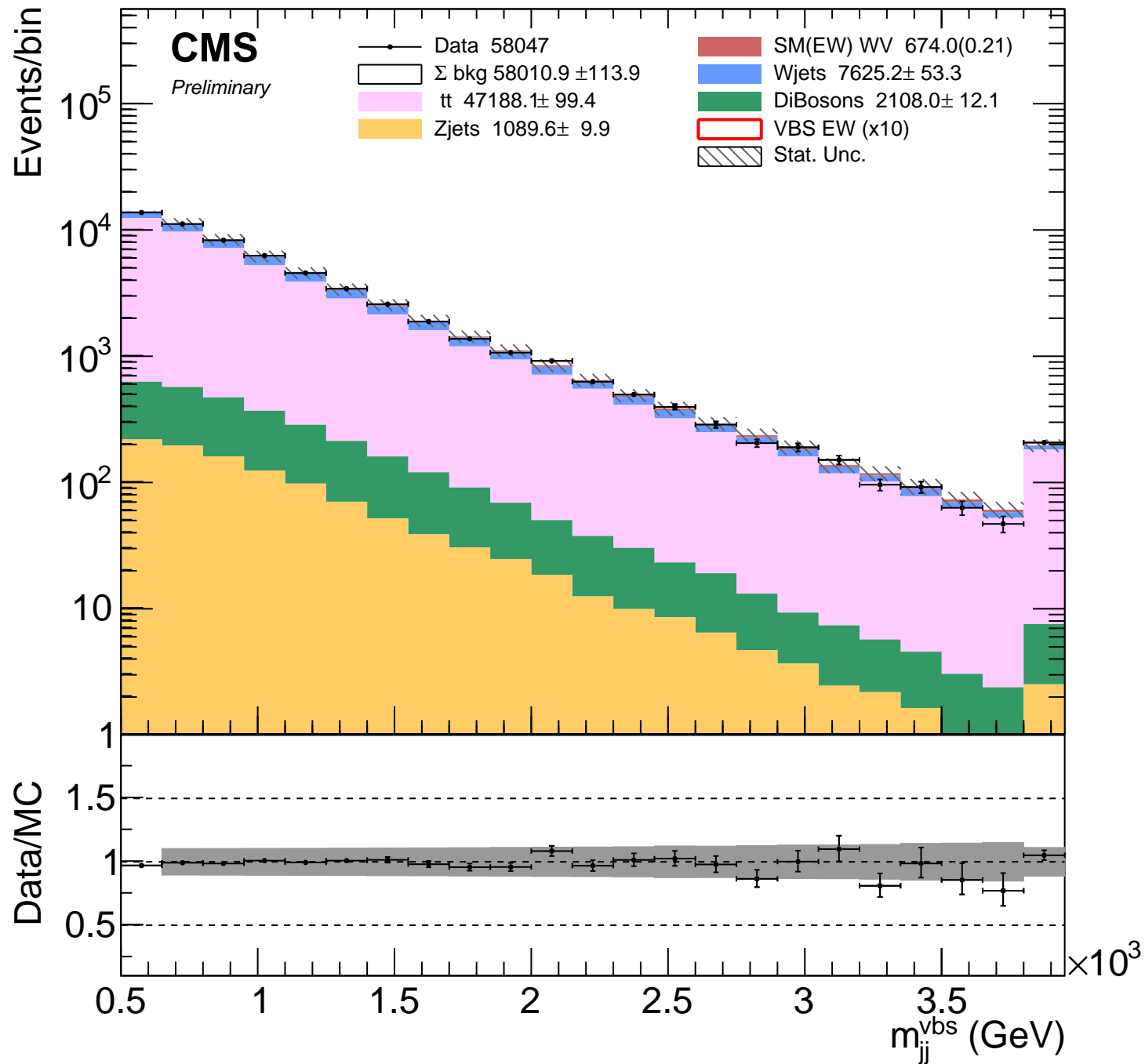
Data/MC

1.5
1
0.5

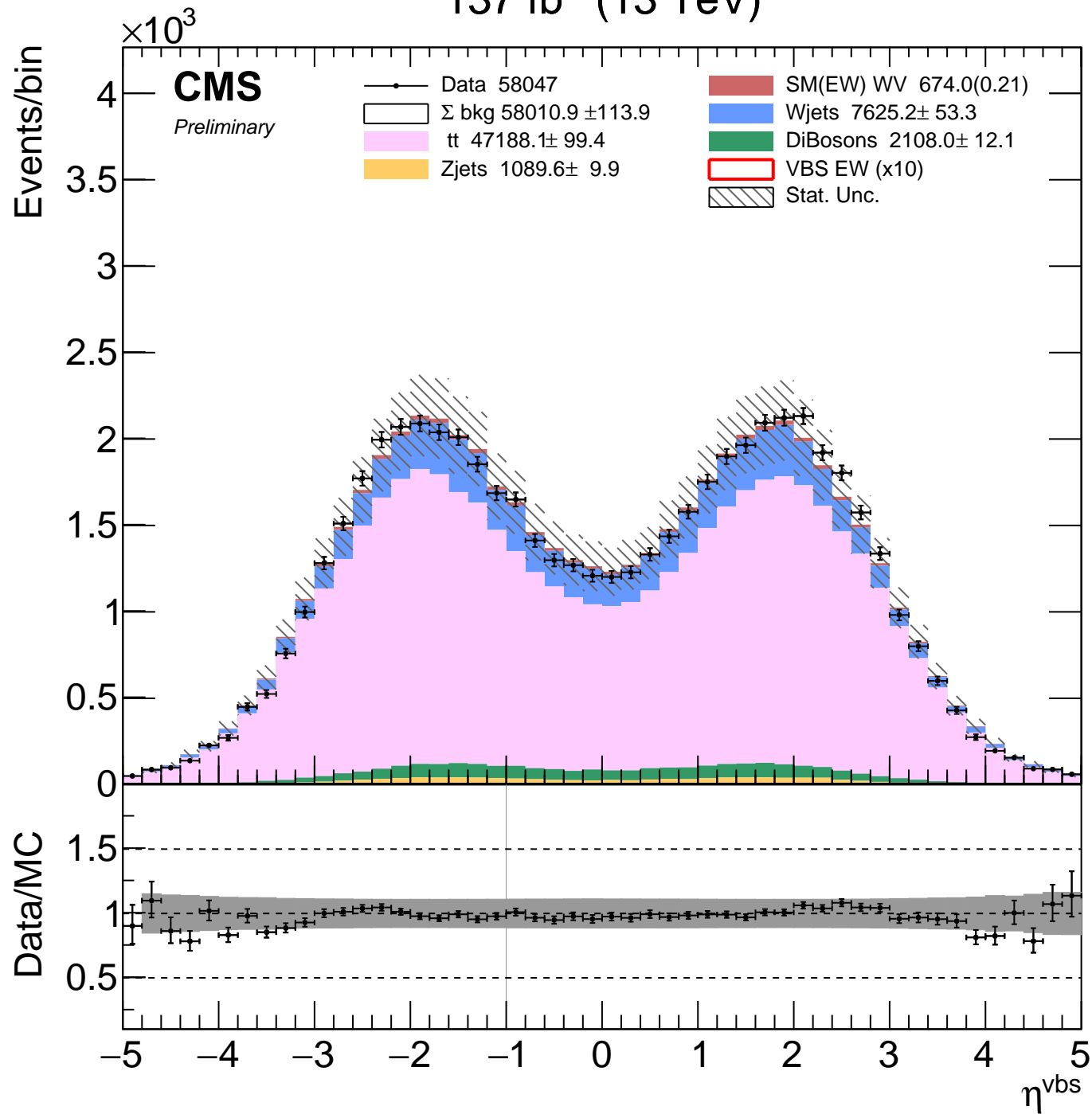
$\Delta\eta^{\text{vbs}}$



137 fb⁻¹ (13 TeV)



137 fb⁻¹ (13 TeV)



137 fb⁻¹ (13 TeV)

