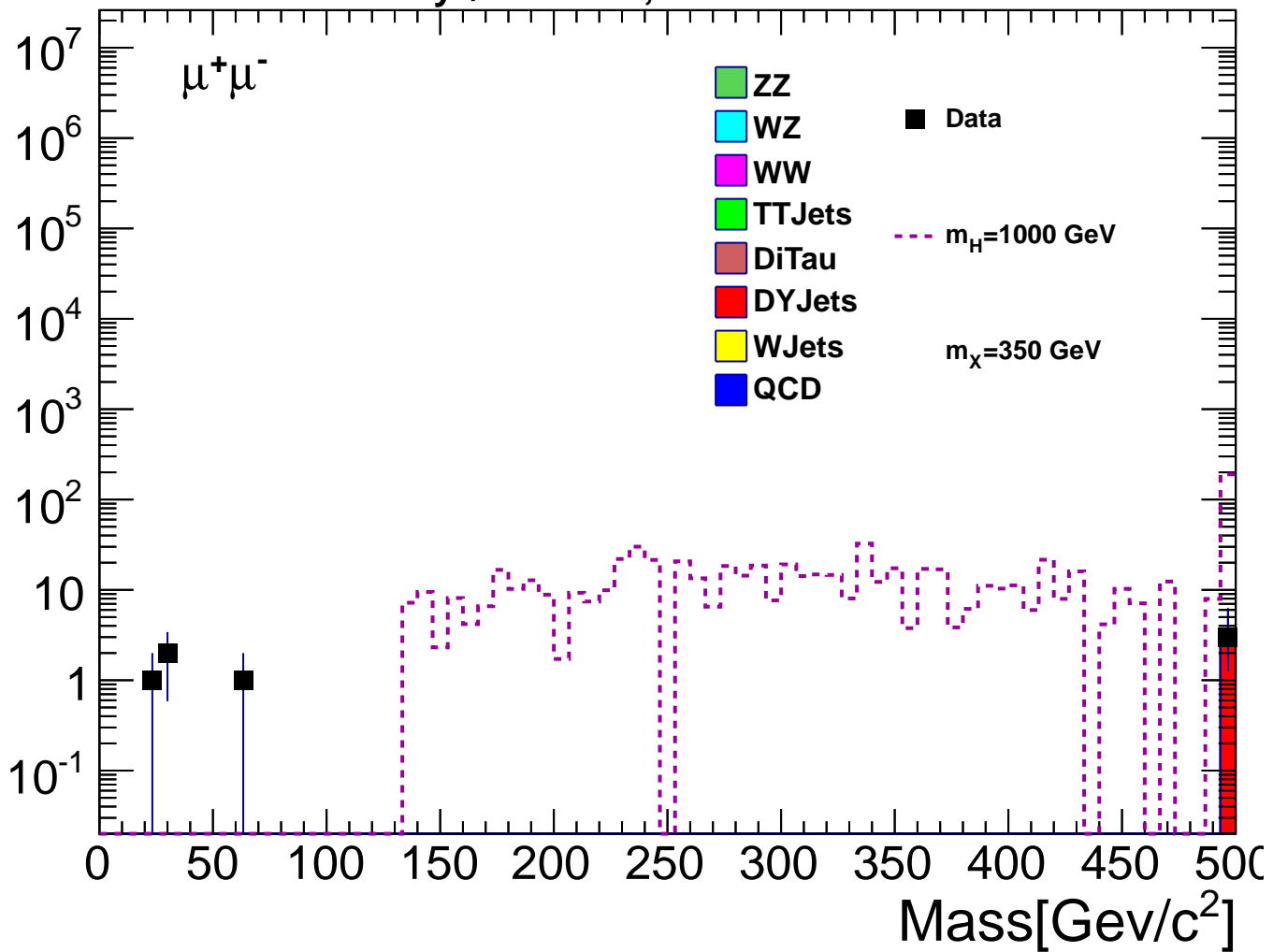
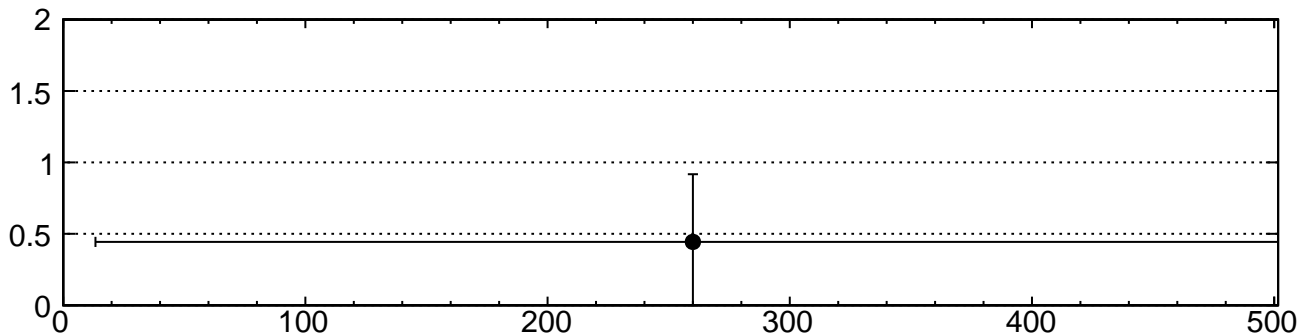


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

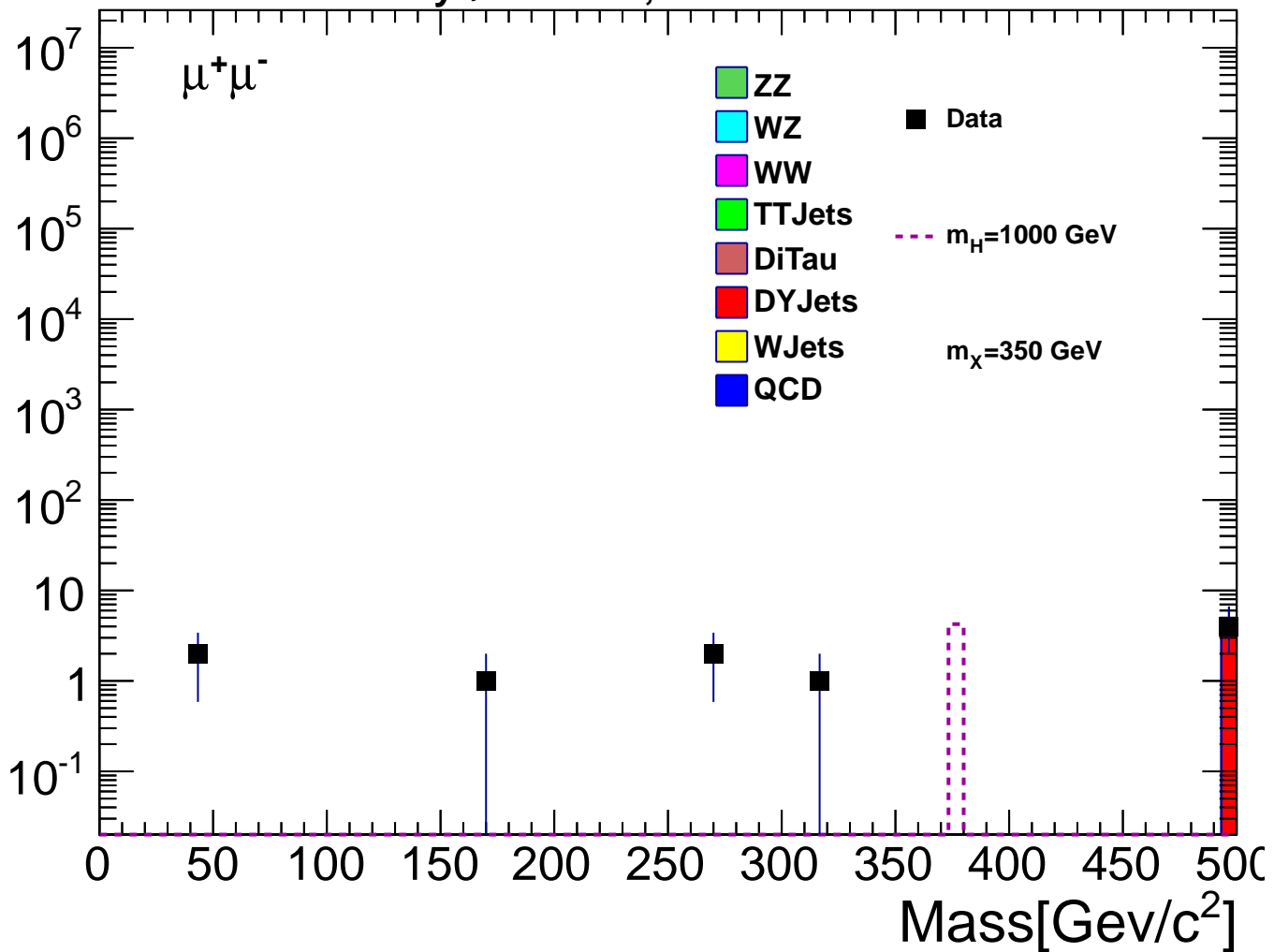


MC/Data

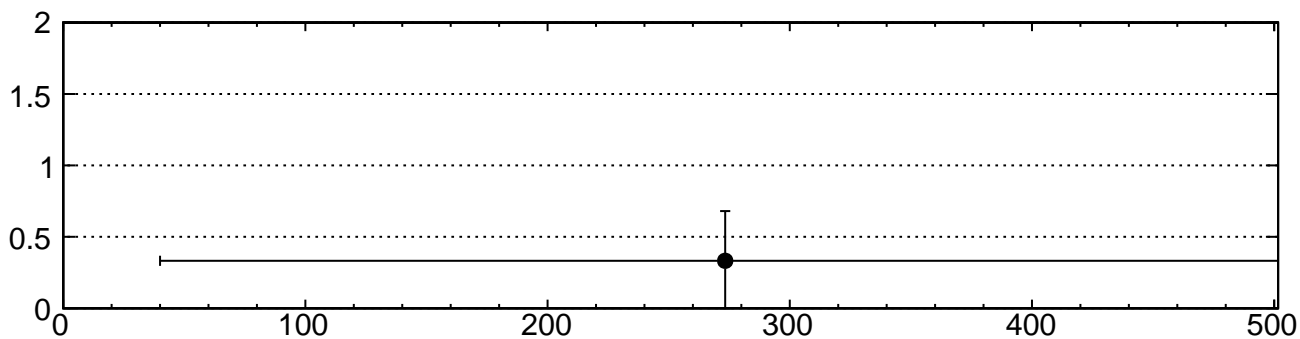


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

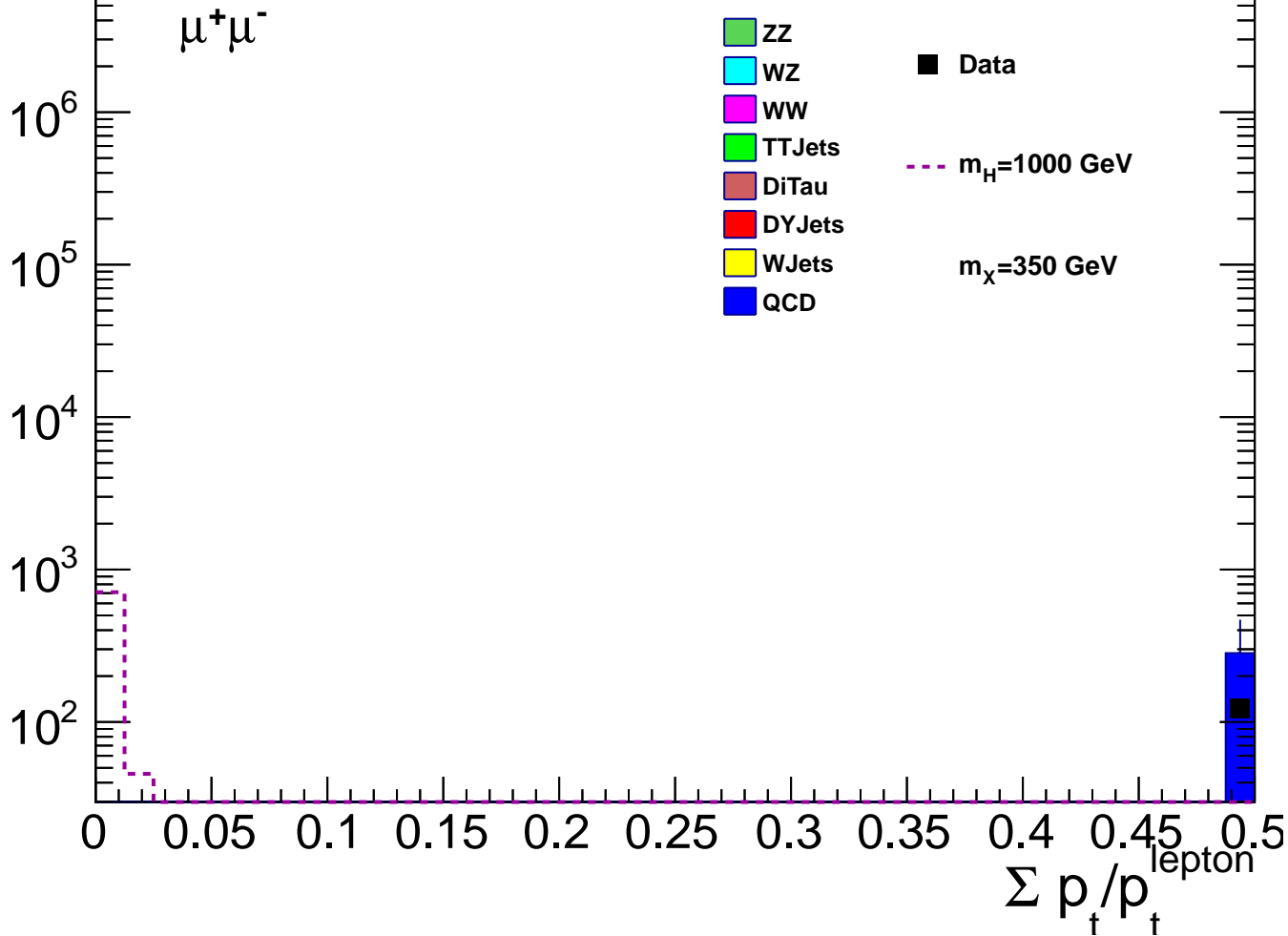


MC/Data

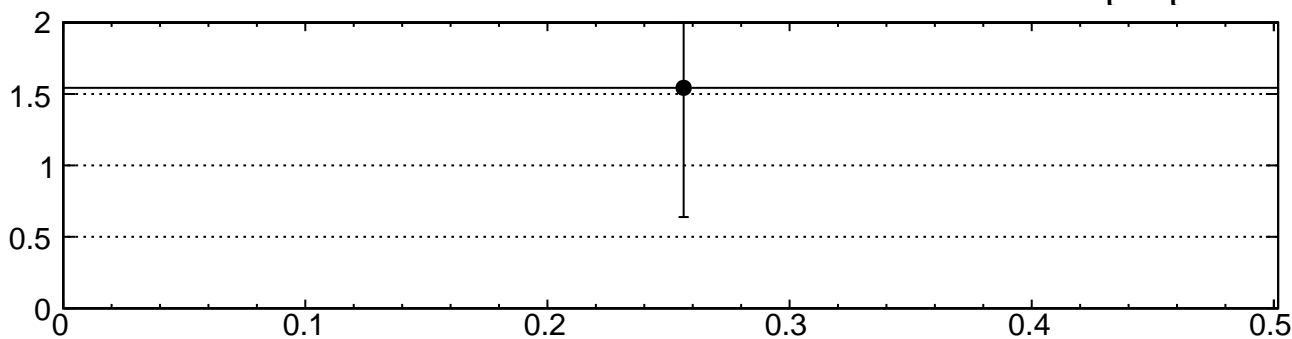


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

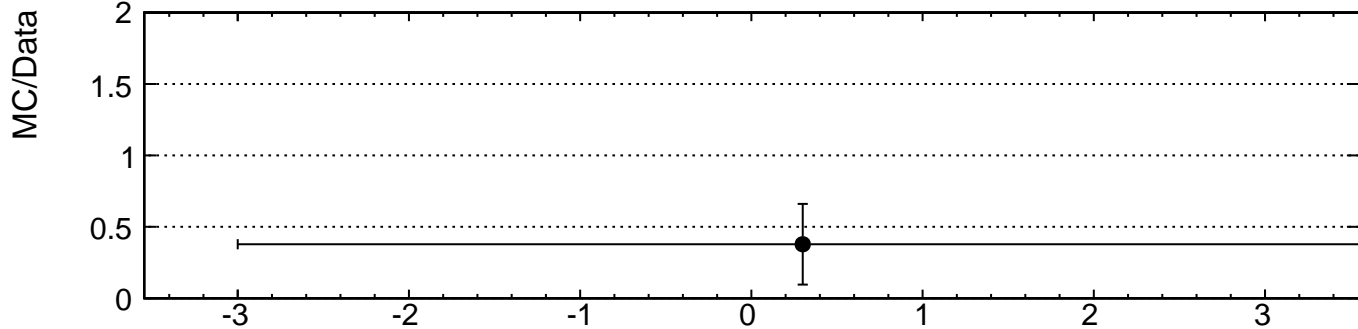
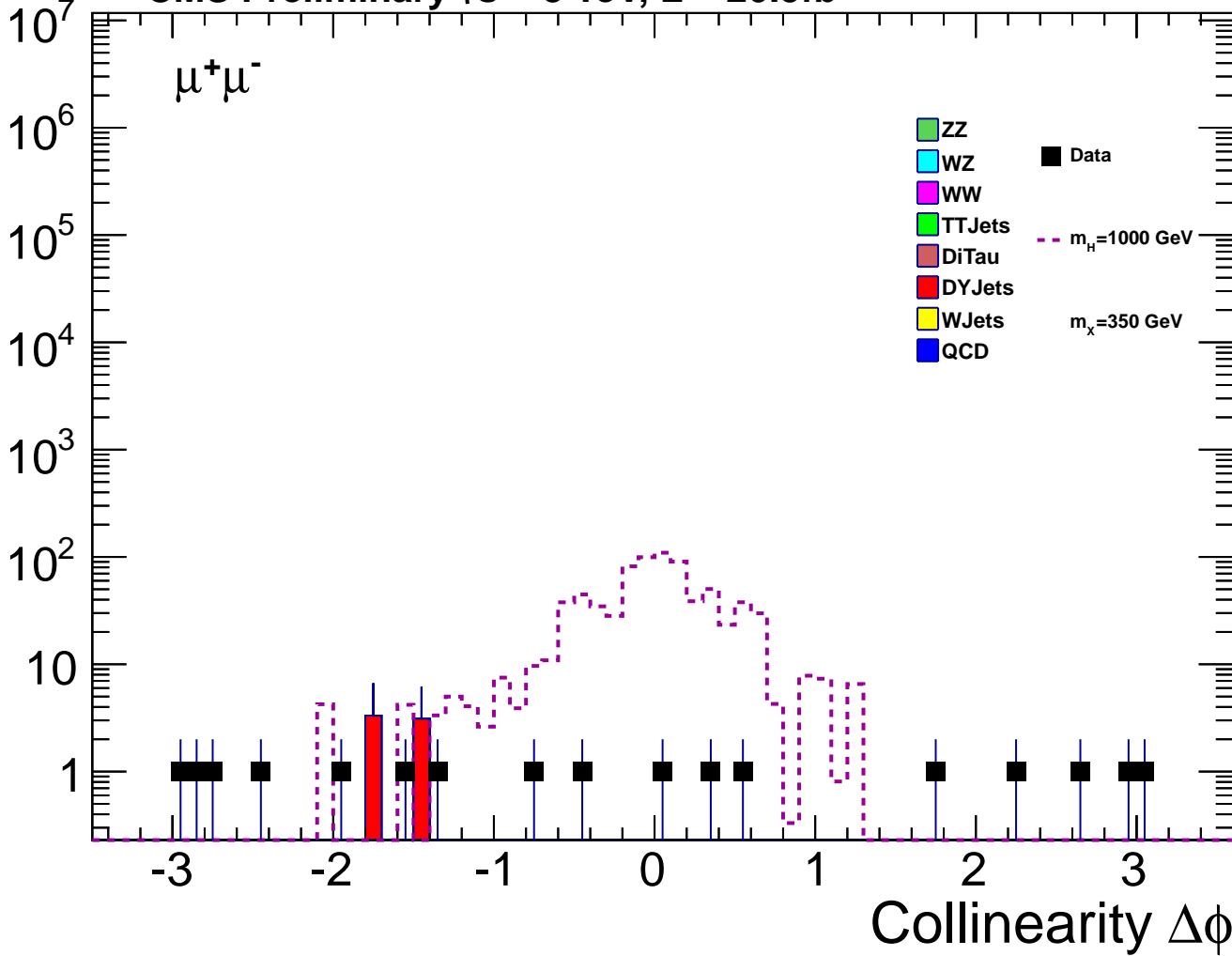


MC/Data



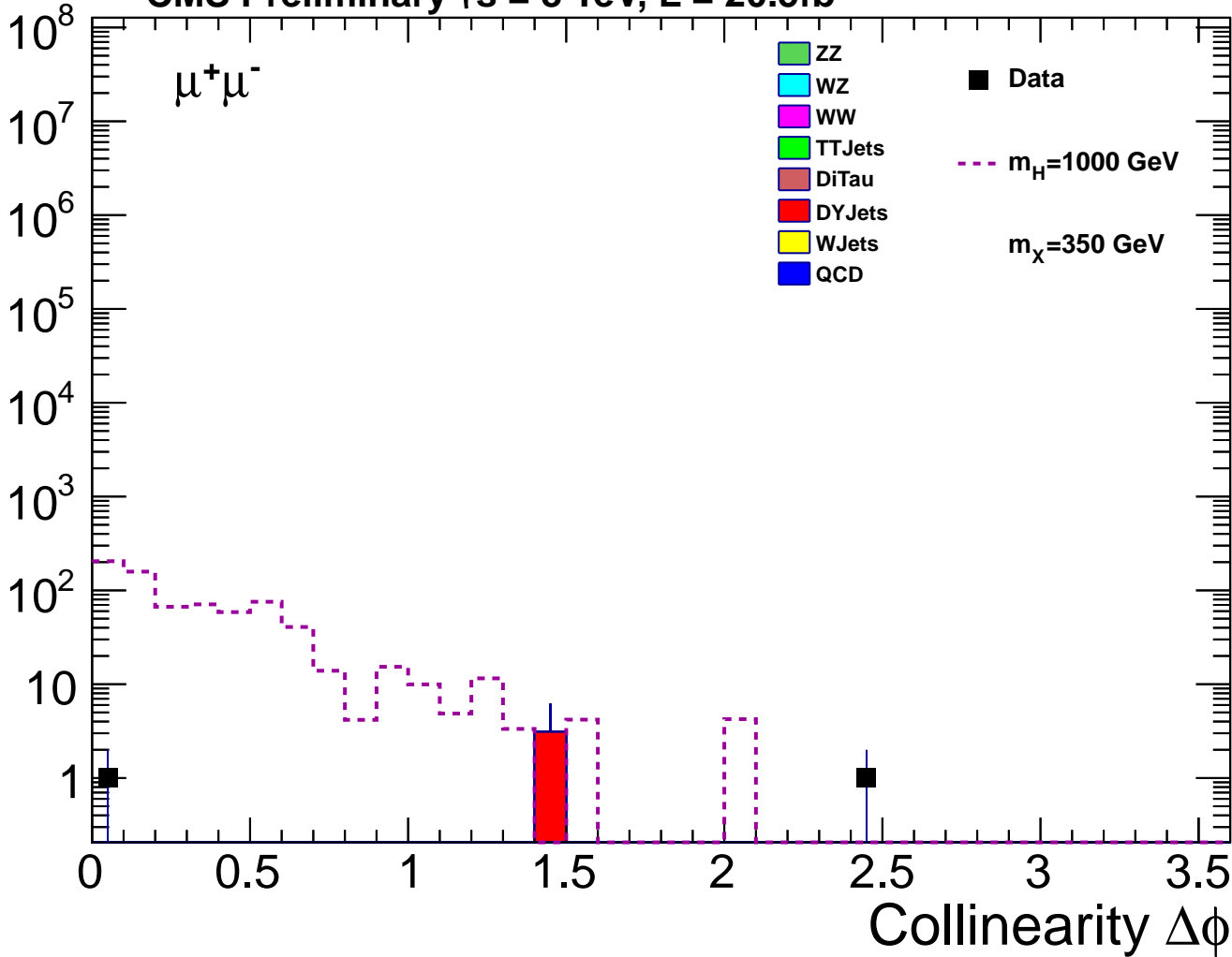
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

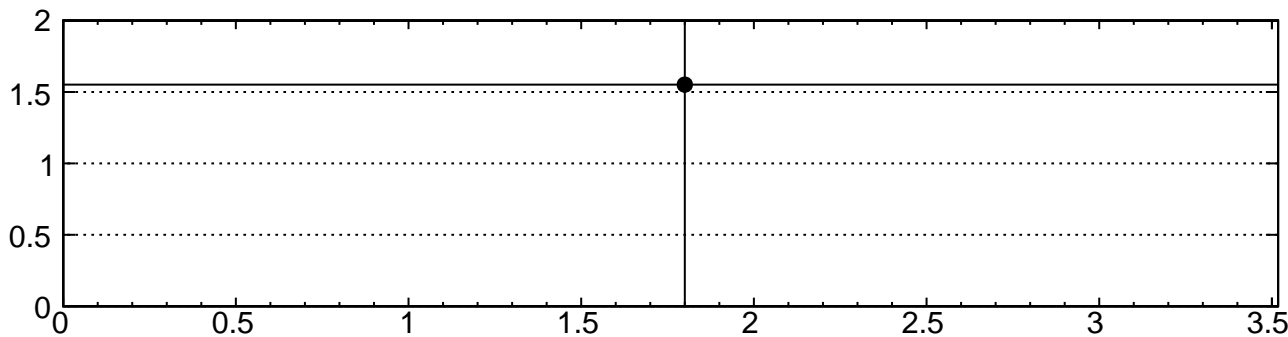


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

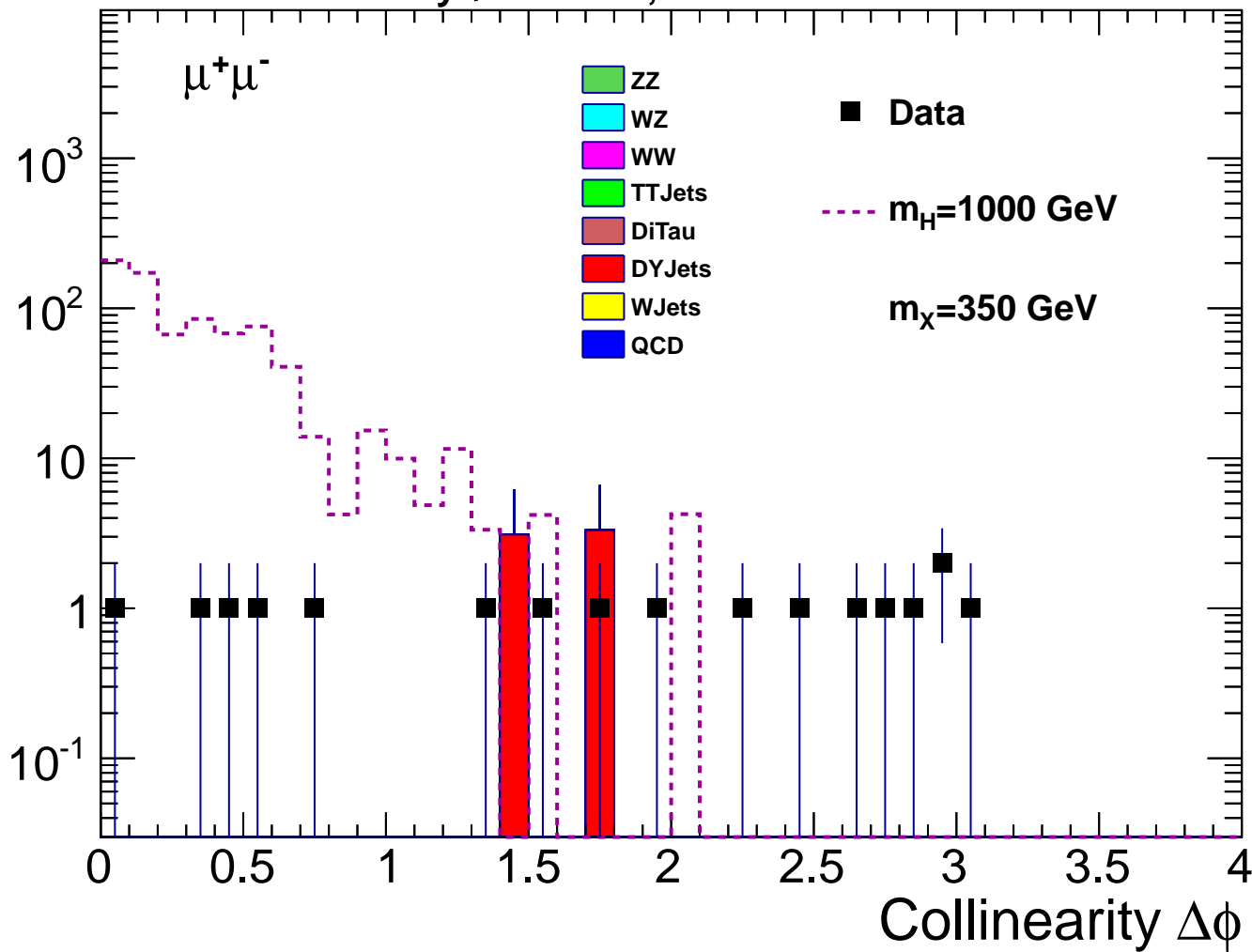


MC/Data

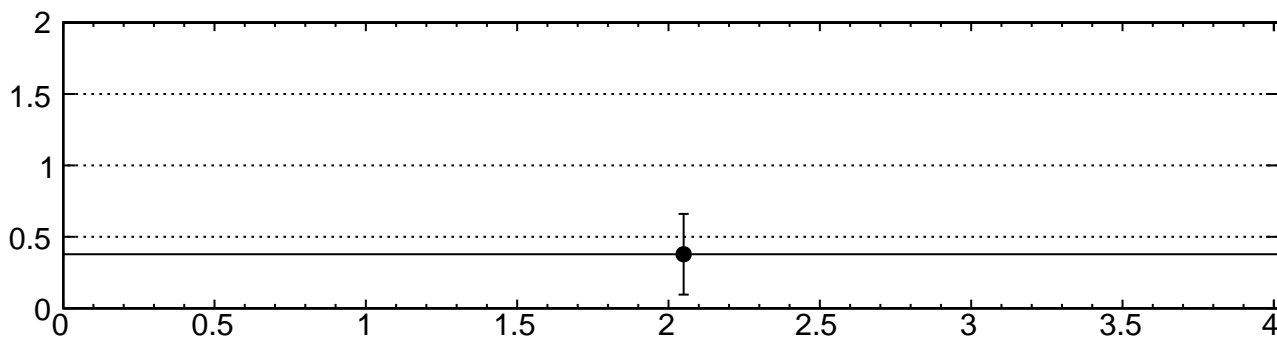


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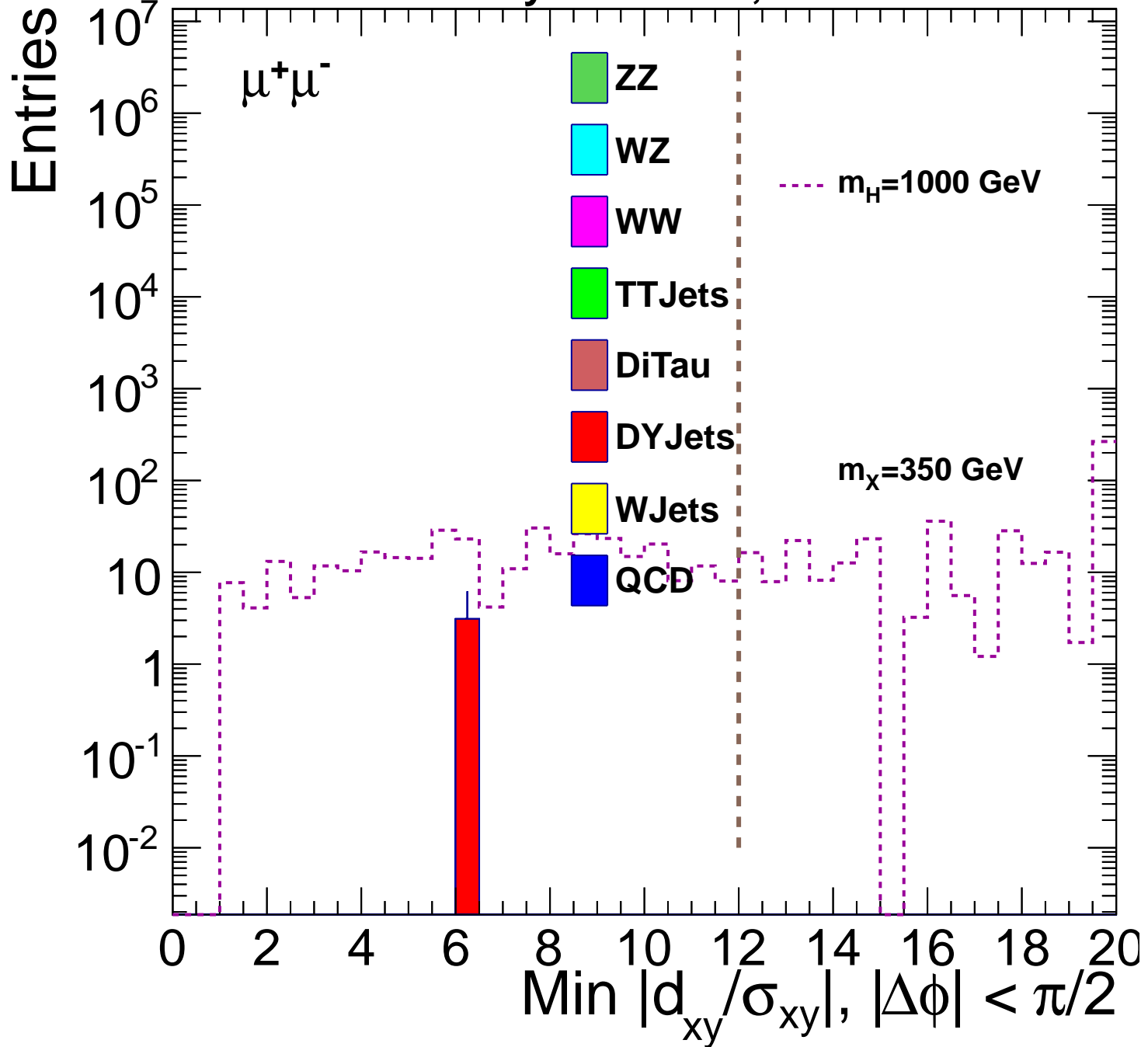
Entries



MC/Data

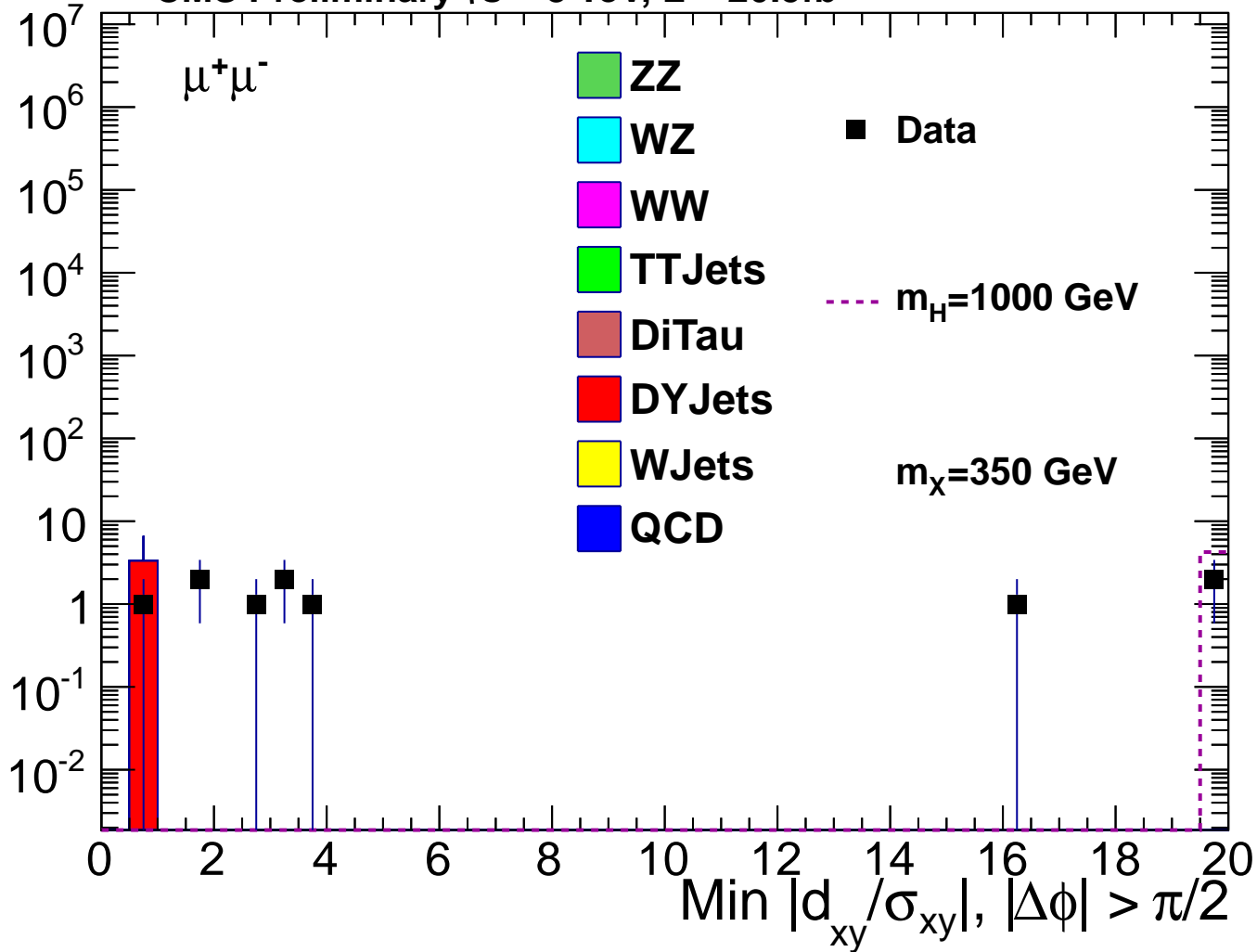


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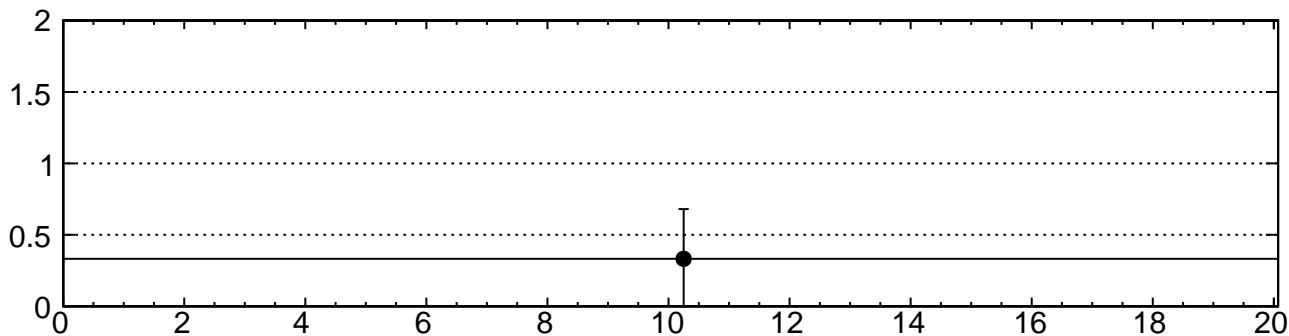