Events/bin

$\times 10^3$

CMS

Preliminary

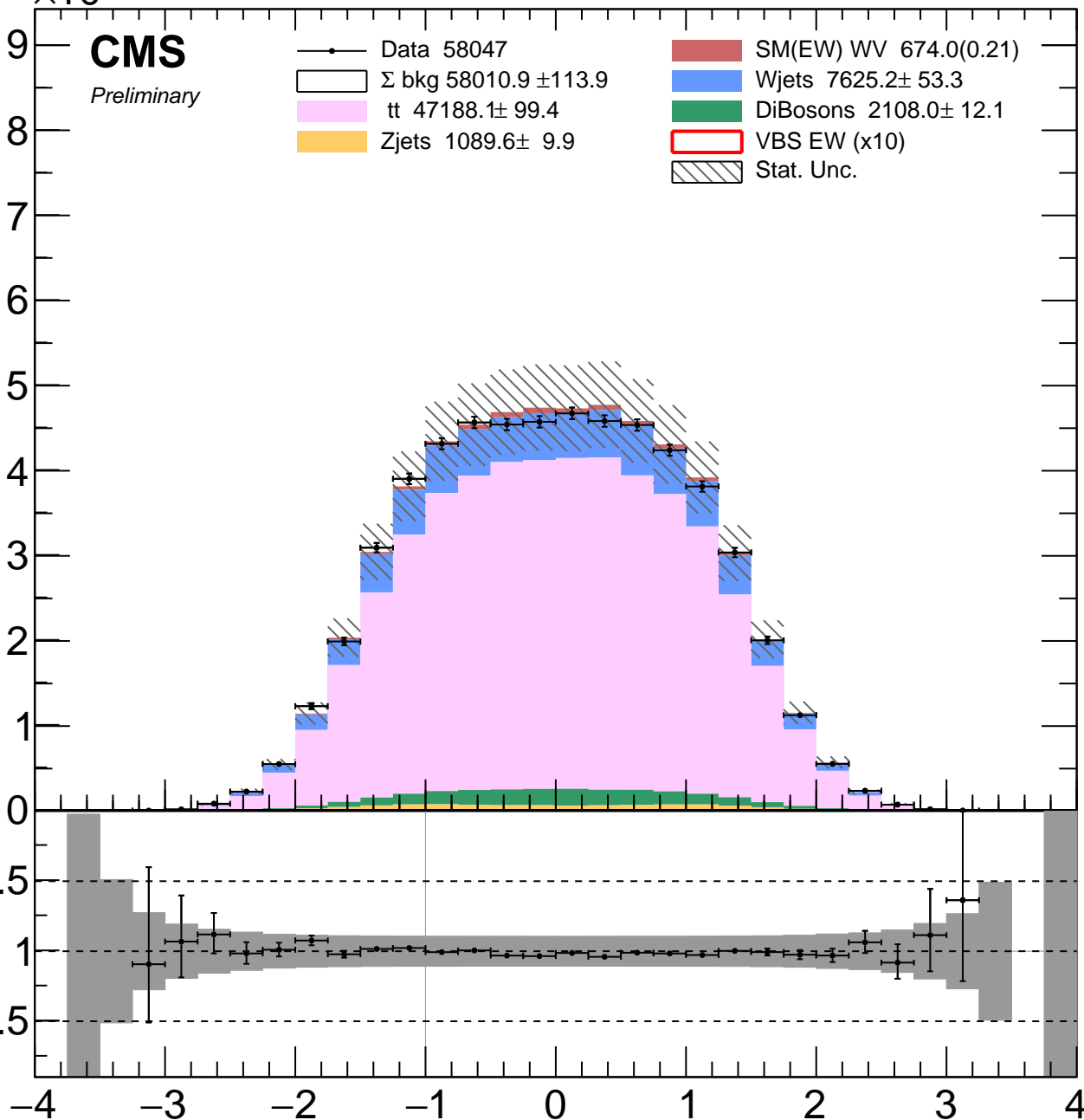
—•— Data 58047
□ Σ bkg 58010.9 \pm 113.9
■ tt 47188.1 \pm 99.4
■ Zjets 1089.6 \pm 9.9

■ SM(EW) WV 674.0(0.21)
■ Wjets 7625.2 \pm 53.3
■ DiBosons 2108.0 \pm 12.1
□ VBS EW (x10)
▨ Stat. Unc.

Data/MC

1.5
1
0.5

Leptonic Zeppenfeld



137 fb⁻¹ (13 TeV)

Events/bin

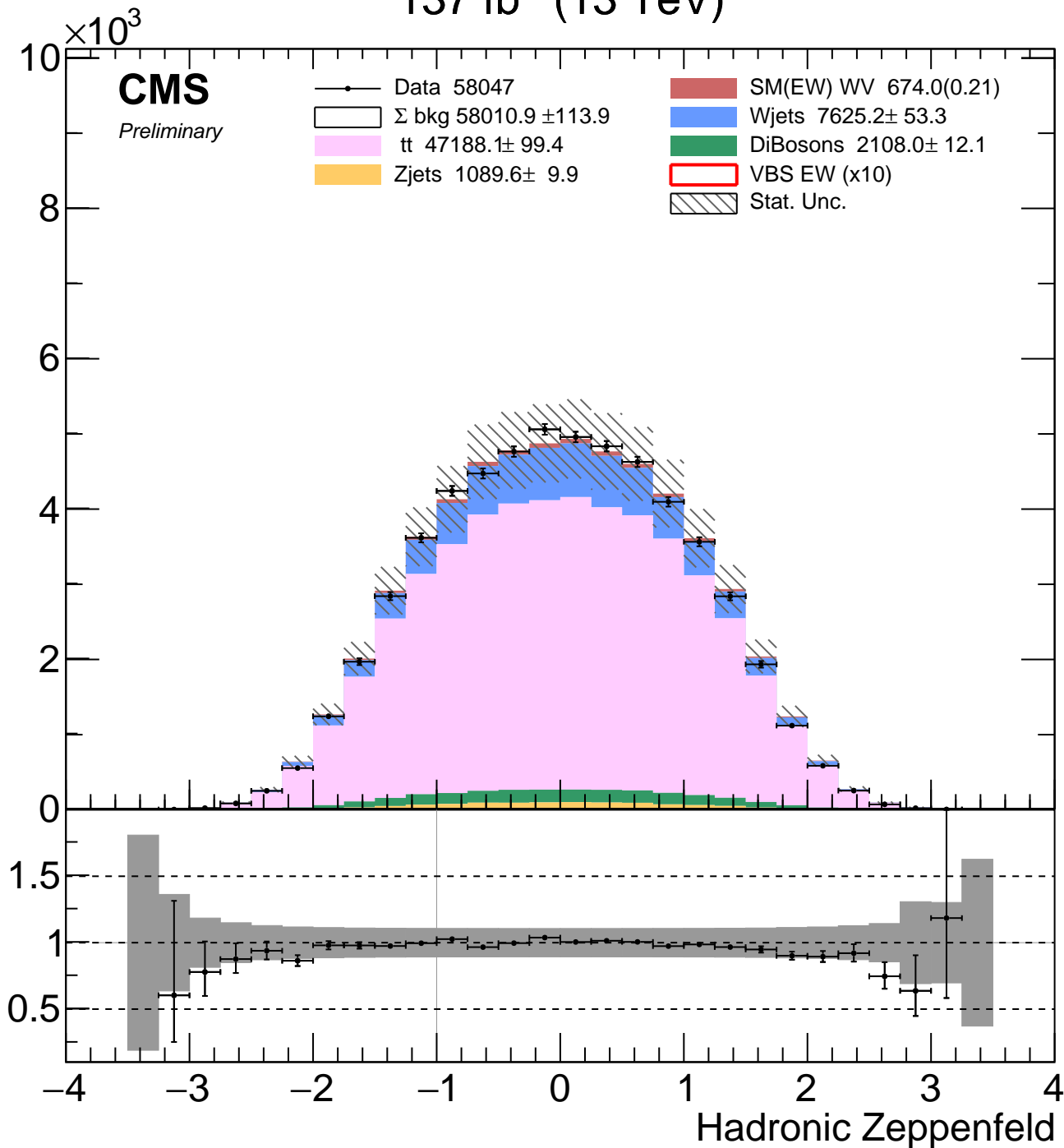
CMS

Preliminary

—•— Data 58047
□ Σ bkg 58010.9 \pm 113.9
■ tt 47188.1 \pm 99.4
■ Zjets 1089.6 \pm 9.9

■ SM(EW) WV 674.0(0.21)
■ Wjets 7625.2 \pm 53.3
■ DiBosons 2108.0 \pm 12.1
□ VBS EW (x10)
▨ Stat. Unc.