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

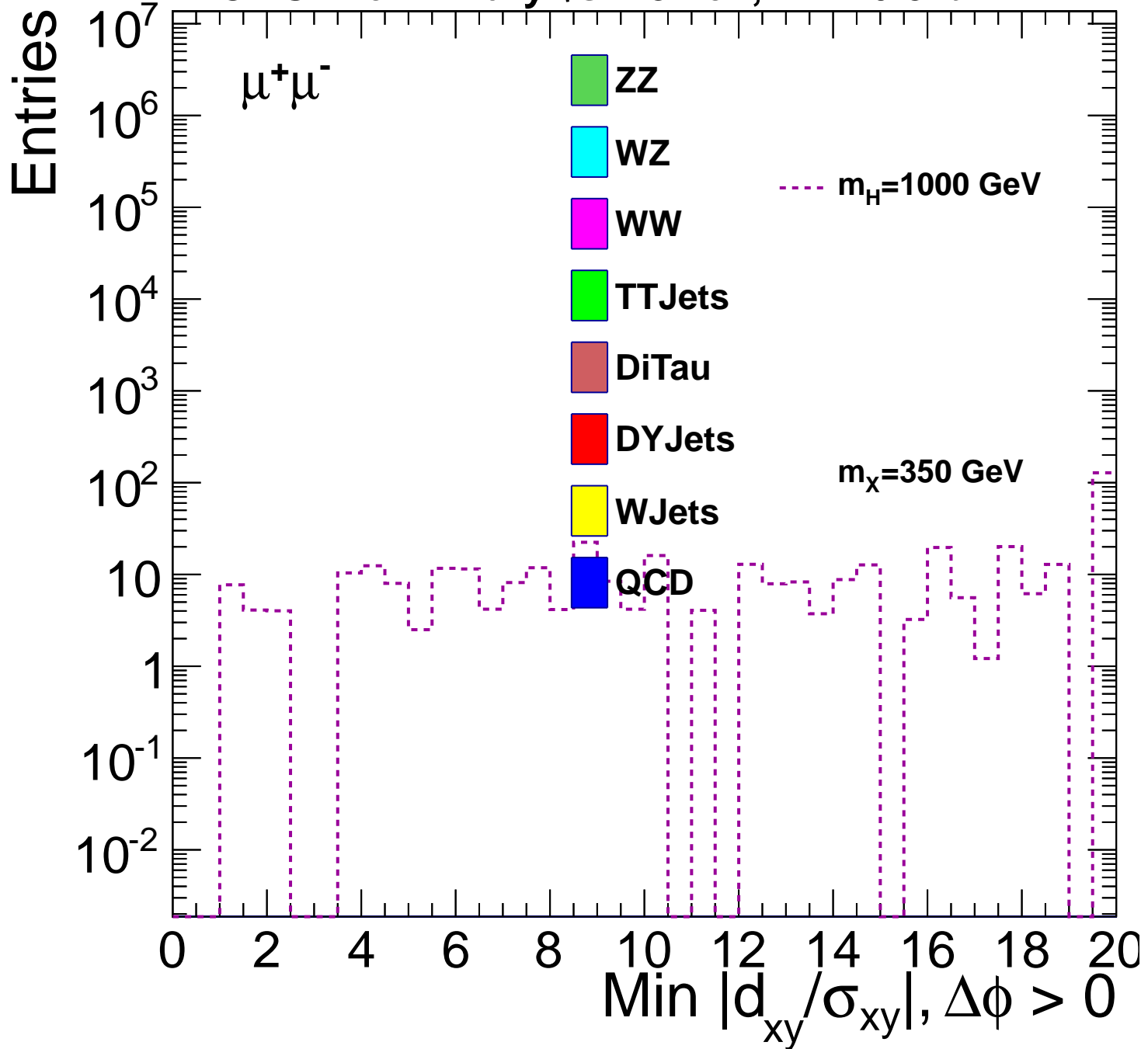
Entries



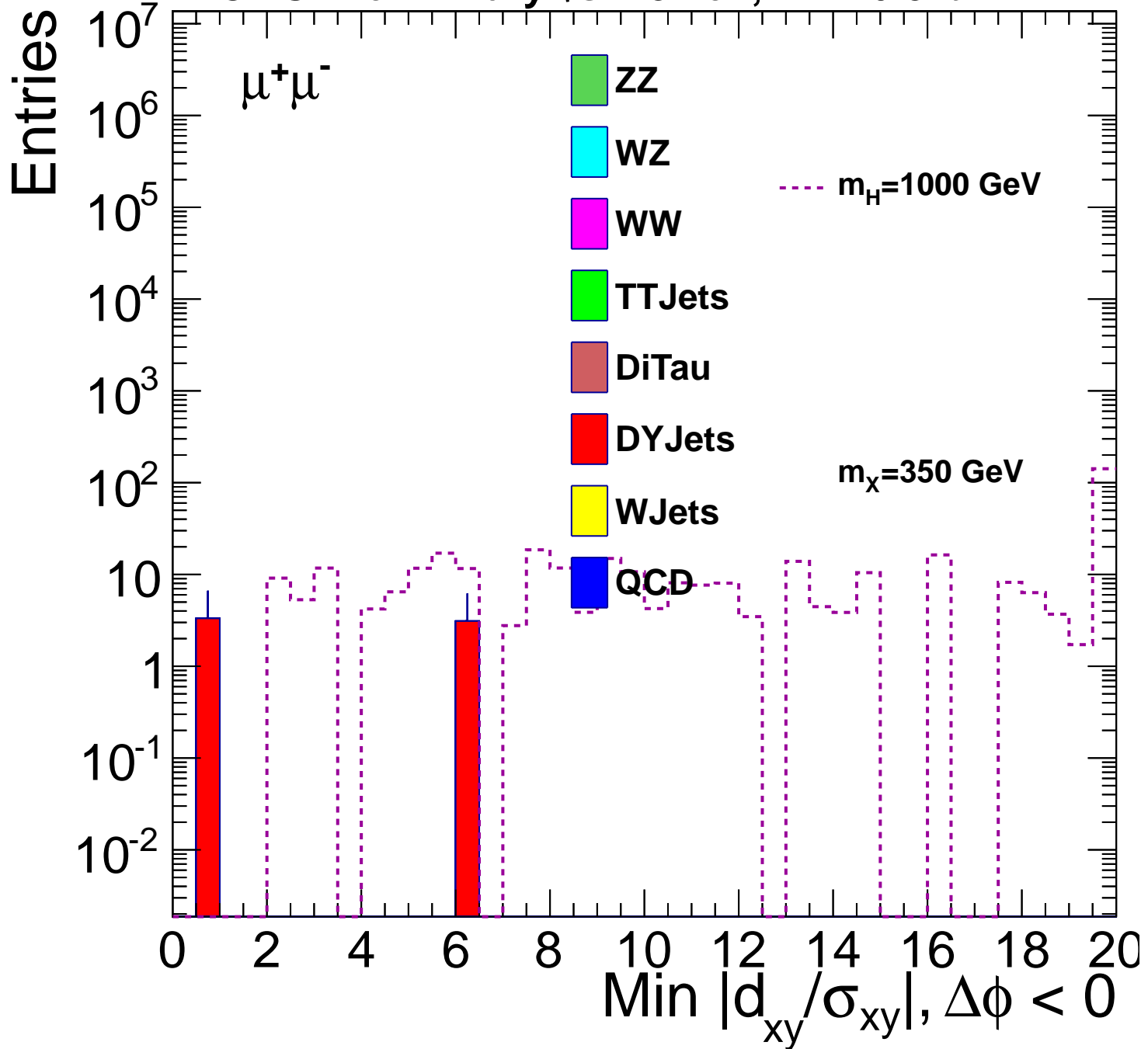
MC/Data



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

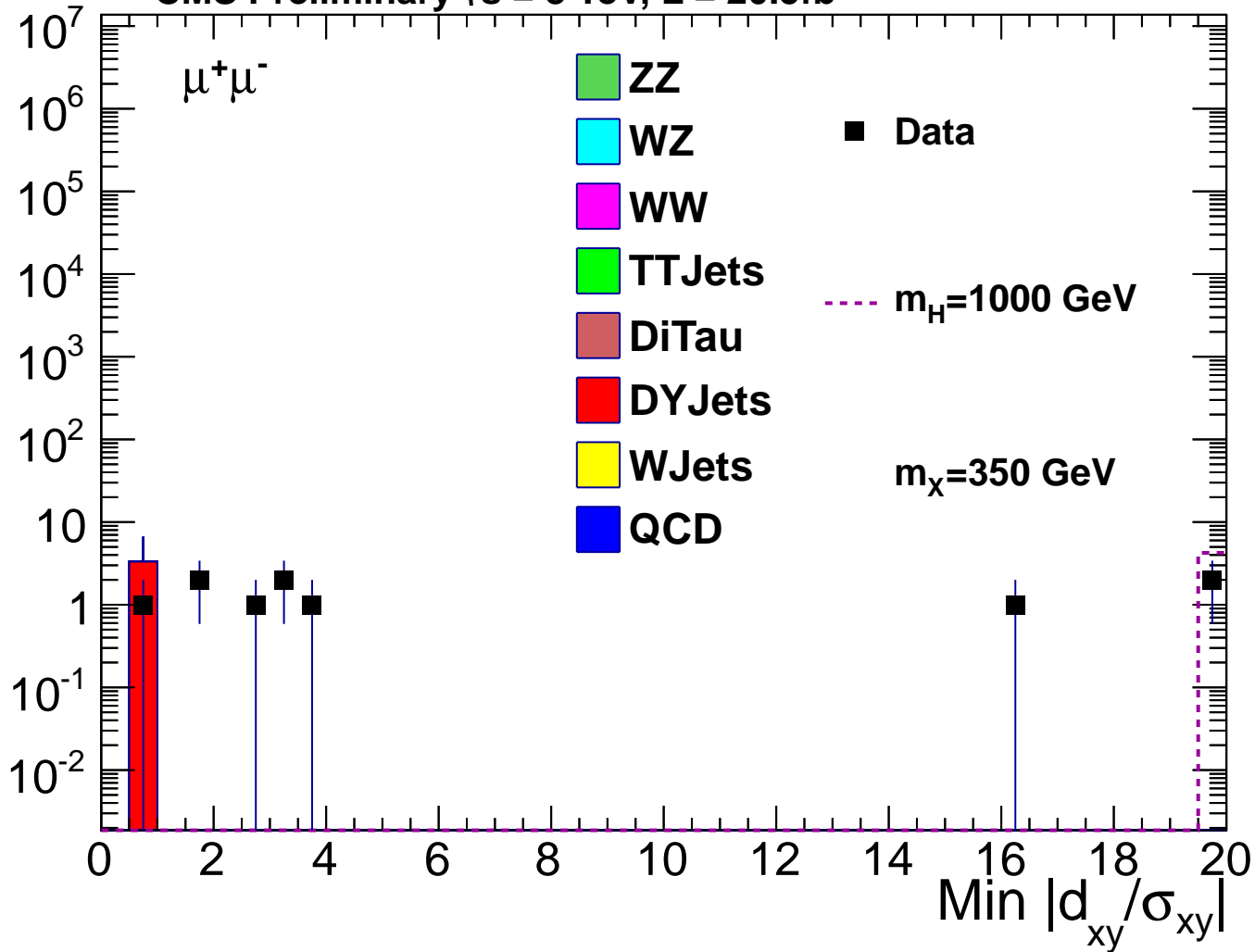


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

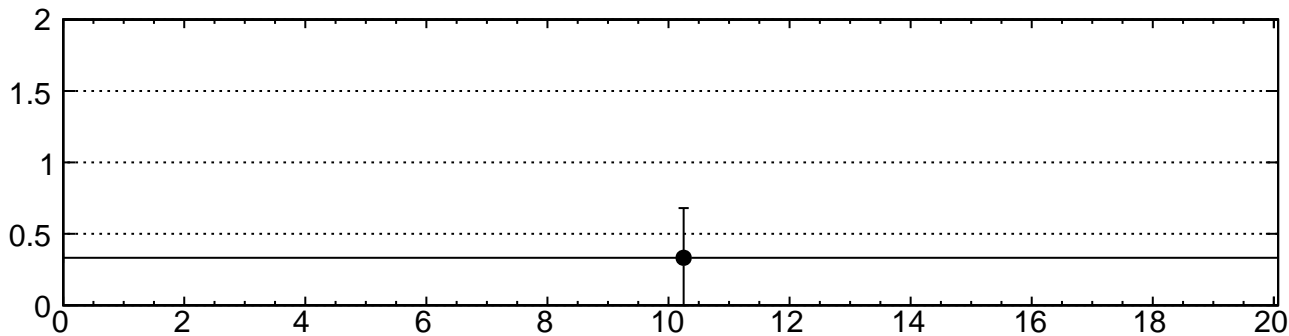


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

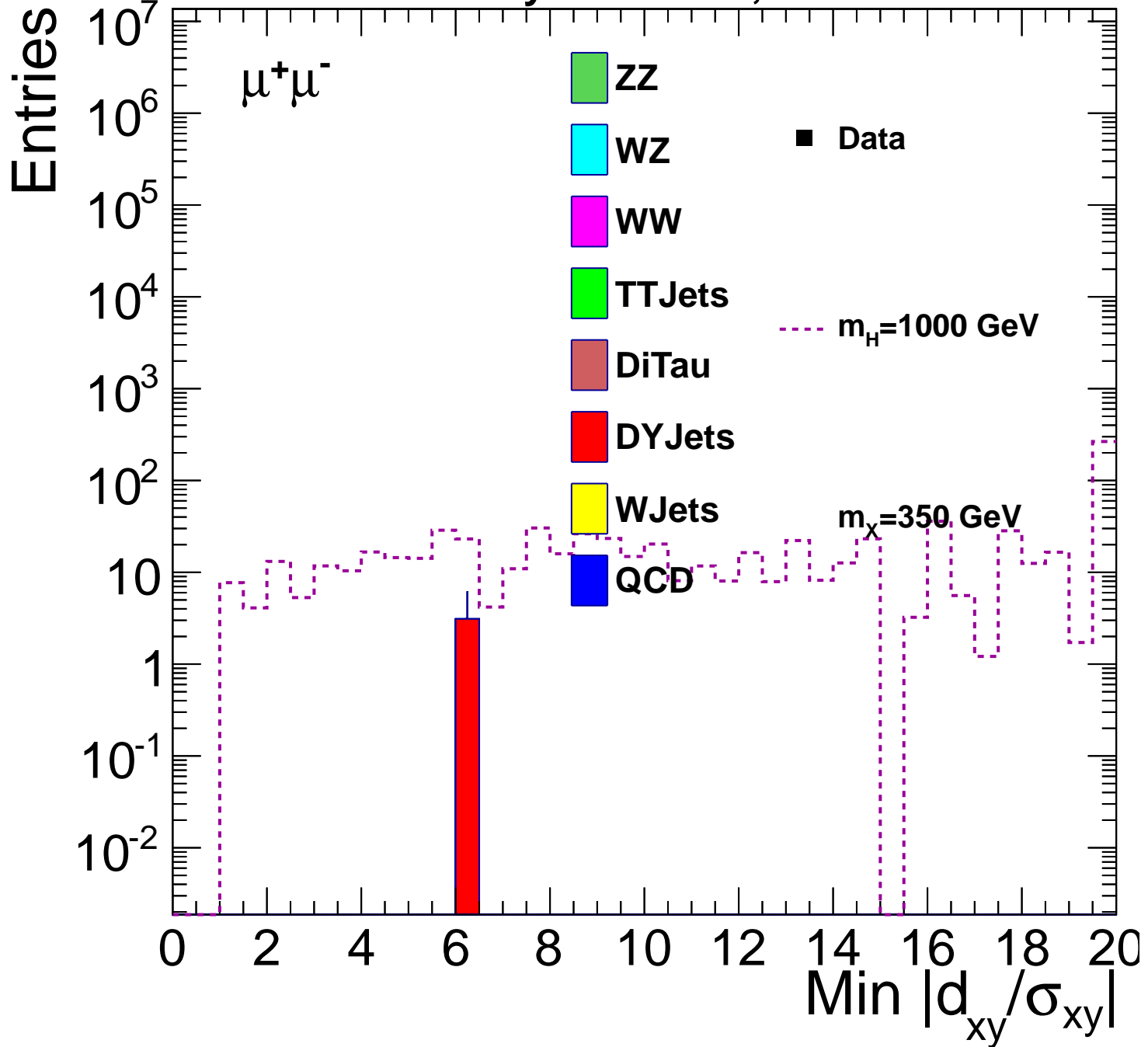
Entries



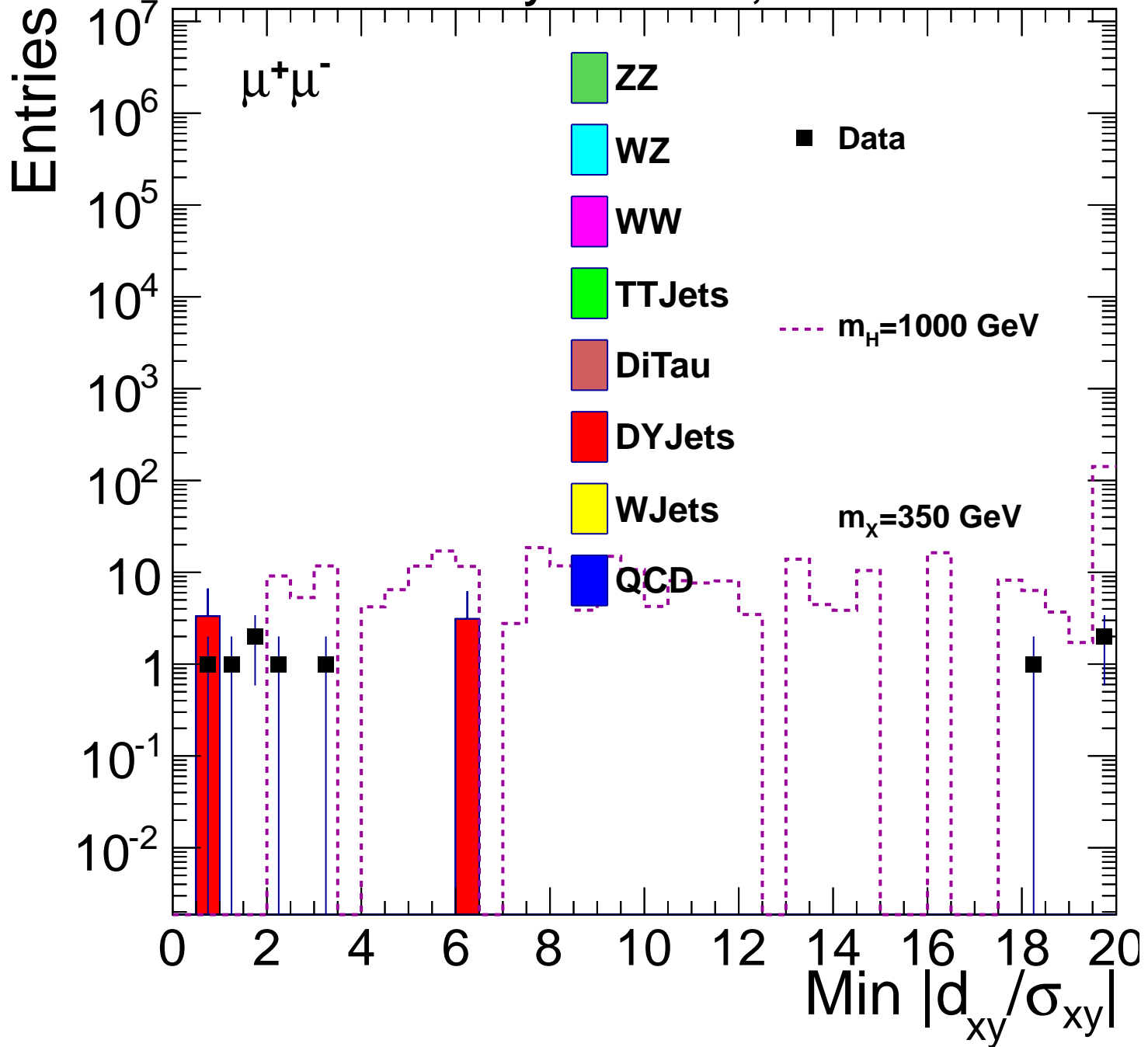
MC/Data



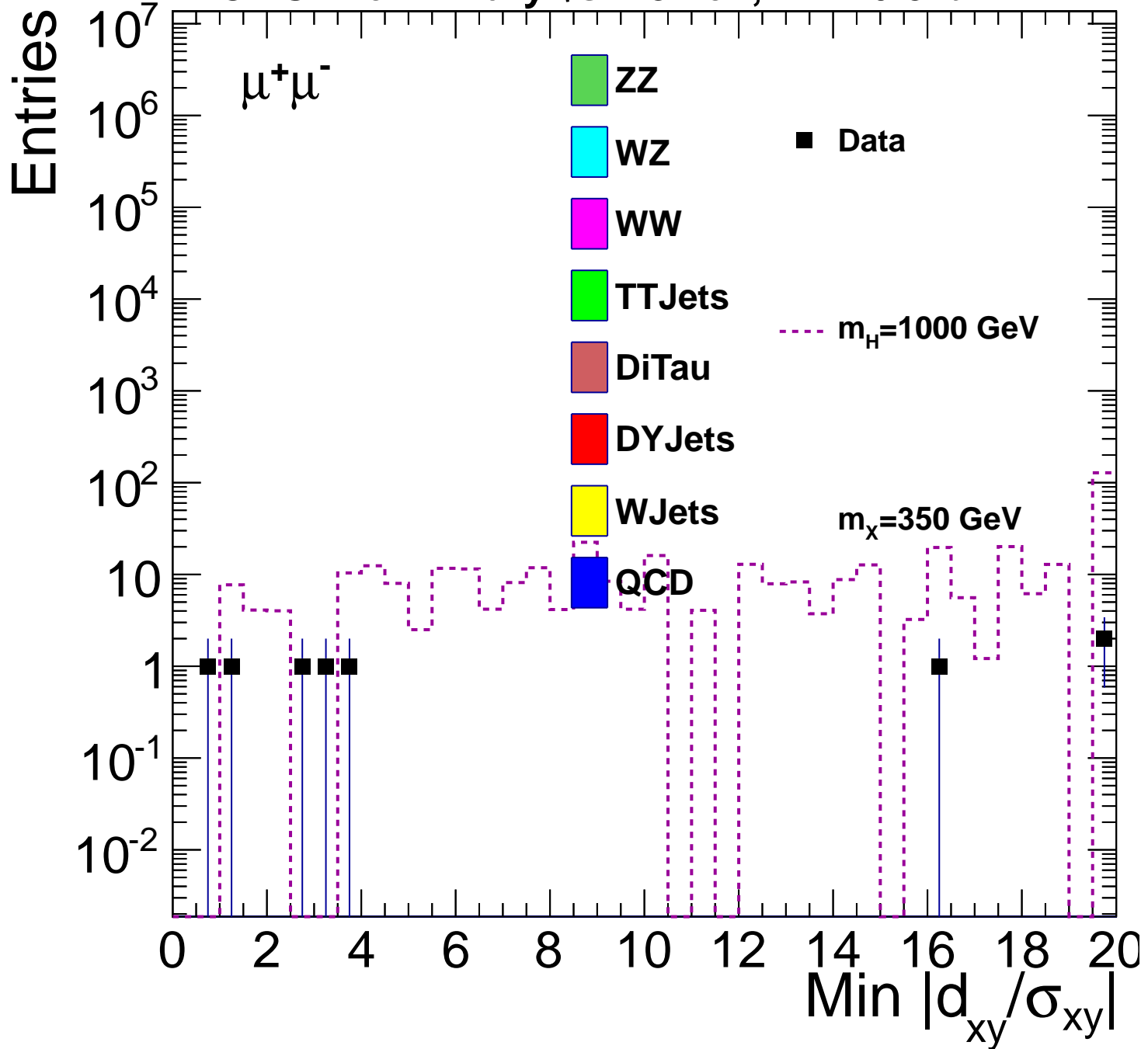
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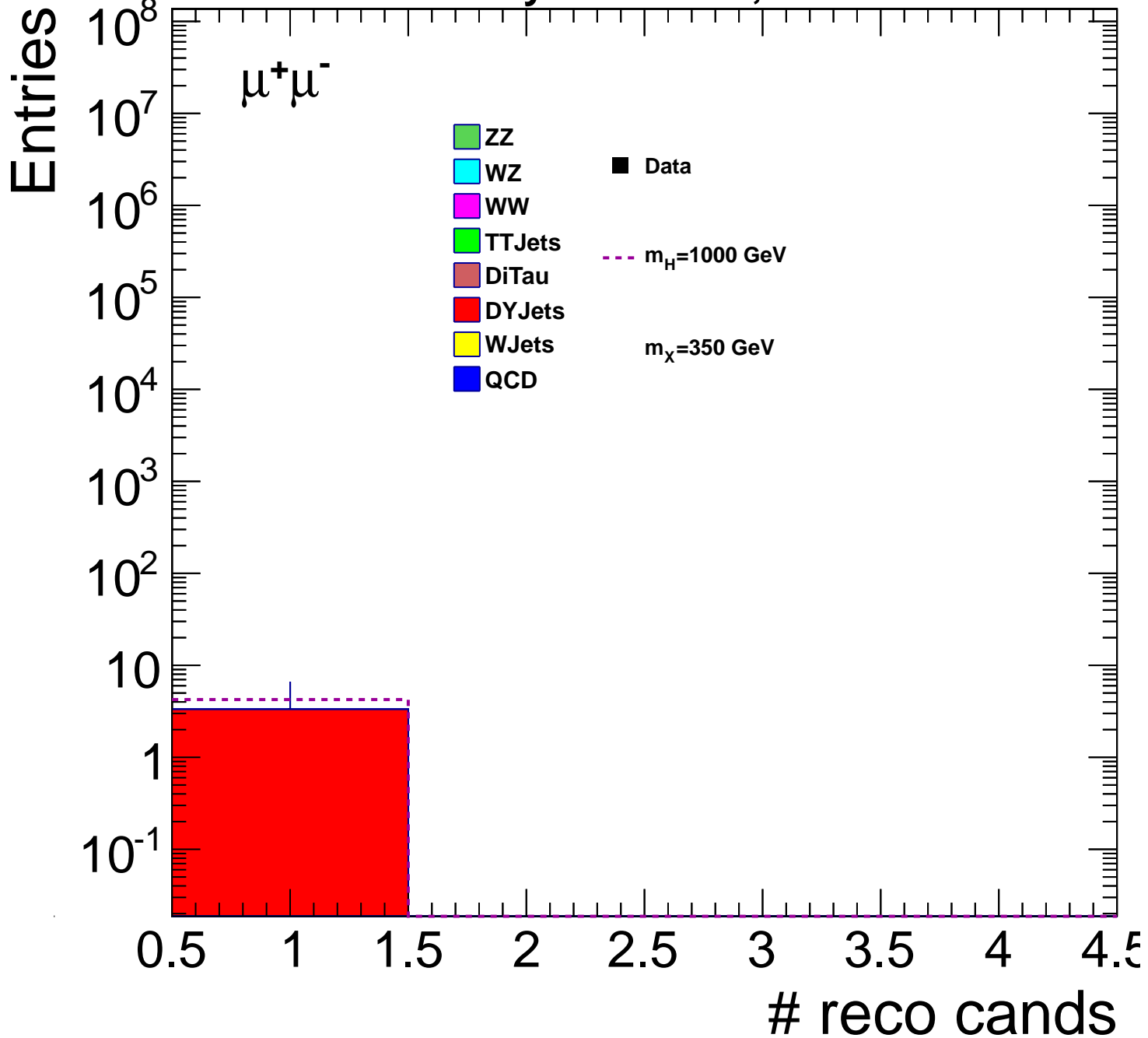
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

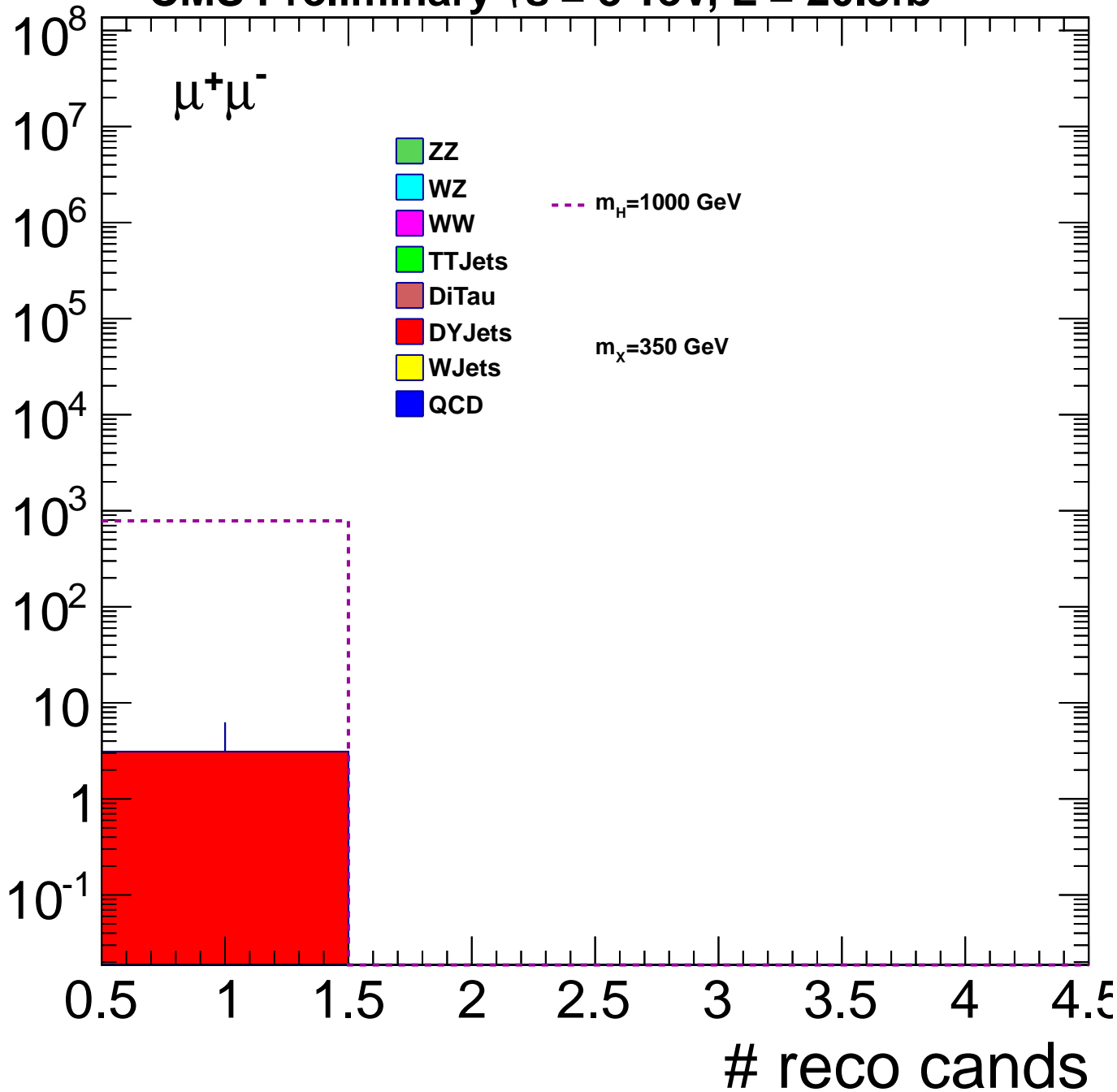
Entries

$\mu^+\mu^-$

ZZ
WZ
WW
TTJets
DiTau
DYJets
WJets
QCD

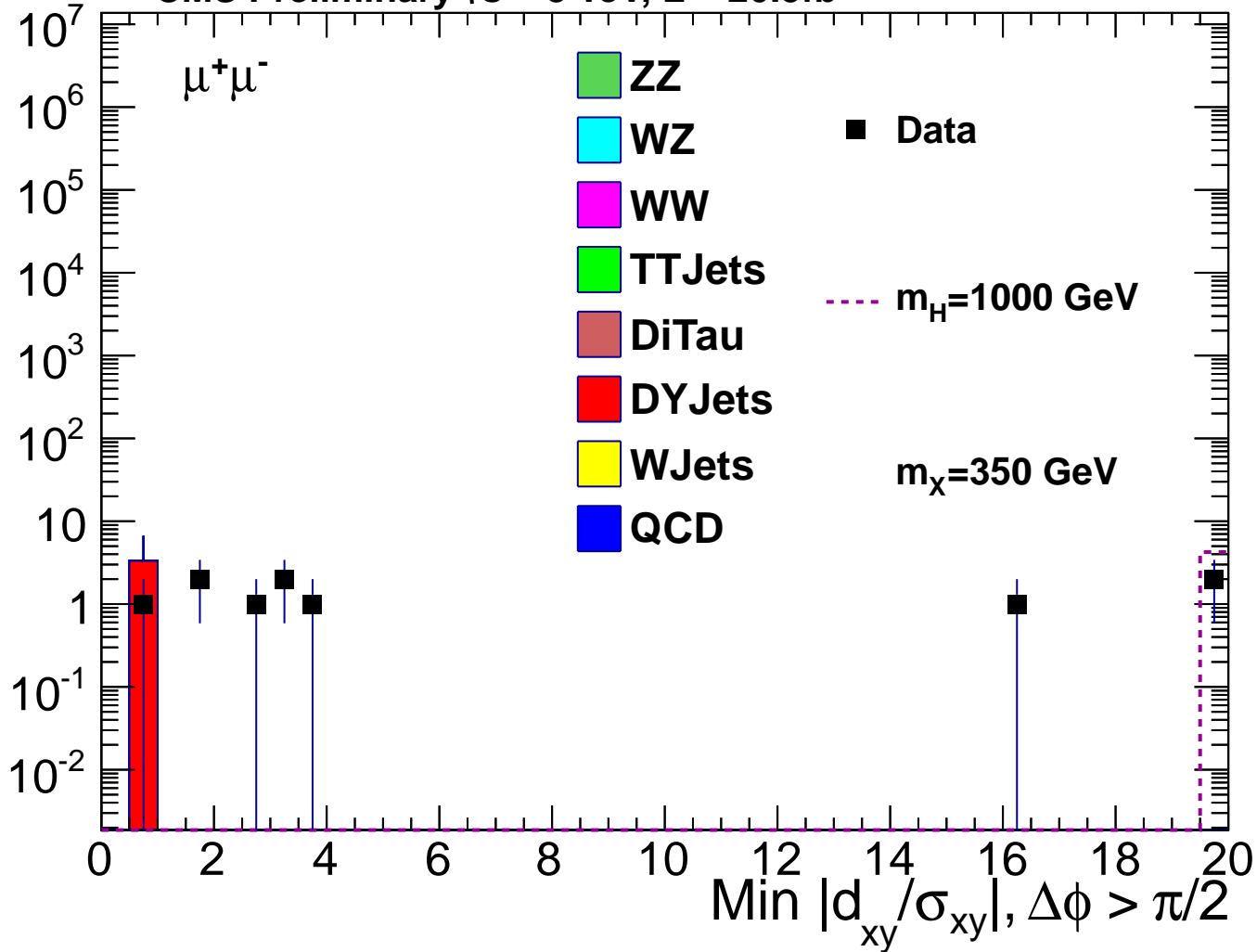
$m_H = 1000 \text{ GeV}$

$m_\chi = 350 \text{ GeV}$

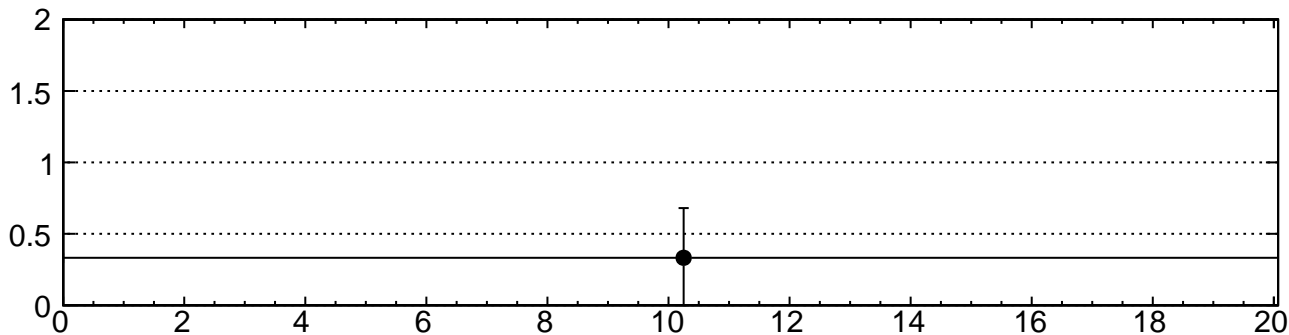


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries



MC/Data



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

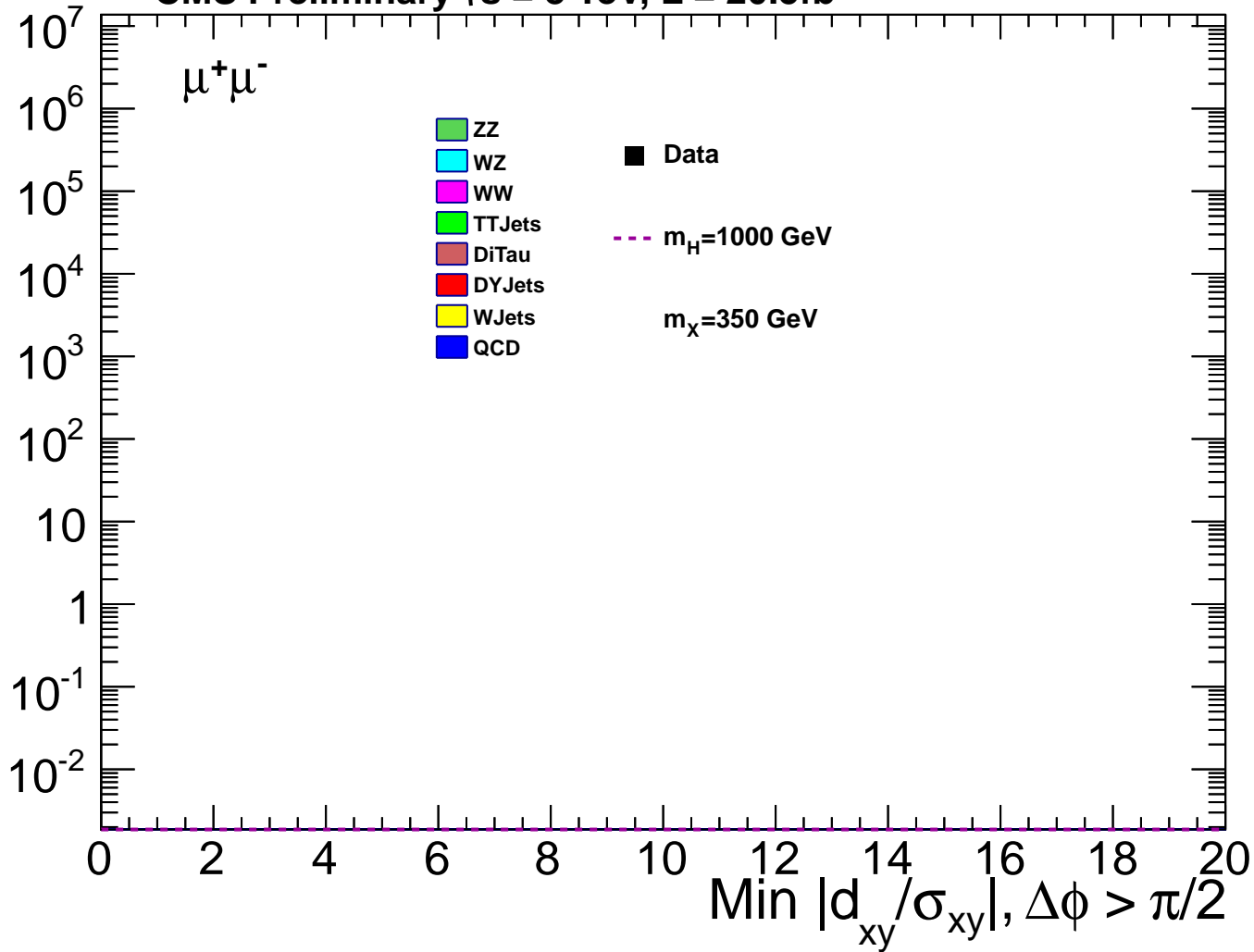
$\mu^+\mu^-$

ZZ
WZ
WW
TTJets
DiTau
DYJets
WJets
QCD

■ Data

--- $m_H = 1000 \text{ GeV}$

$m_\chi = 350 \text{ GeV}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

$\mu^+\mu^-$

ZZ

WZ

WW

TTJets

DiTau

DYJets

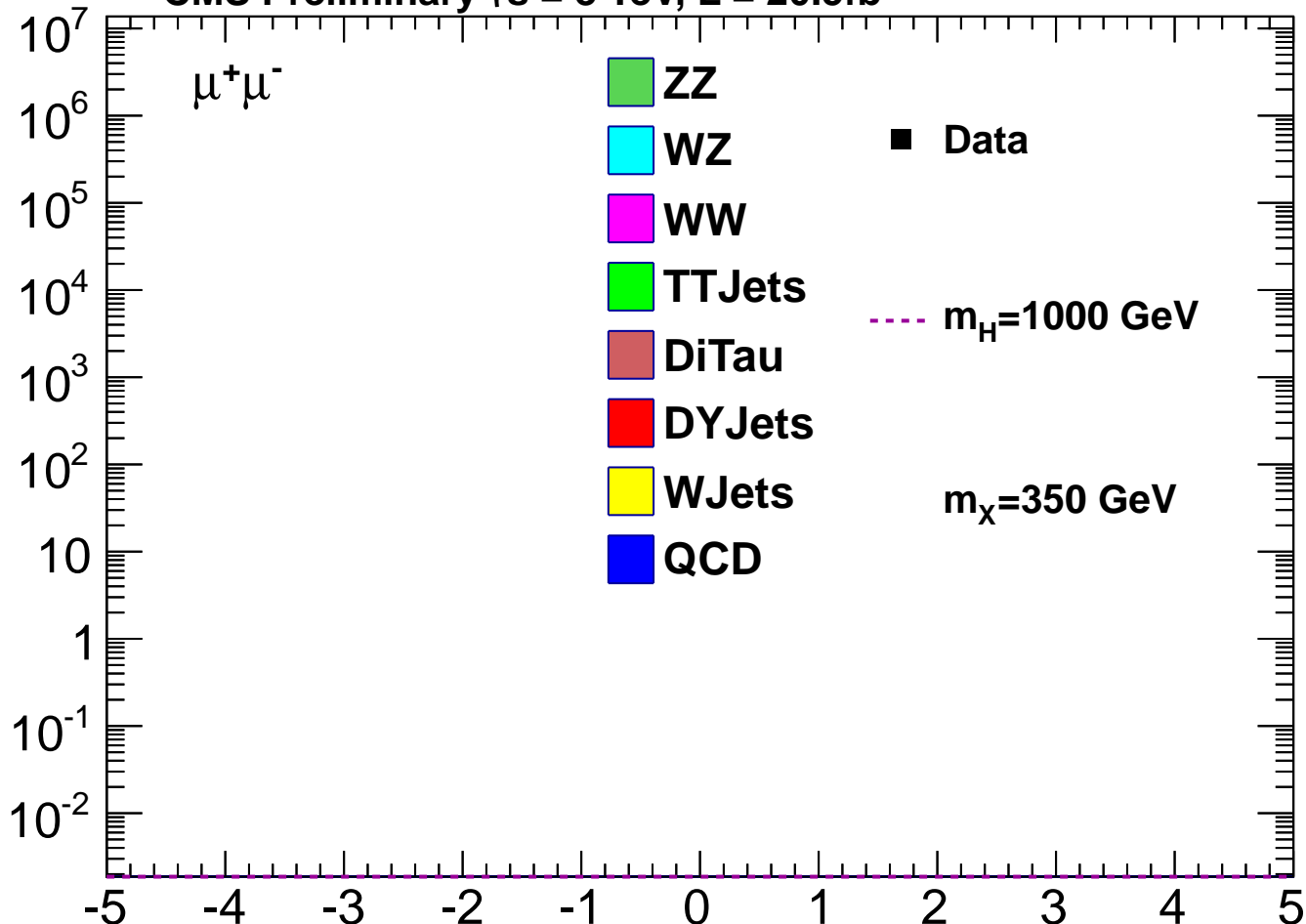
WJets

QCD

■ Data

--- $m_H = 1000 \text{ GeV}$

$m_\chi = 350 \text{ GeV}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

$\mu^+\mu^-$

ZZ

WZ

WW

TTJets

DiTau

DYJets

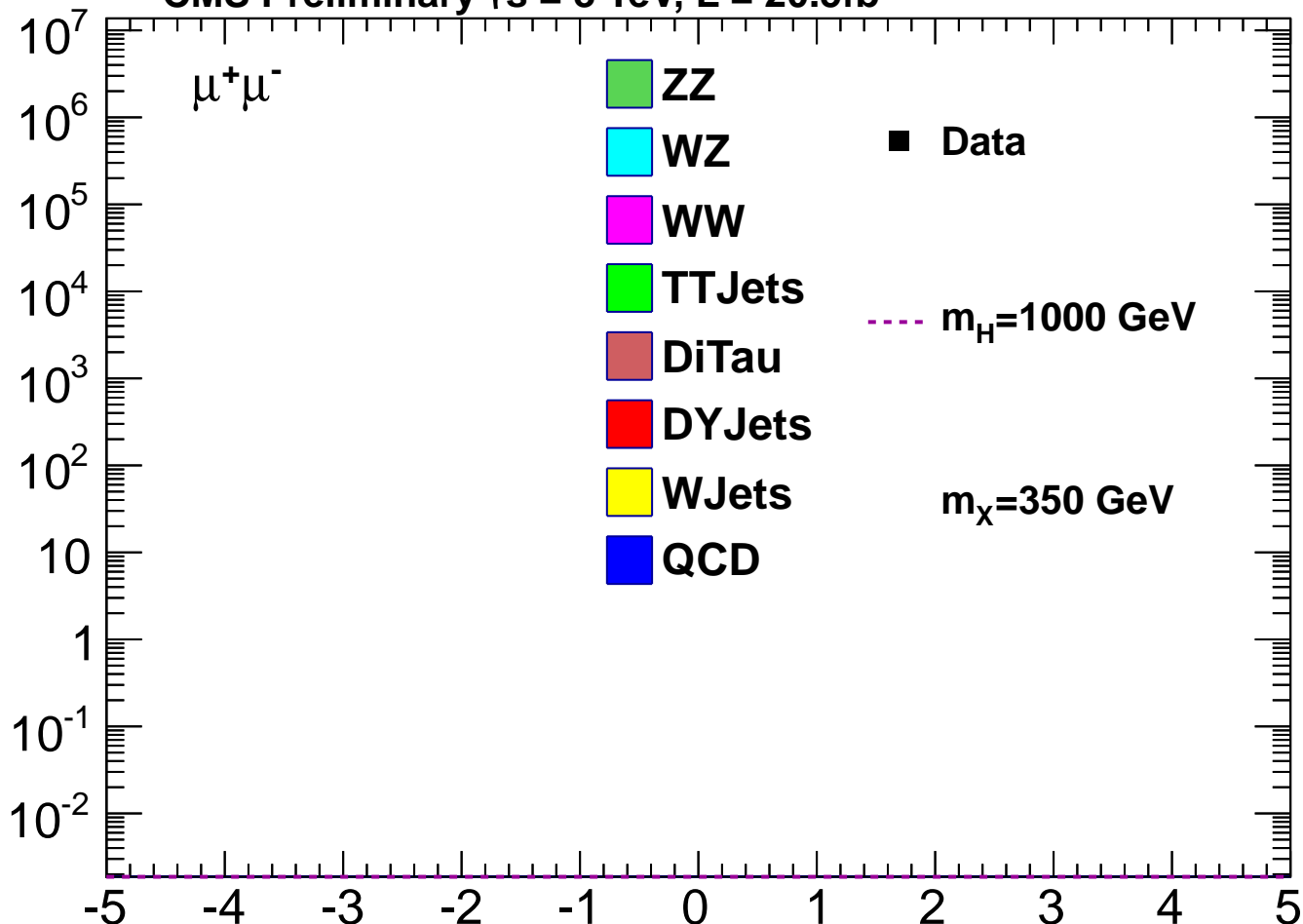
WJets

QCD

■ Data

--- $m_H = 1000 \text{ GeV}$

$m_\chi = 350 \text{ GeV}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

$\mu^+\mu^-$



ZZ



WZ



WW



TTJets



DiTau



DYJets



WJets



QCD

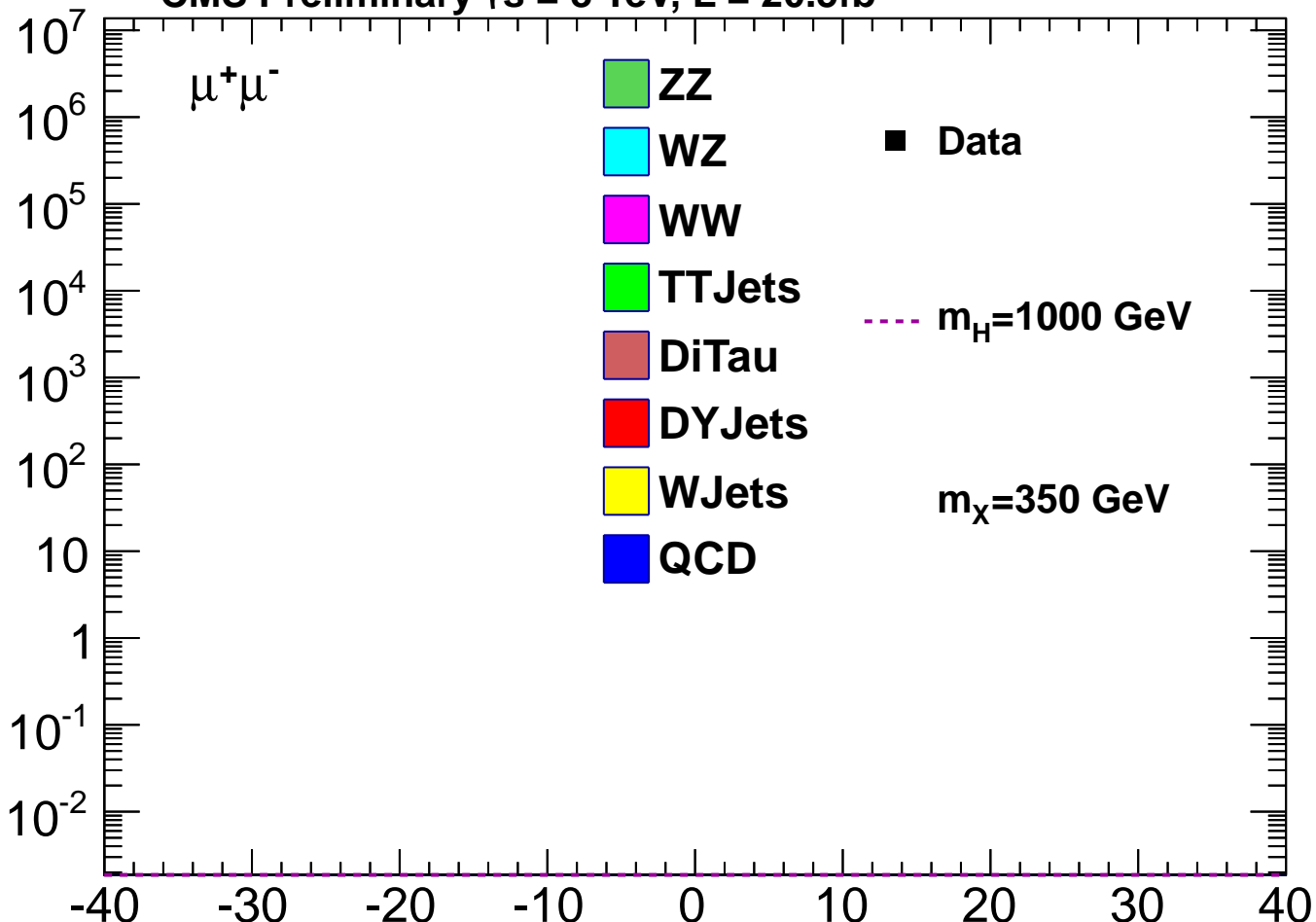


Data

--- $m_H = 1000 \text{ GeV}$

$m_\chi = 350 \text{ GeV}$

Lepton TimeAtIpOutIn (ns)



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

$\mu^+\mu^-$



ZZ



WZ



WW



TTJets



DiTau



DYJets



WJets



QCD



Data



$m_H=1000 \text{ GeV}$

$m_\chi=350 \text{ GeV}$

Lepton TimeAtInOut (ns)

CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

$\mu^+\mu^-$

ZZ

WZ

WW

TTJets

DiTau

DYJets

WJets

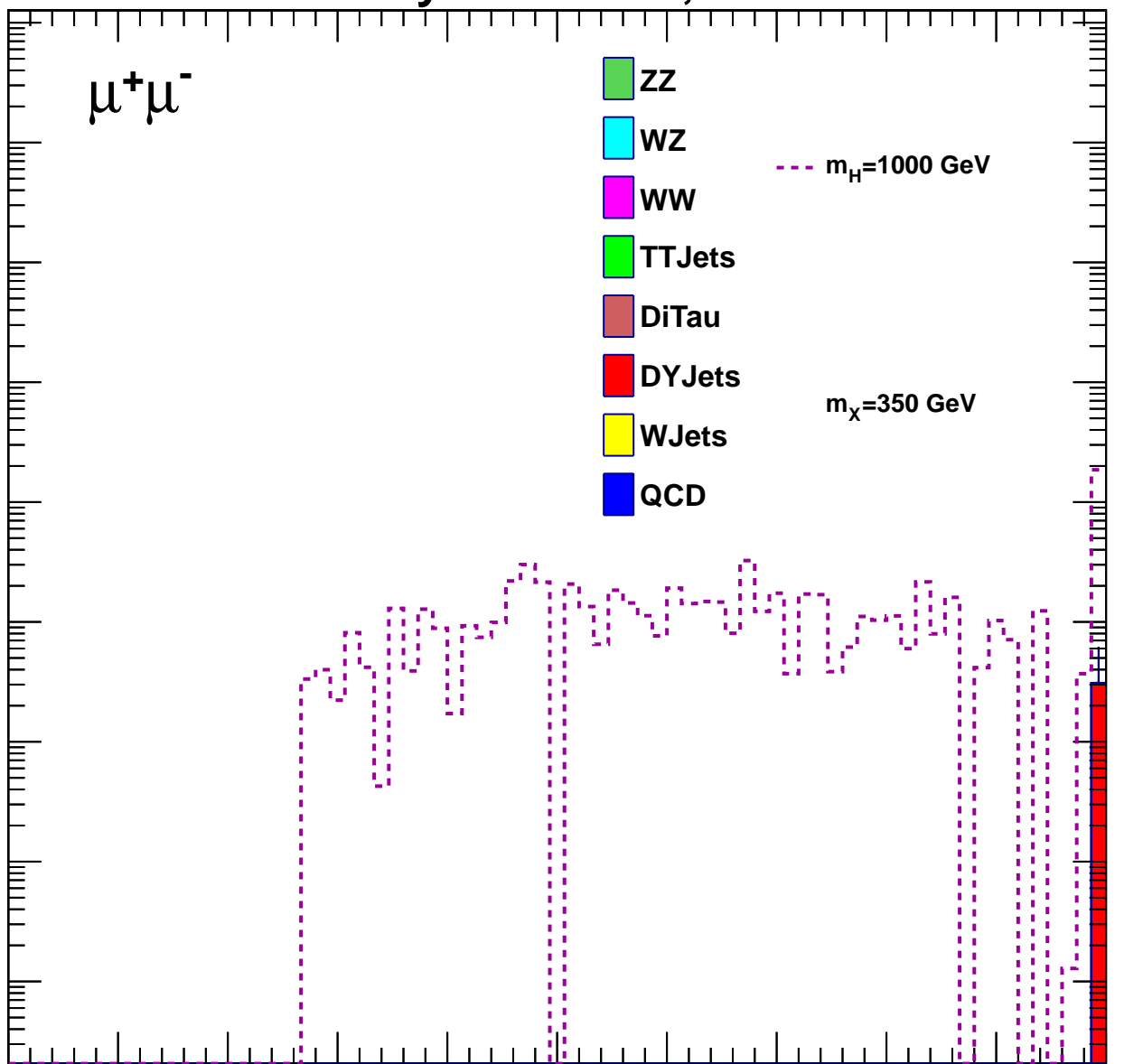
QCD

$m_H = 1000 \text{ GeV}$

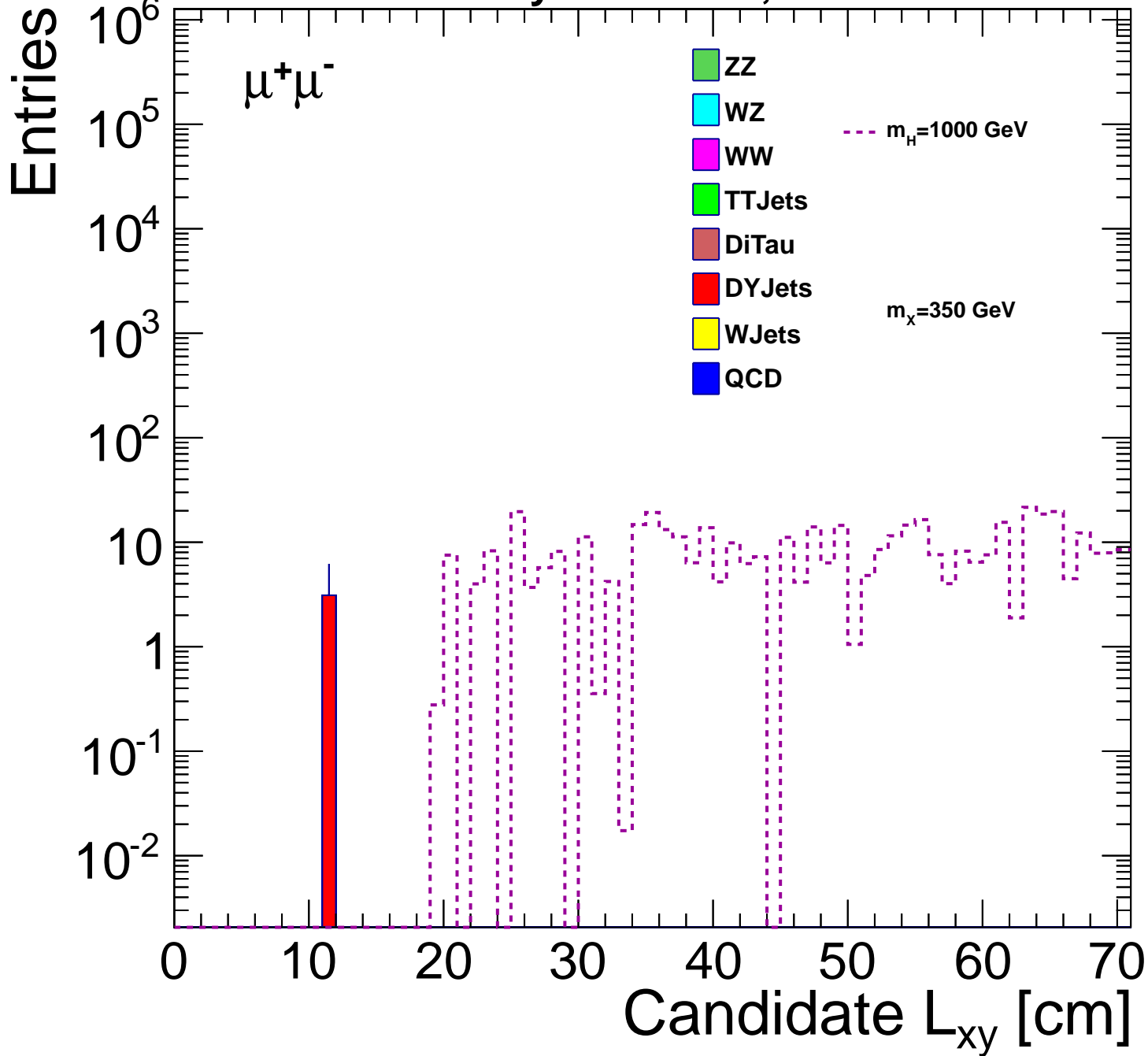
$m_X = 350 \text{ GeV}$

10^6
 10^5
 10^4
 10^3
 10^2
 10
 1
 10^{-1}
 10^{-2}

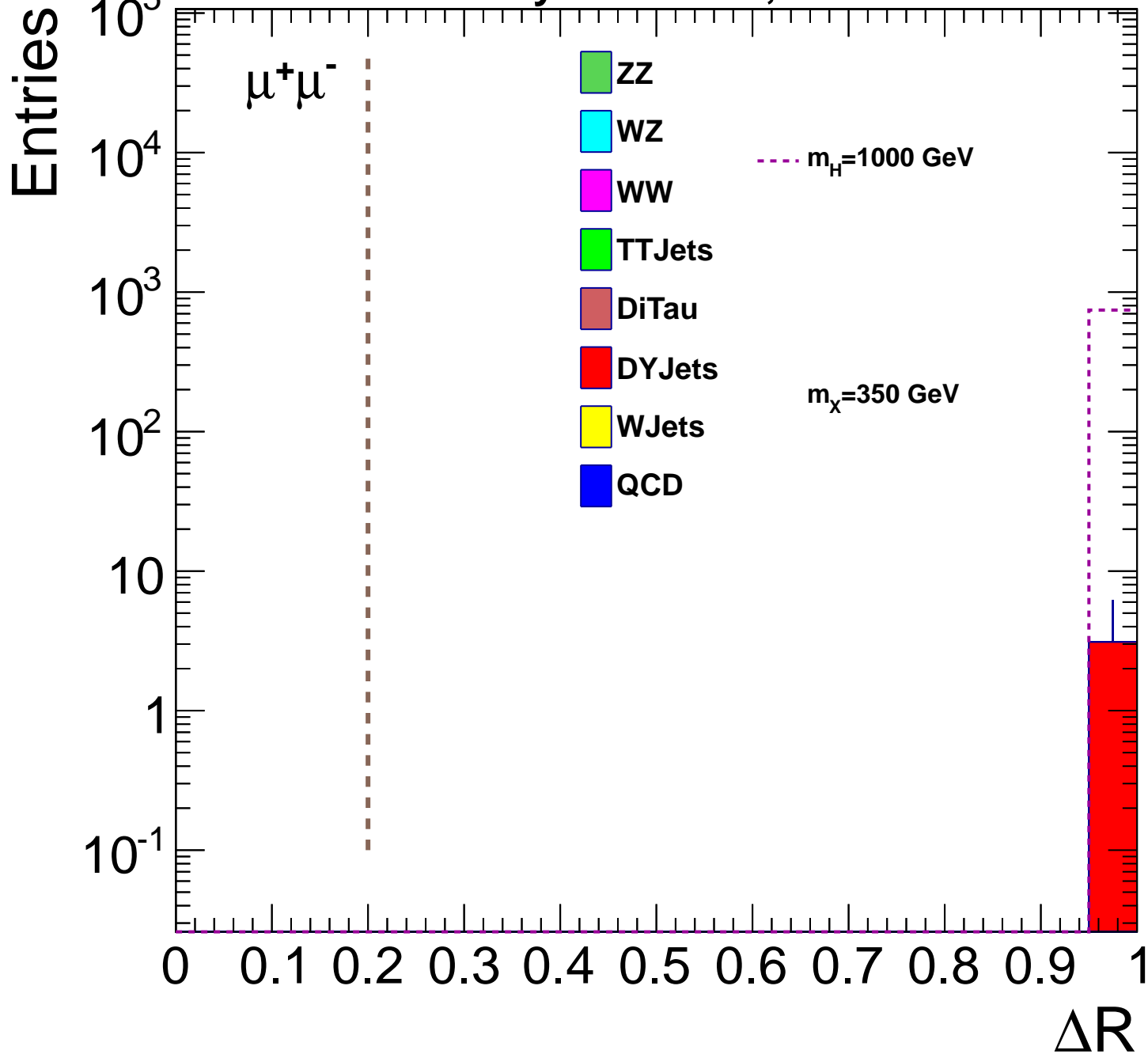
0 50 100 150 200 250 300 350 400 450 500
mass[GeV/c²]



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

$\mu^+\mu^-$

ZZ

WZ

WW

TTJets

DiTau

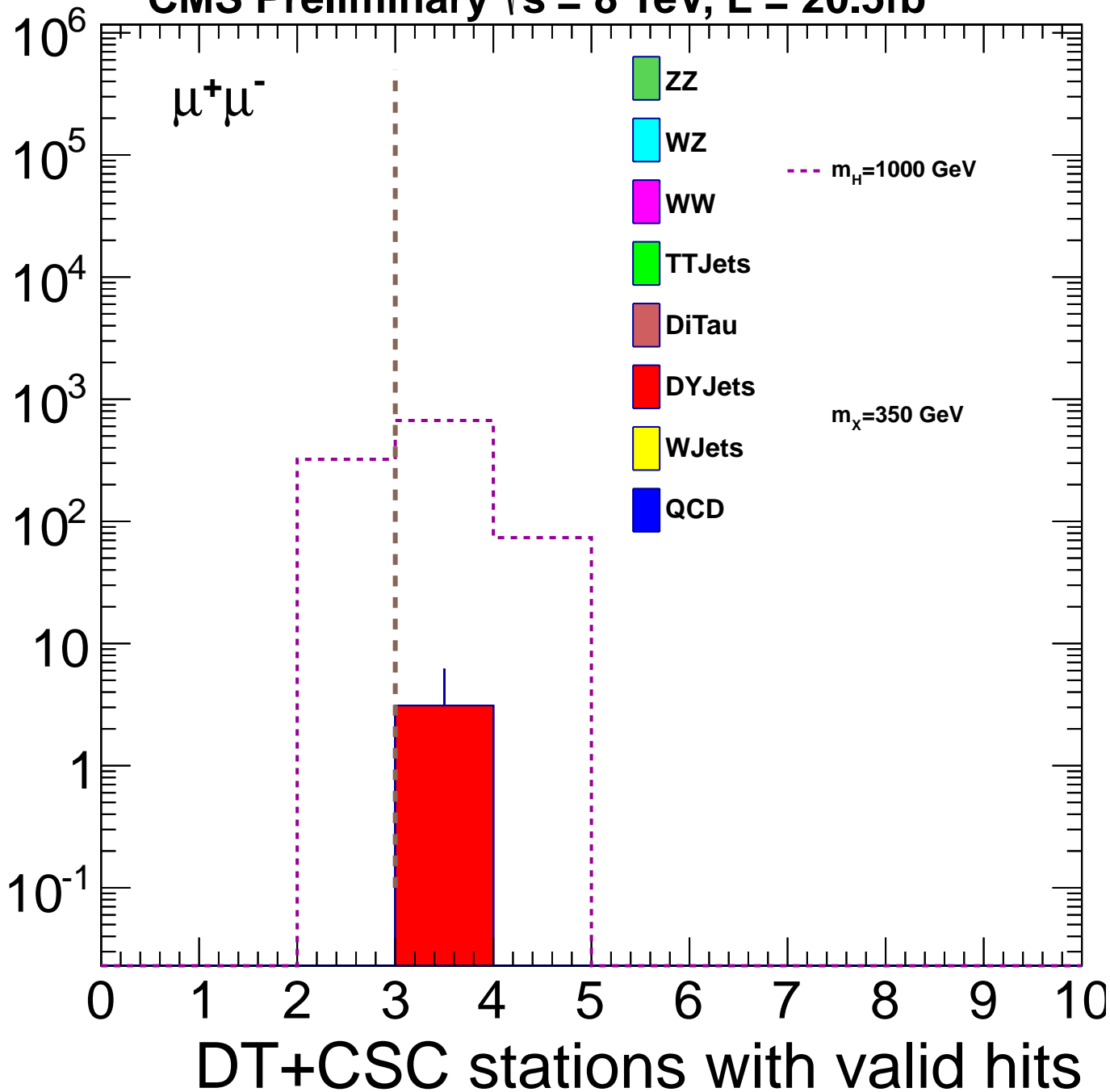
DYJets

WJets

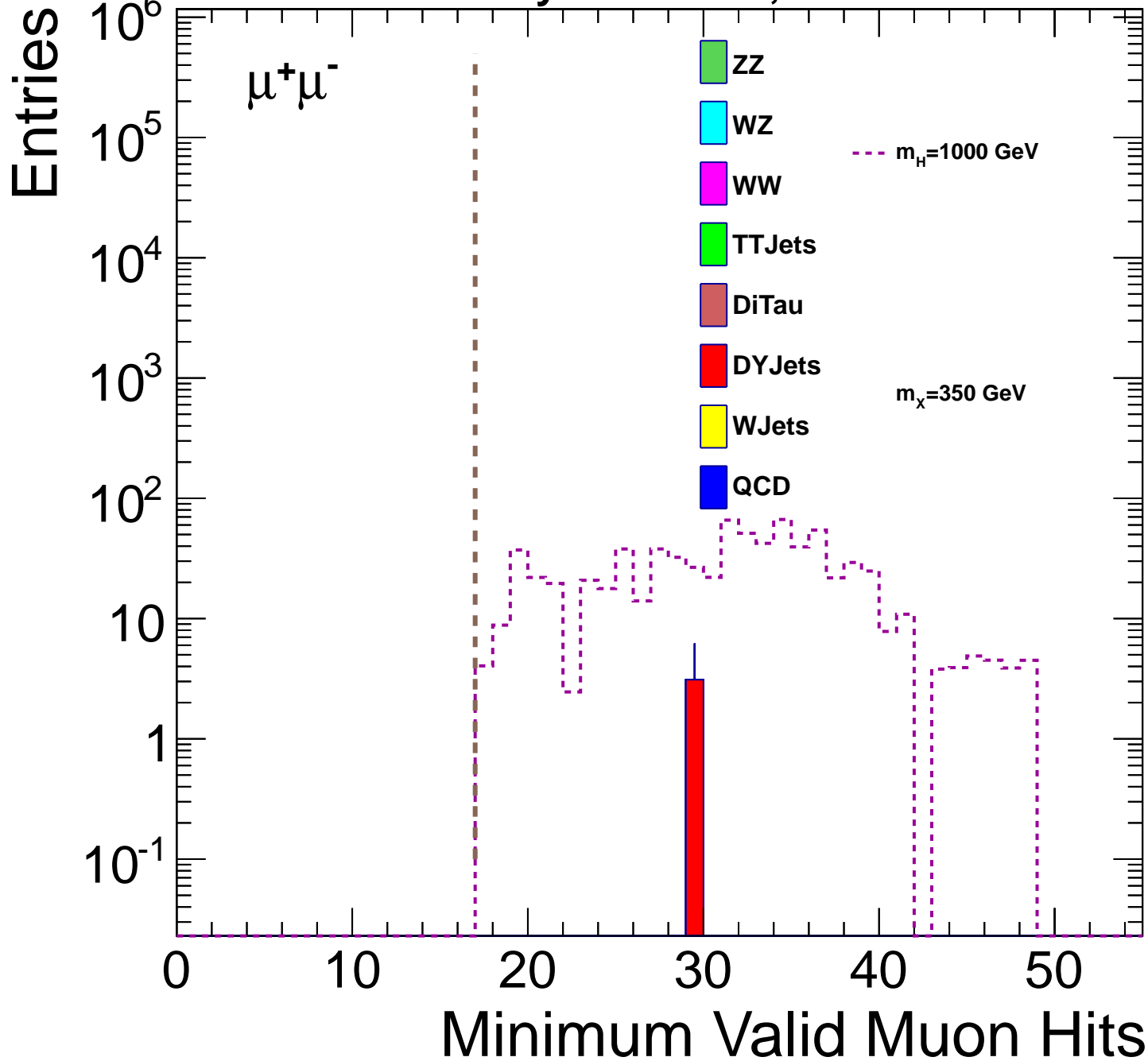
QCD

$m_H = 1000 \text{ GeV}$

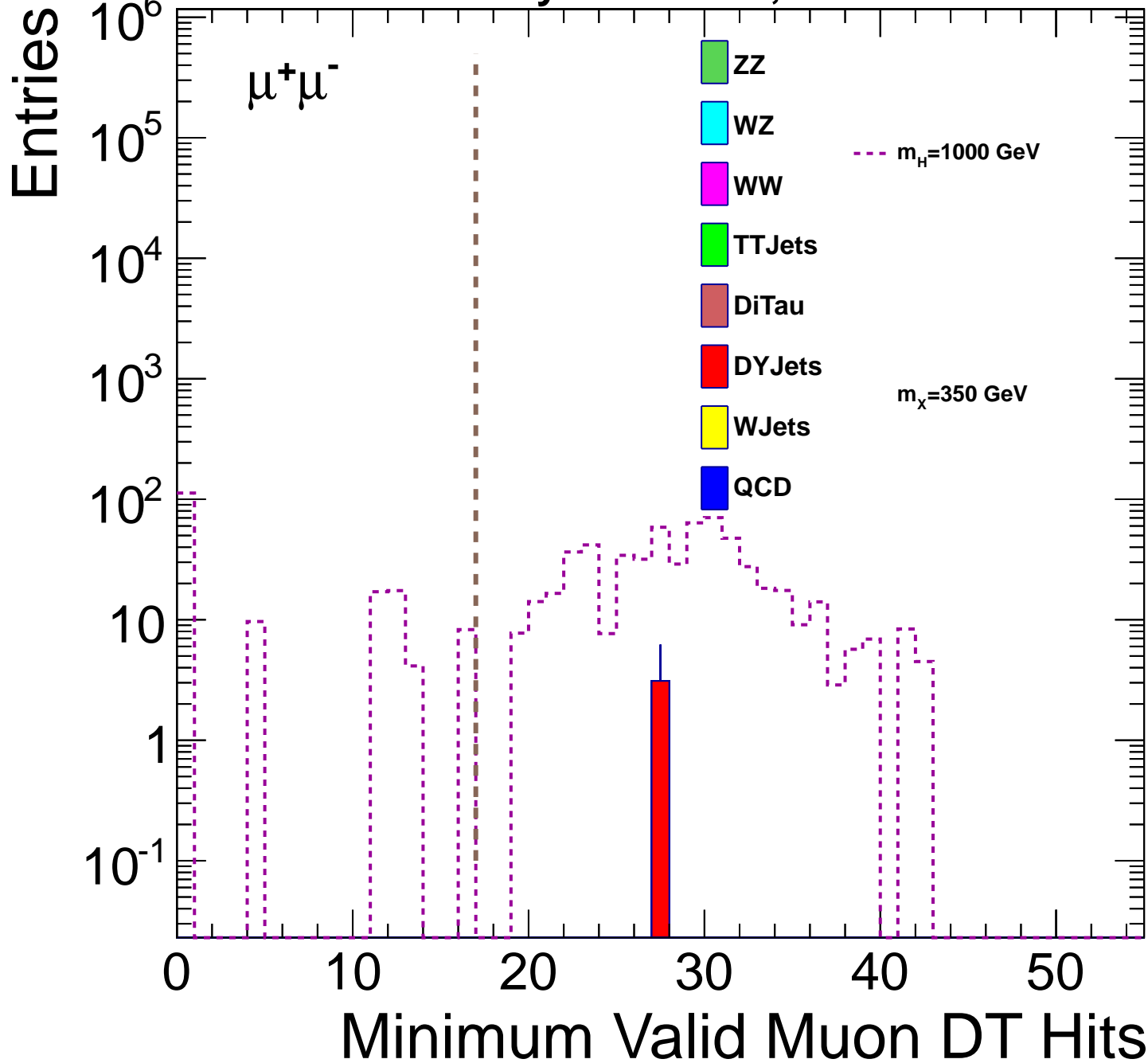
$m_\chi = 350 \text{ GeV}$



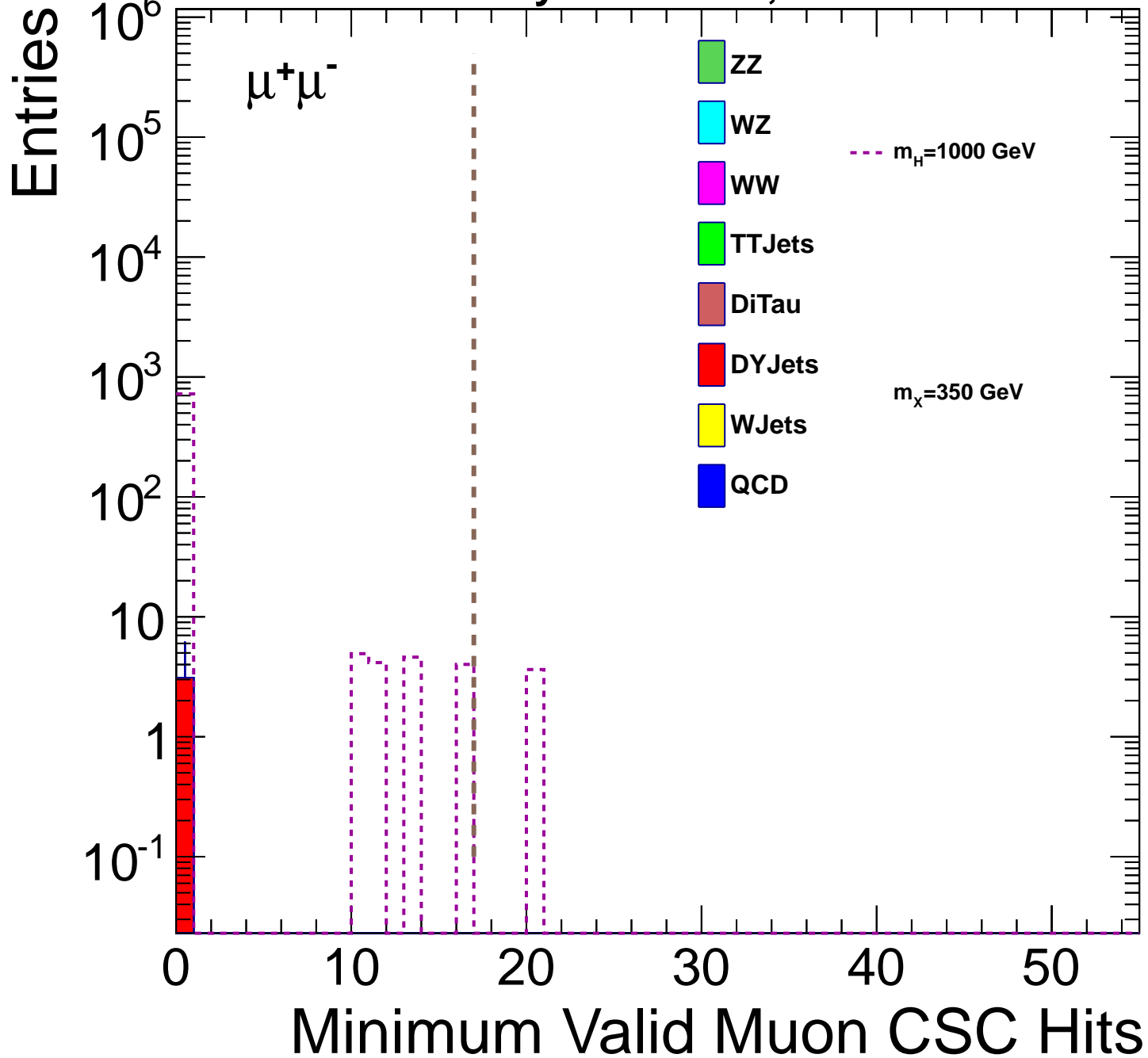
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



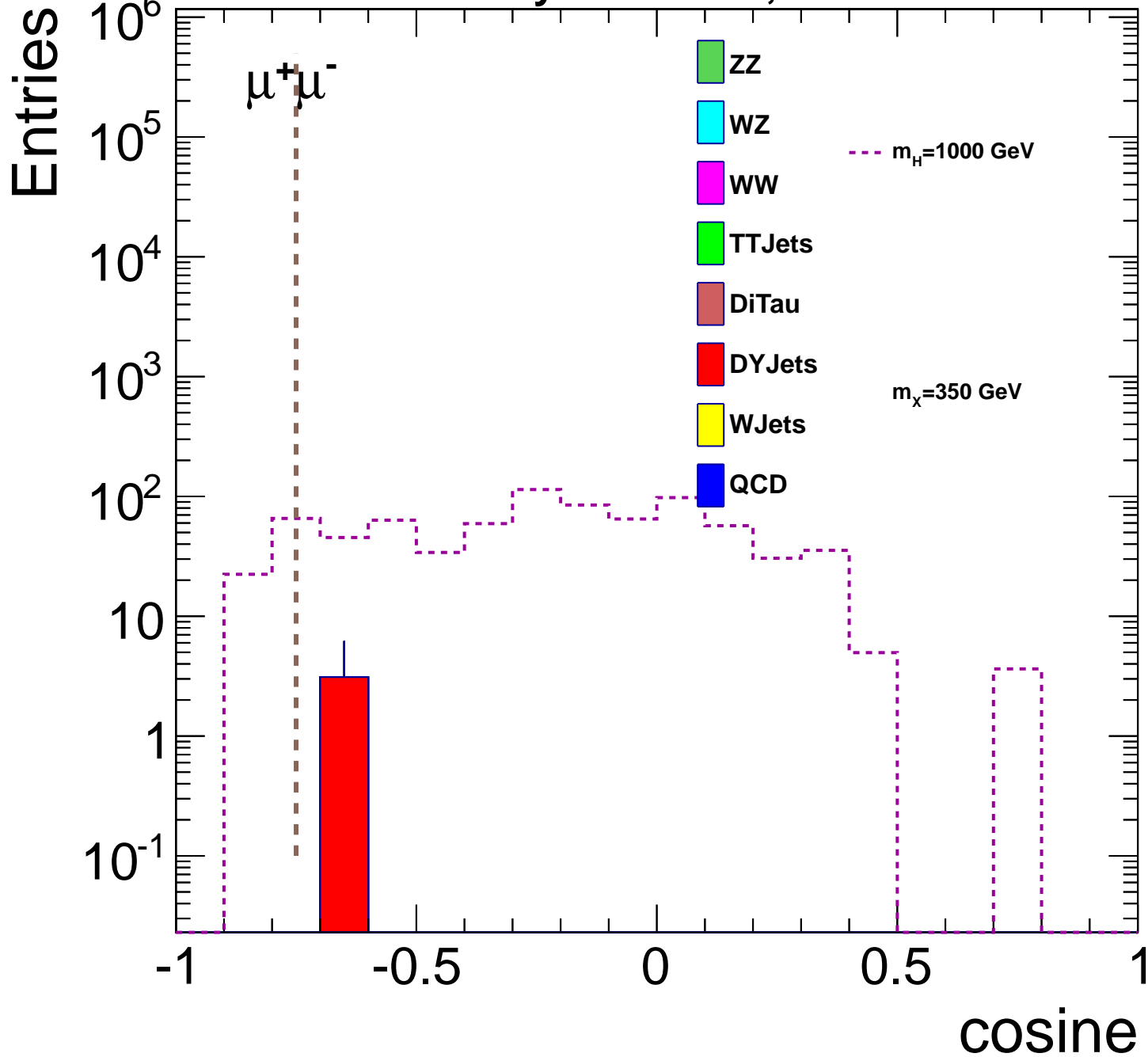
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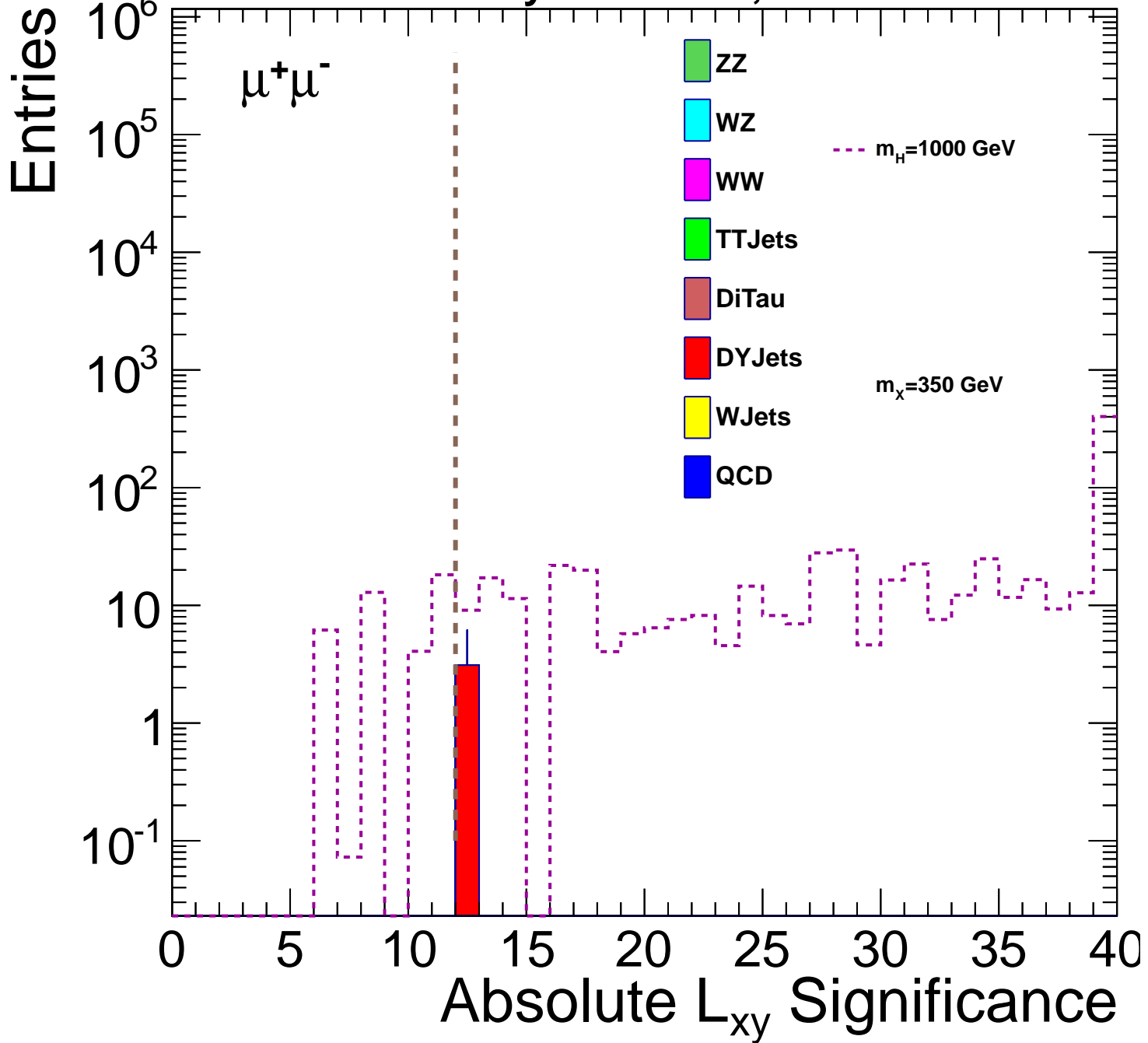
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



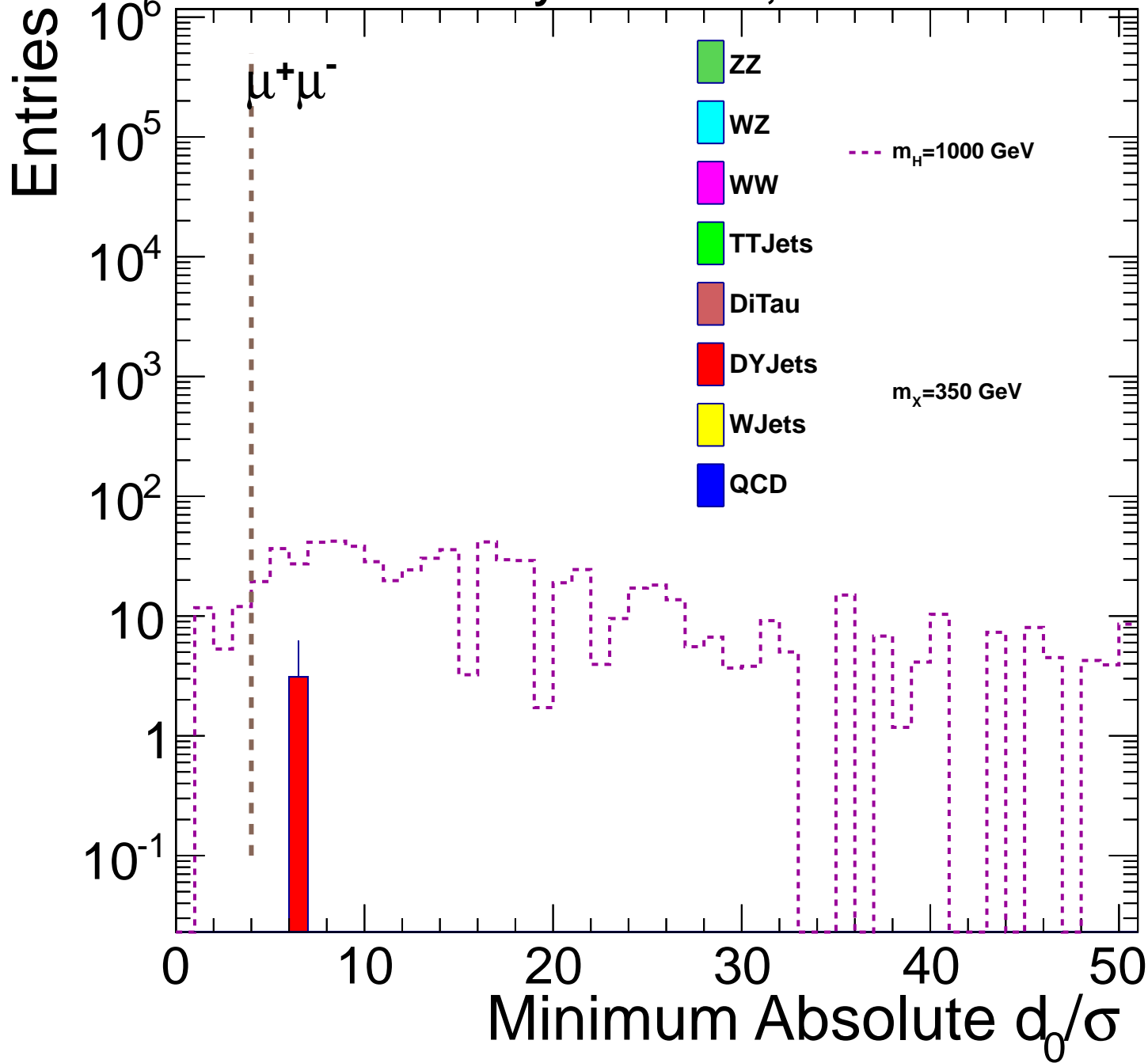
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



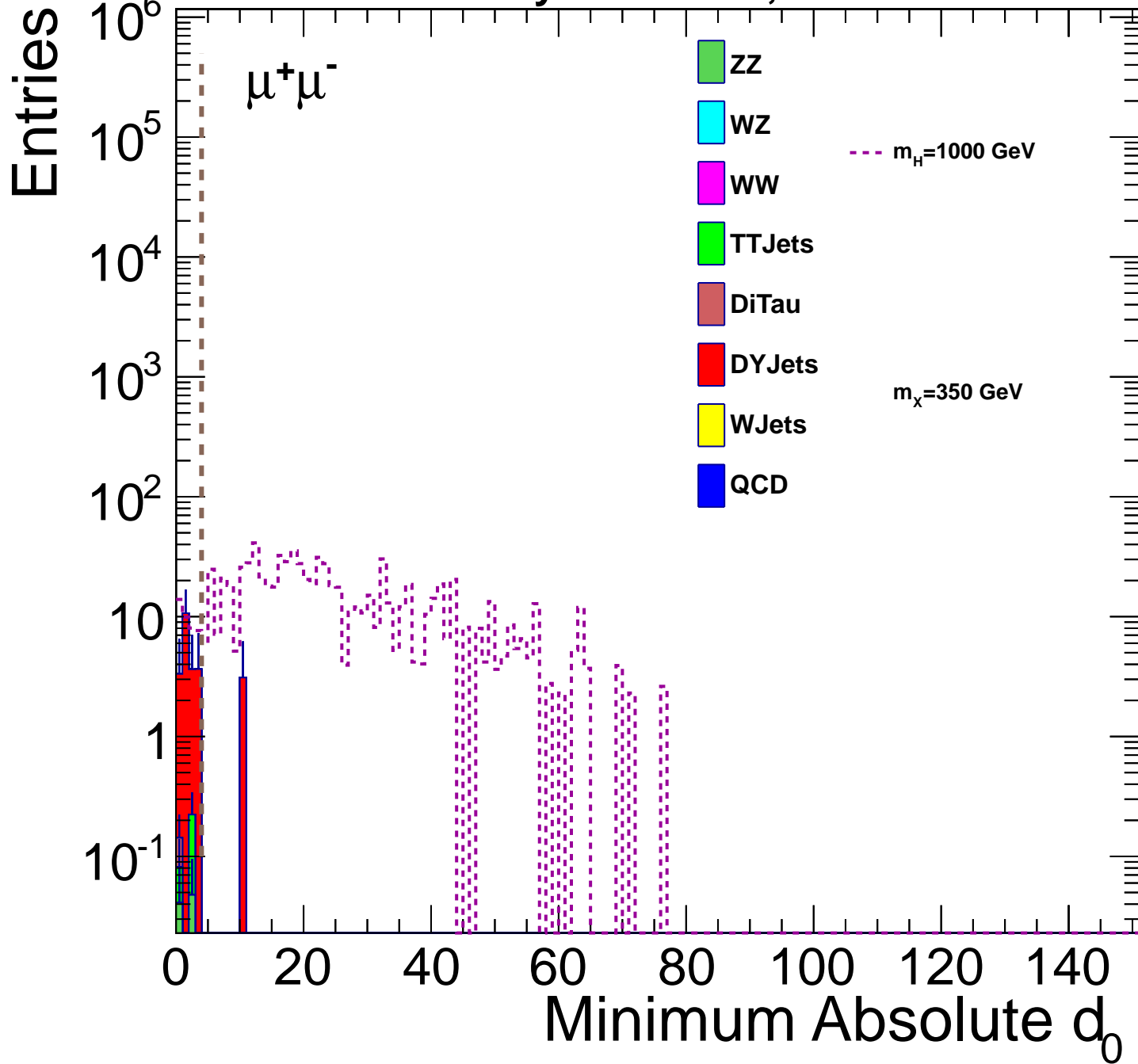
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



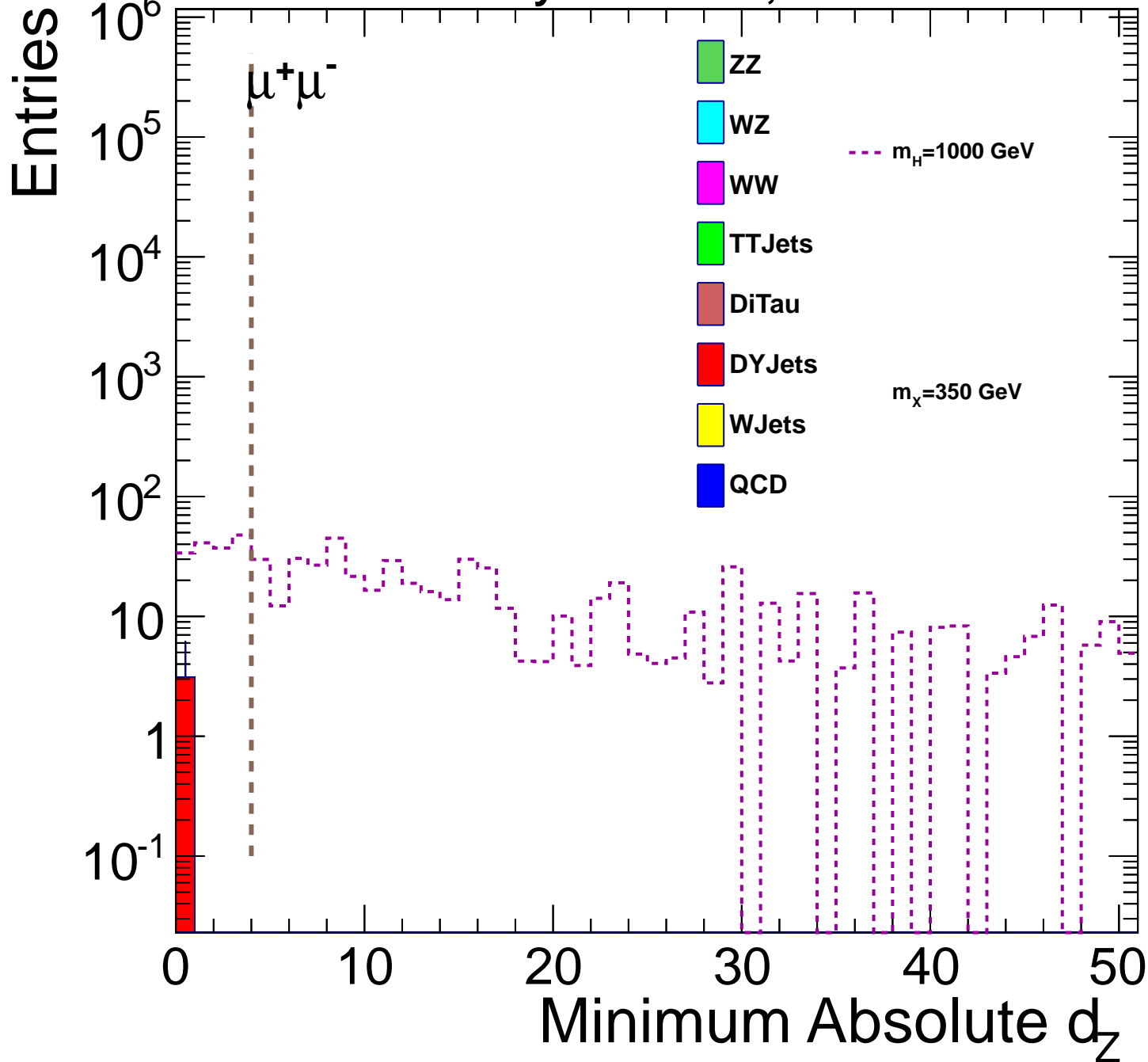
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



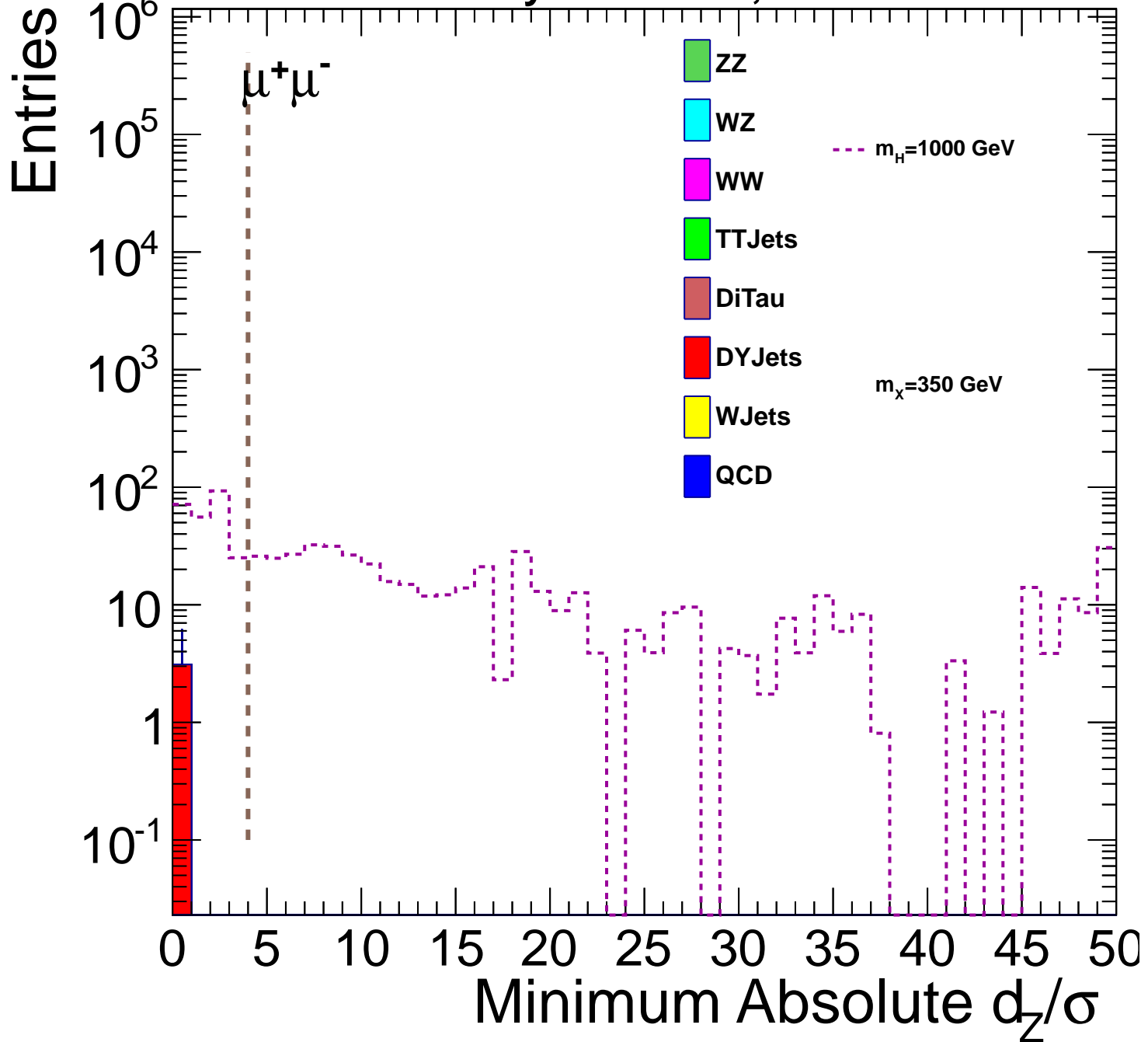
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



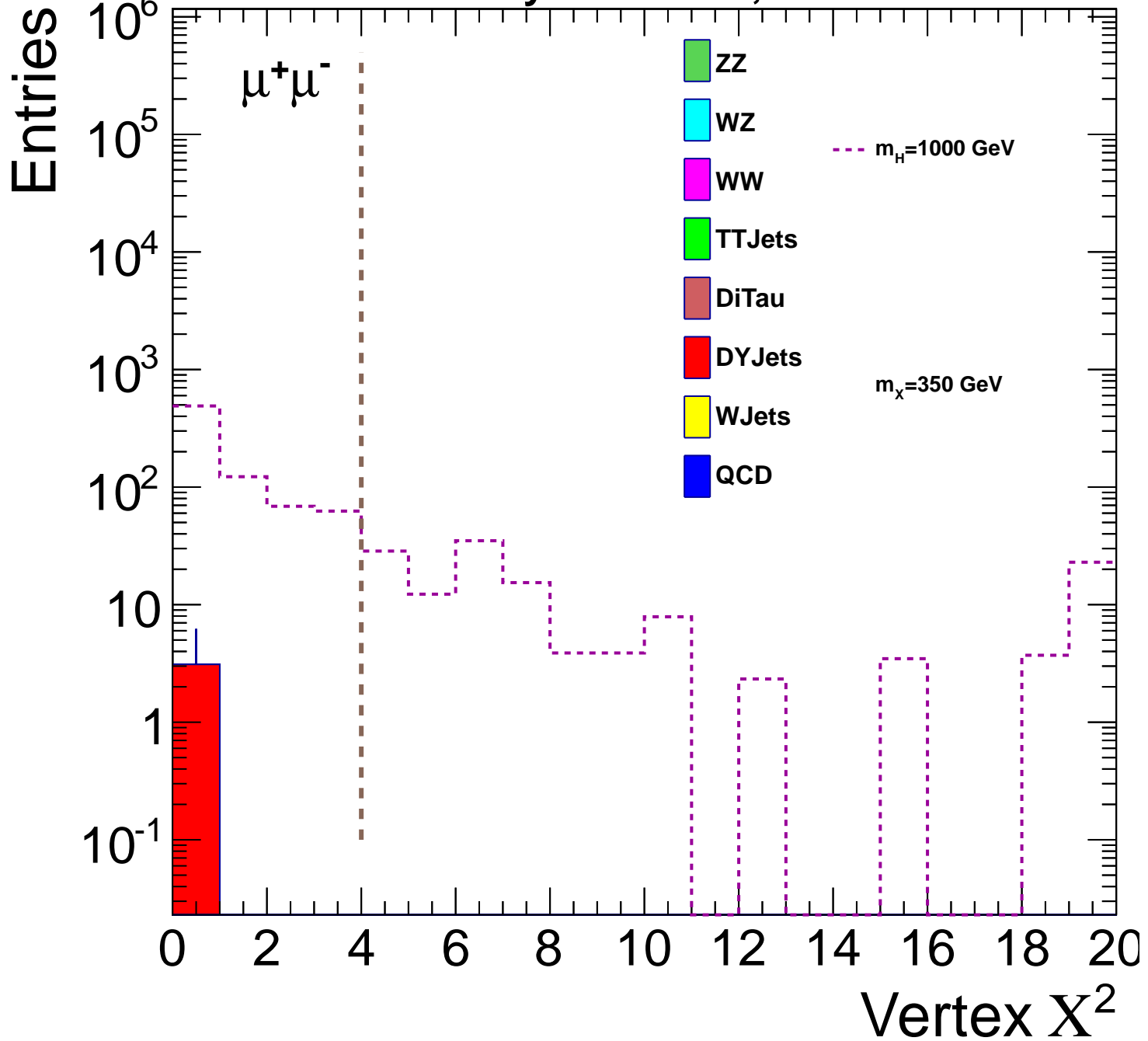
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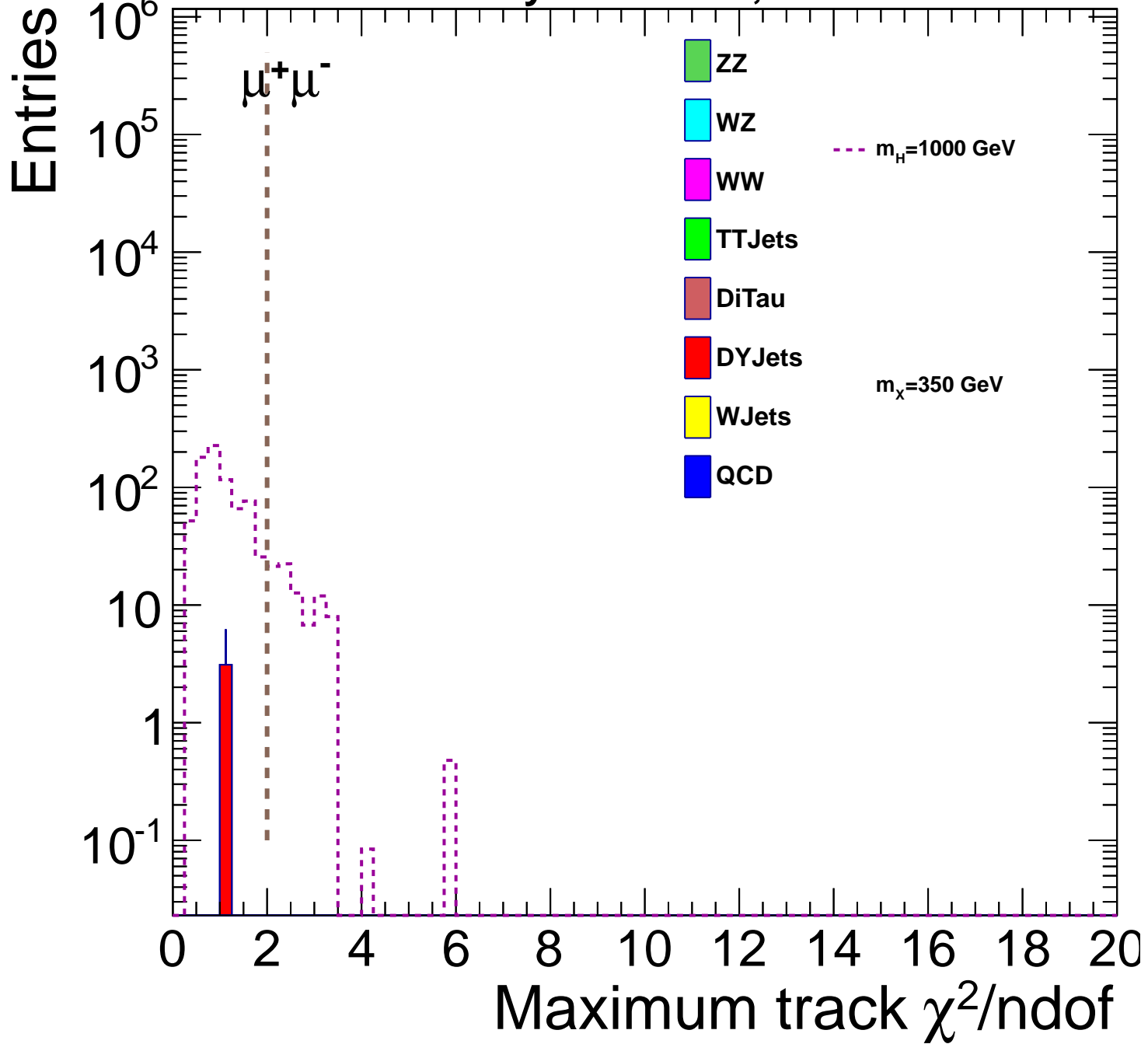
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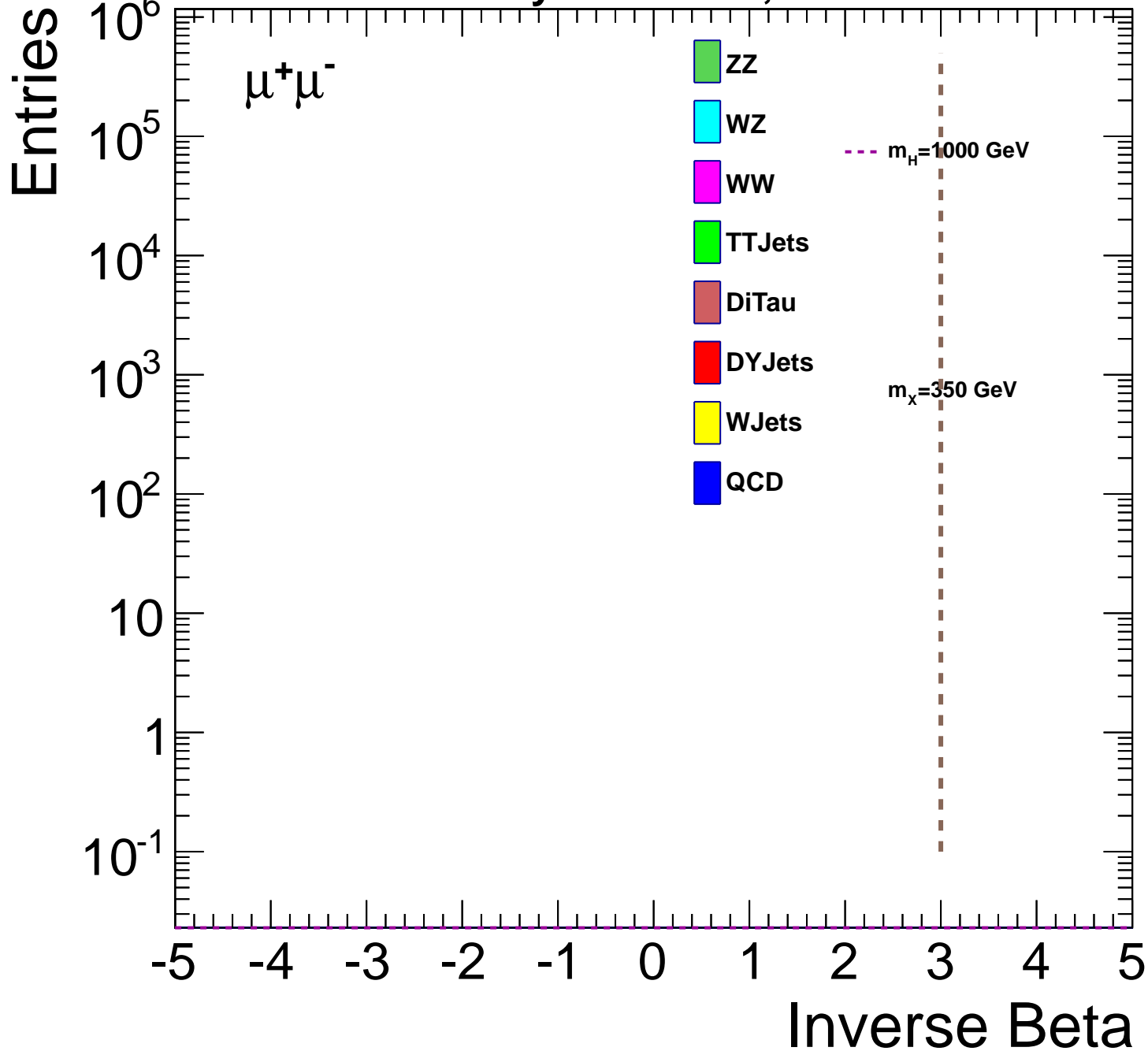
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