Data/MC



137 fb⁻¹ (13 TeV)

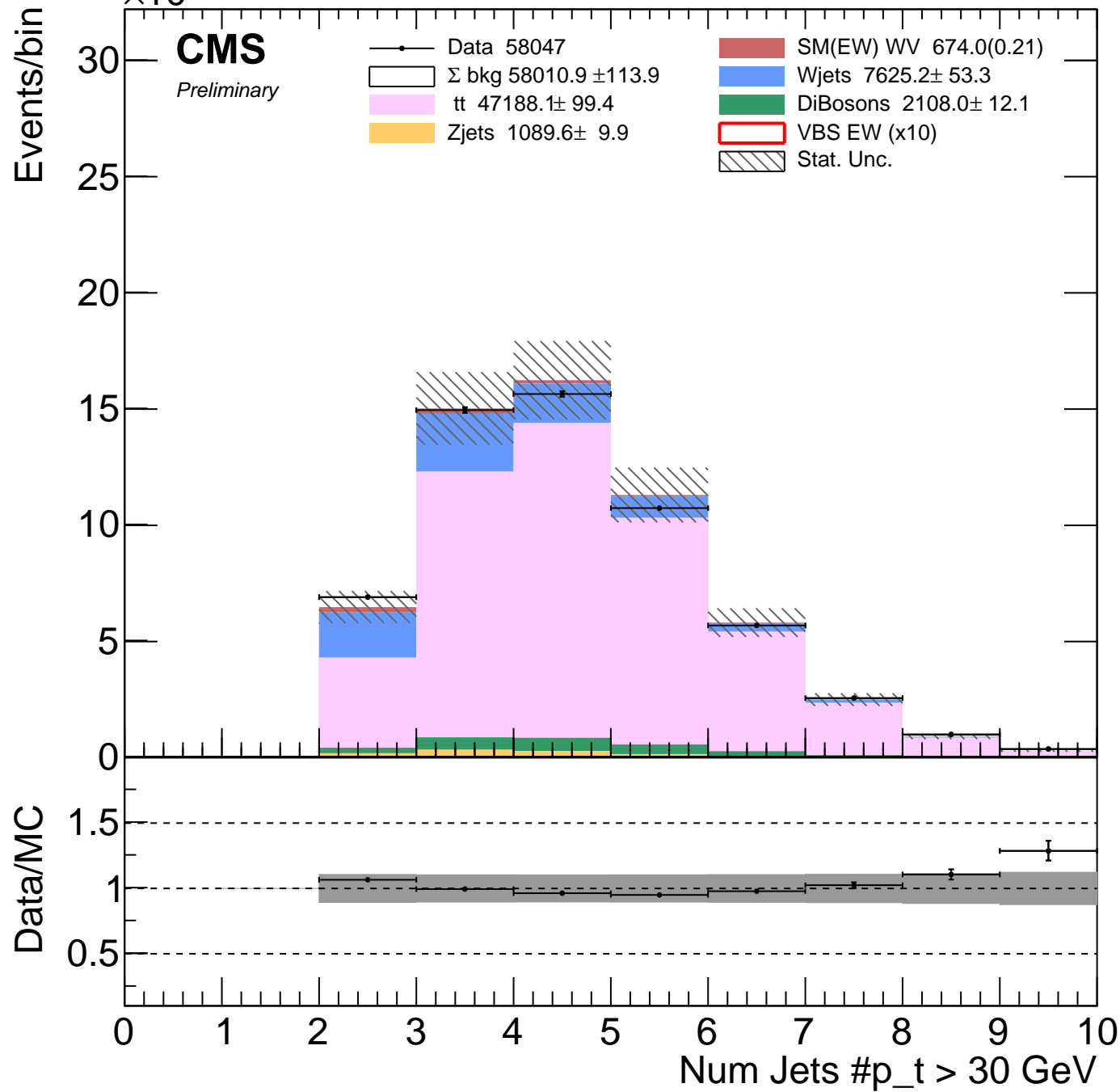
×10³

CMS

Preliminary

—•— Data 58047
 □ Σ bkg 58010.9 ± 113.9
 ■ tt 47188.1 ± 99.4
 ■ Zjets 1089.6 ± 9.9

■ SM(EW) WV 674.0(0.21)
 ■ Wjets 7625.2 ± 53.3
 ■ DiBosons 2108.0 ± 12.1
 □ VBS EW (x10)
 ▨ Stat. Unc.