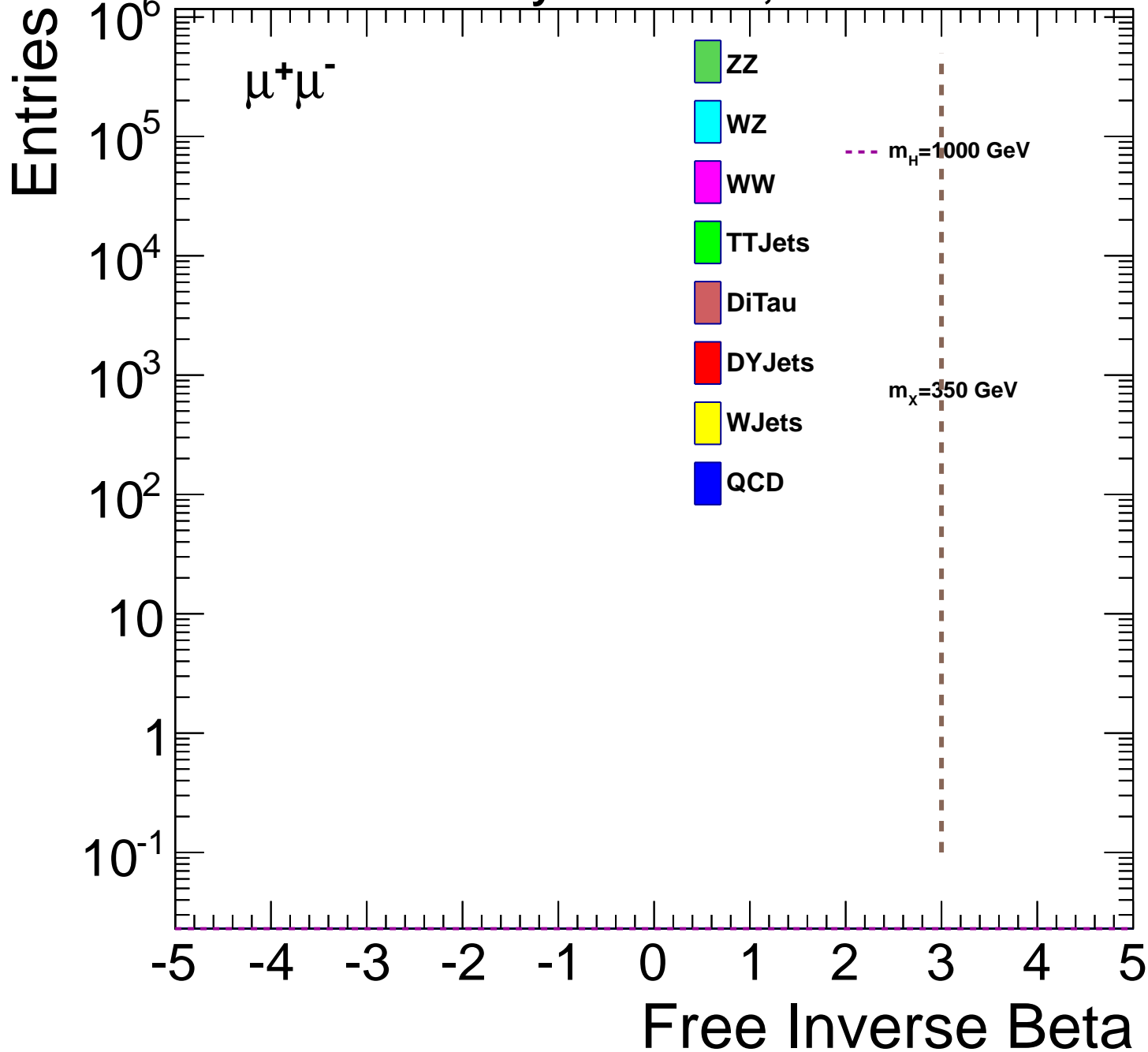
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



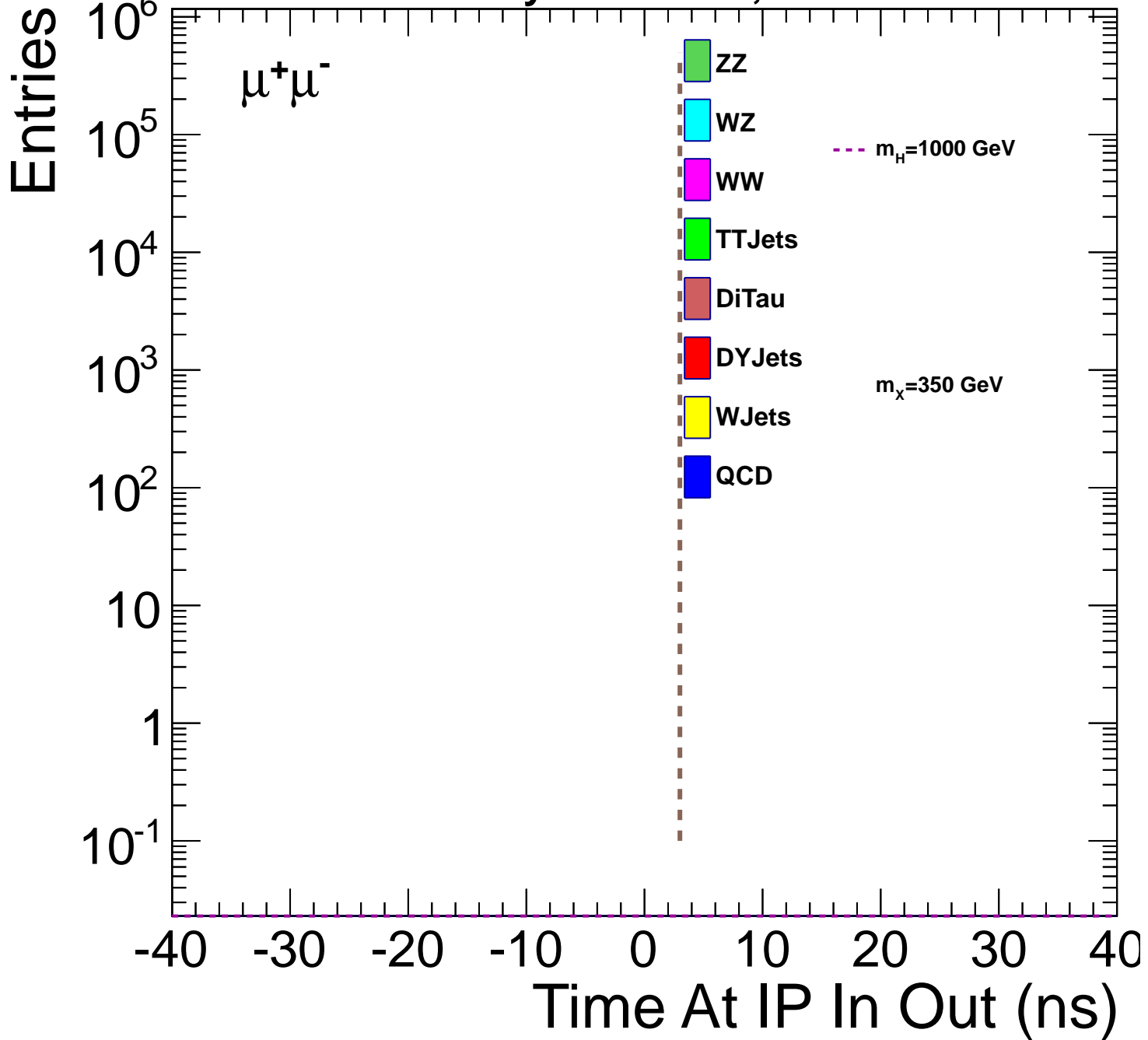
CMS Preliminary $\sqrt{s} = 8$ TeV, $L = 20.5\text{fb}^{-1}$



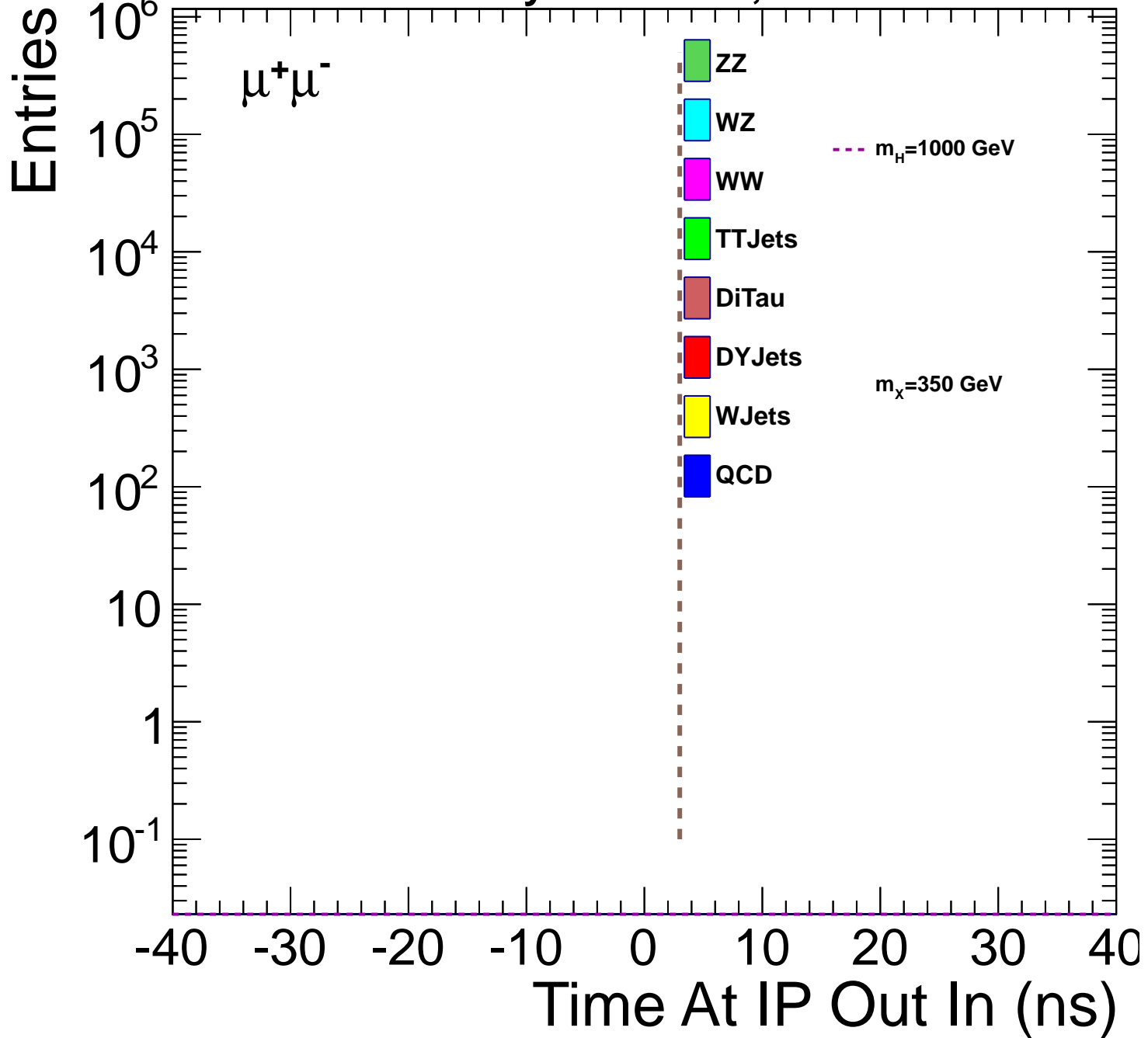
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



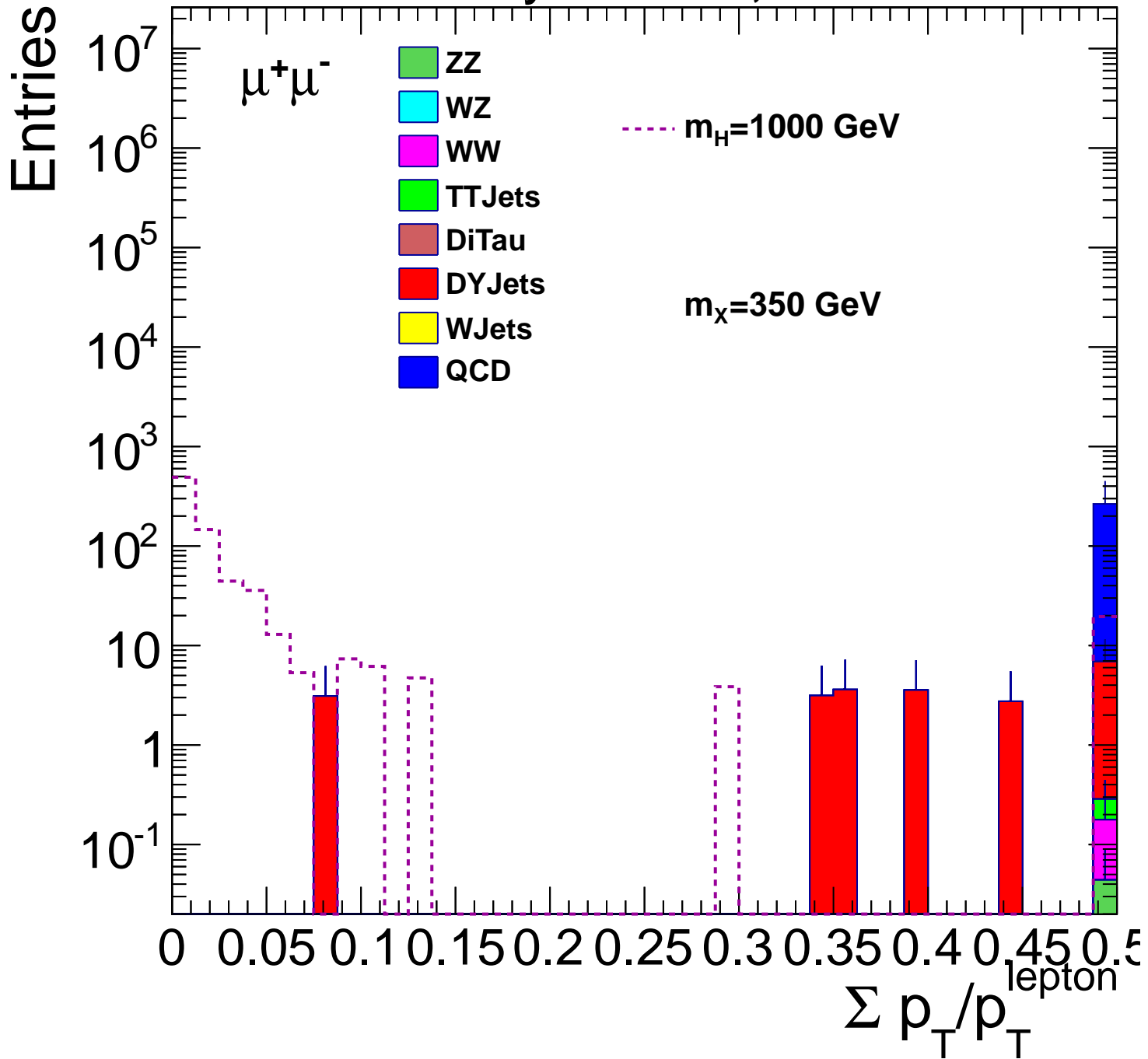
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



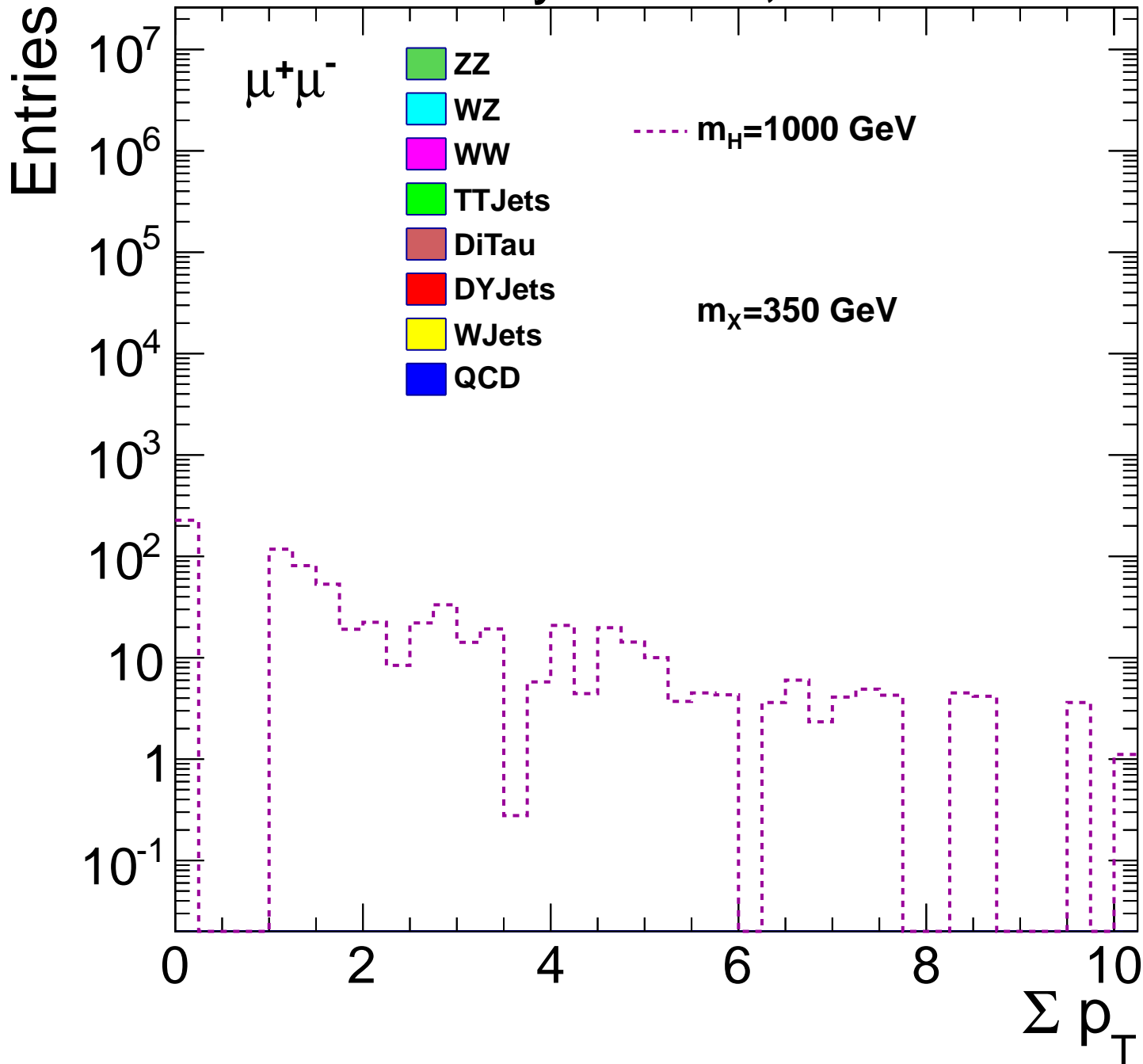
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



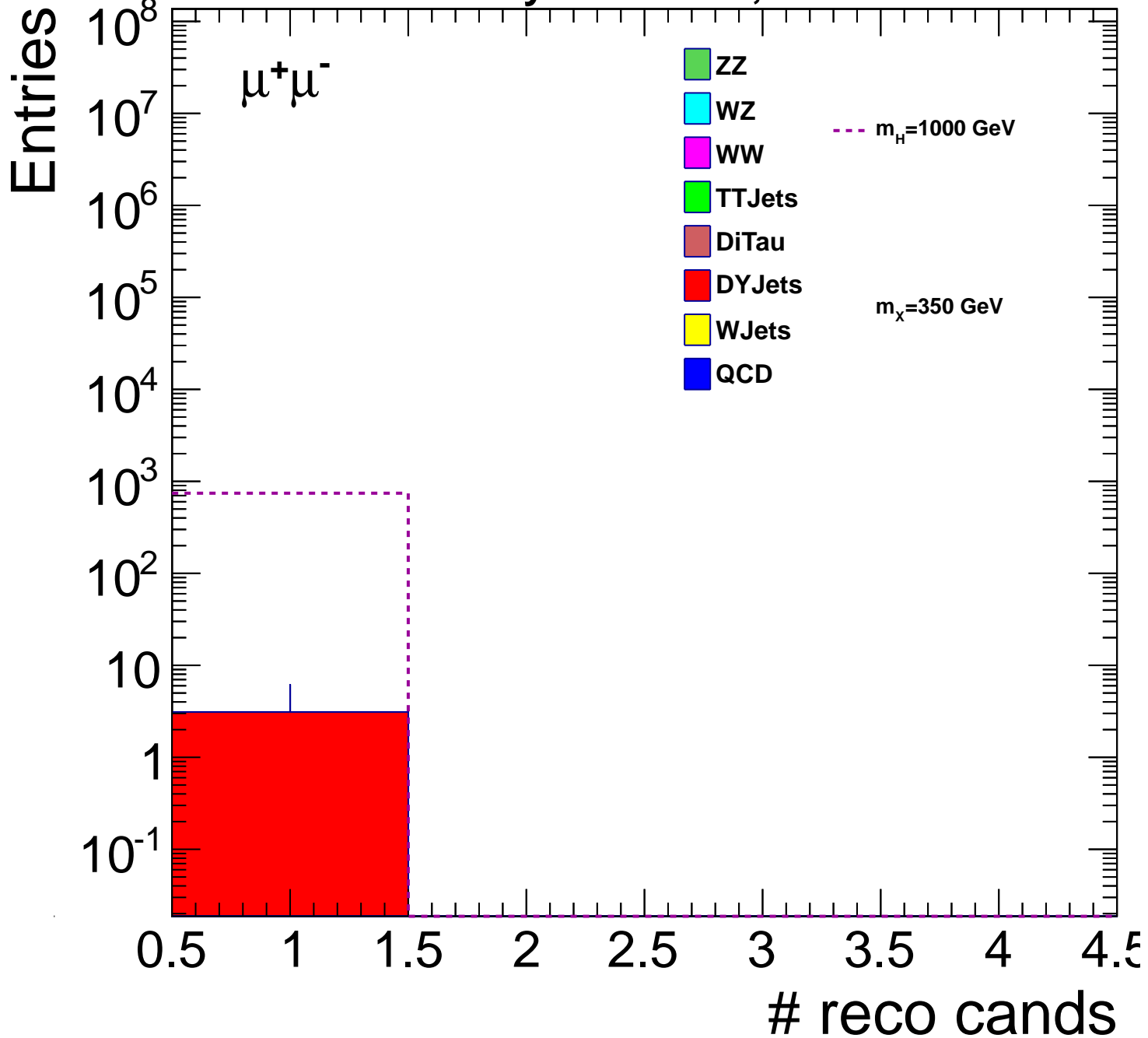
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

$\mu^+\mu^-$

ZZ

WZ

WW

TTJets

DiTau

DYJets

WJets

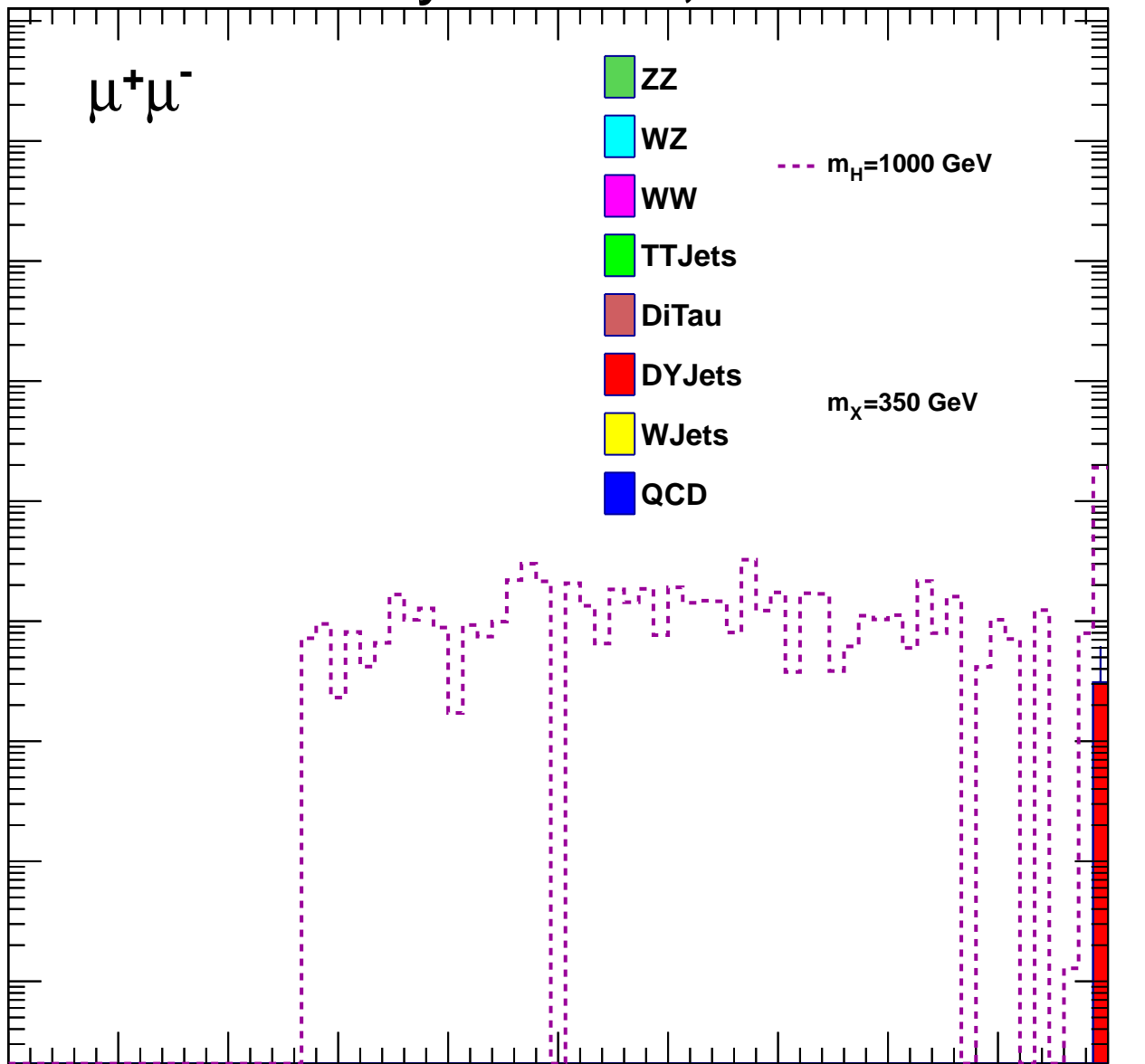
QCD

$m_H = 1000 \text{ GeV}$

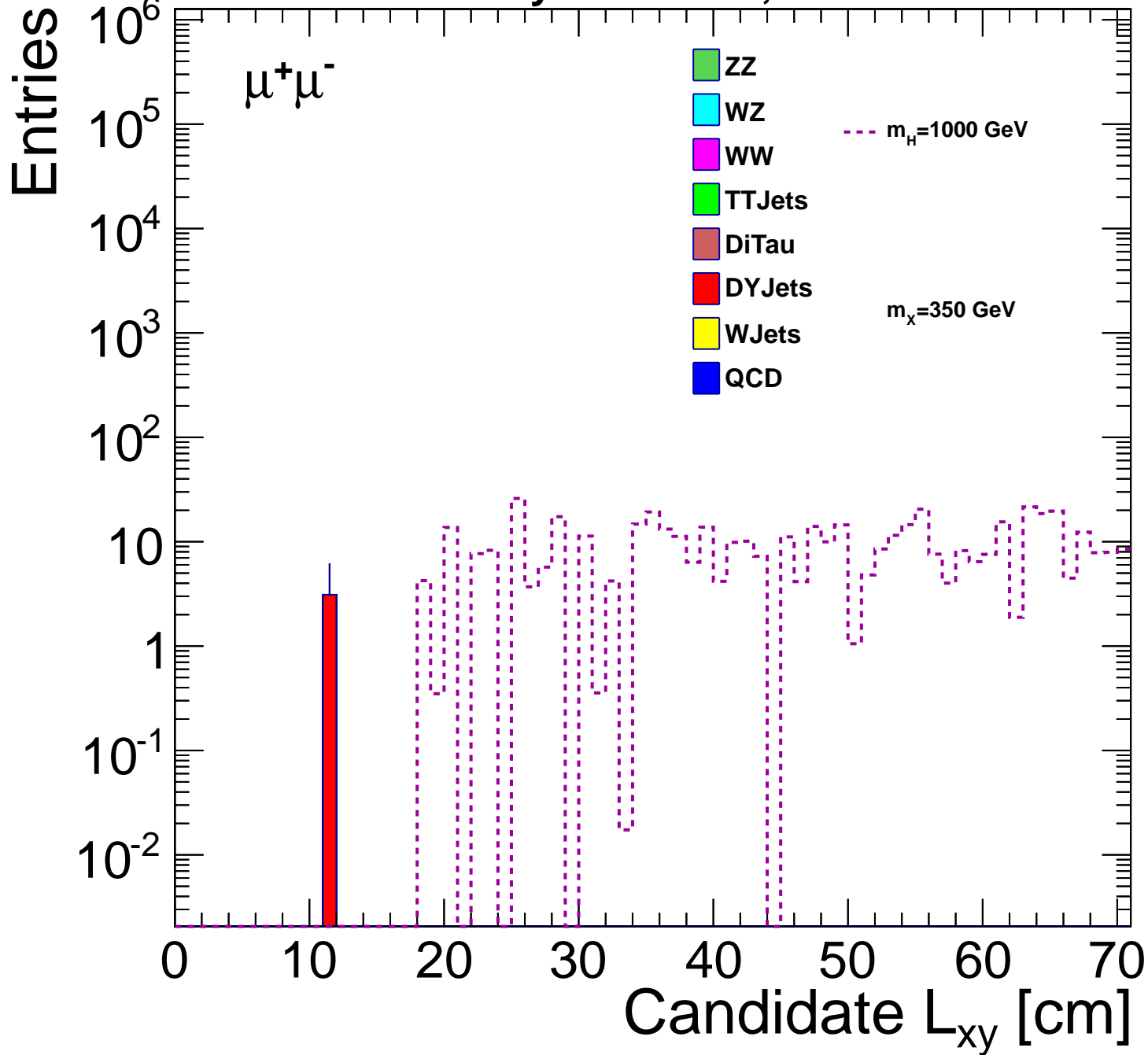
$m_X = 350 \text{ GeV}$

10^6
 10^5
 10^4
 10^3
 10^2
 10
 1
 10^{-1}
 10^{-2}

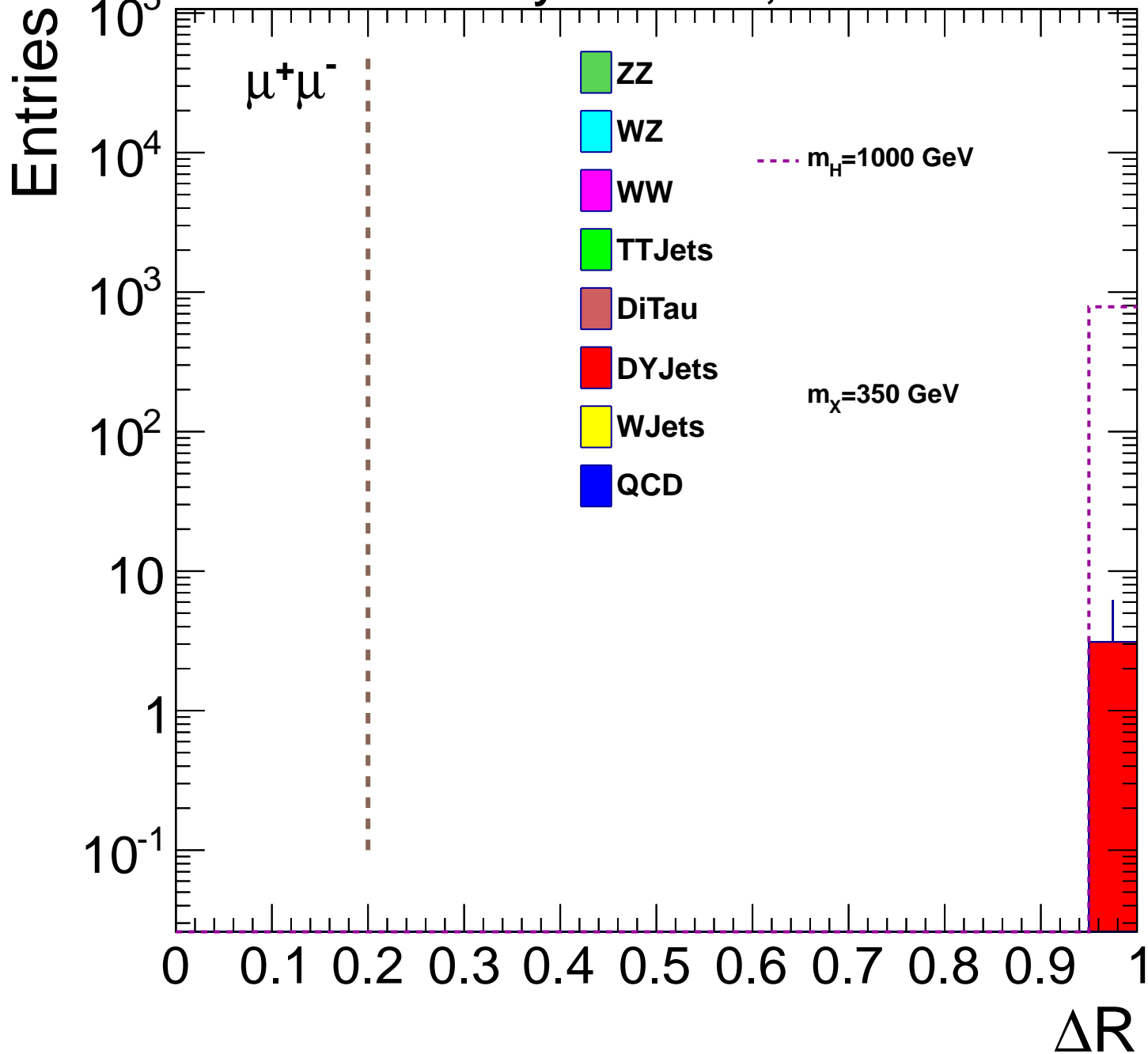
0 50 100 150 200 250 300 350 400 450 500
mass[GeV/c²]



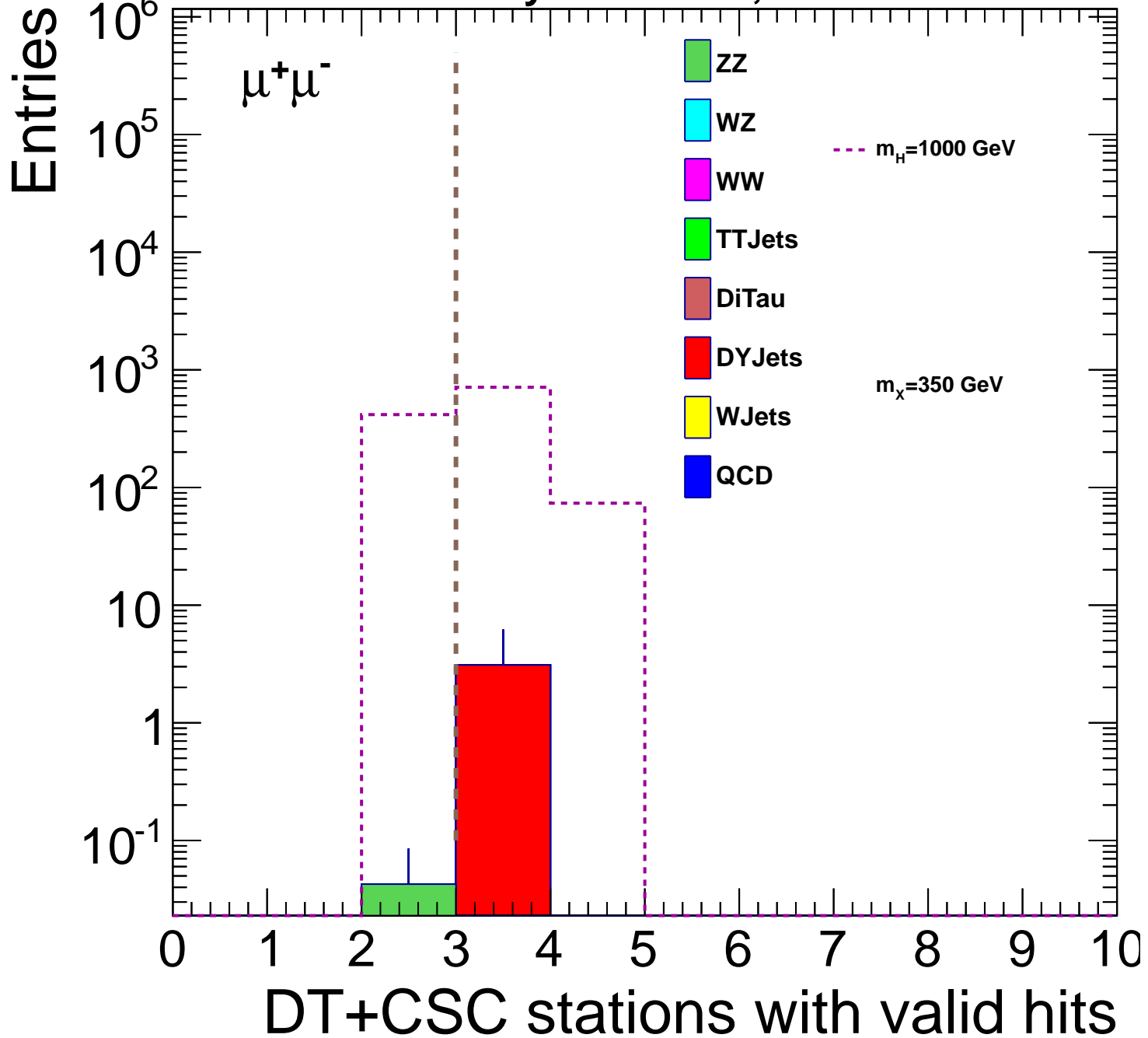
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



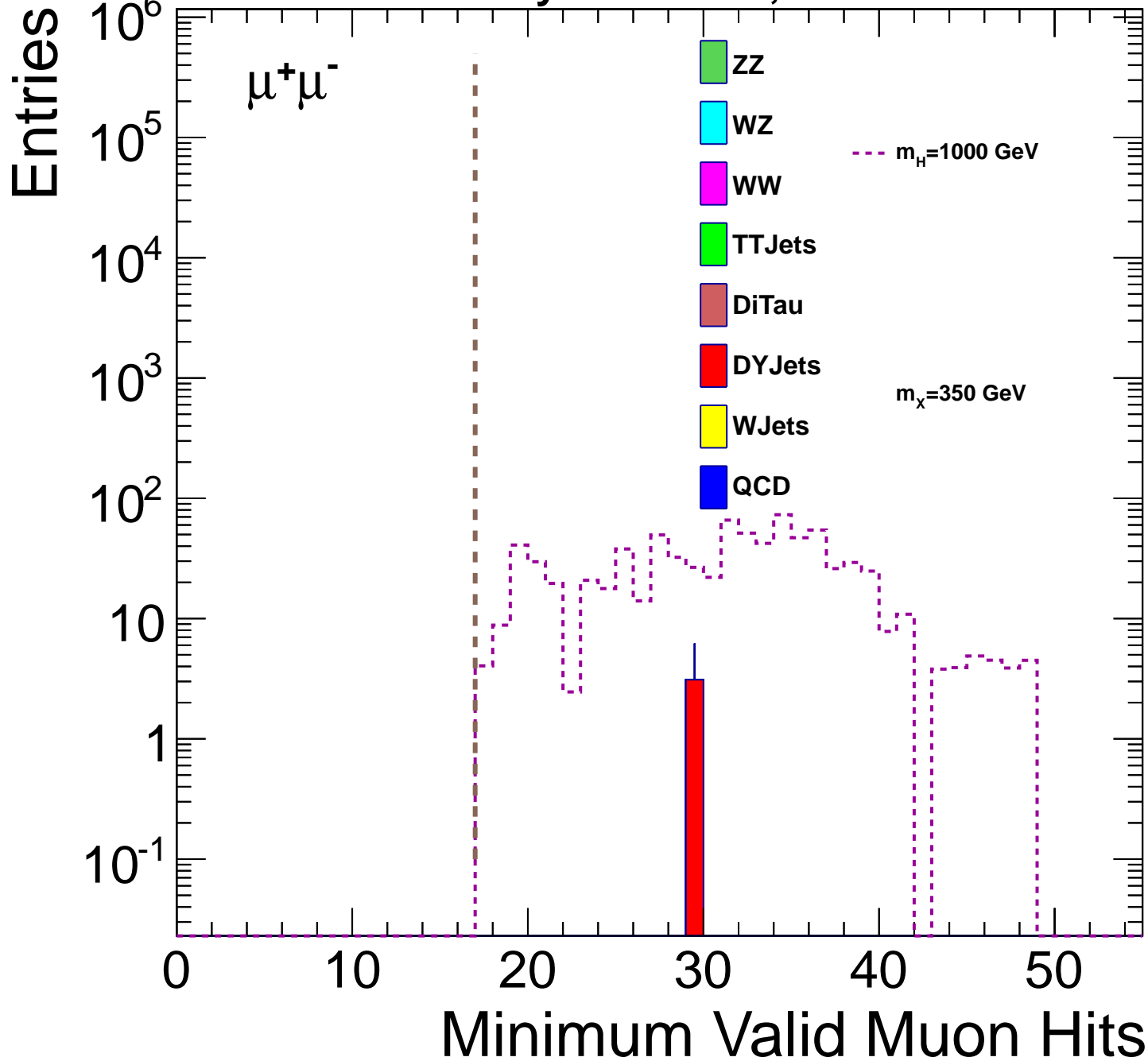
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



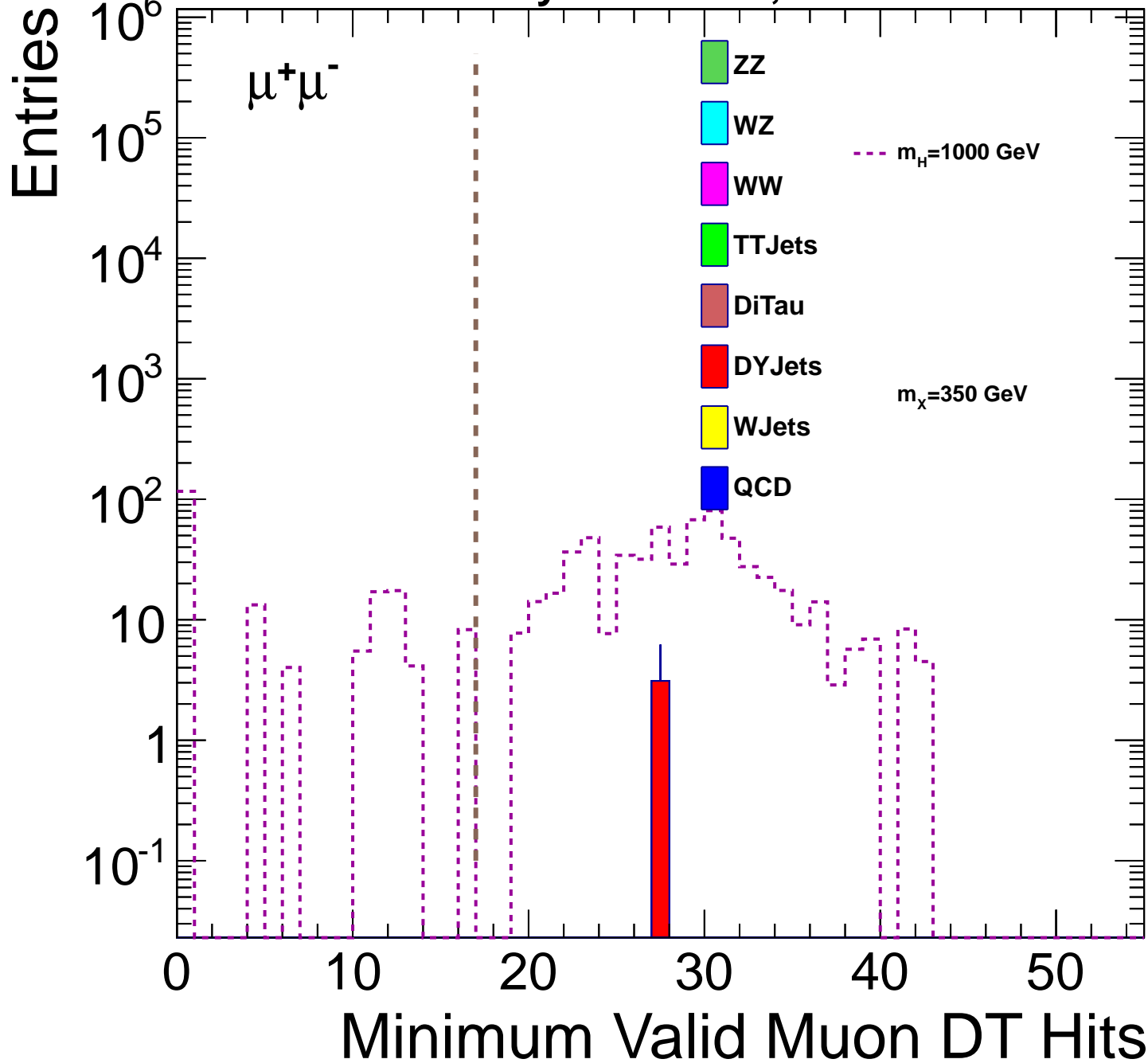
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



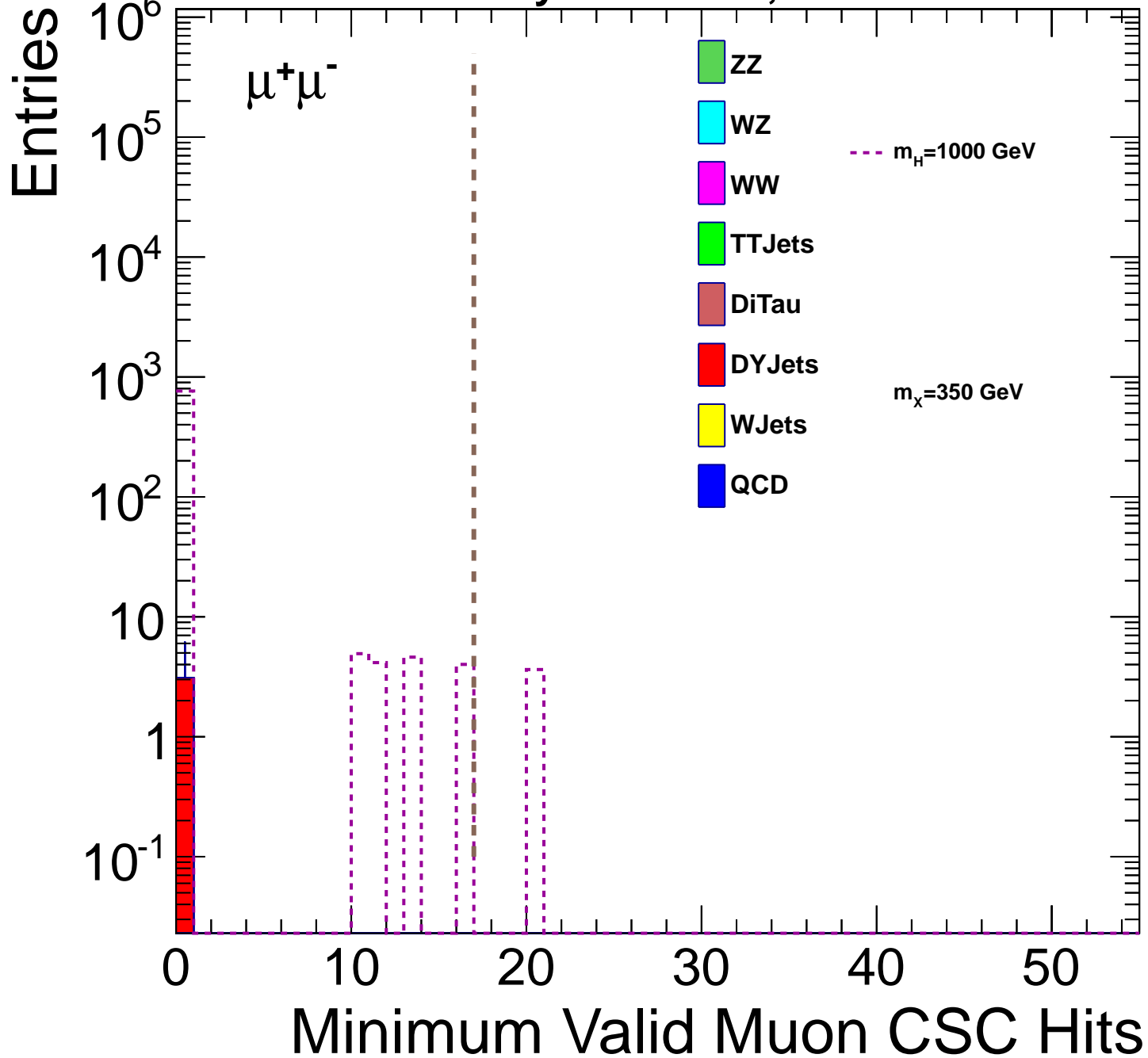
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



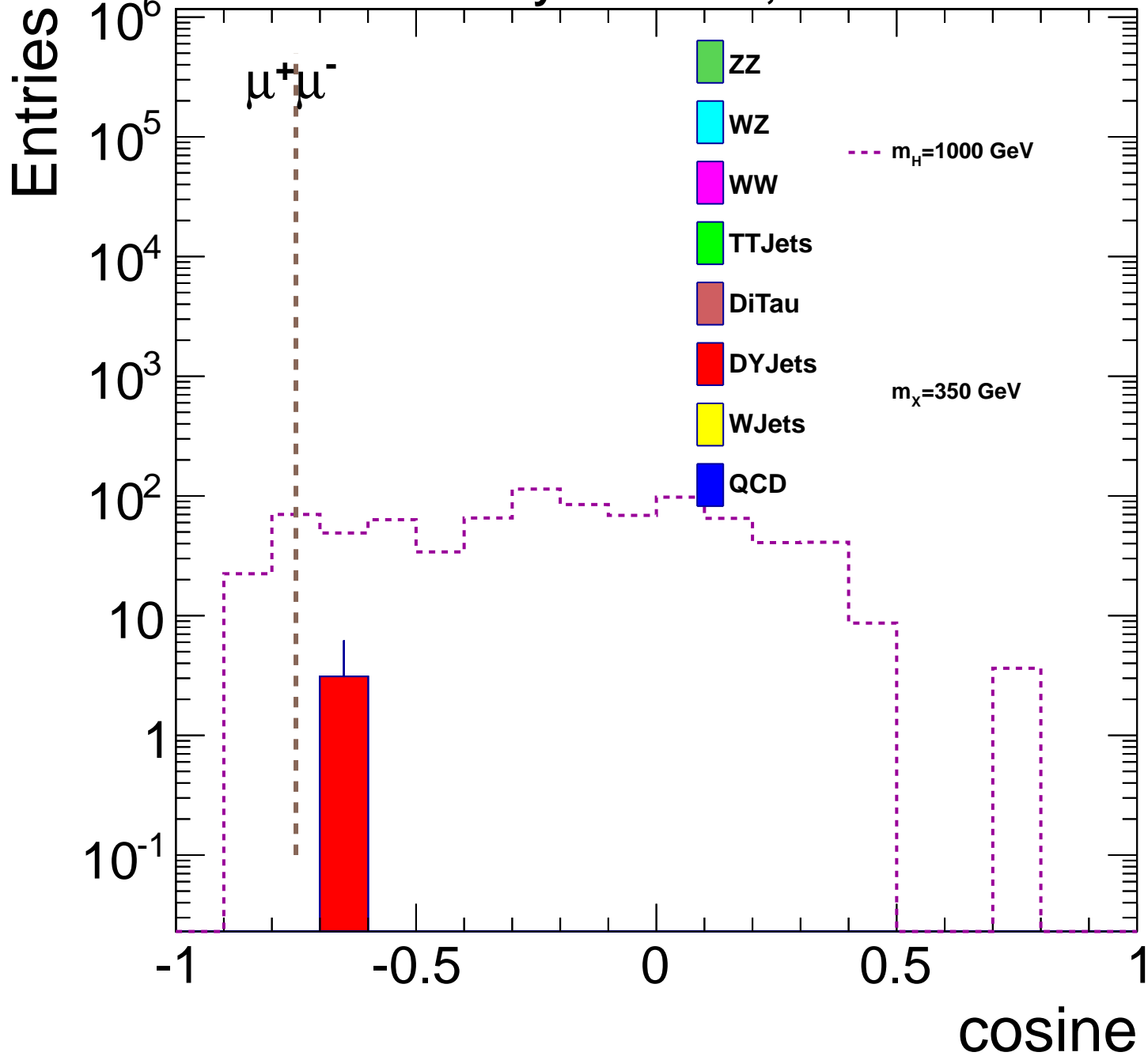
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