137 fb⁻¹ (13 TeV)

Events/bin

×10³

CMS

Preliminary

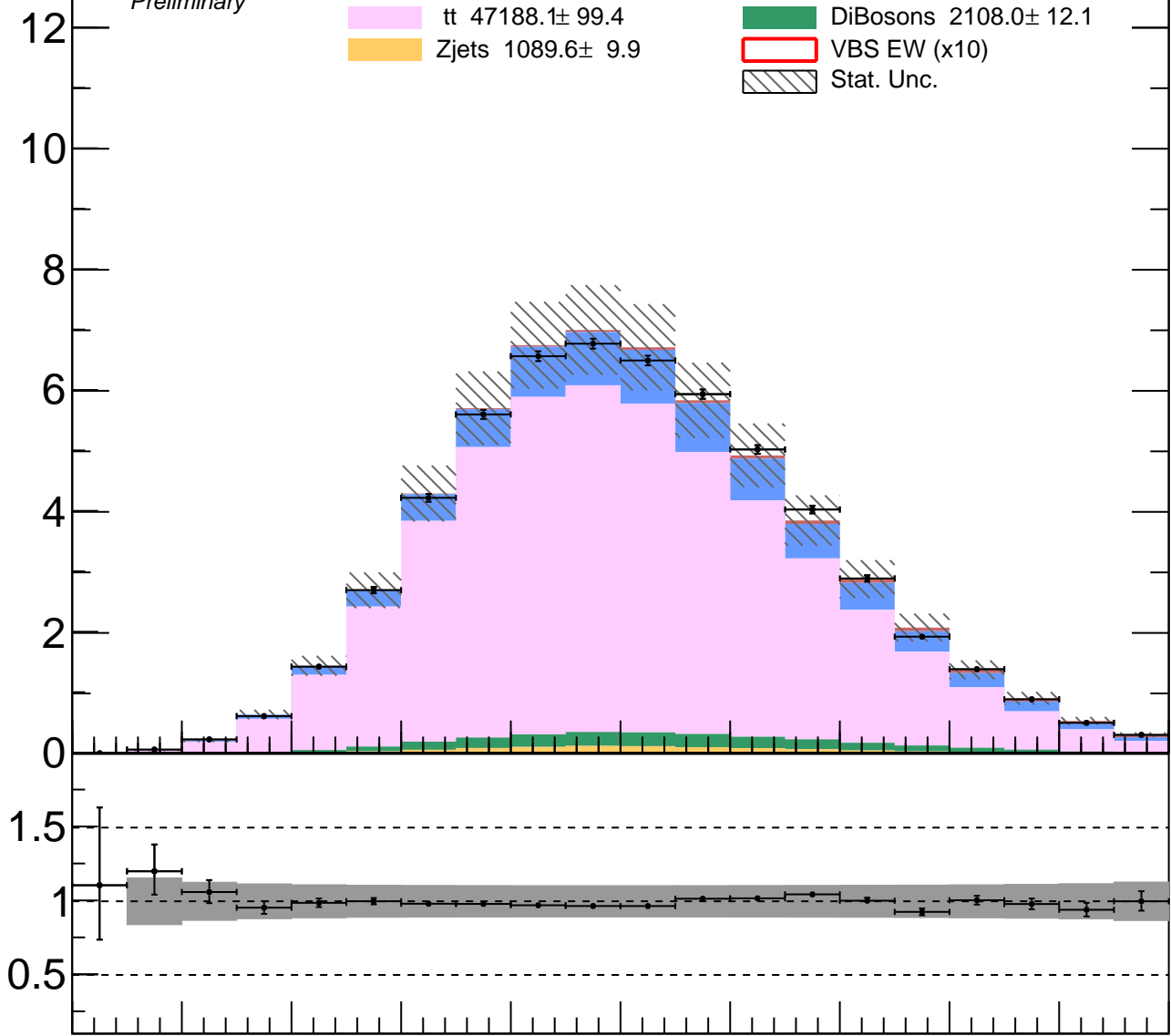
—•— Data 58047
□ Σ bkg 58010.9 ± 113.9
■ tt 47188.1 ± 99.4
■ Zjets 1089.6 ± 9.9

■ SM(EW) WV 674.0(0.21)
■ Wjets 7625.2 ± 53.3
■ DiBosons 2108.0 ± 12.1
□ VBS EW (x10)
▨ Stat. Unc.

Data/MC

-0.5 -0.4 -0.3 -0.2 -0.1 0 0.1 0.2 0.3 0.4 0.5

BDT



137 fb⁻¹ (13 TeV)