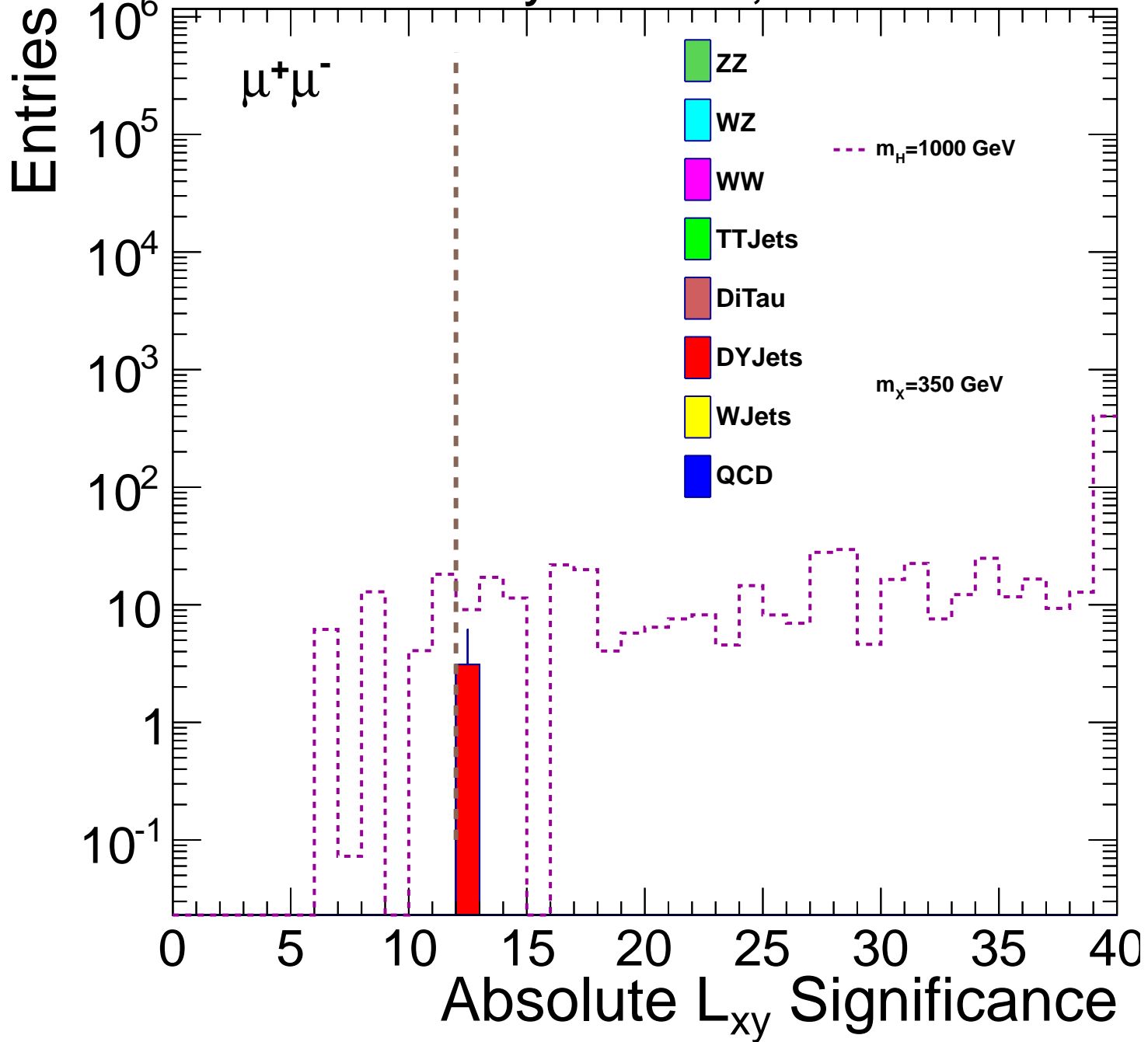
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



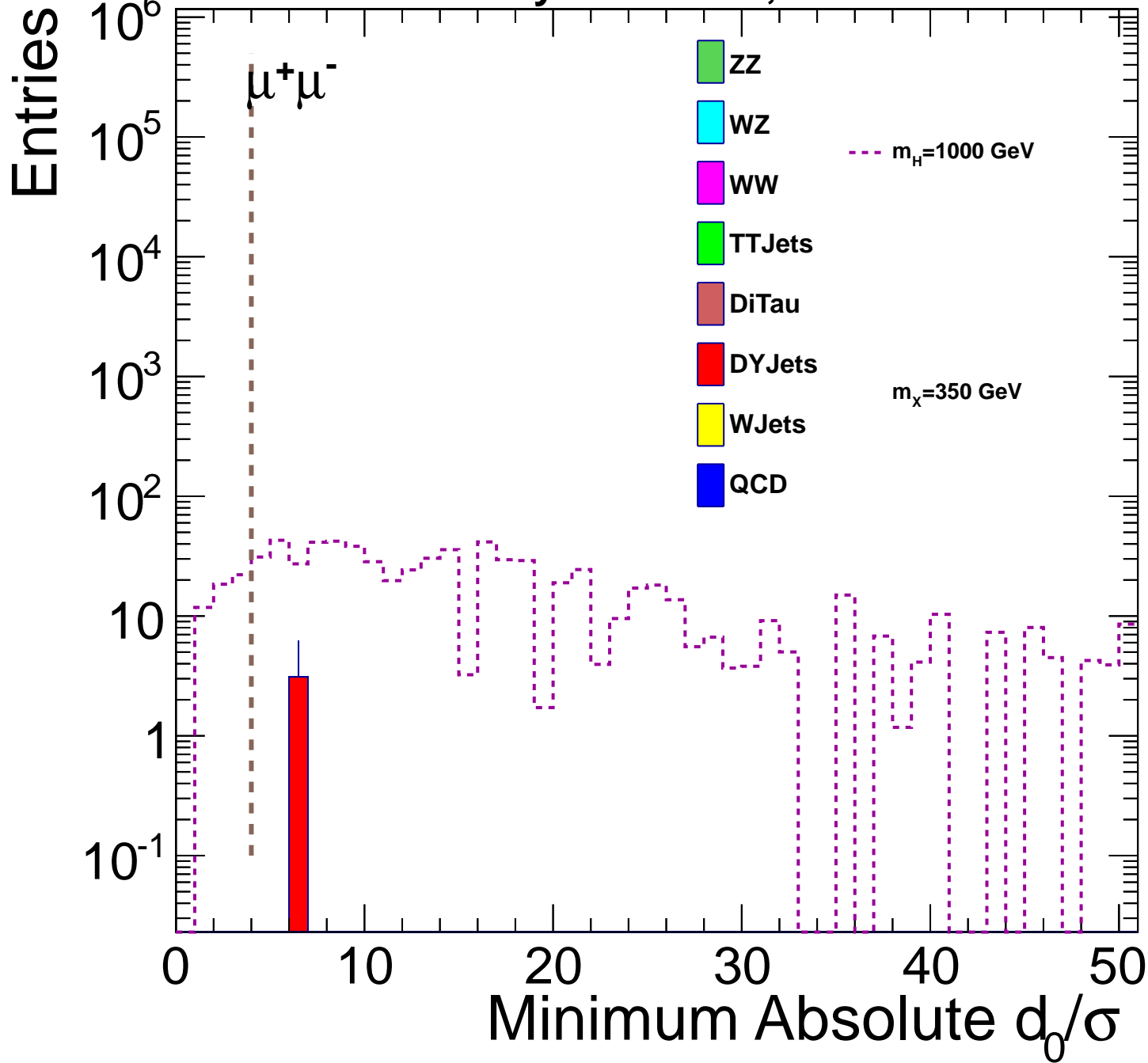
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



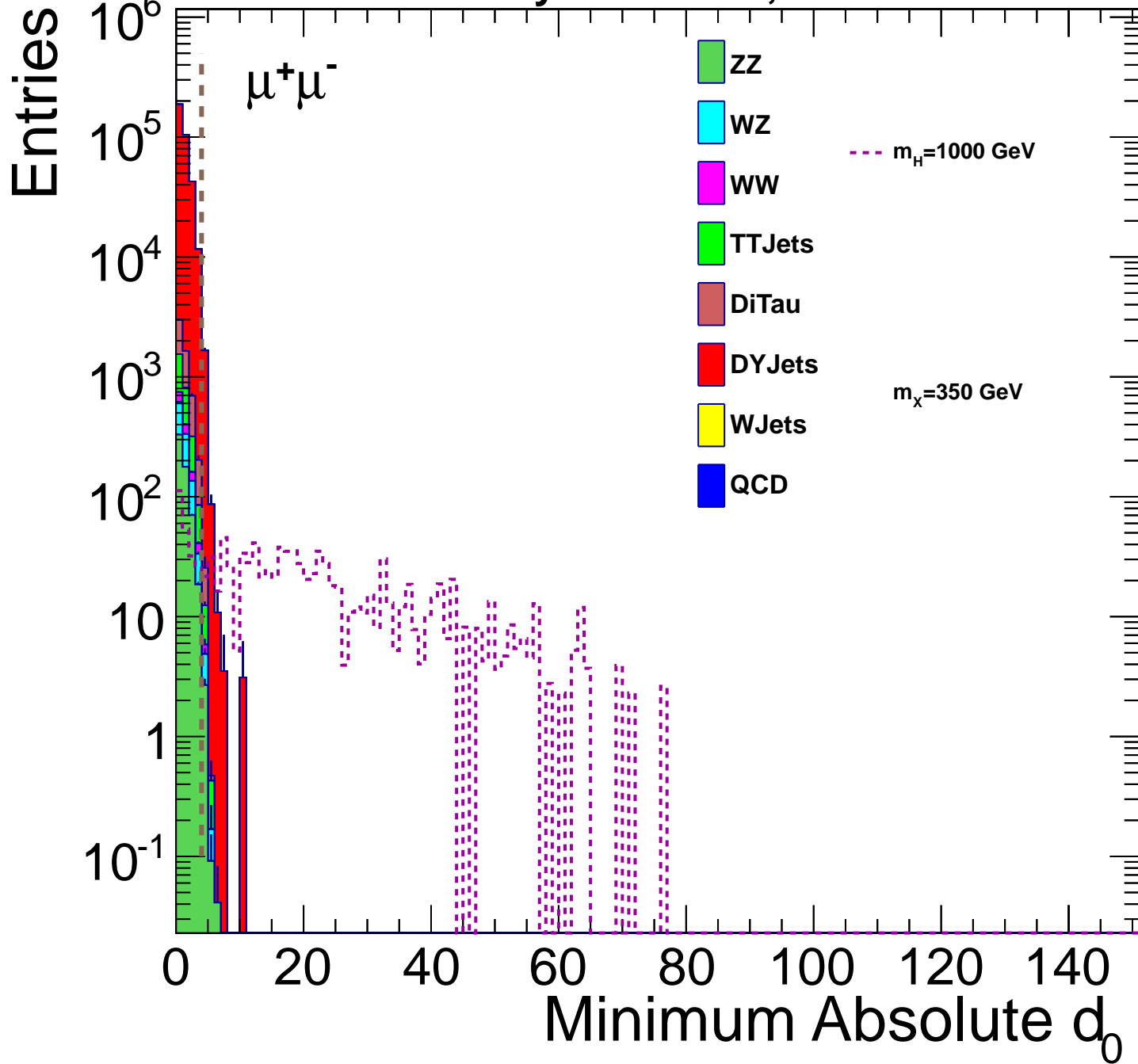
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



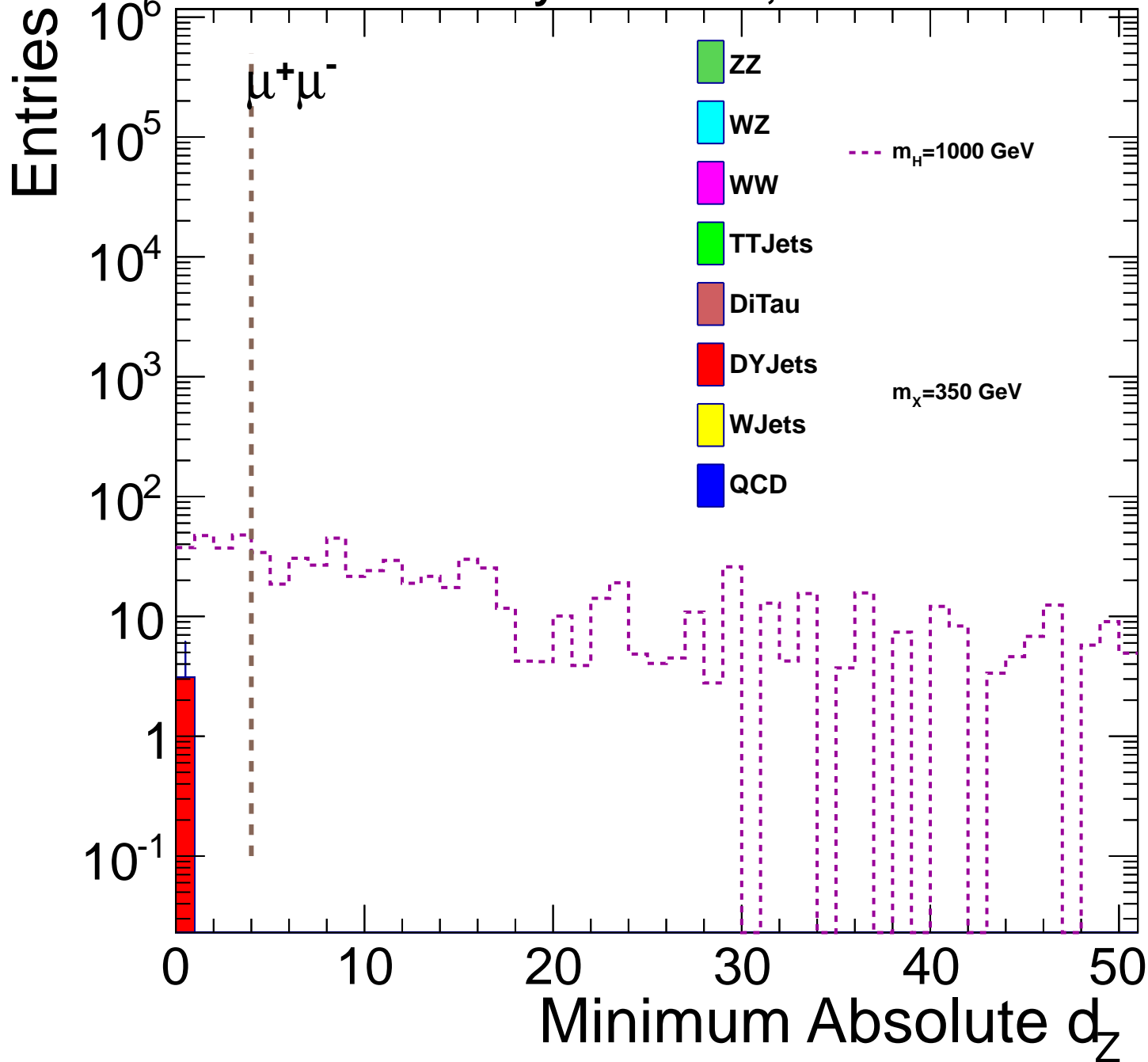
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



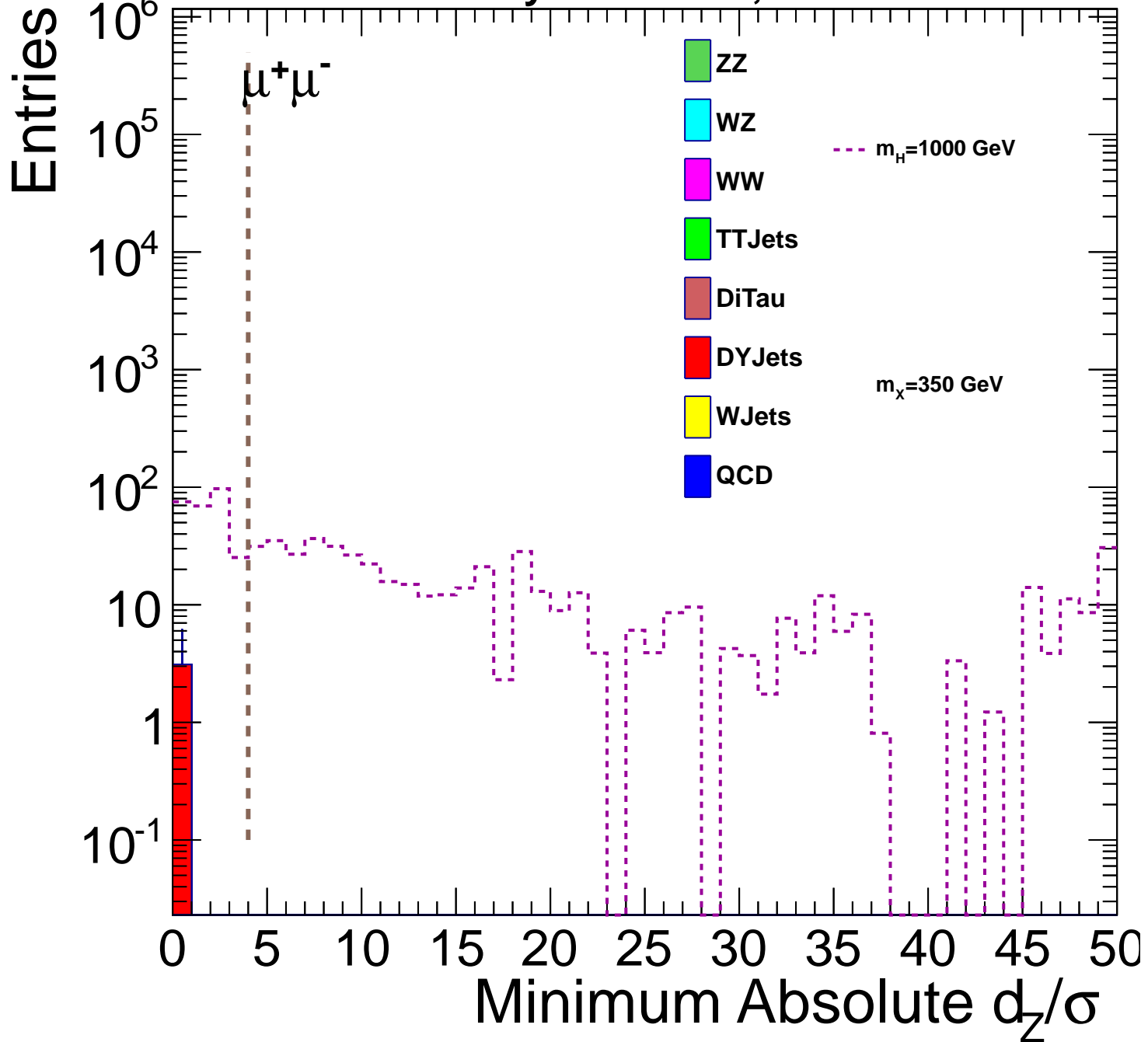
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



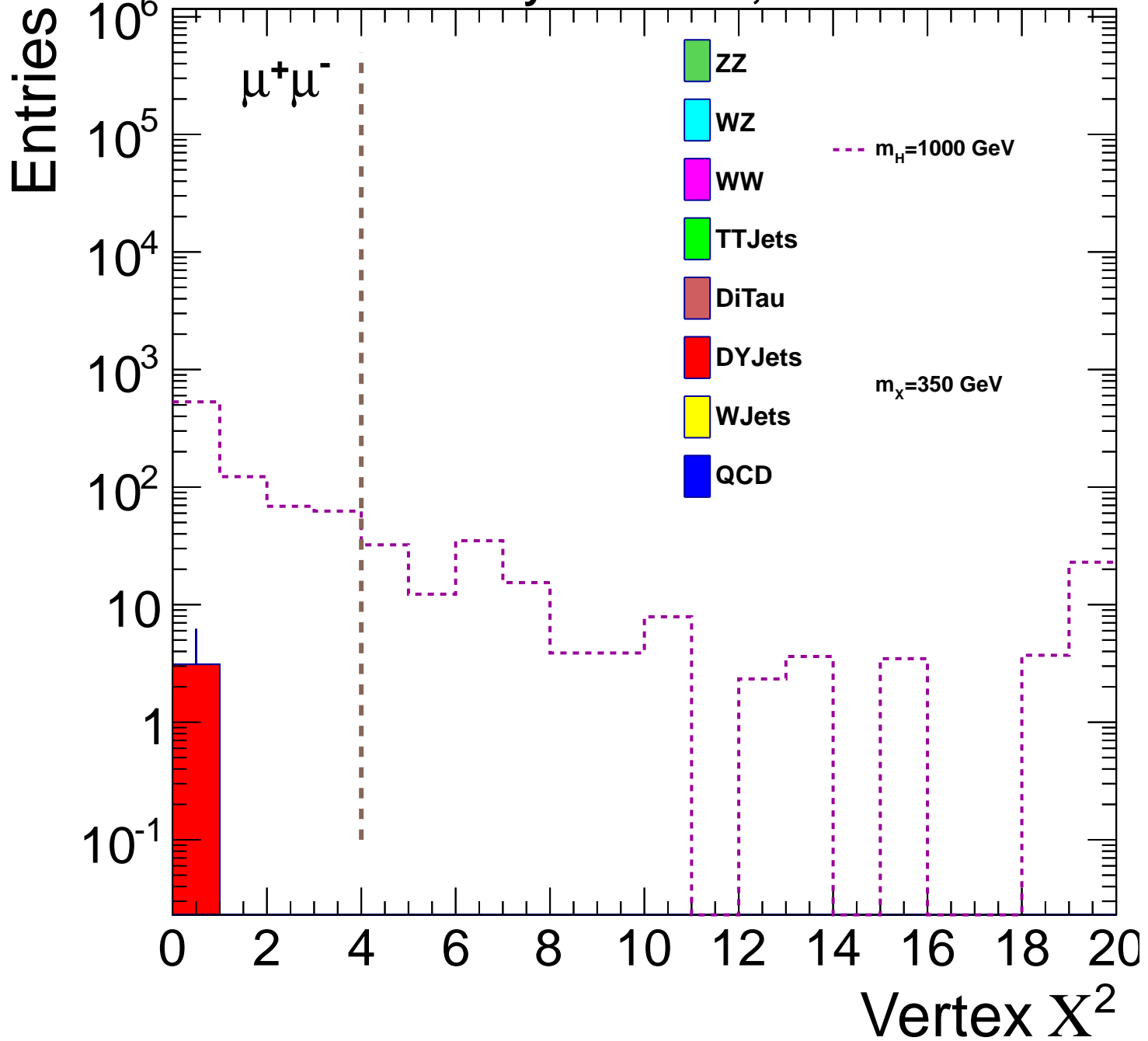
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



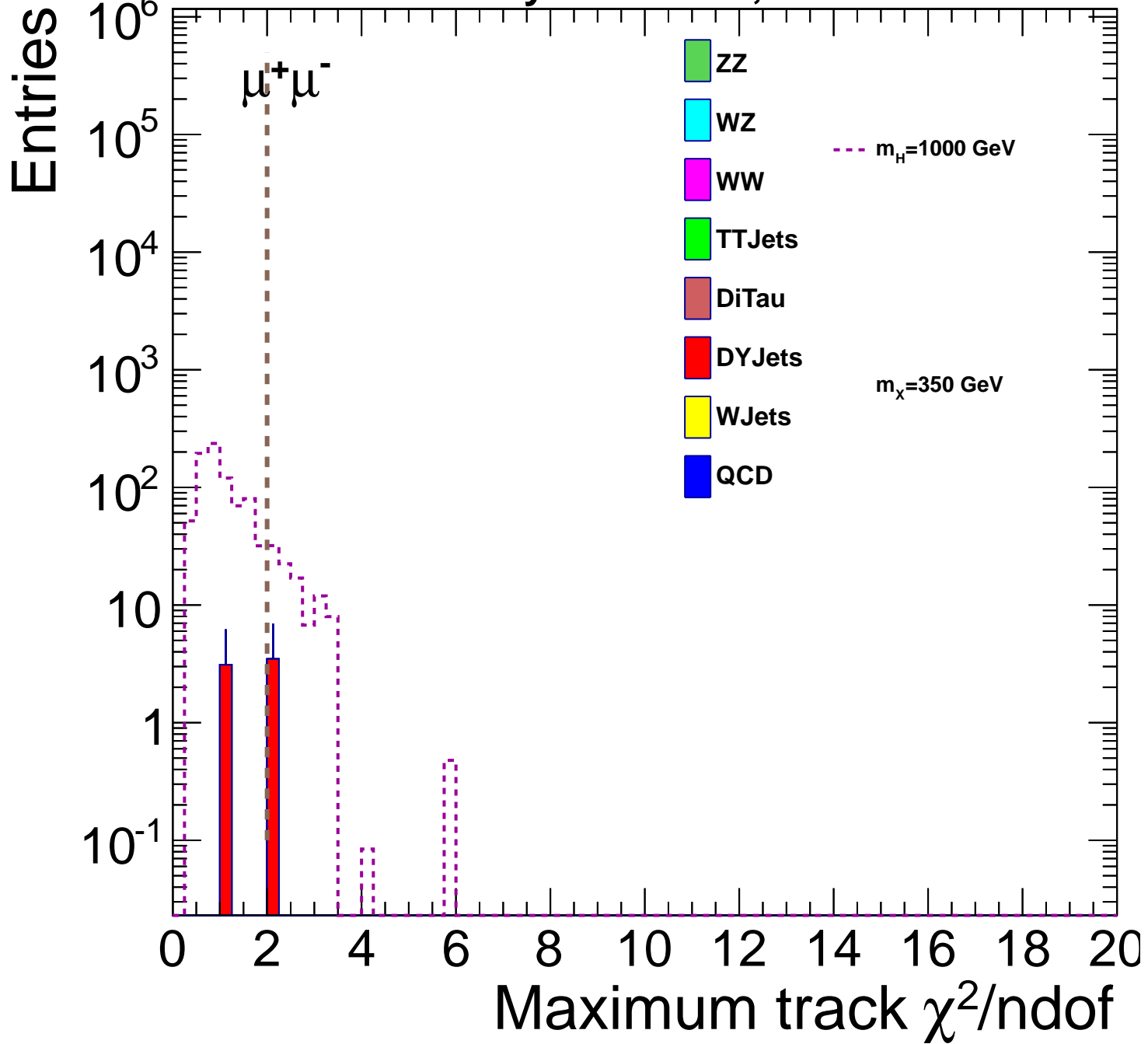
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



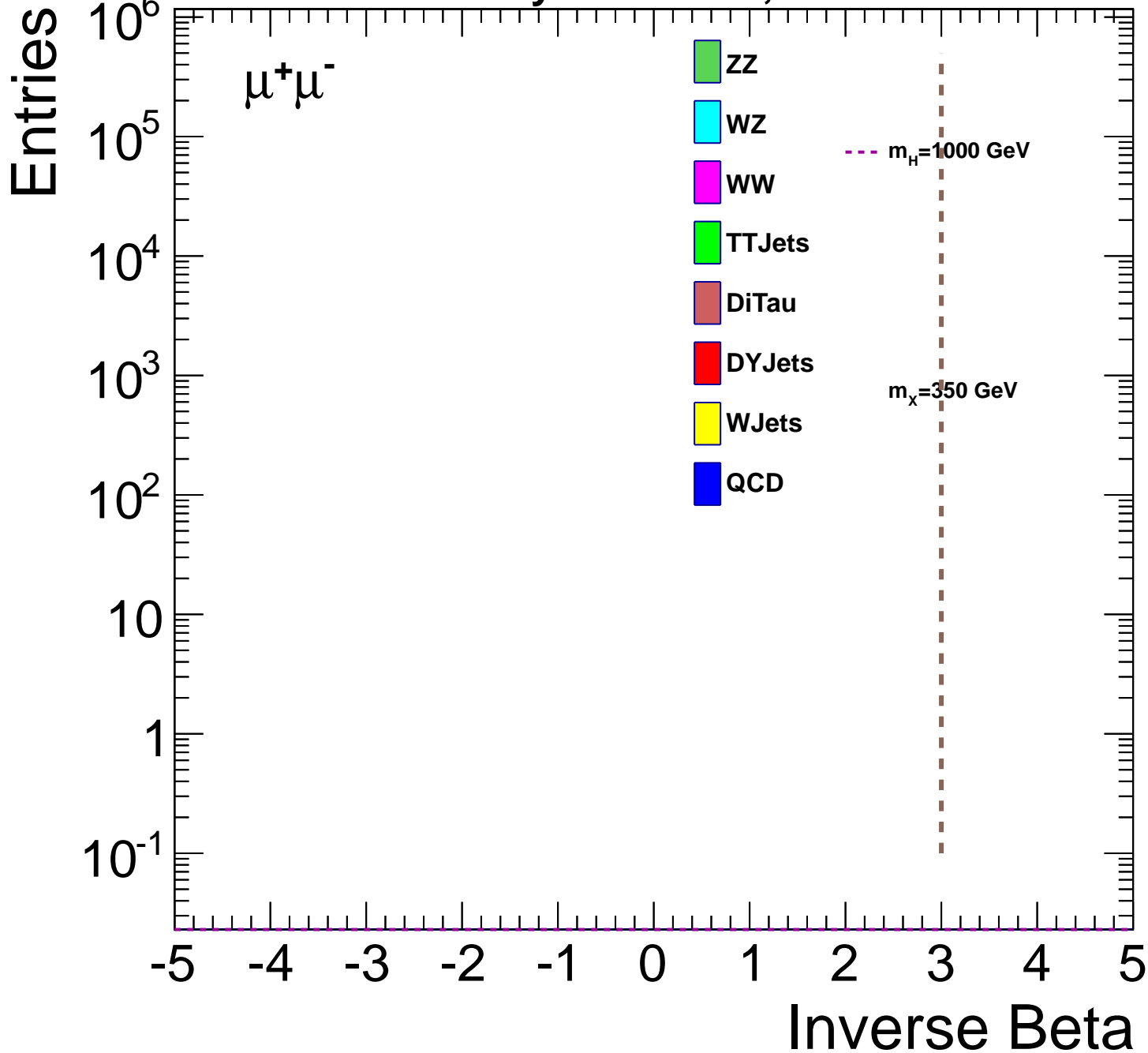
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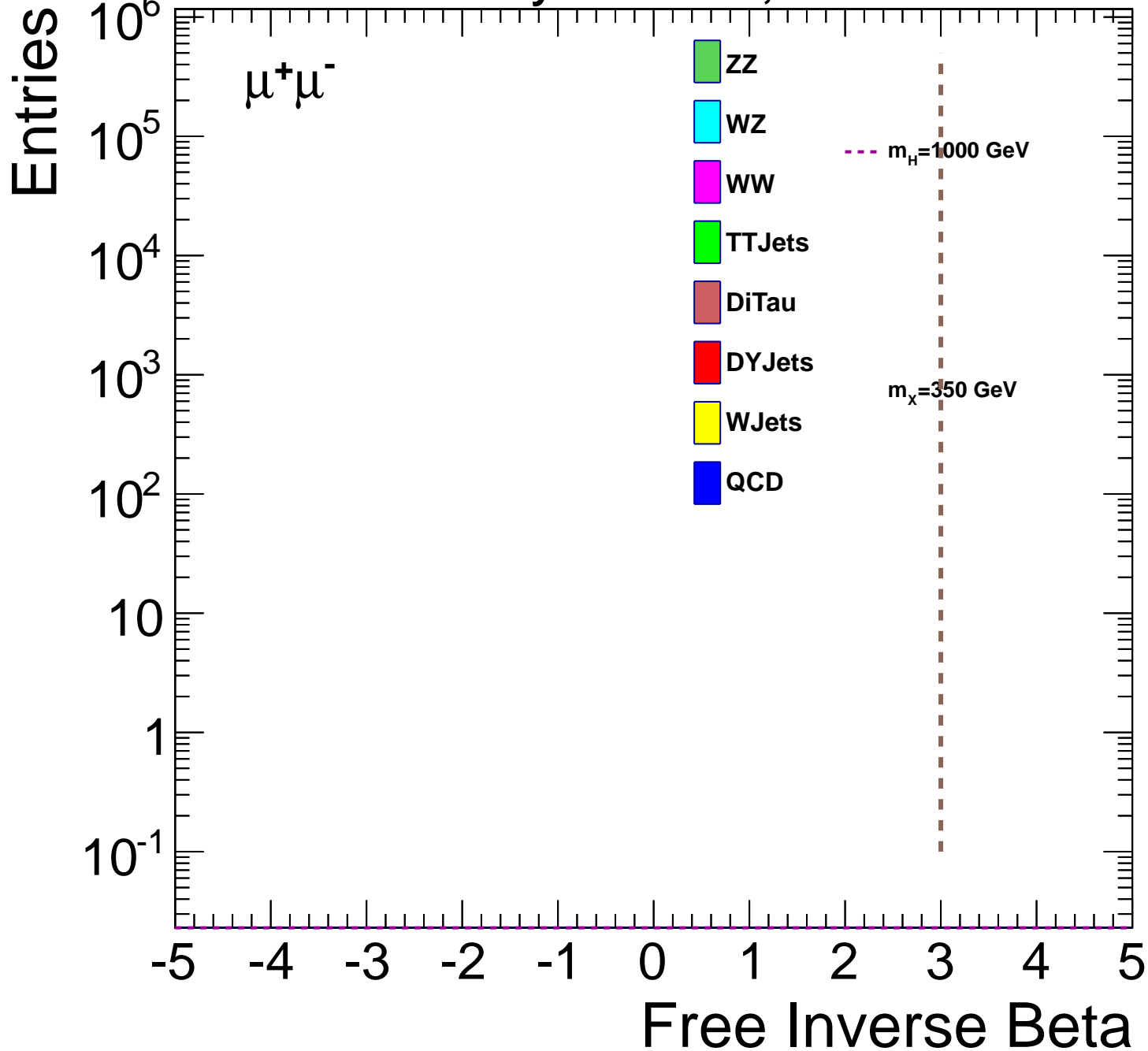
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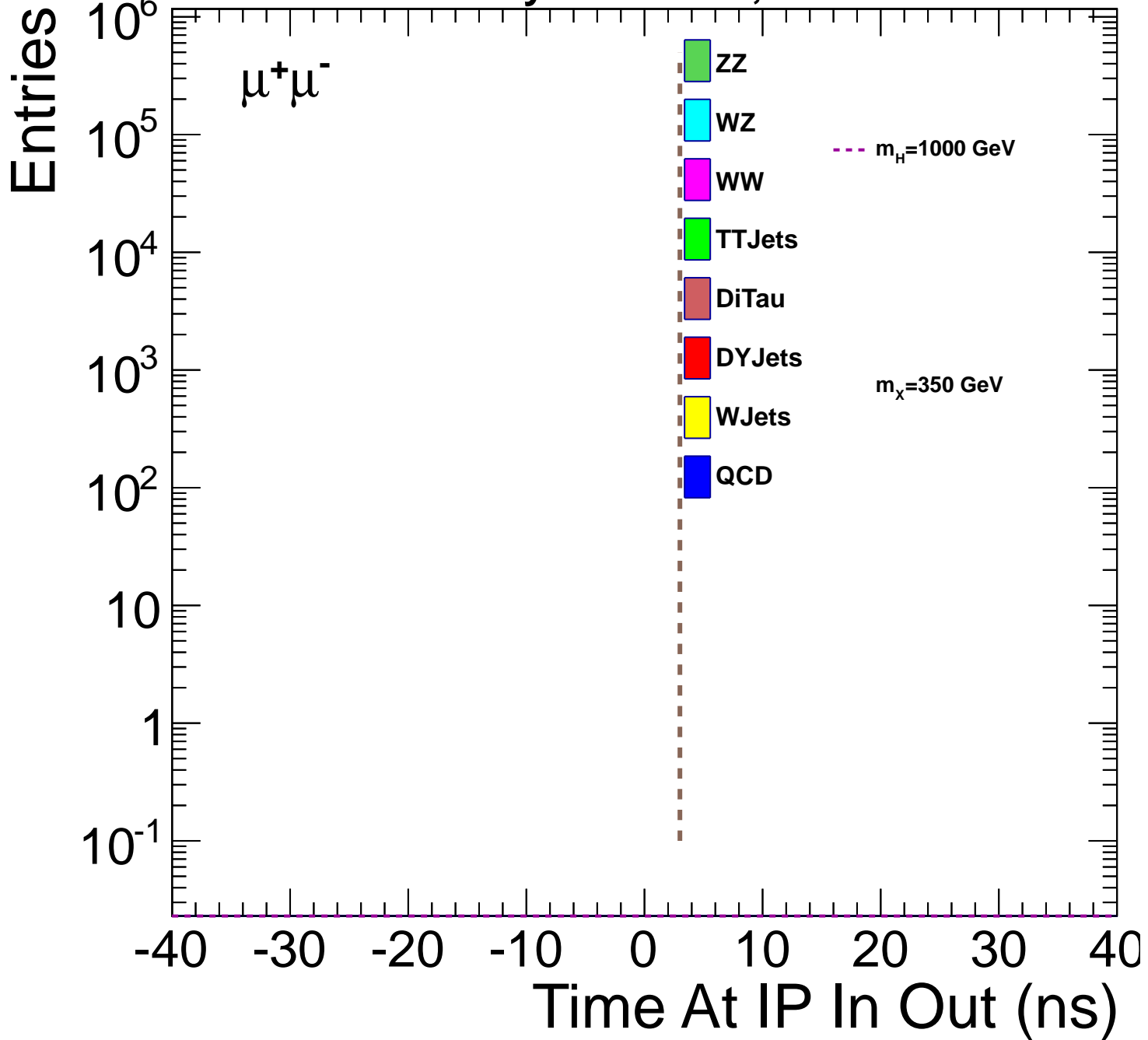
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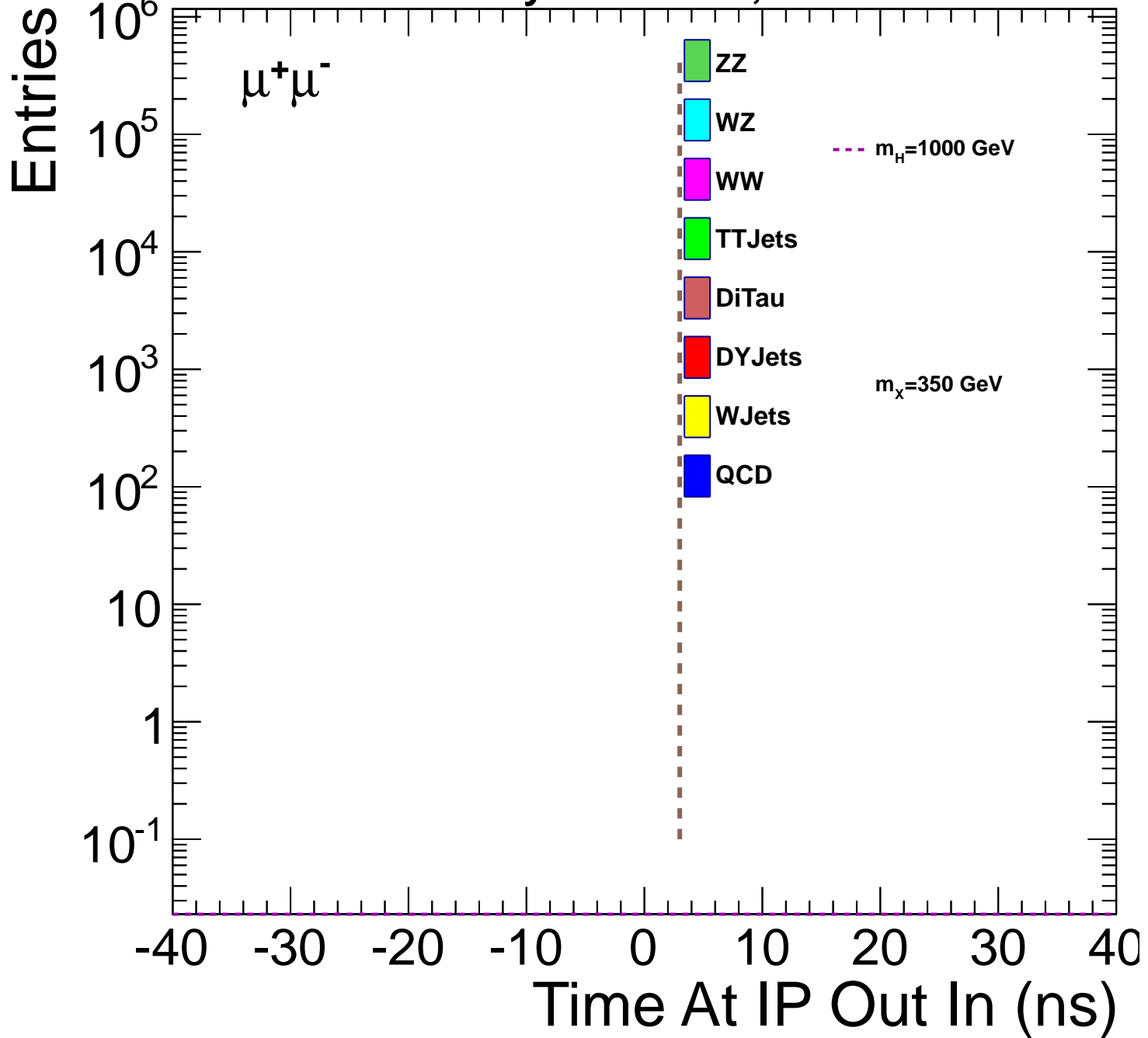
CMS Preliminary $\sqrt{s} = 8$ TeV, $L = 20.5\text{fb}^{-1}$



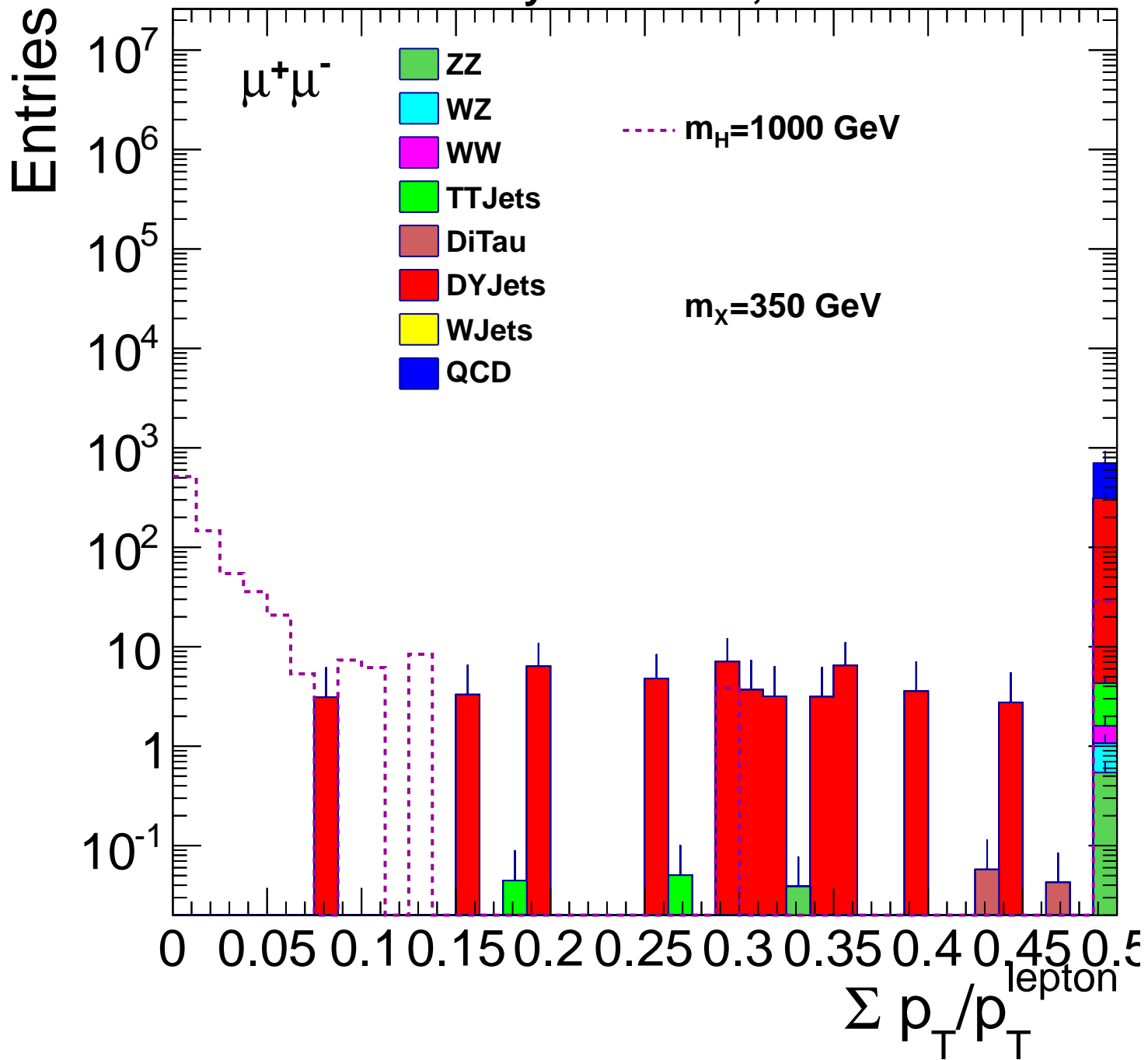
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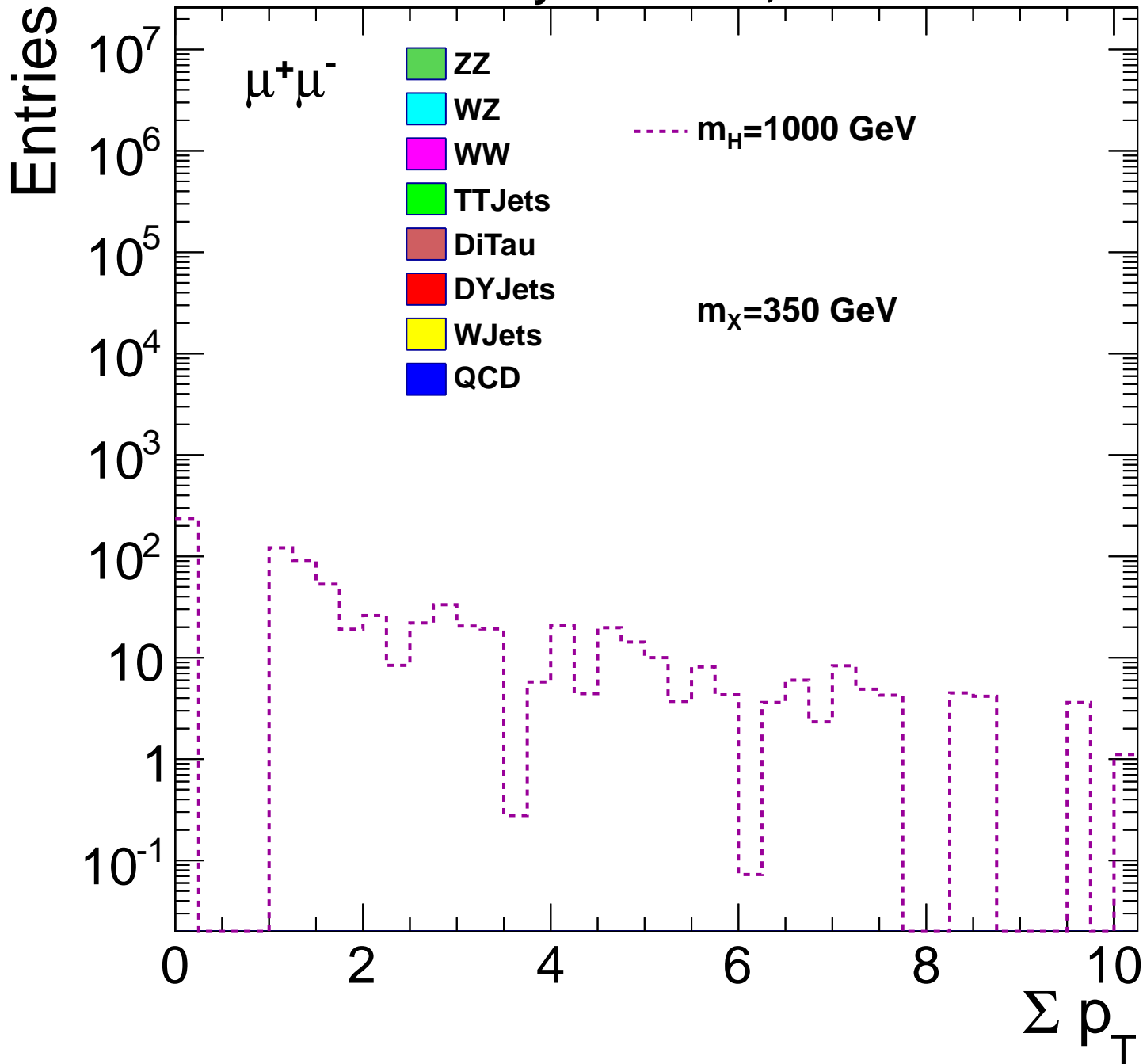
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



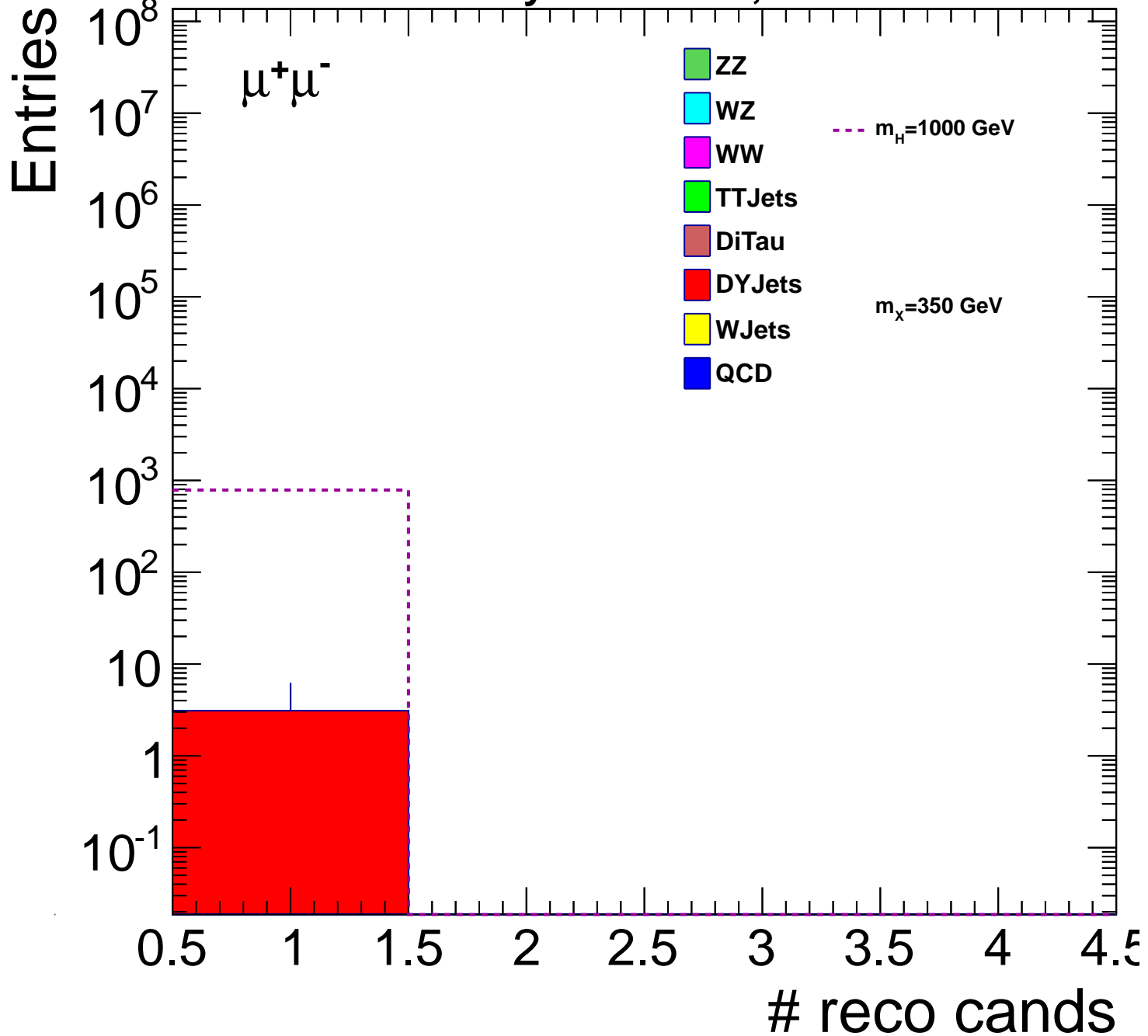
CMS Preliminary $\sqrt{s} = 8$ TeV, $L = 20.5\text{fb}^{-1}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

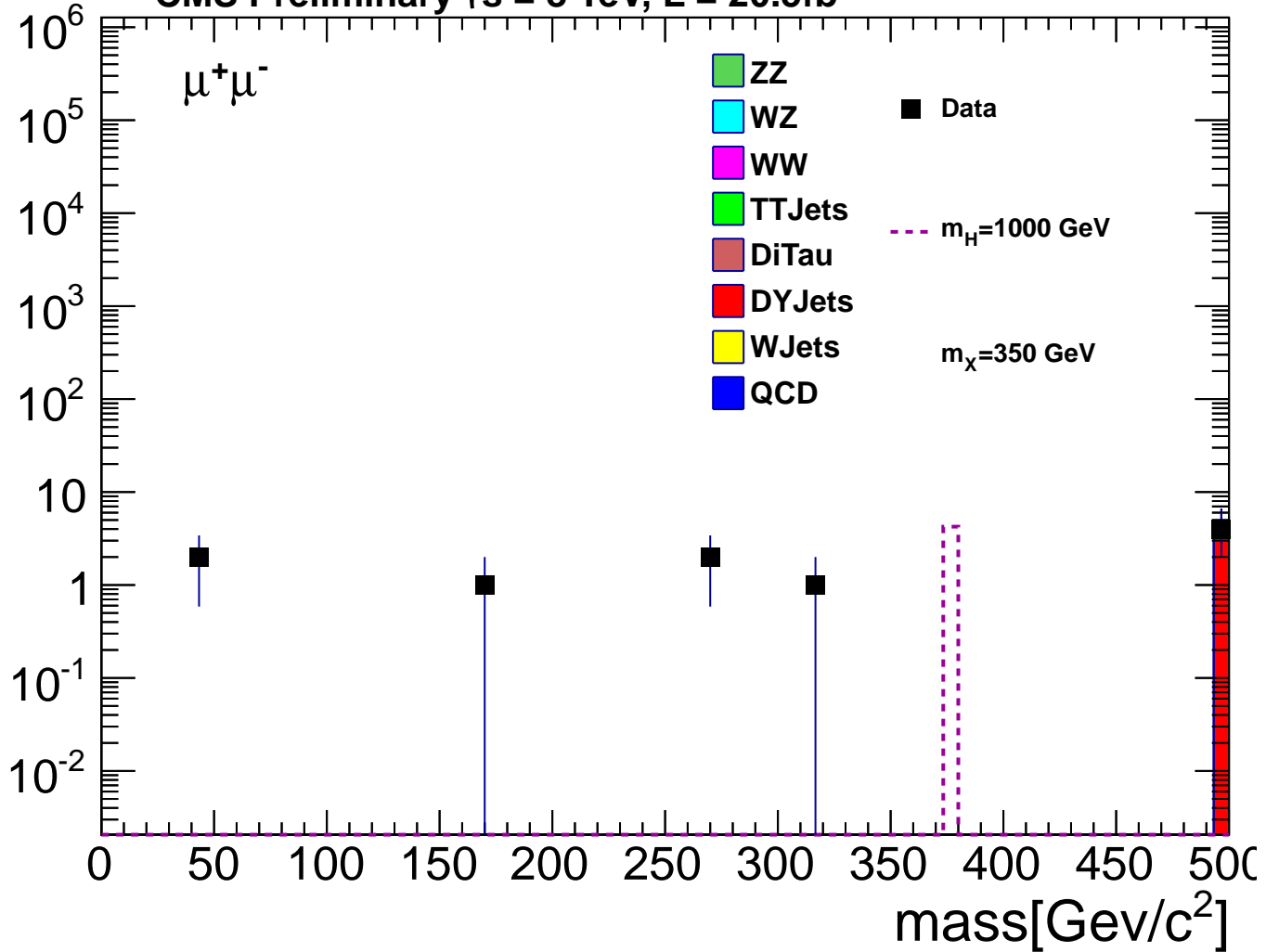


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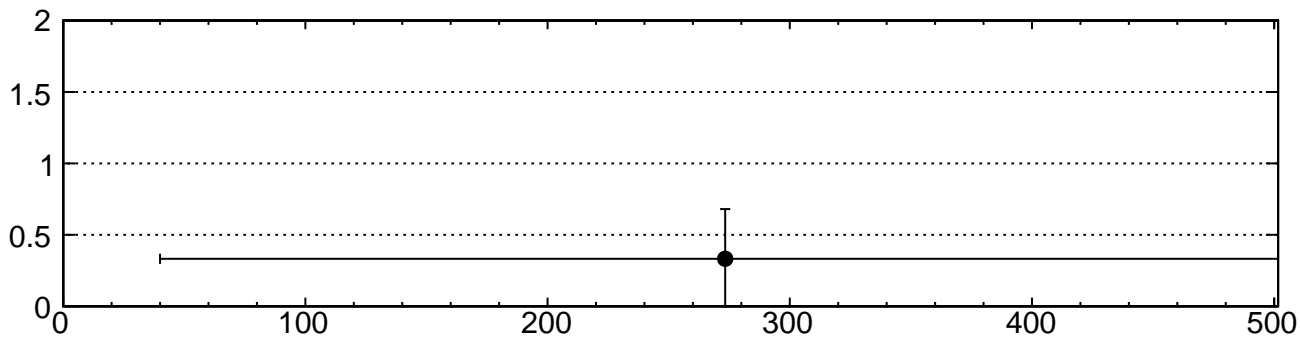


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

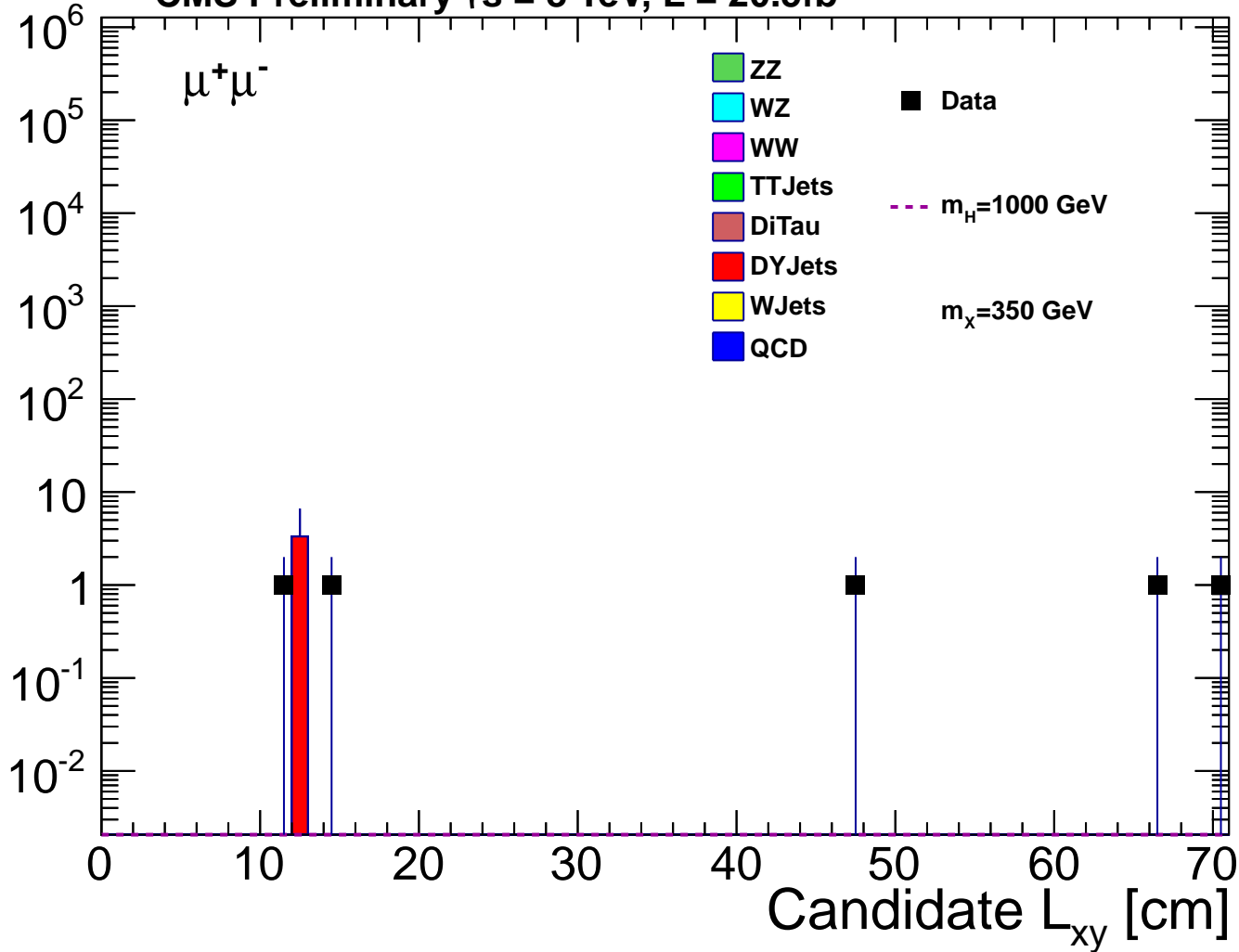


MC/Data

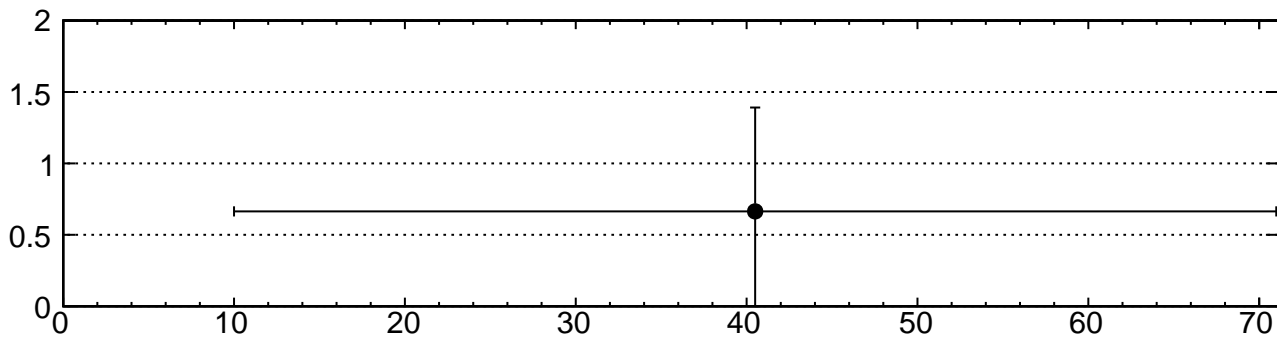


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

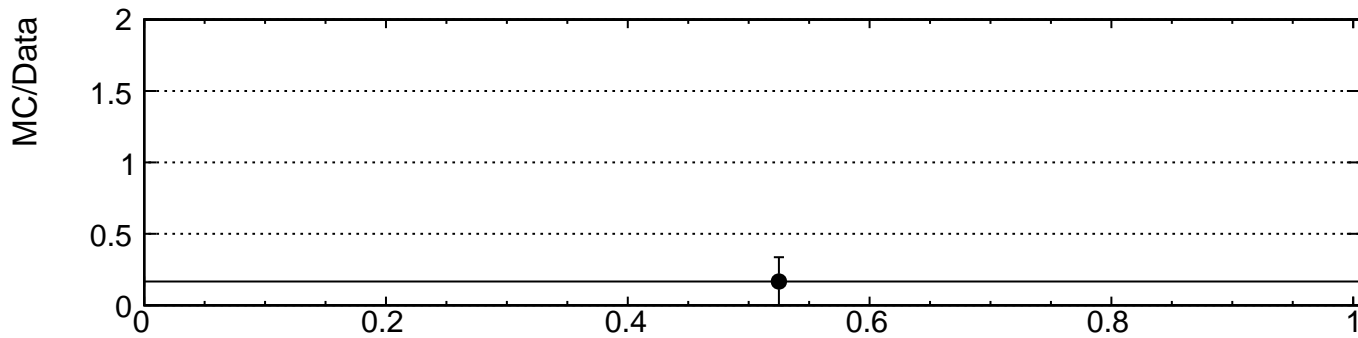
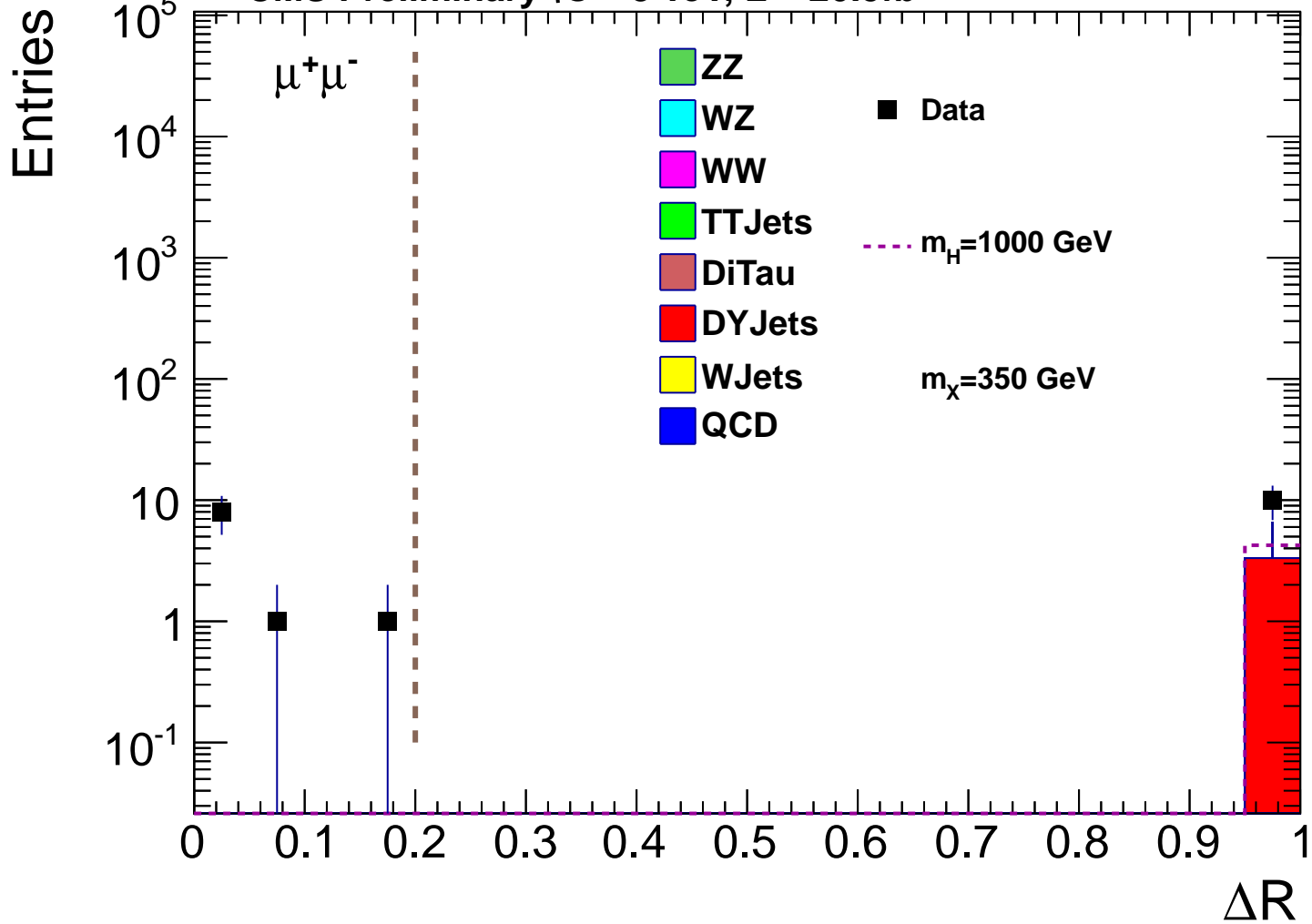
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MC/Data

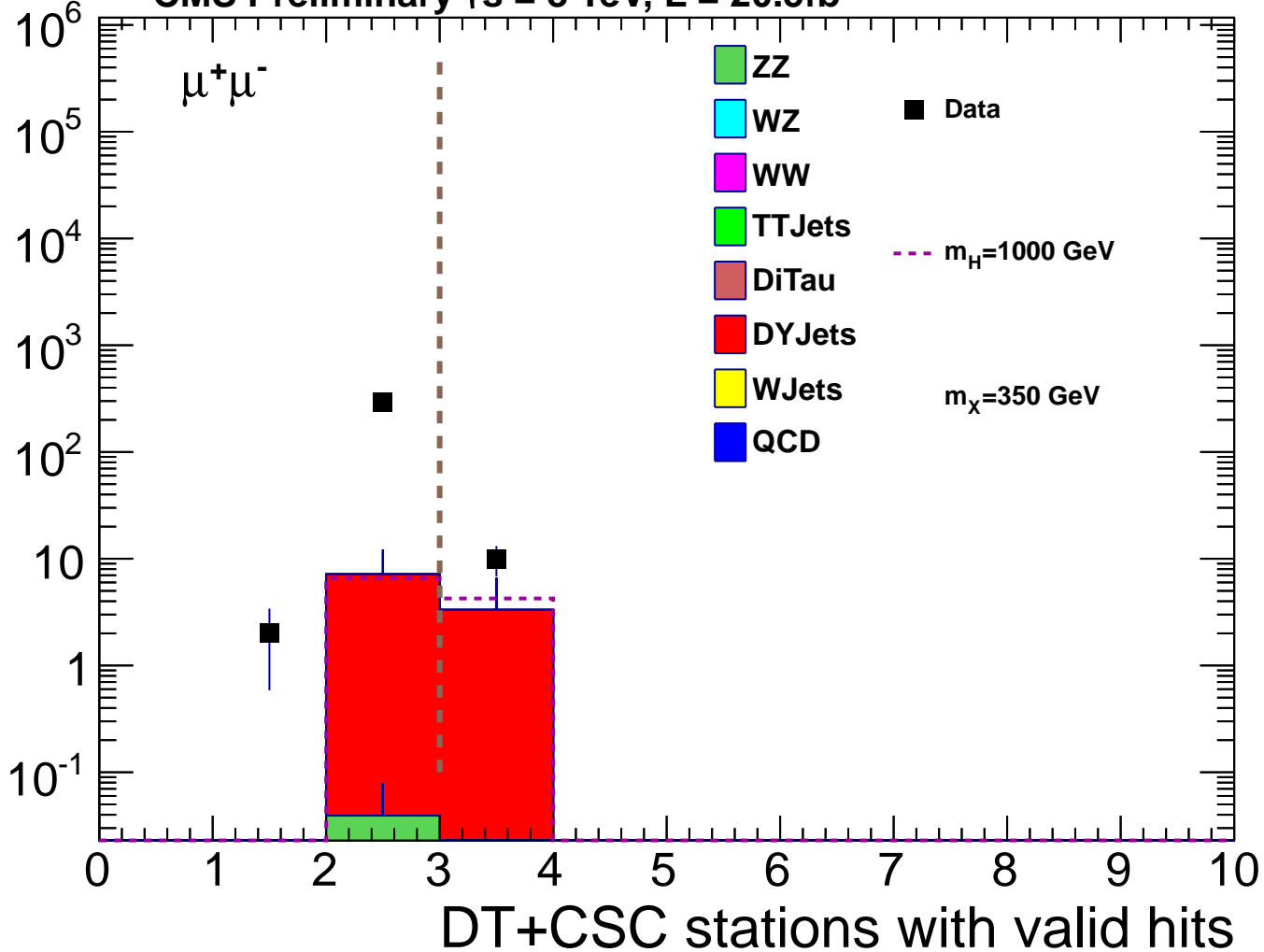


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

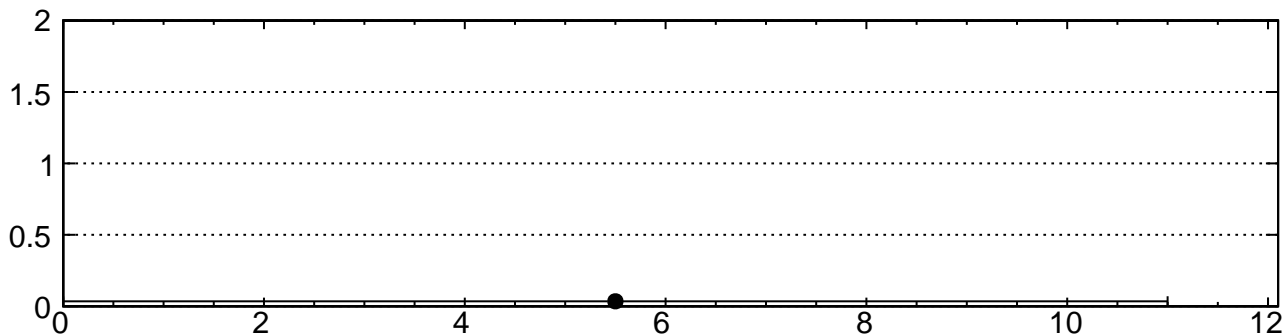


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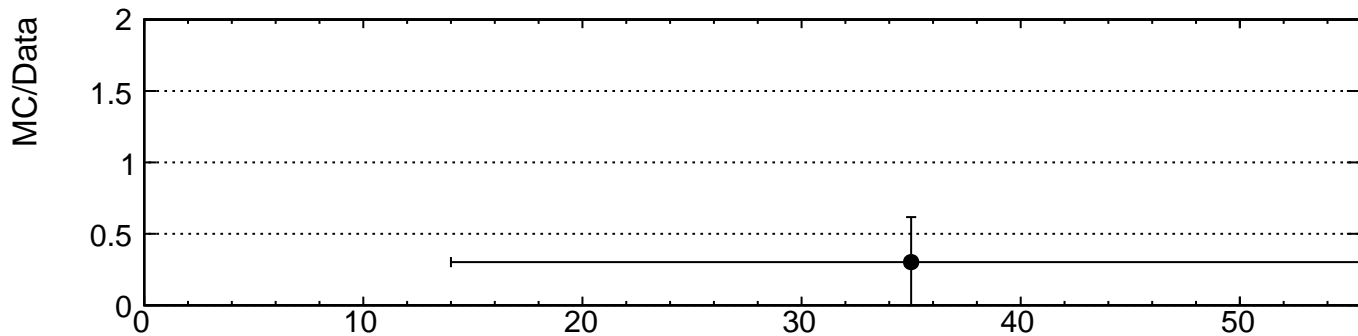
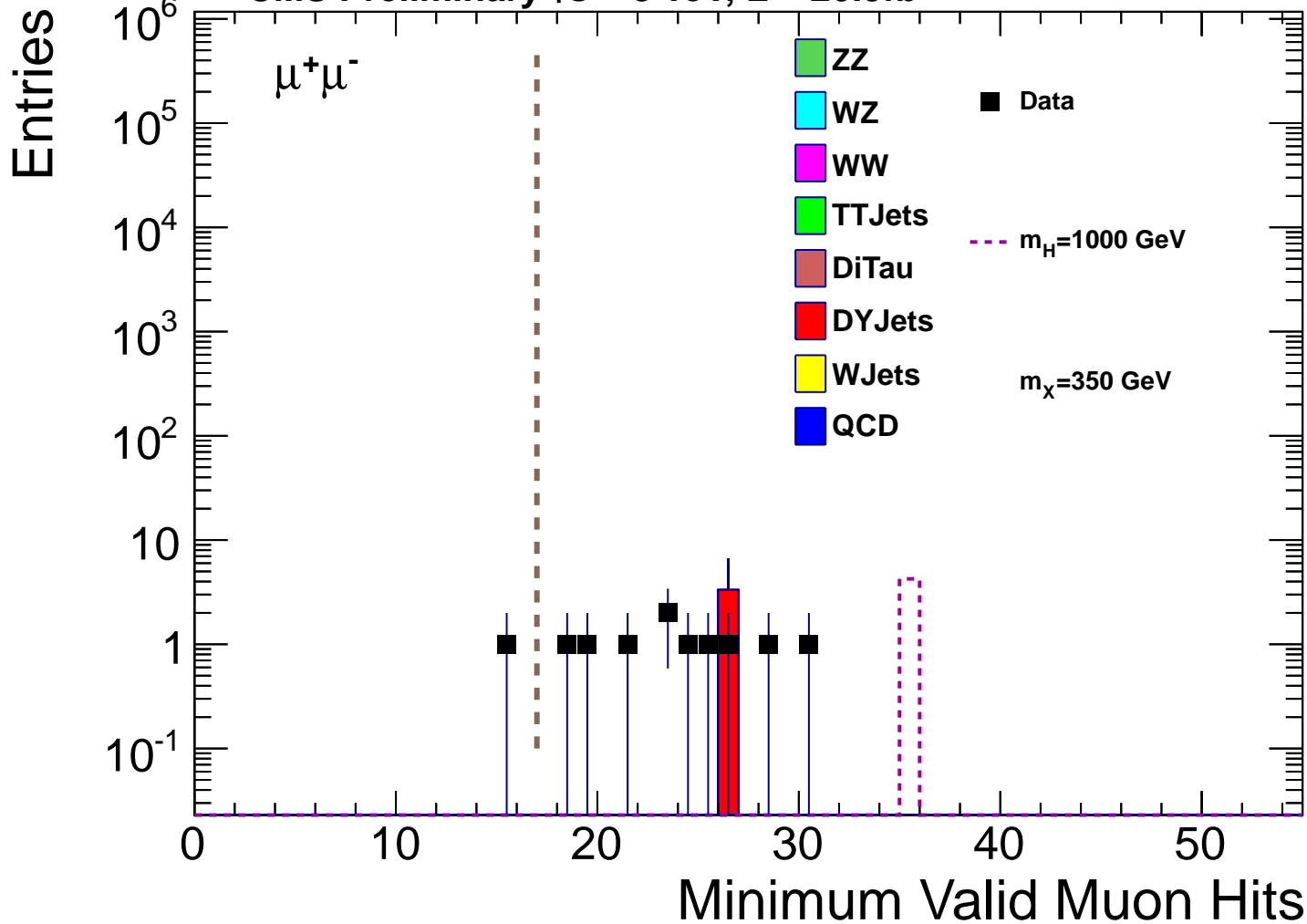
Entries



MC/Data

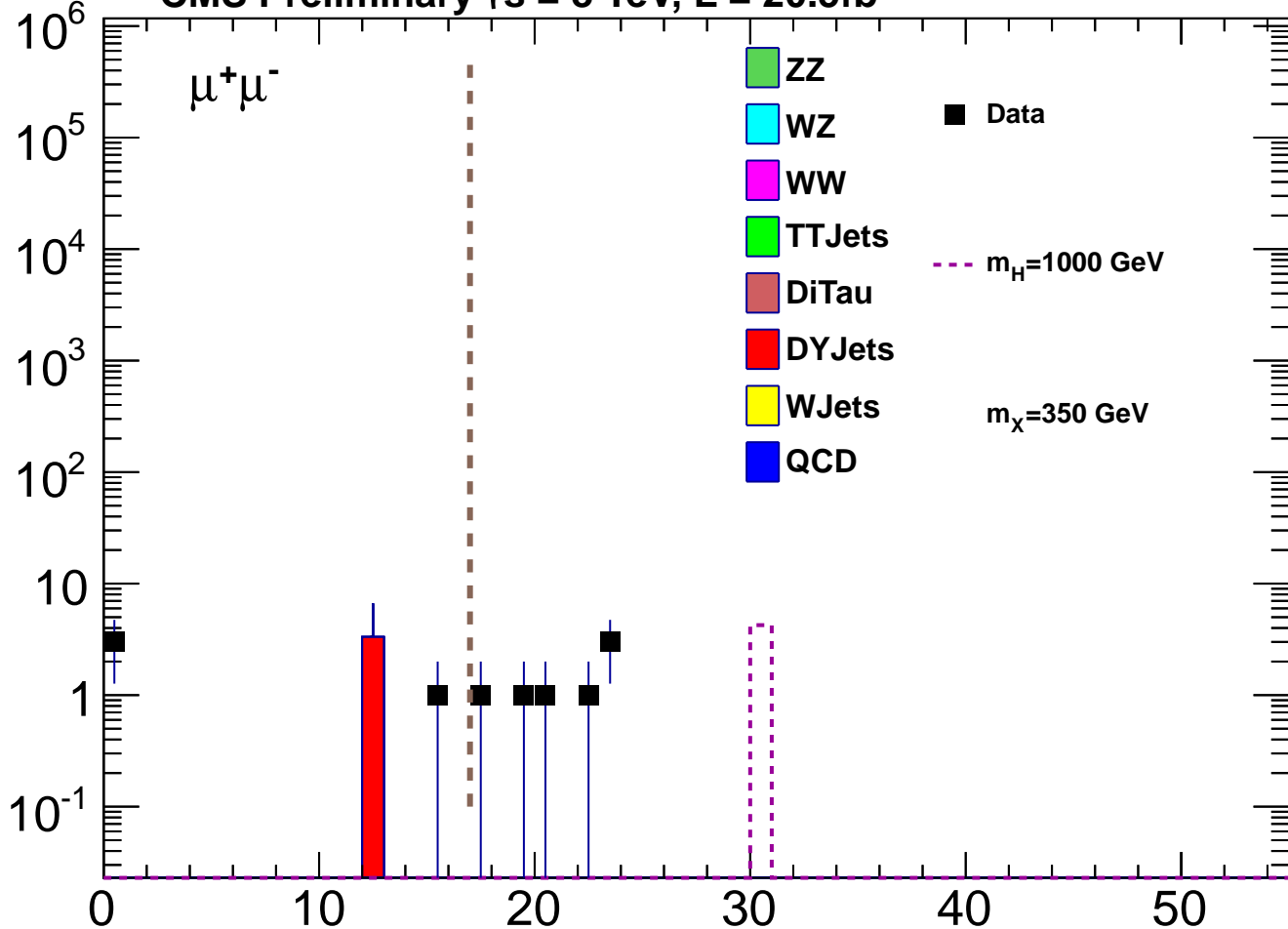


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

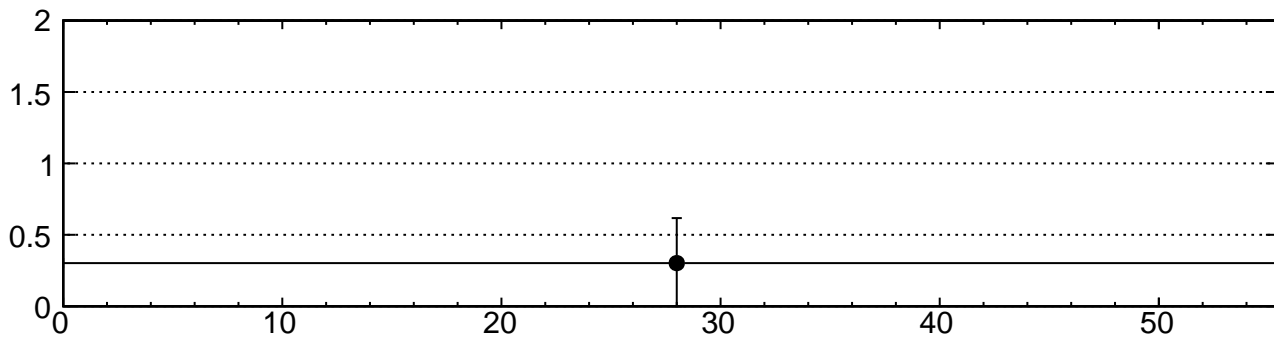


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

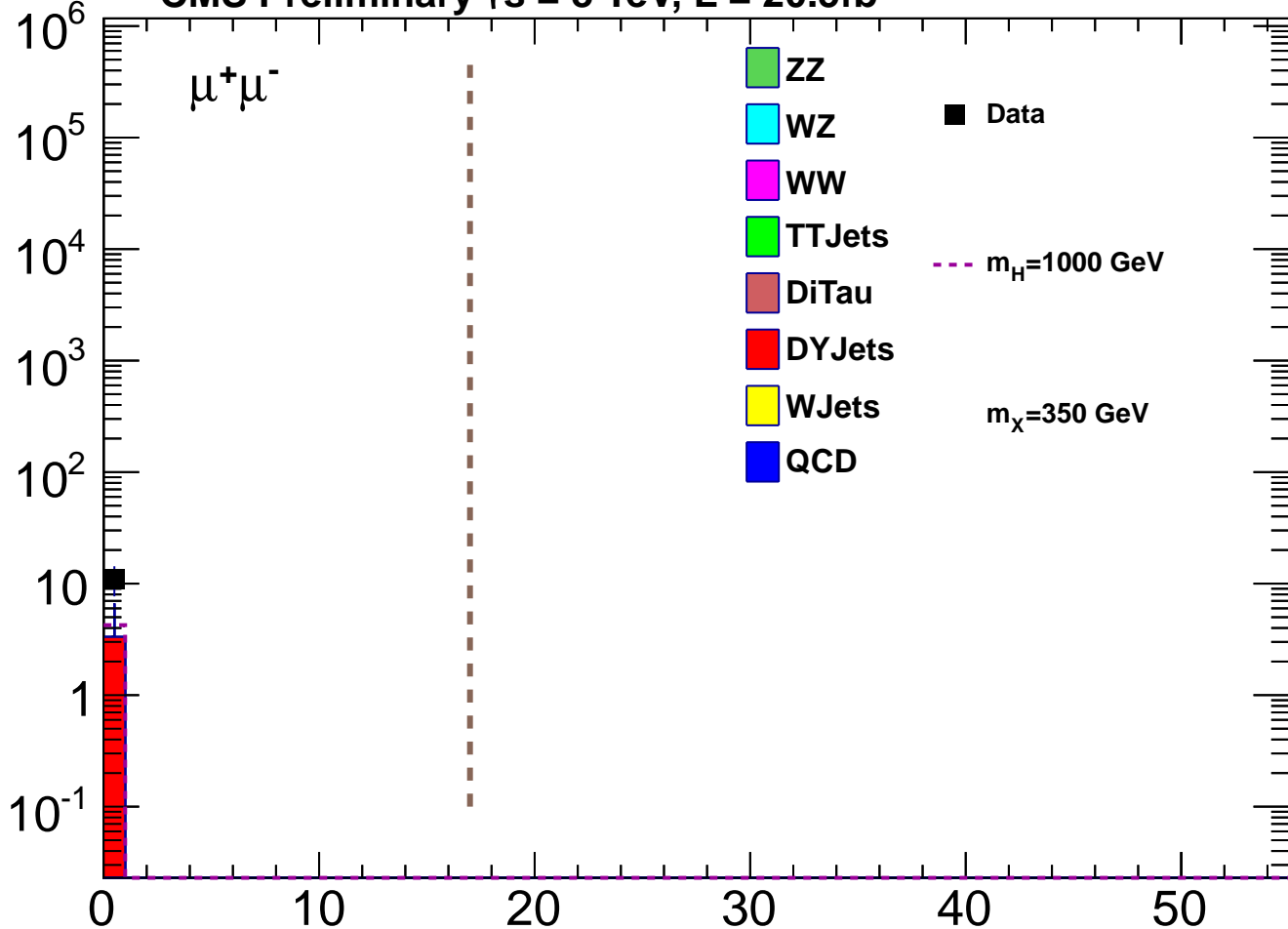


MC/Data

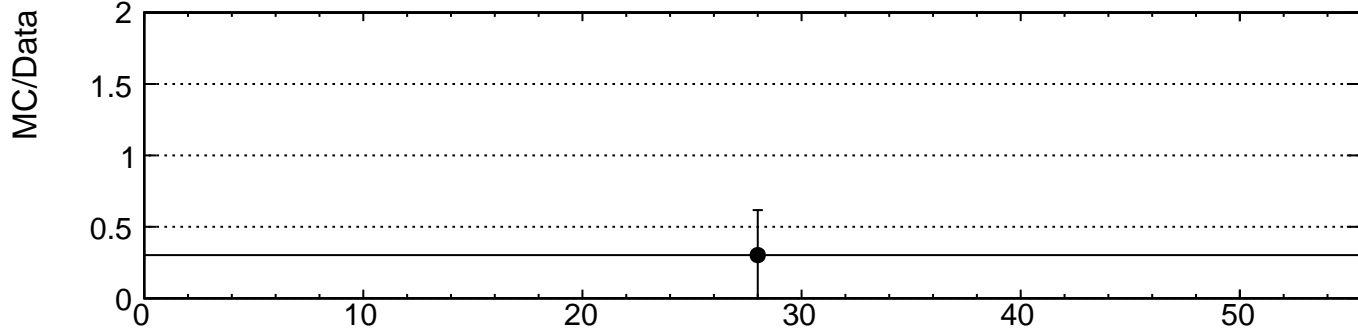


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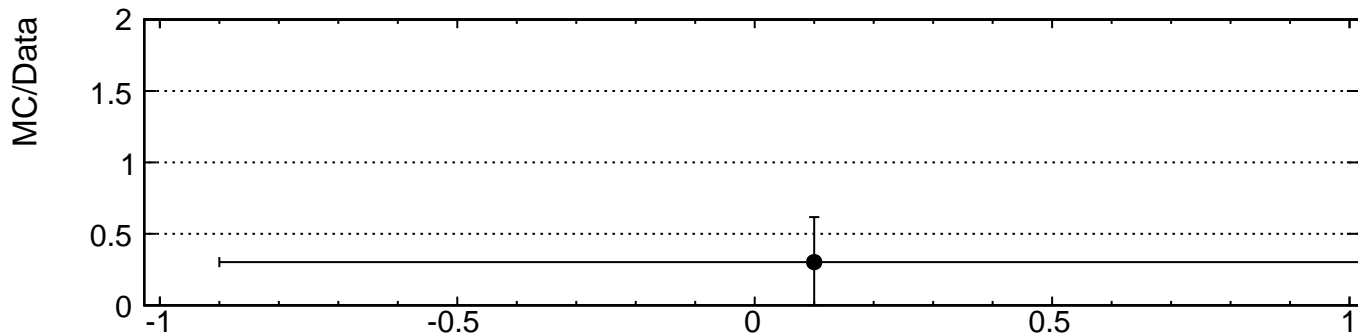
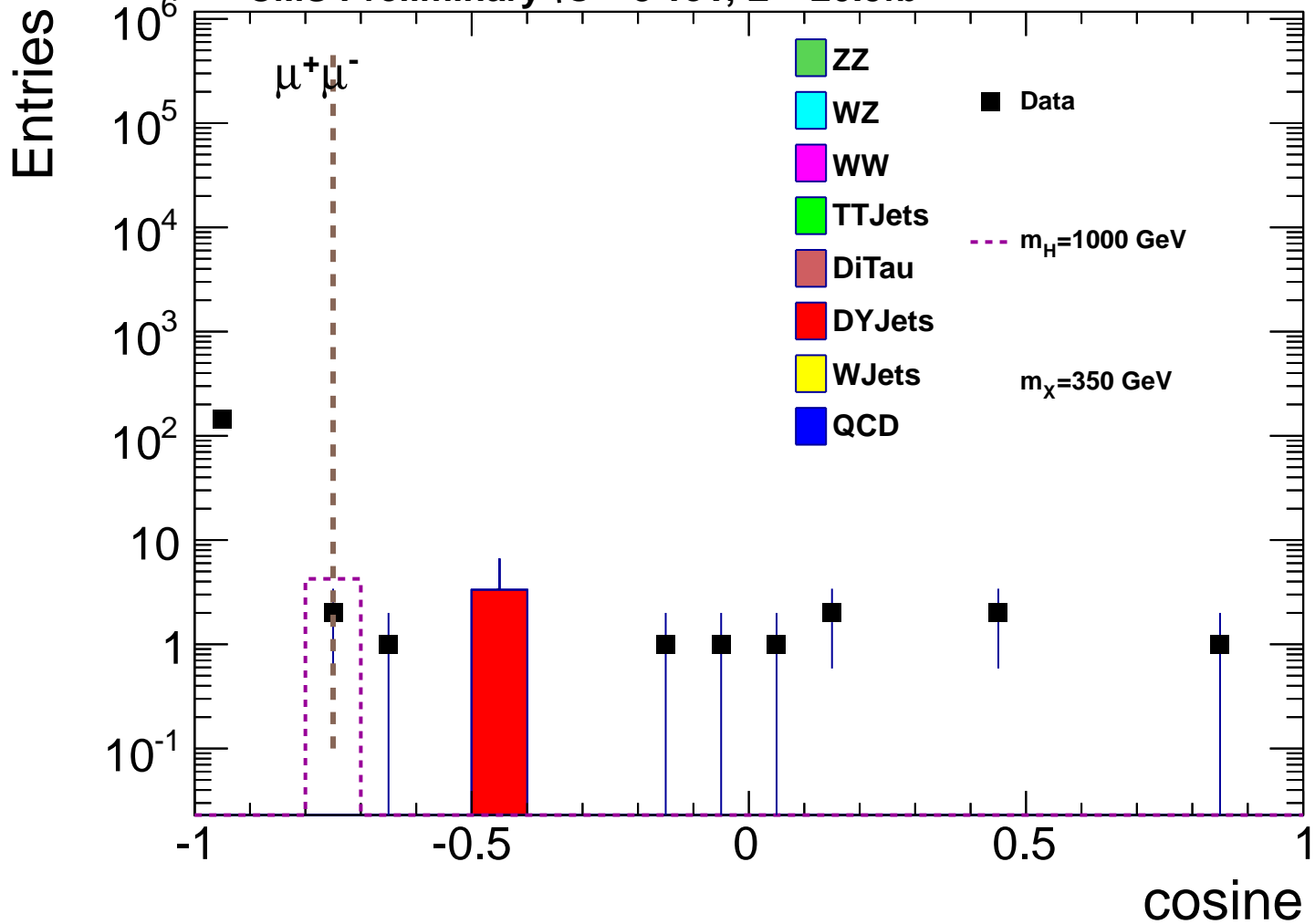
Entries



Minimum Valid Muon CSC Hits

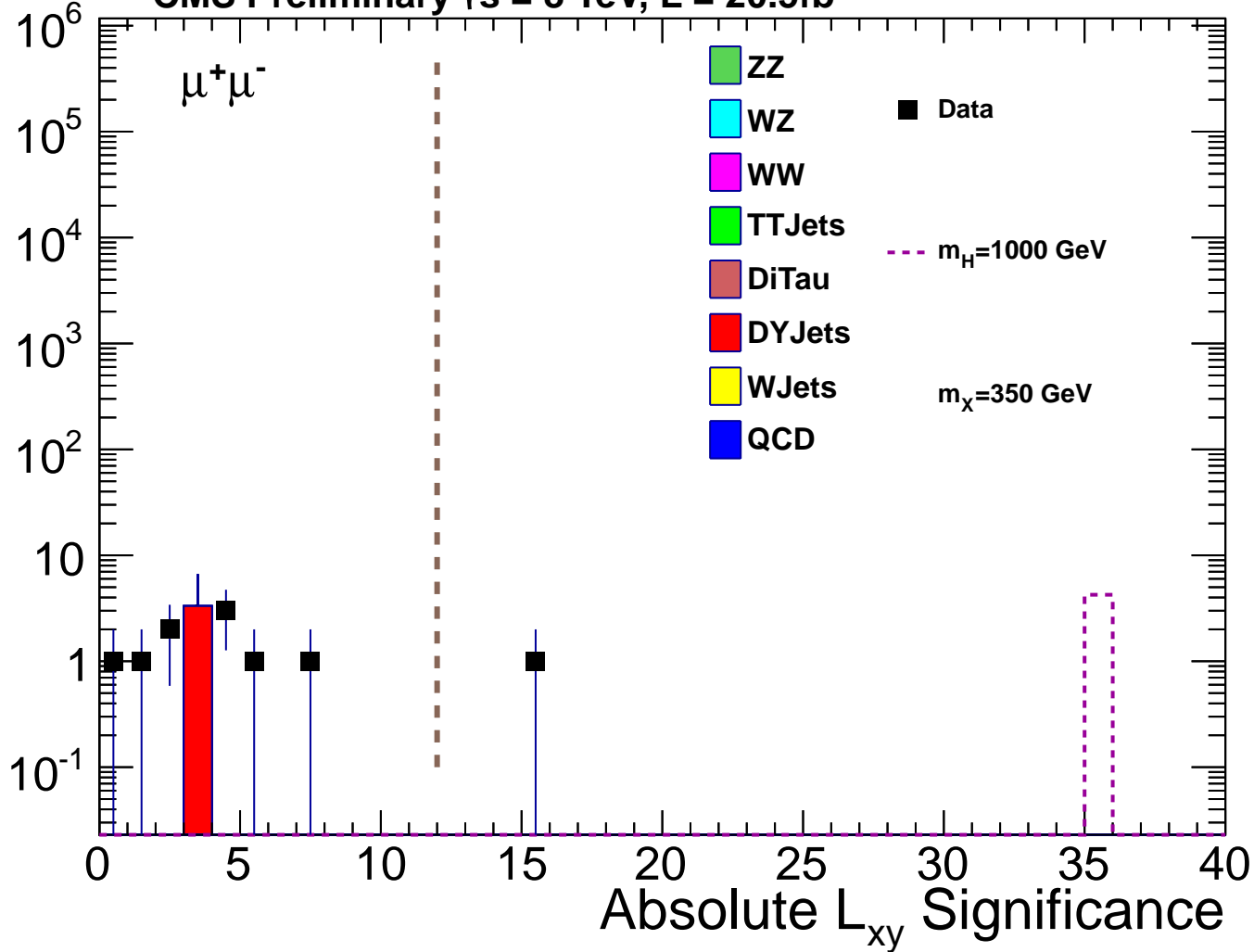


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}, L = 20.5 \text{ fb}^{-1}$

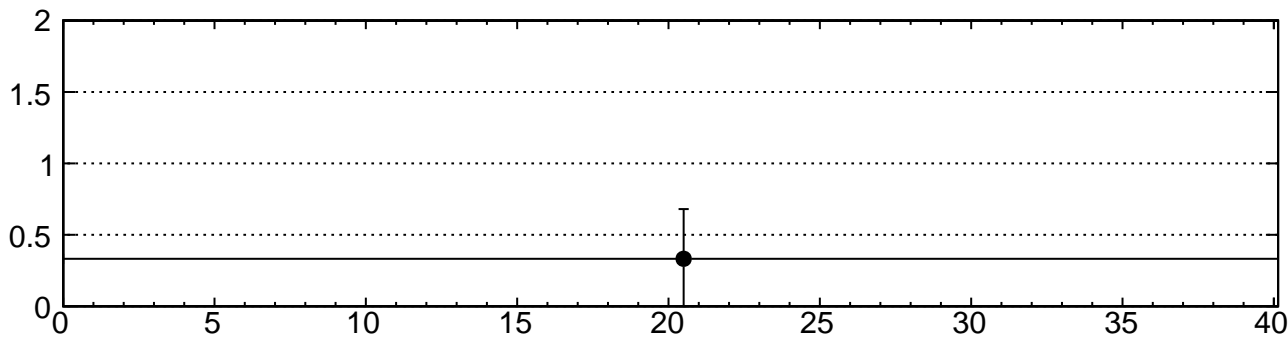


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

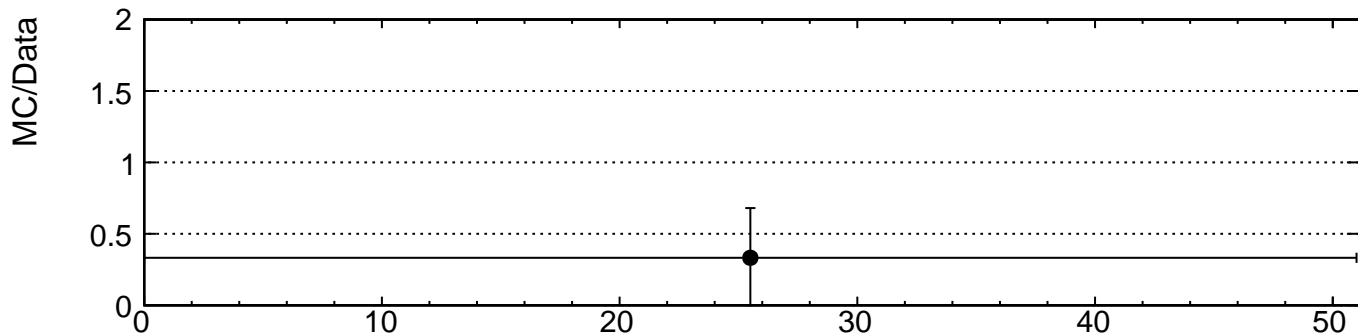
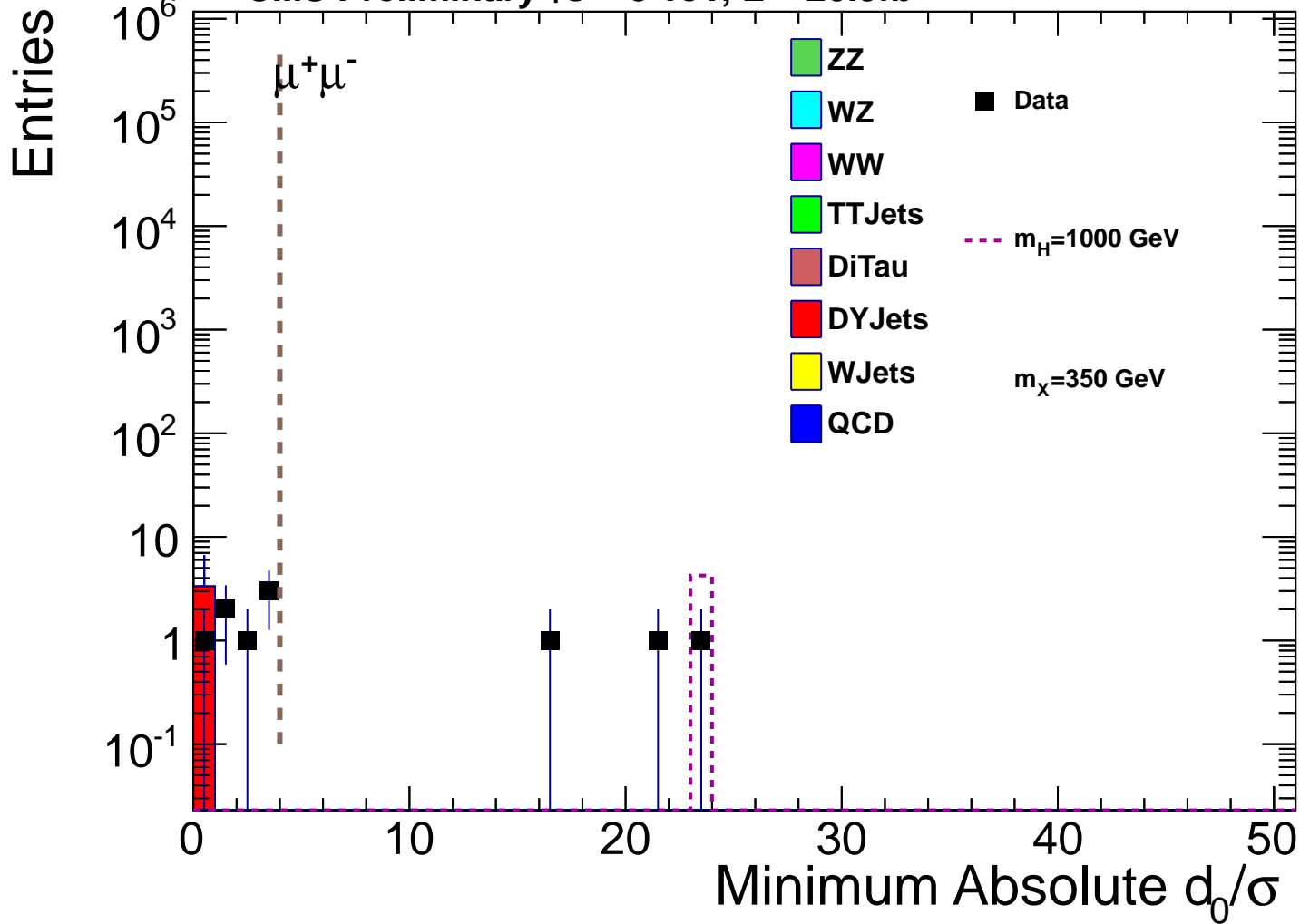
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MC/Data

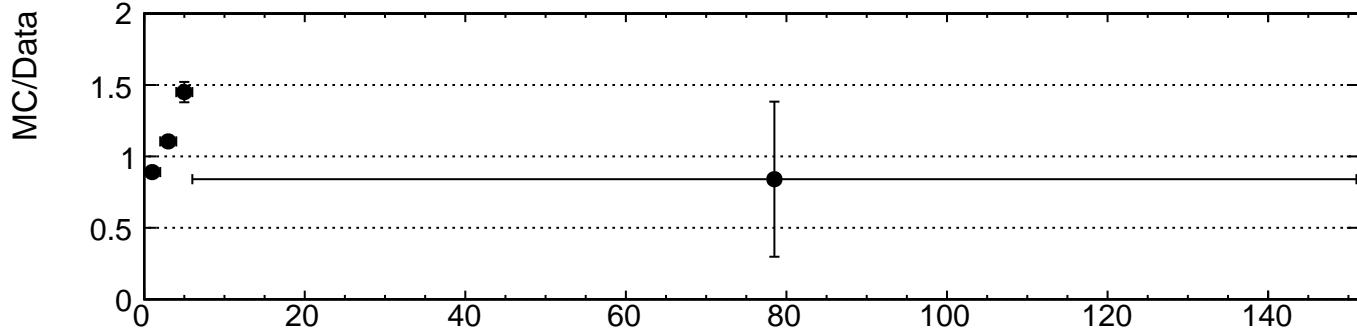
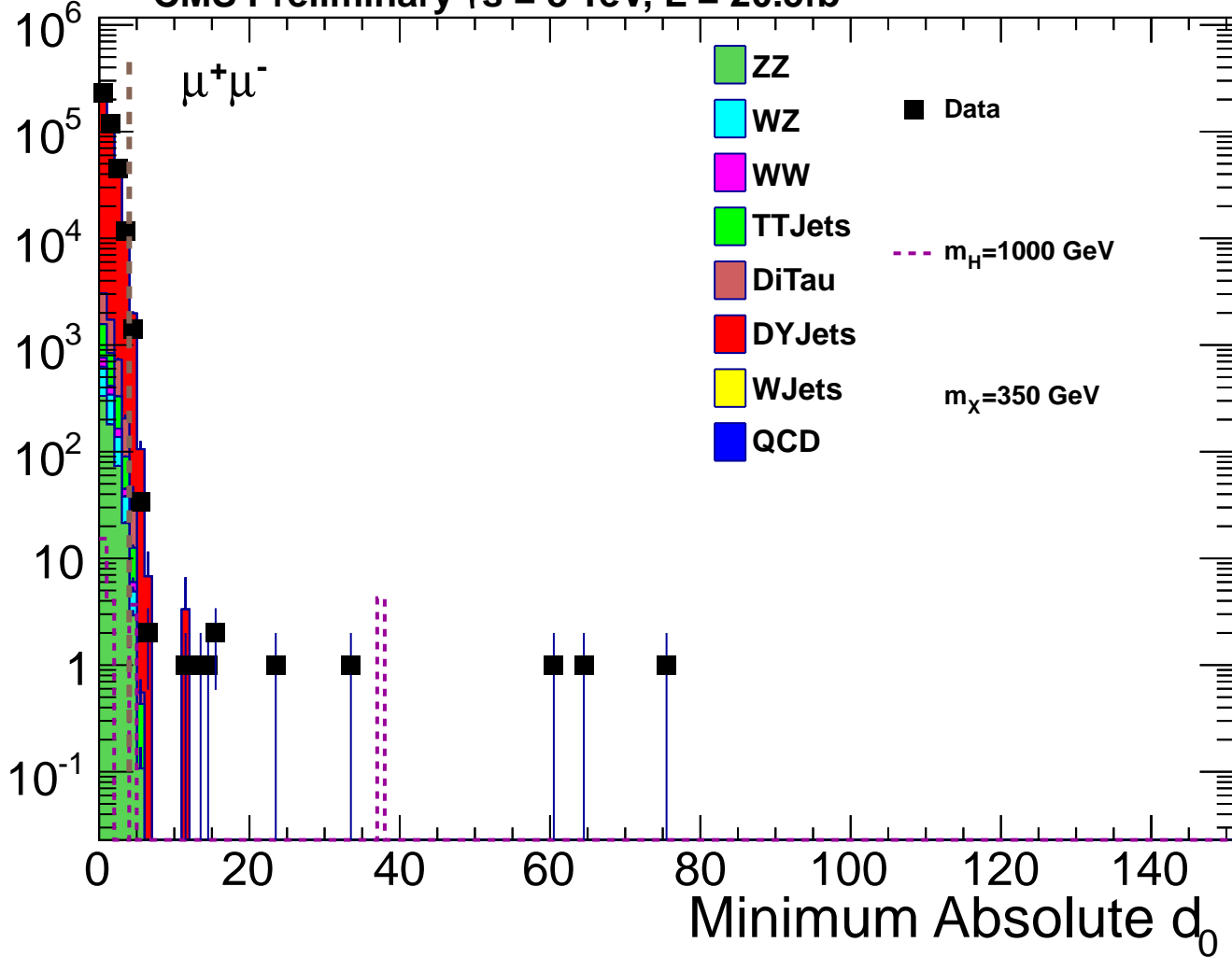


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

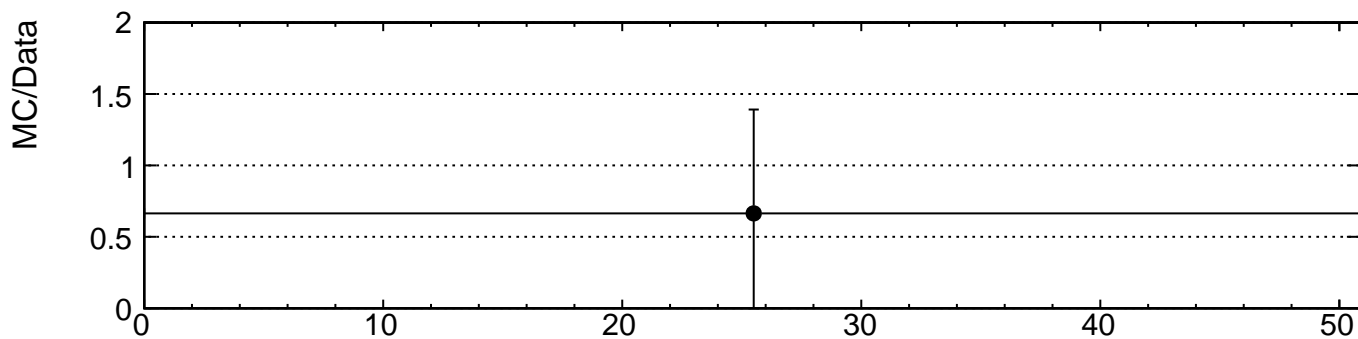
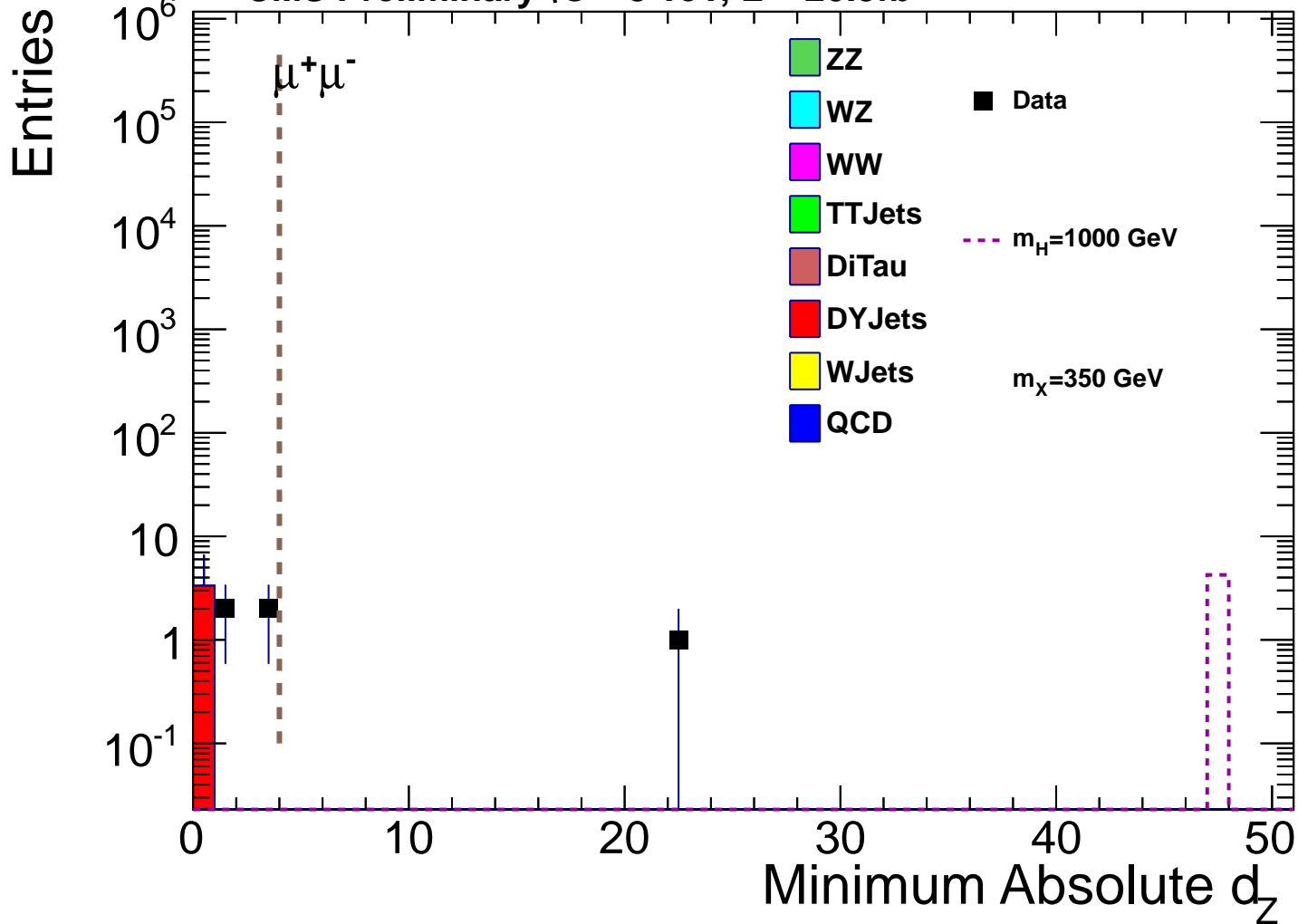


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

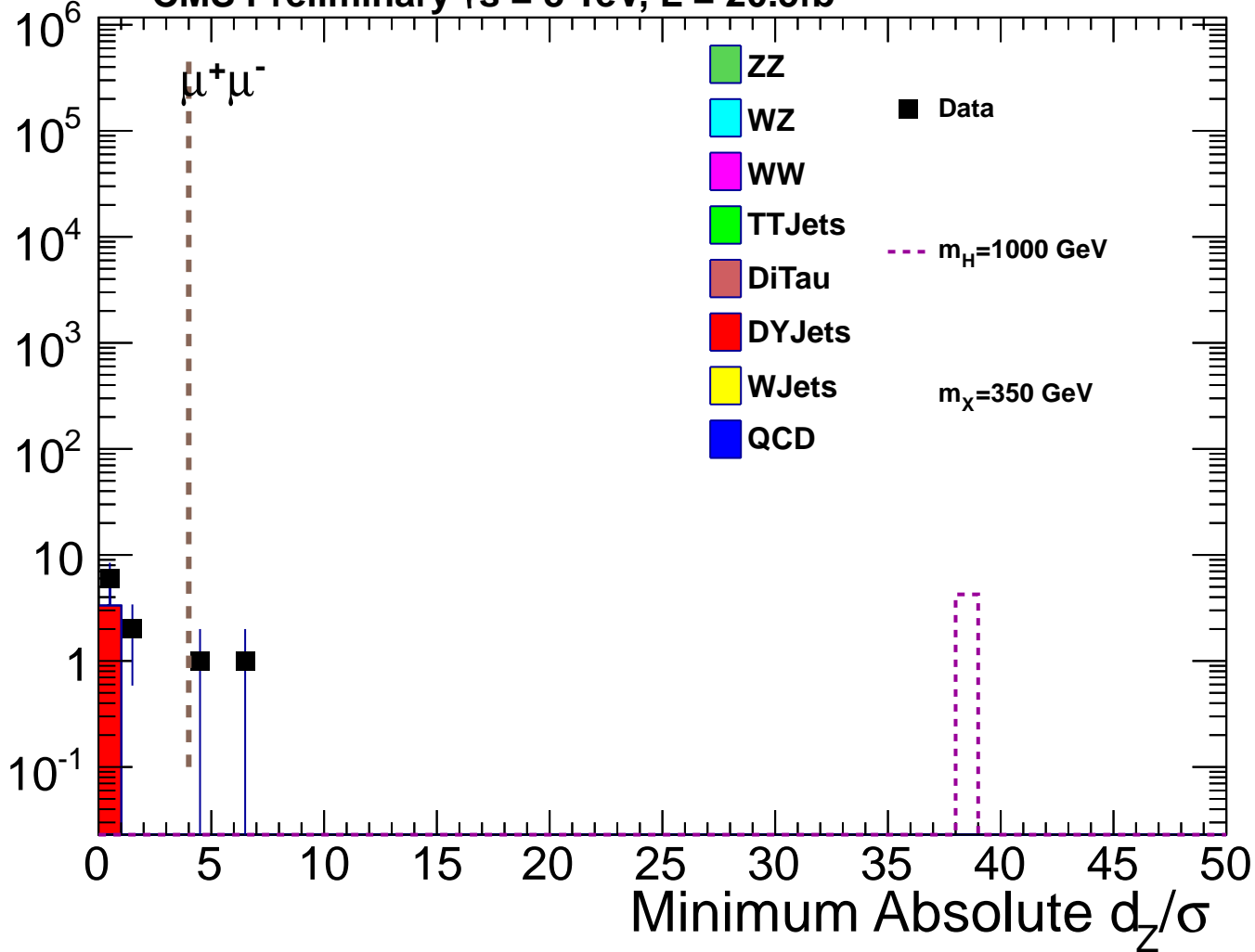


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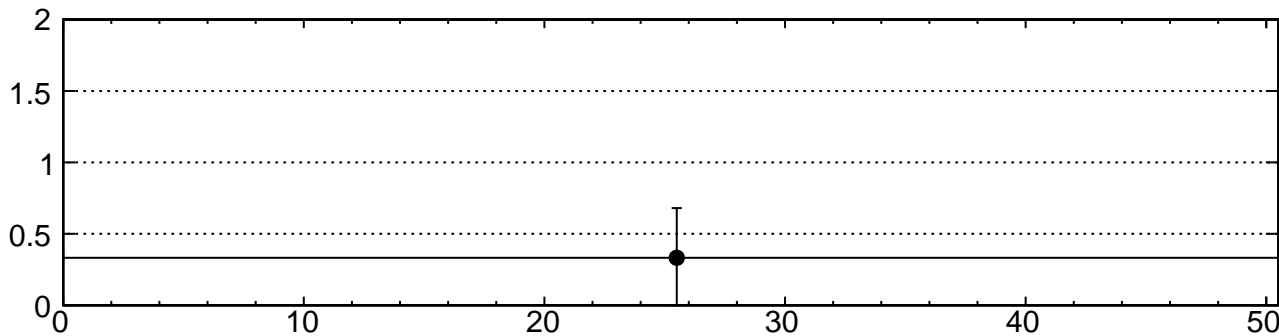


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

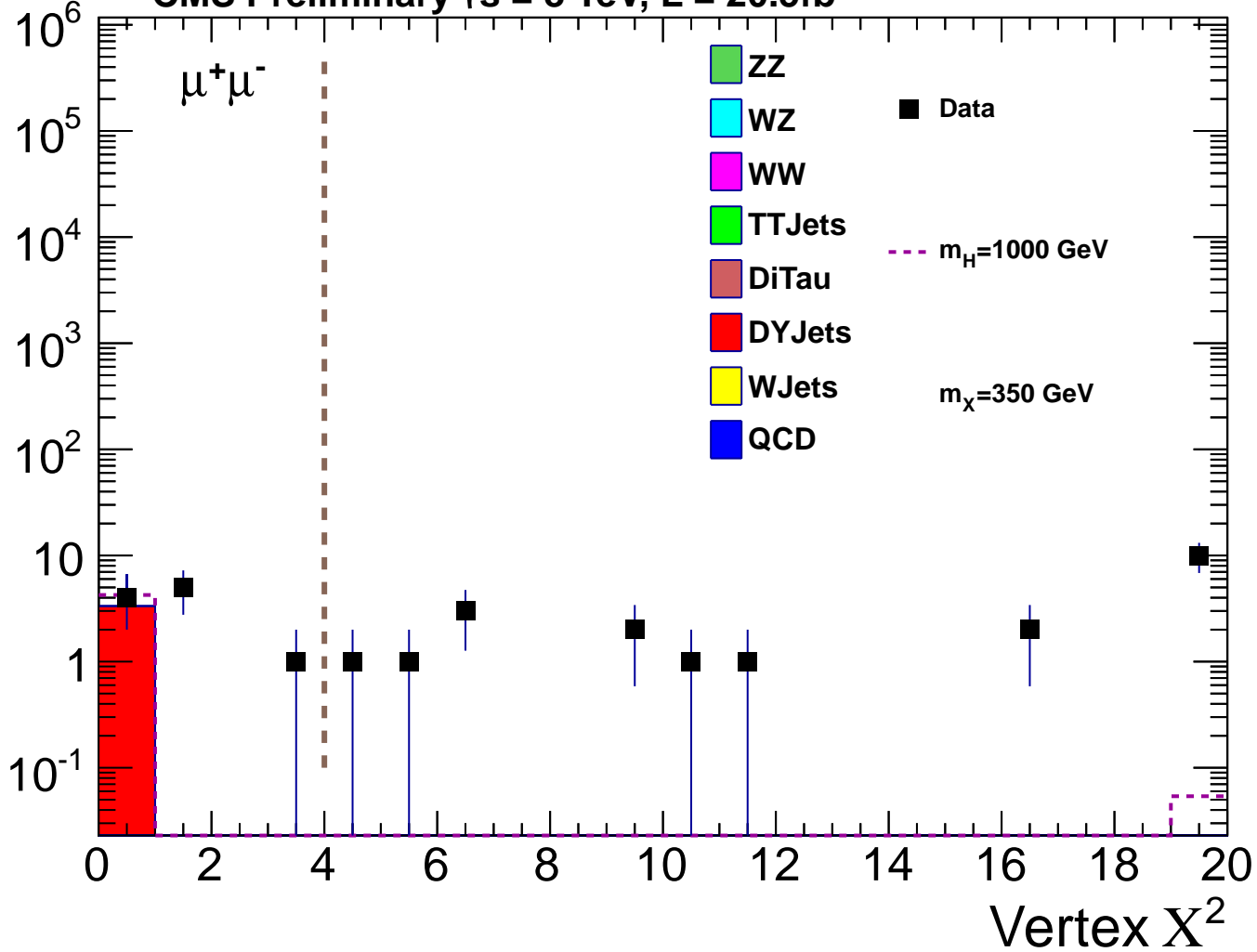


MC/Data

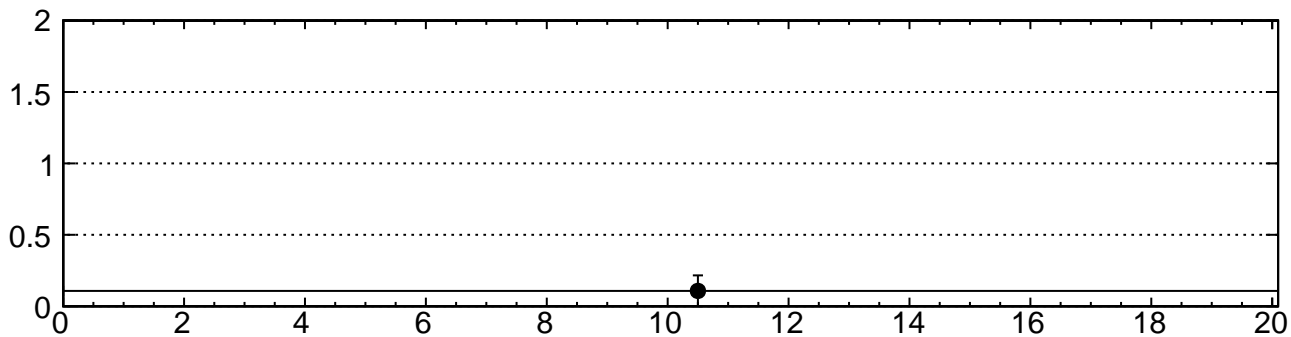


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

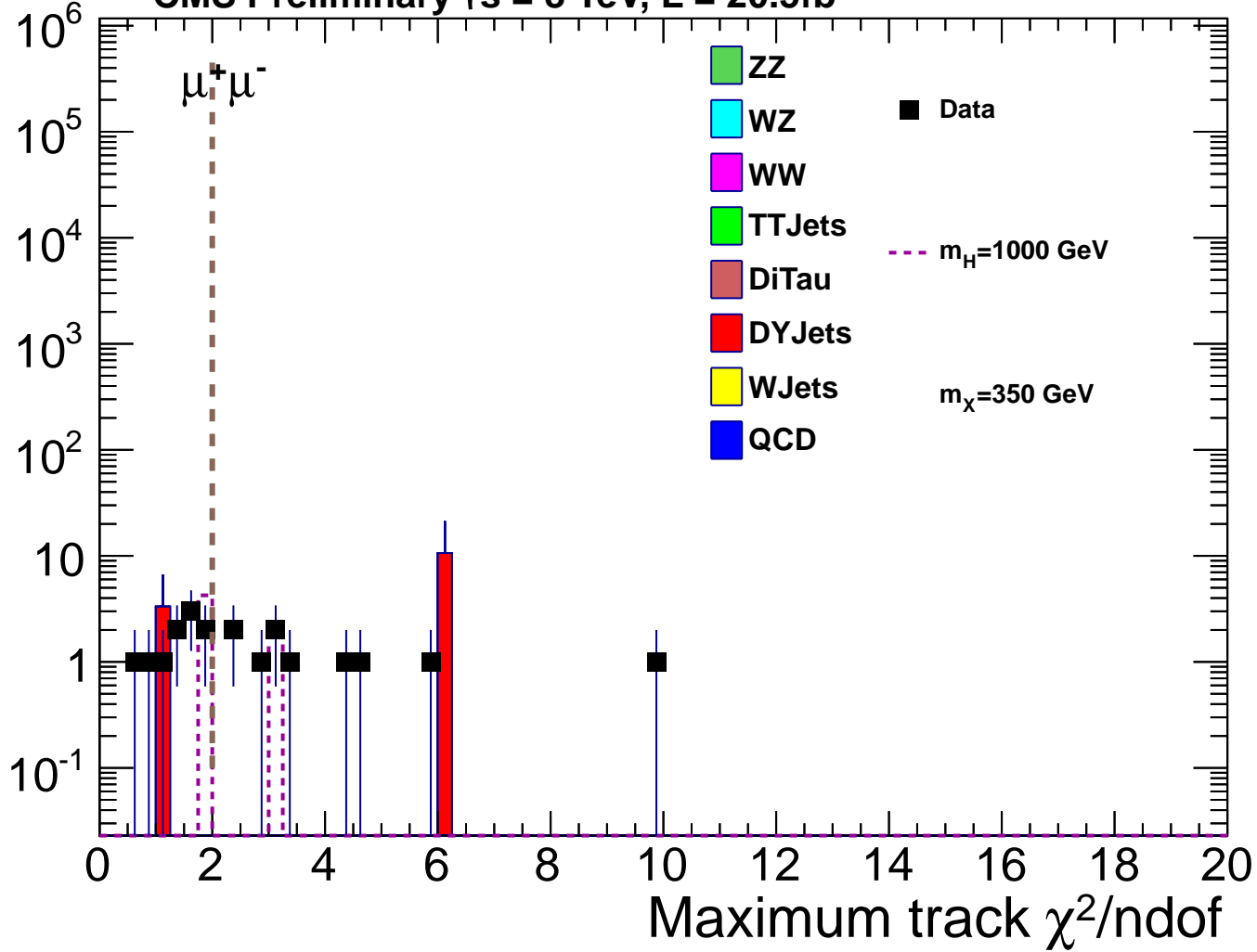


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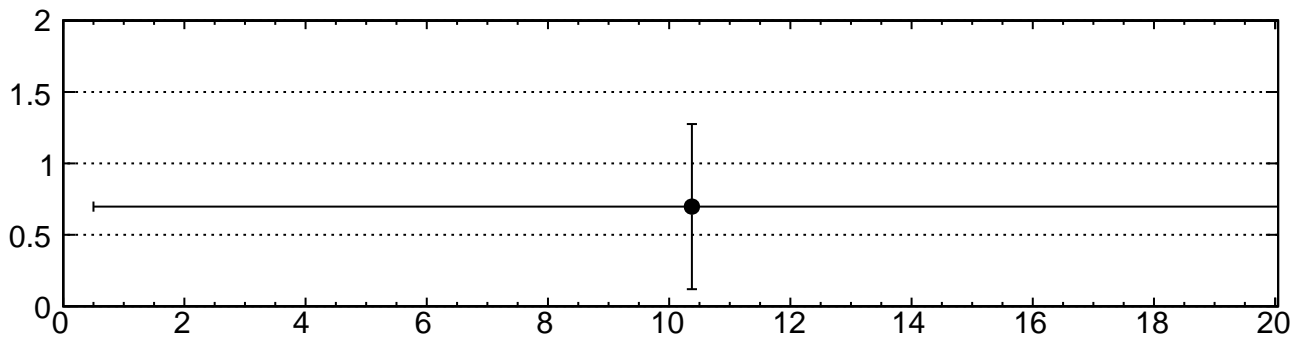


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries



MC/Data



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

$\mu^+\mu^-$

ZZ

WZ

WW

TTJets

DiTau

DYJets

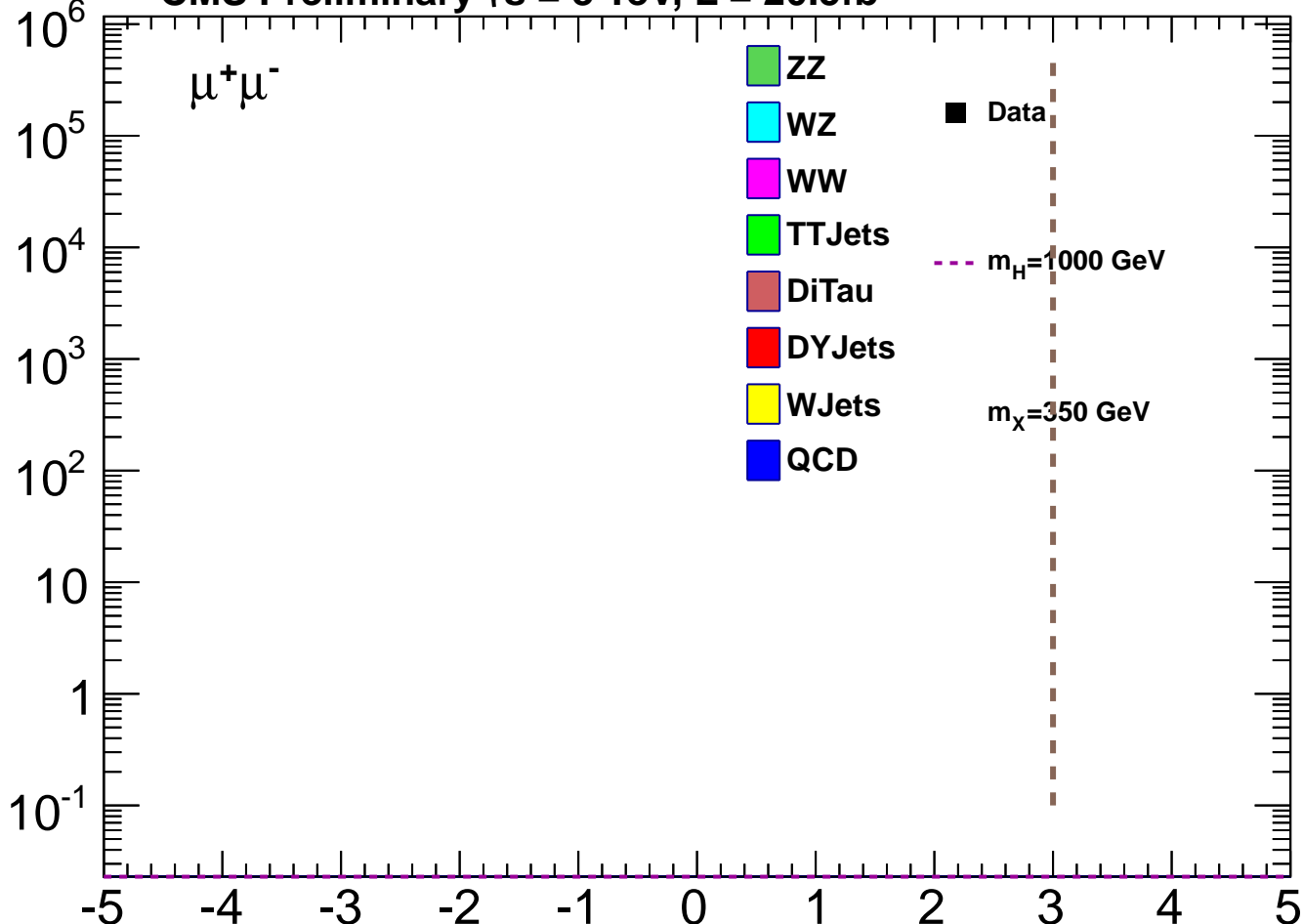
WJets

QCD

■ Data

--- $m_H = 1000 \text{ GeV}$

$m_X = 350 \text{ GeV}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

$\mu^+\mu^-$

ZZ

WZ

WW

TTJets

DiTau

DYJets

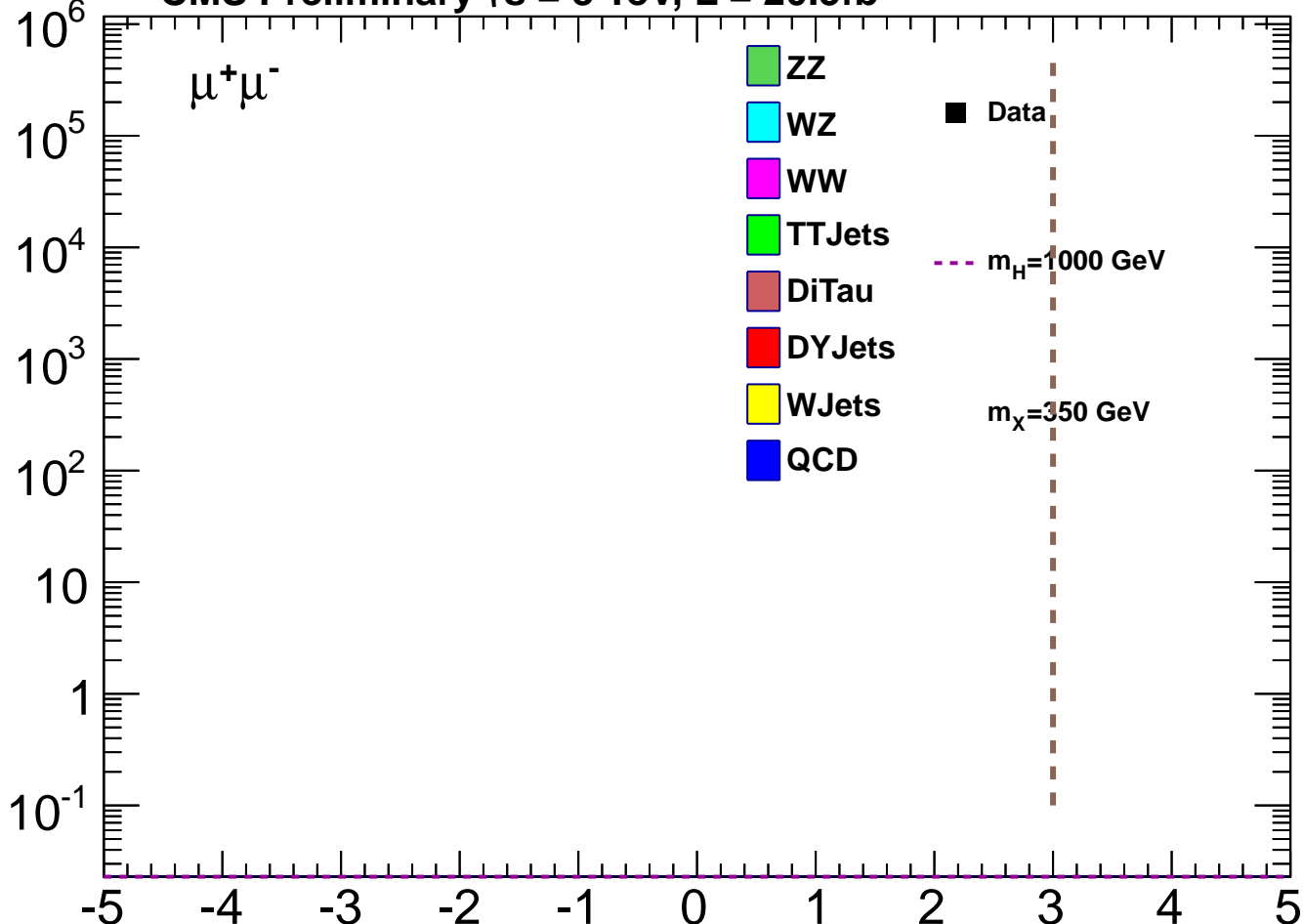
WJets

QCD

■ Data

--- $m_H = 1000 \text{ GeV}$

$m_X = 350 \text{ GeV}$



Free Inverse Beta

CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

$\mu^+\mu^-$

ZZ

WZ

WW

TTJets

DiTau

DYJets

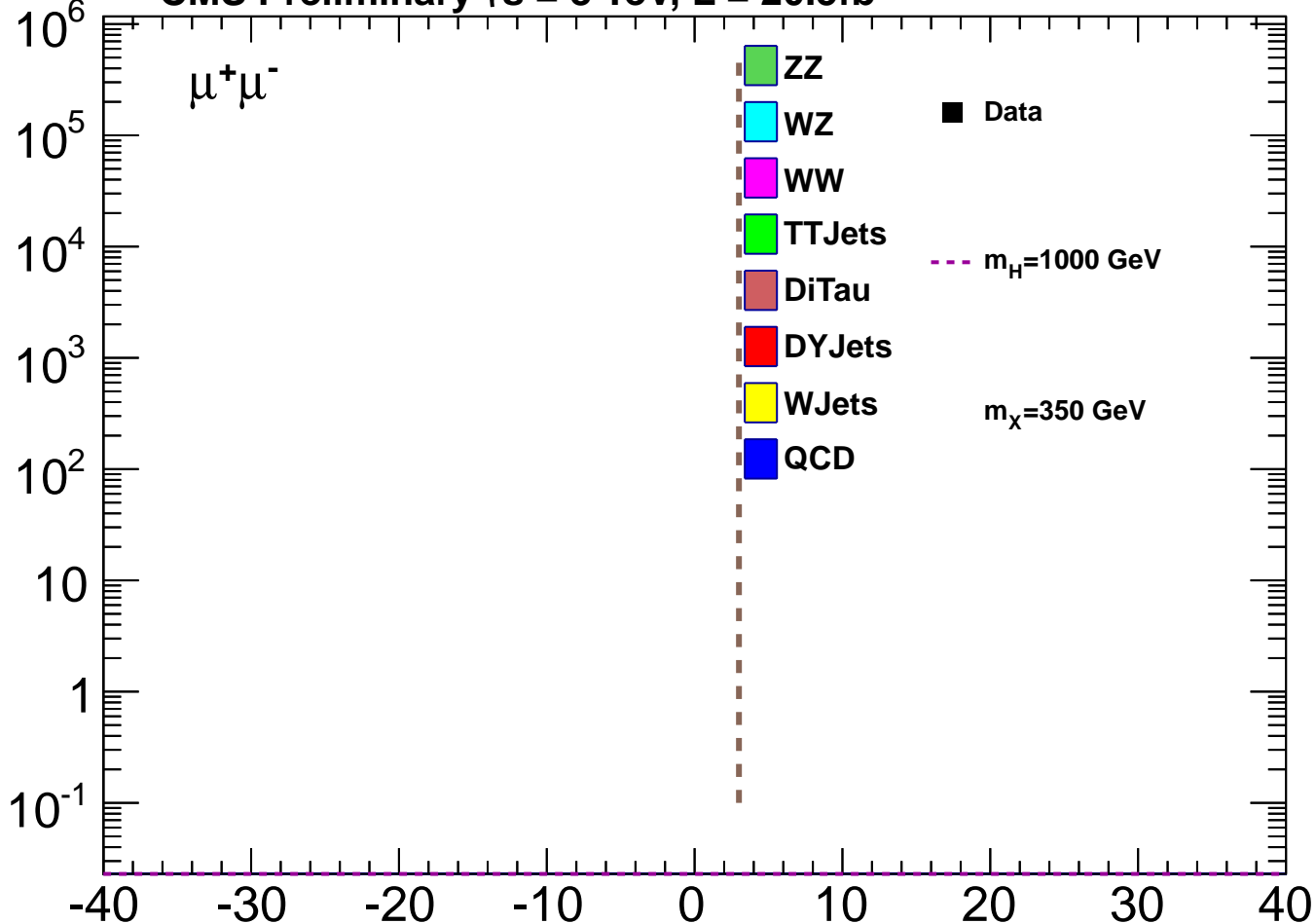
WJets

QCD

■ Data

--- $m_H = 1000 \text{ GeV}$

$m_\chi = 350 \text{ GeV}$

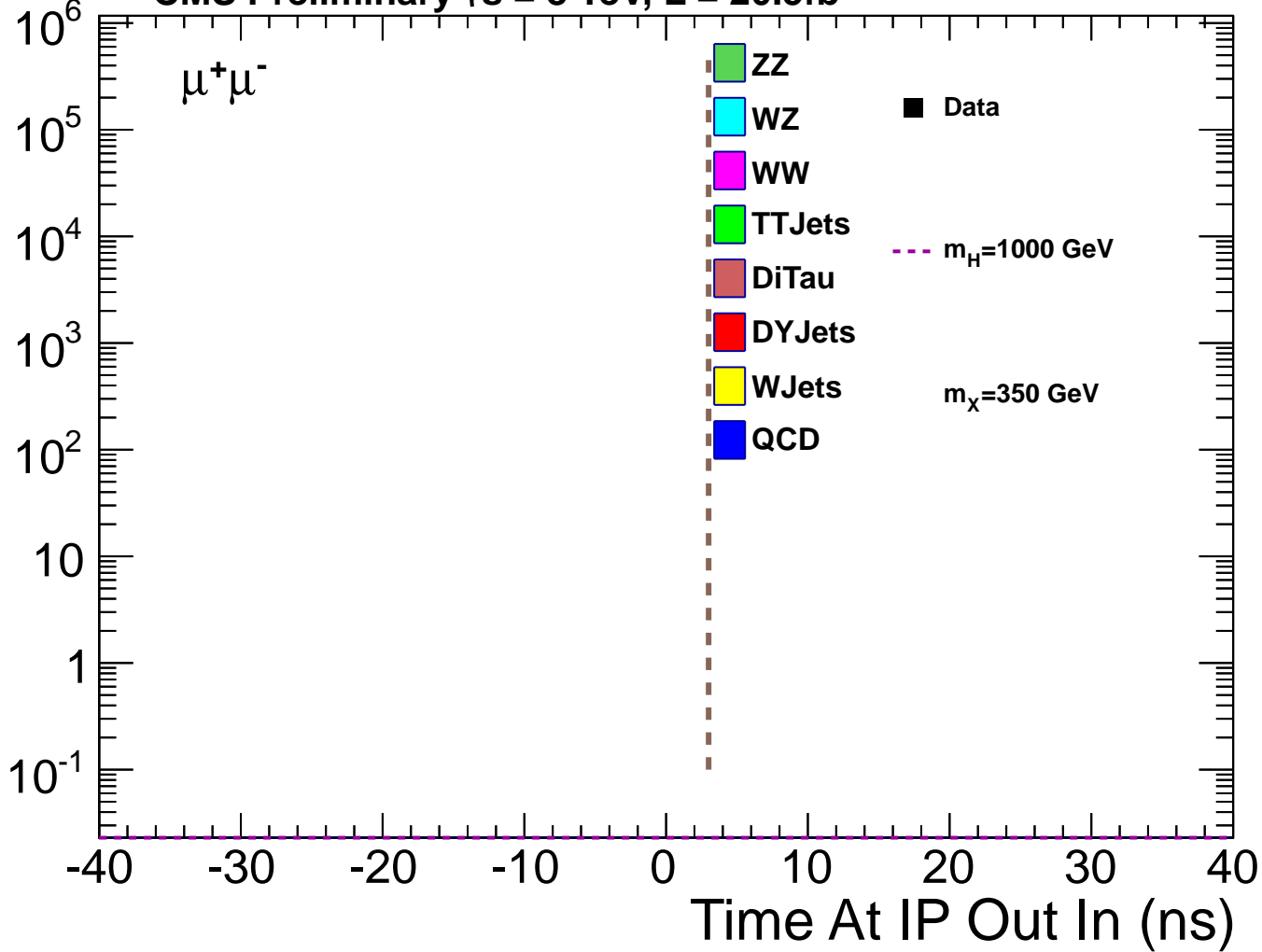


Time At IP In Out (ns)

CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

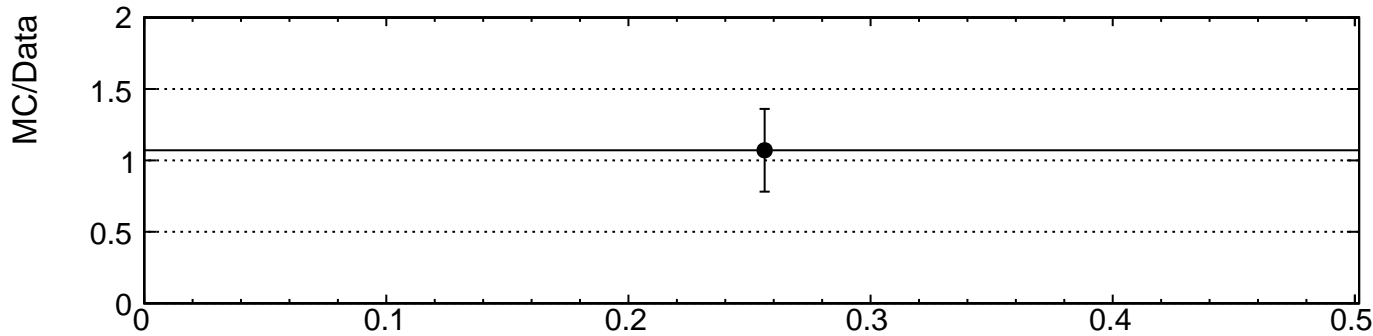
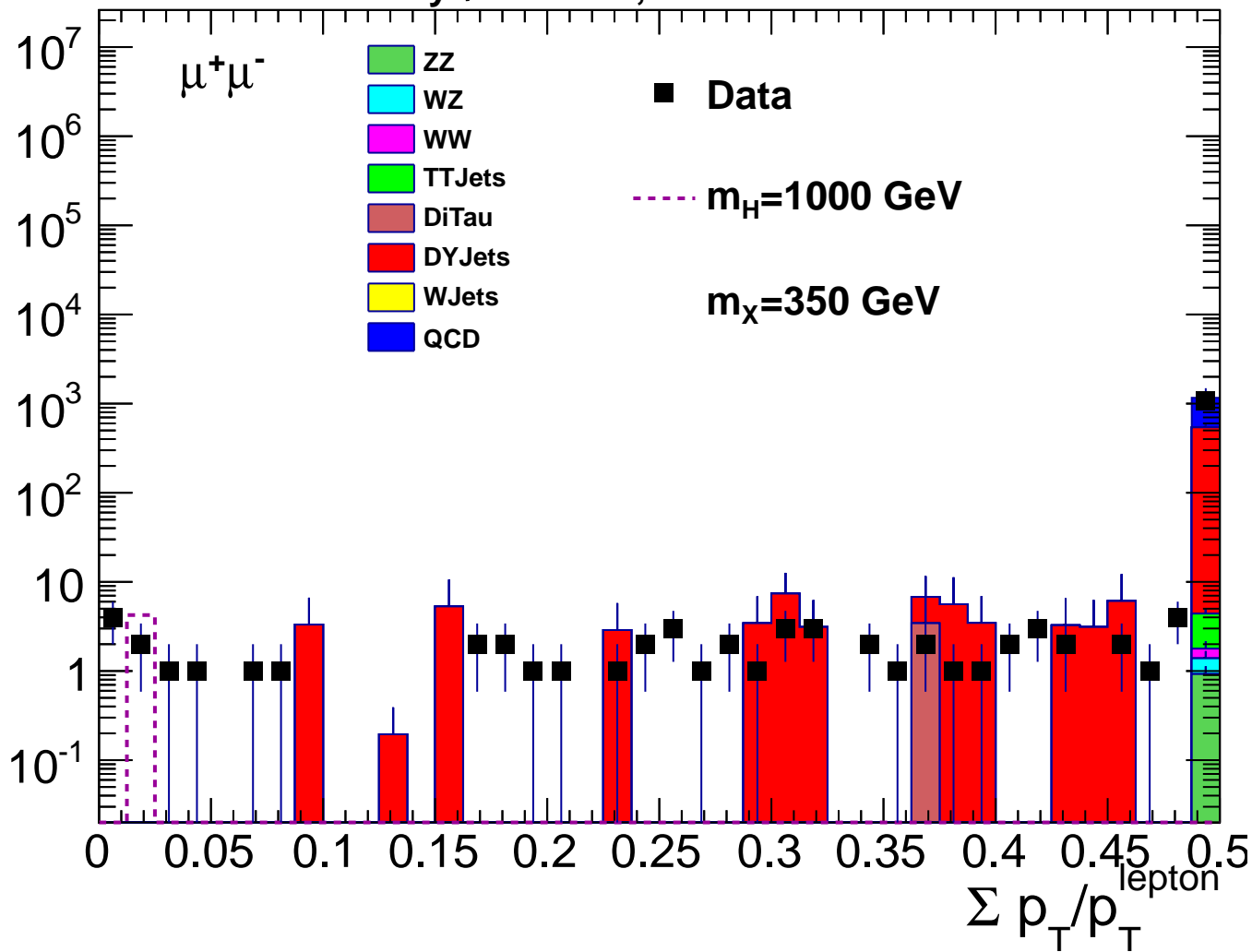
Entries

$\mu^+\mu^-$



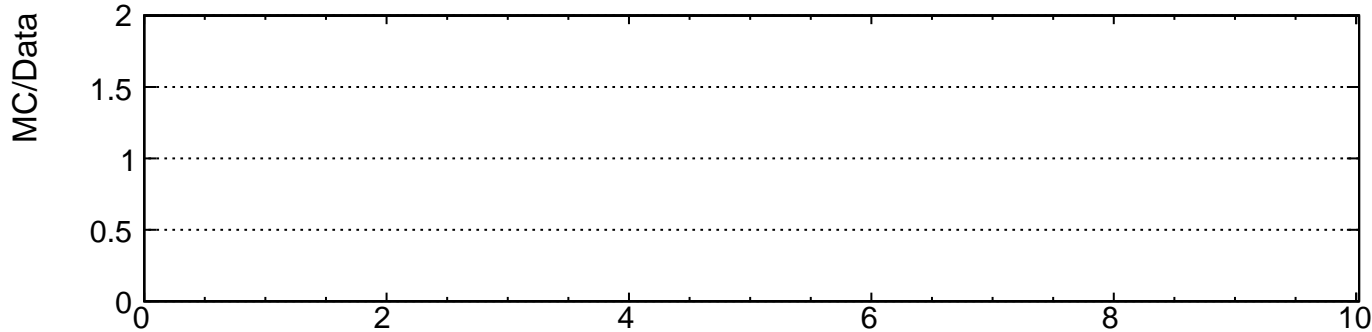
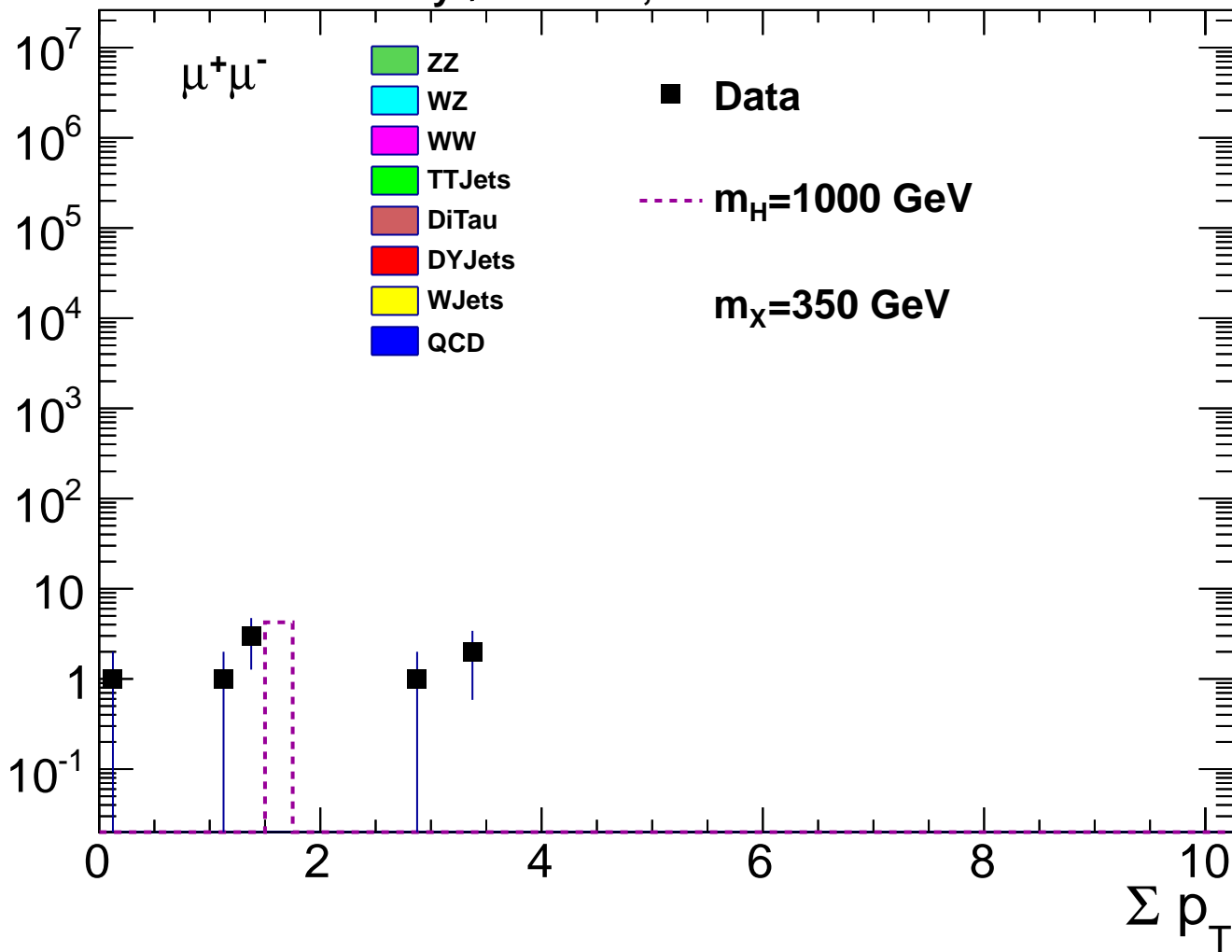
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}, L = 20.5 \text{ fb}^{-1}$

Entries



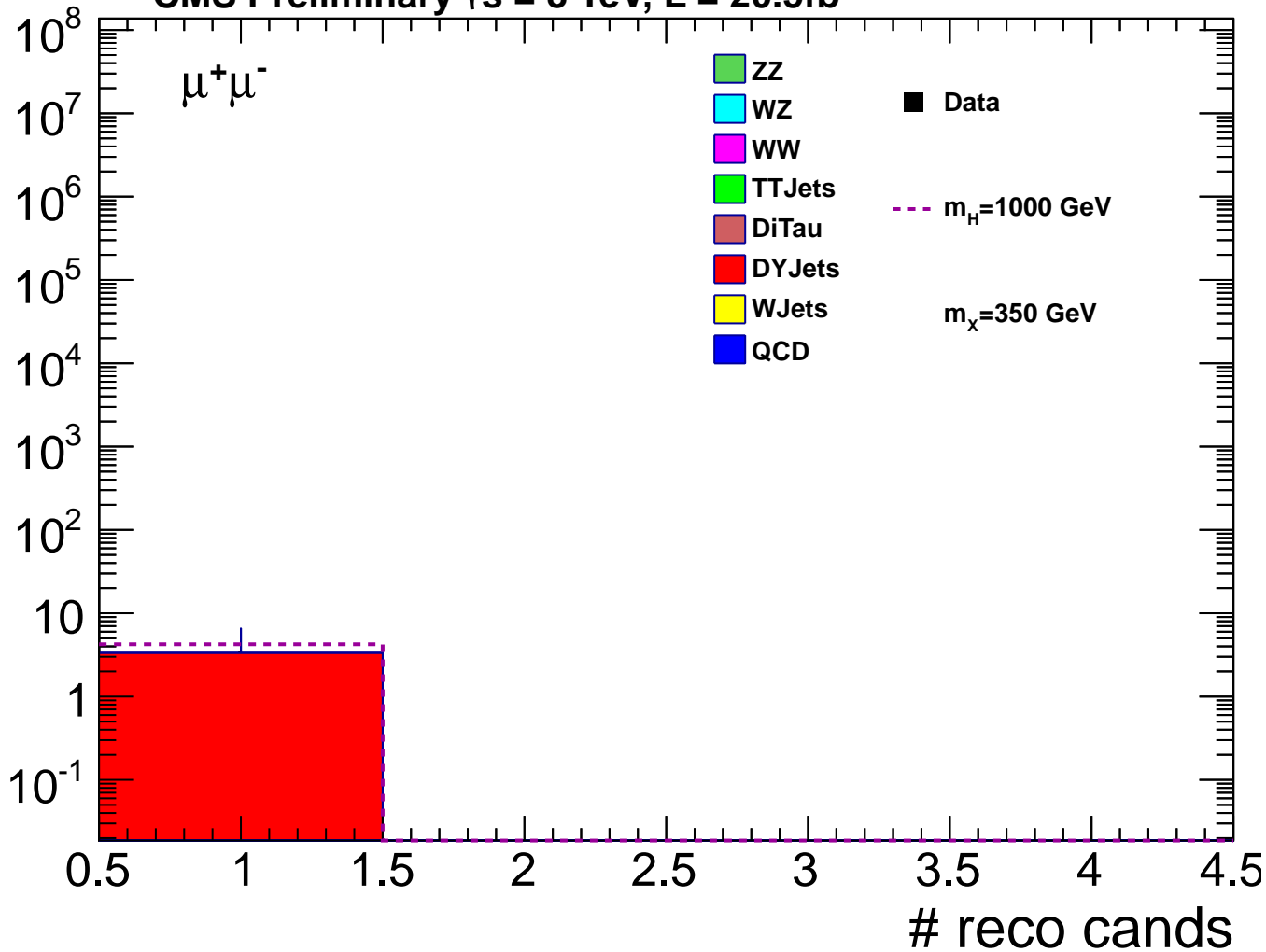
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

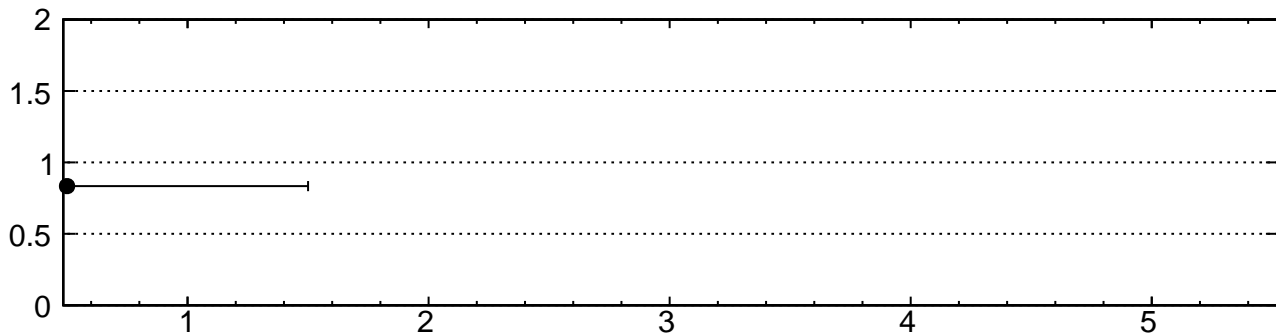


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries



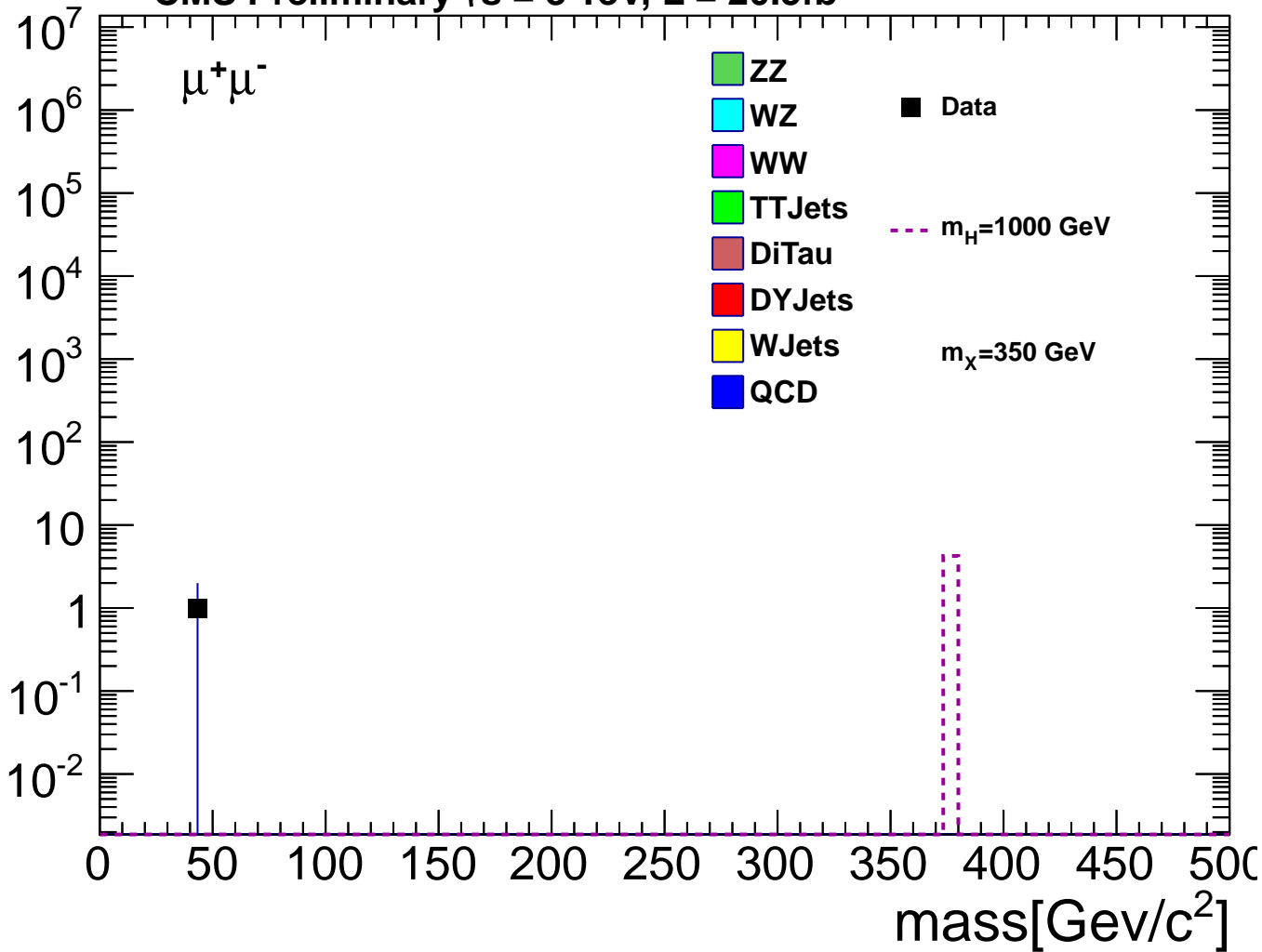
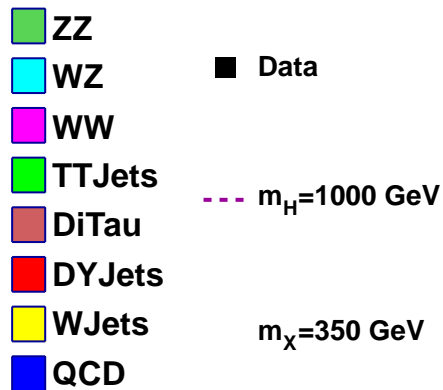
MC/Data



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

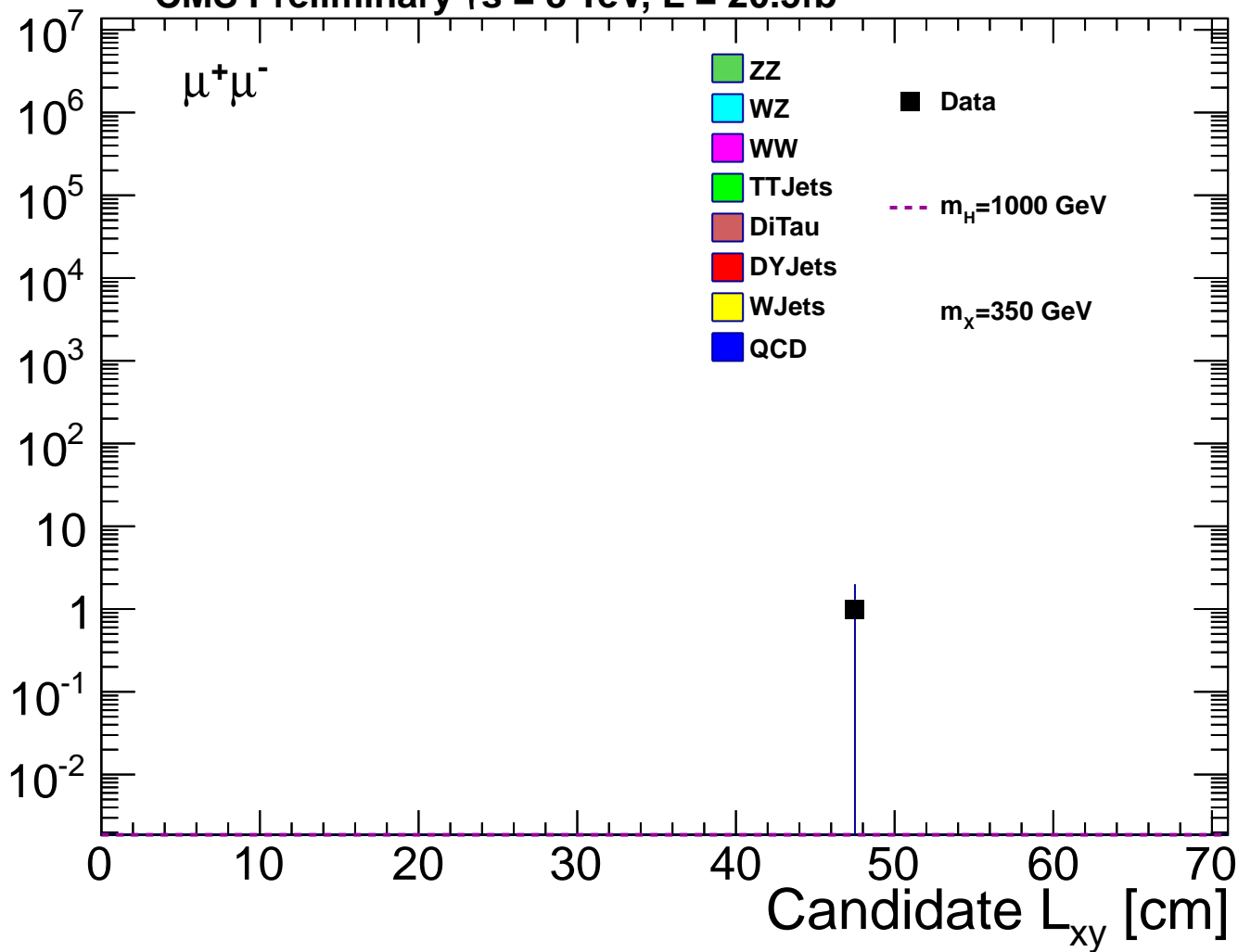
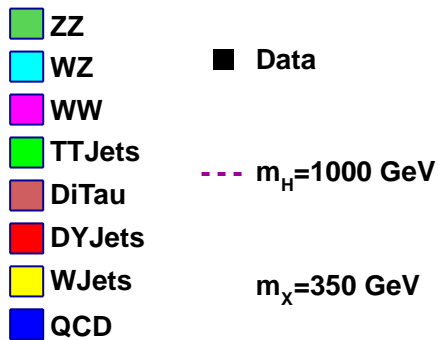
$\mu^+\mu^-$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

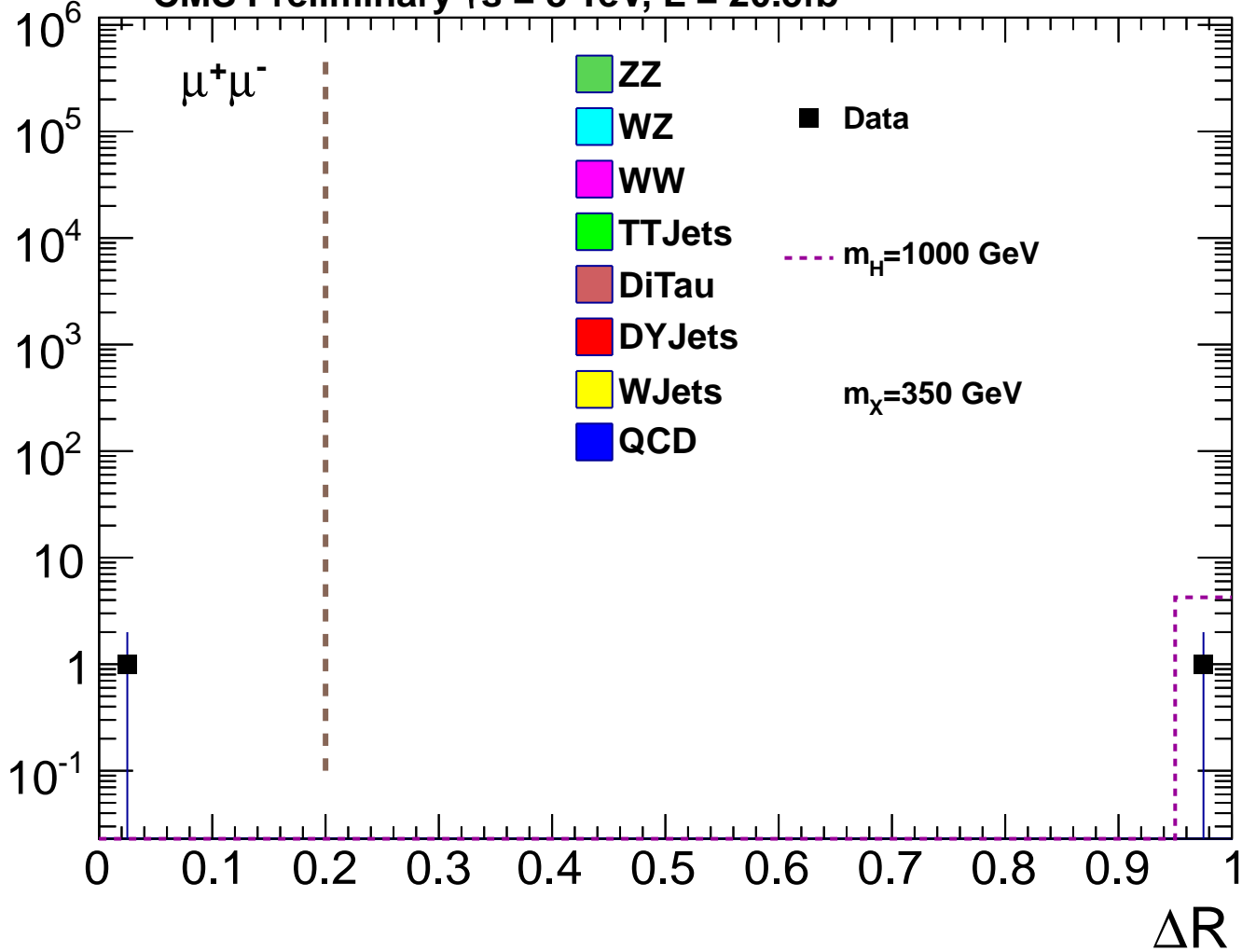
Entries

$\mu^+\mu^-$



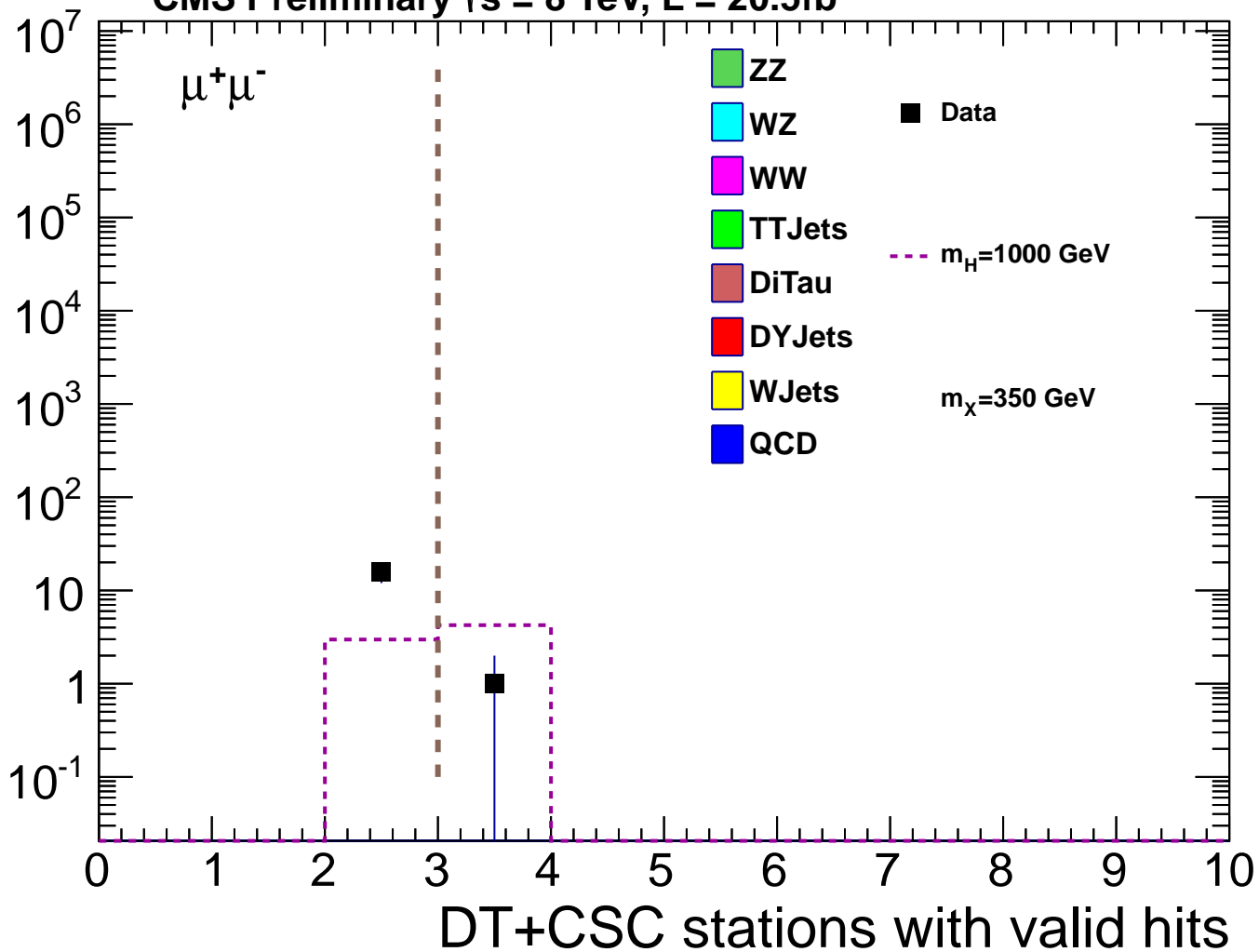
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries



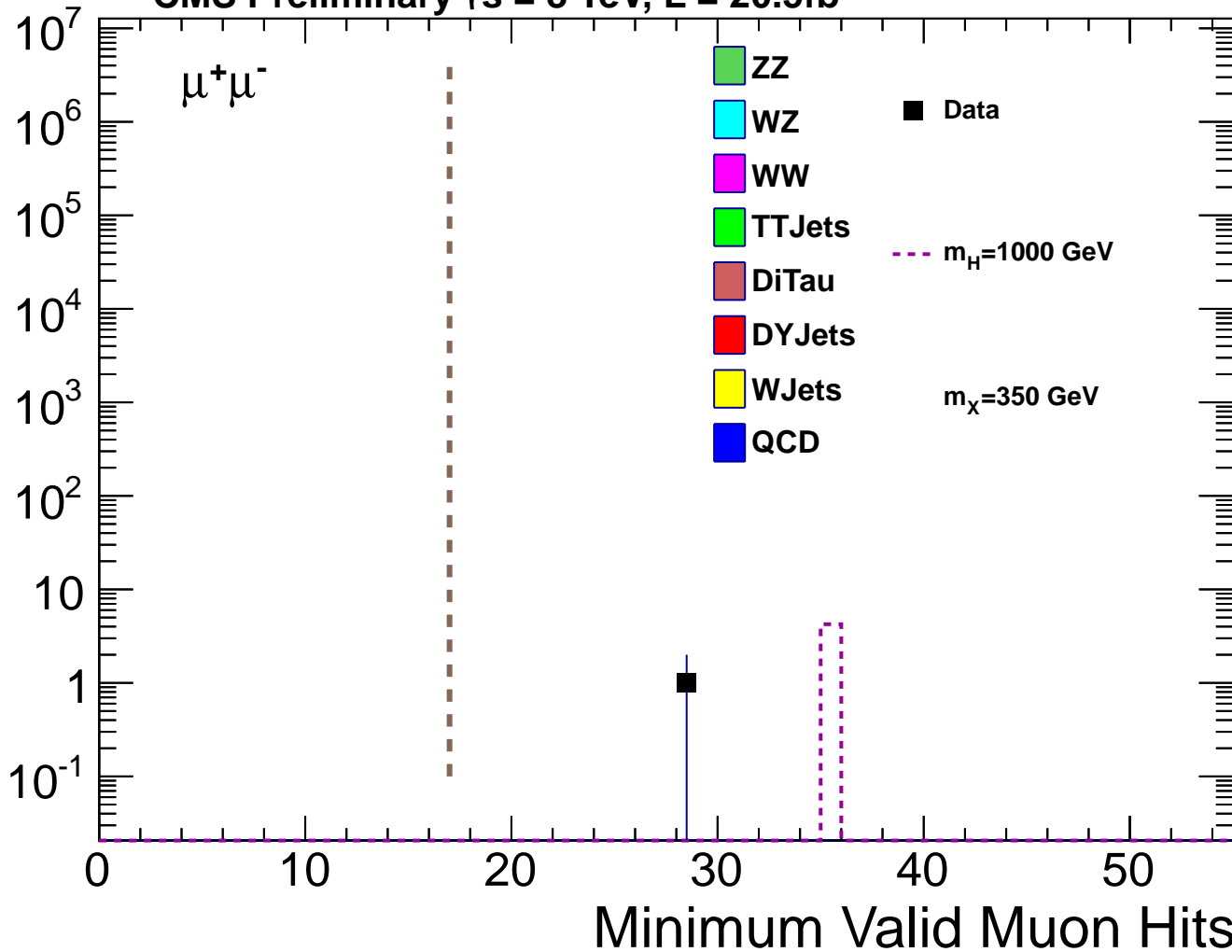
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries



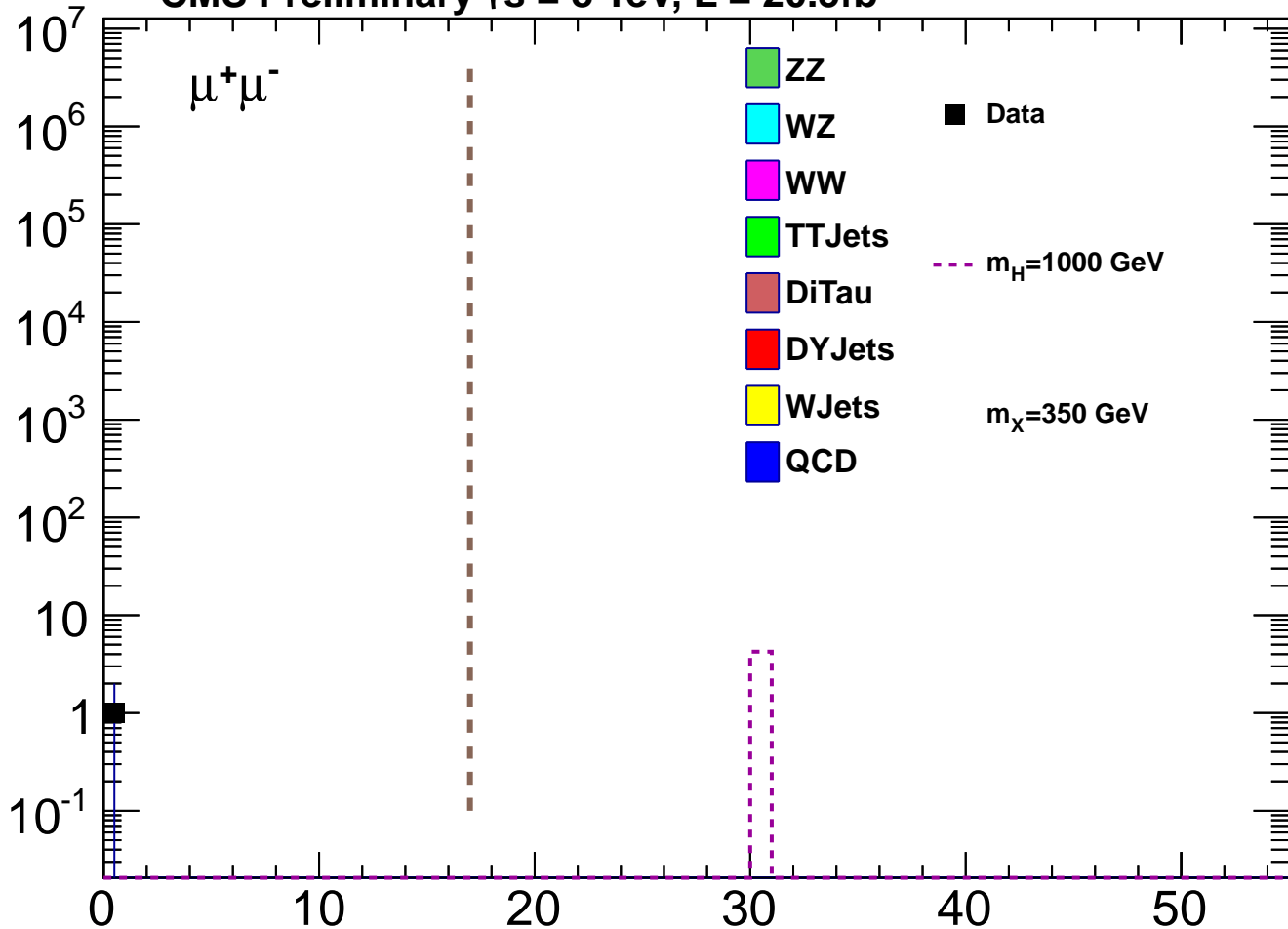
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

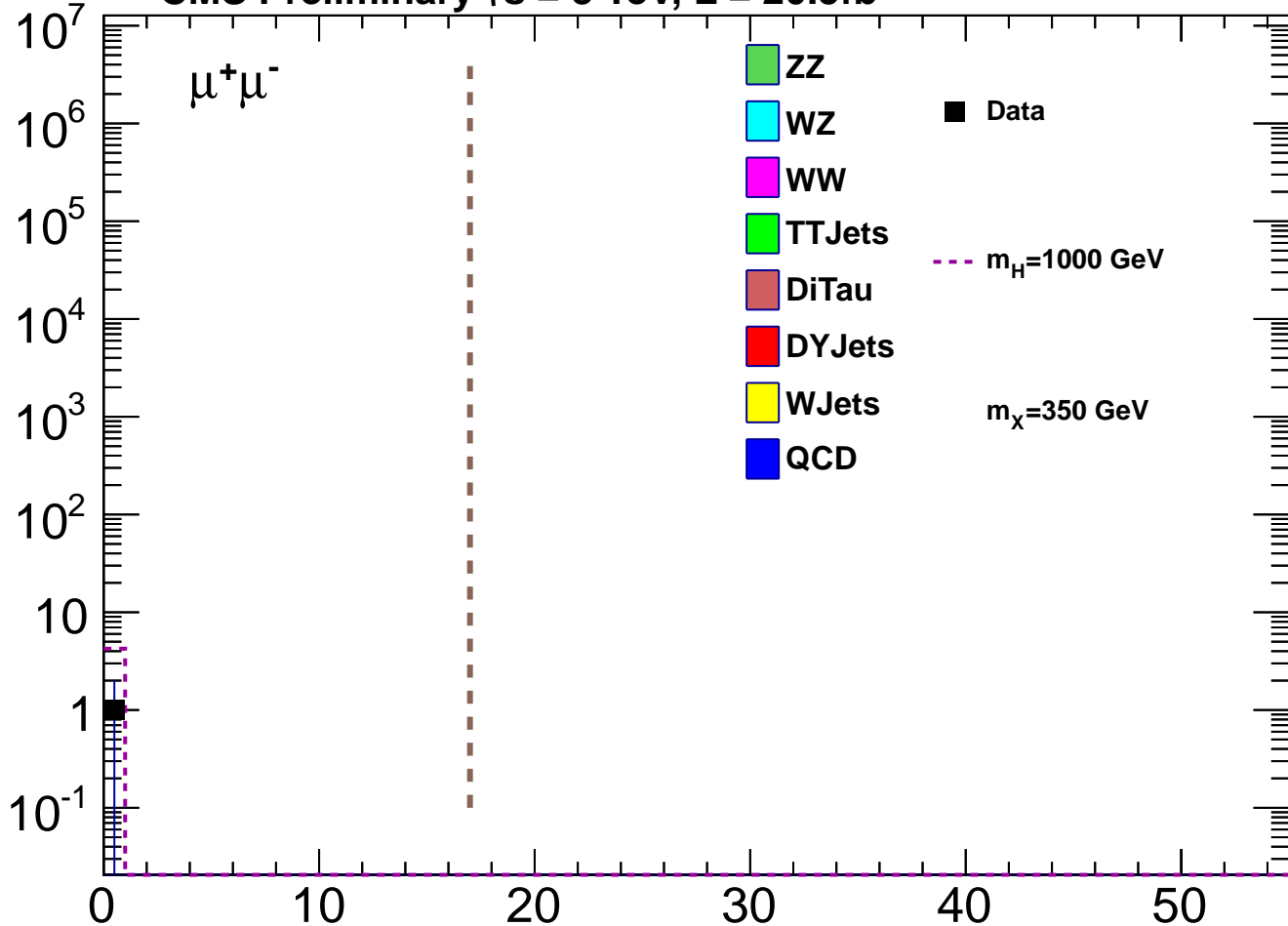
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Minimum Valid Muon DT Hits

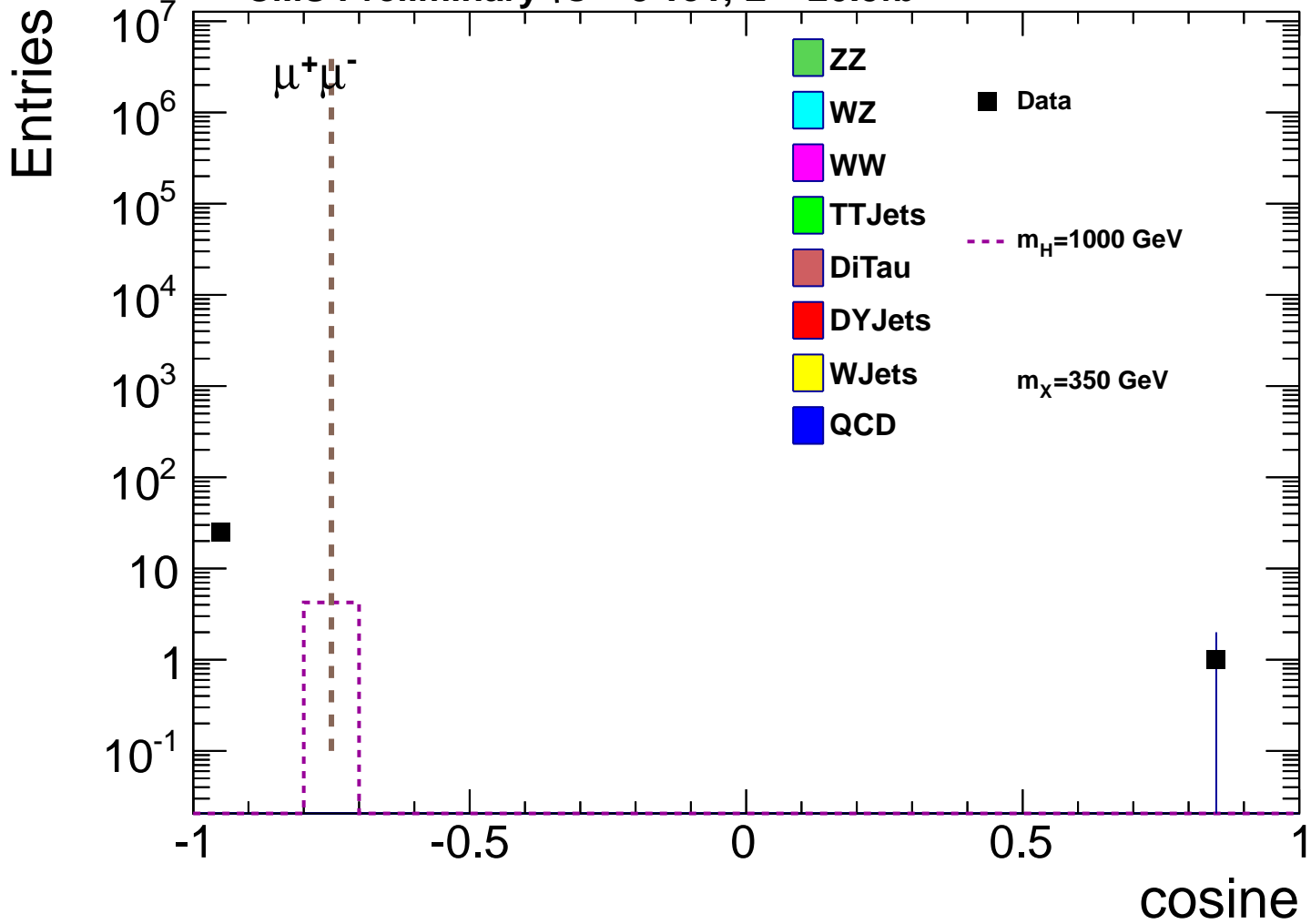
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries



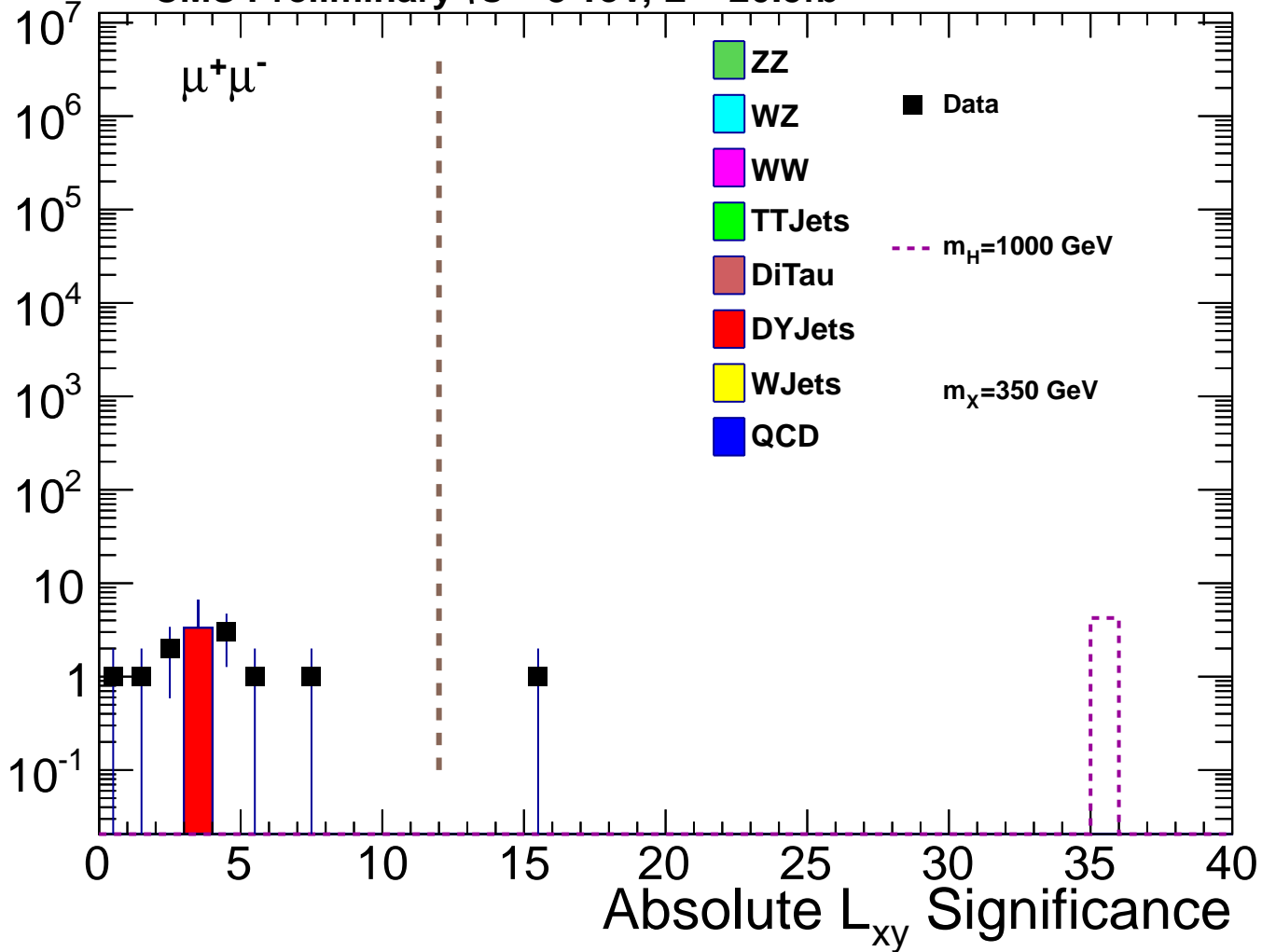
Minimum Valid Muon CSC Hits

CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

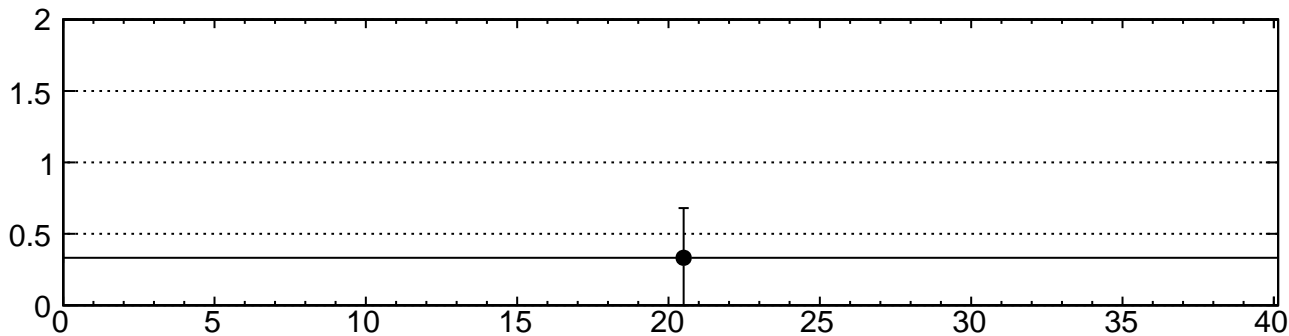


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

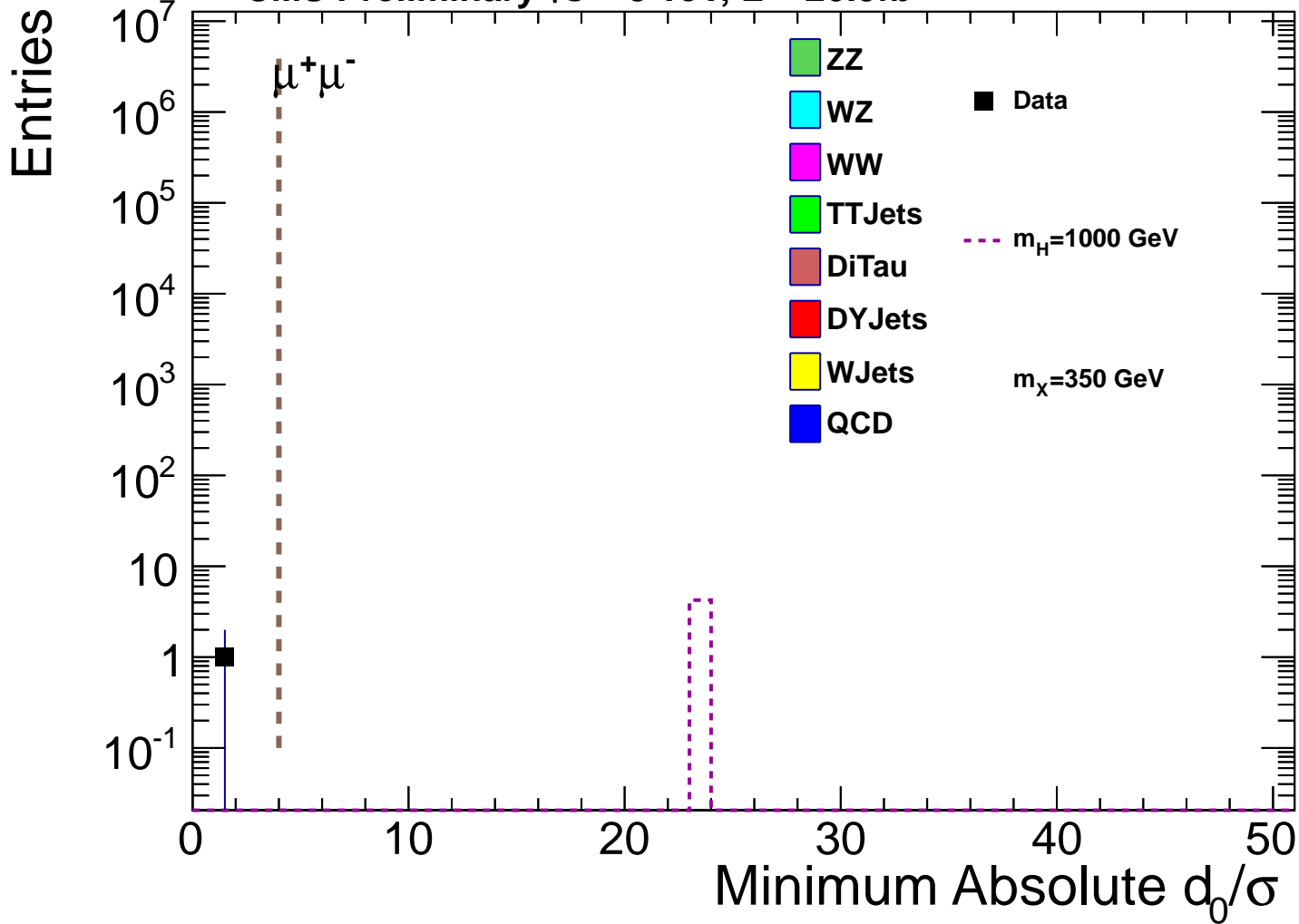
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MC/Data

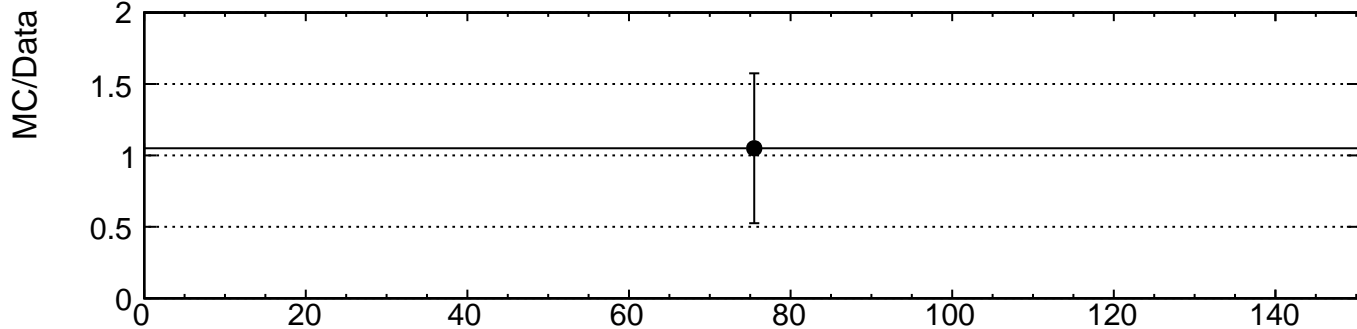
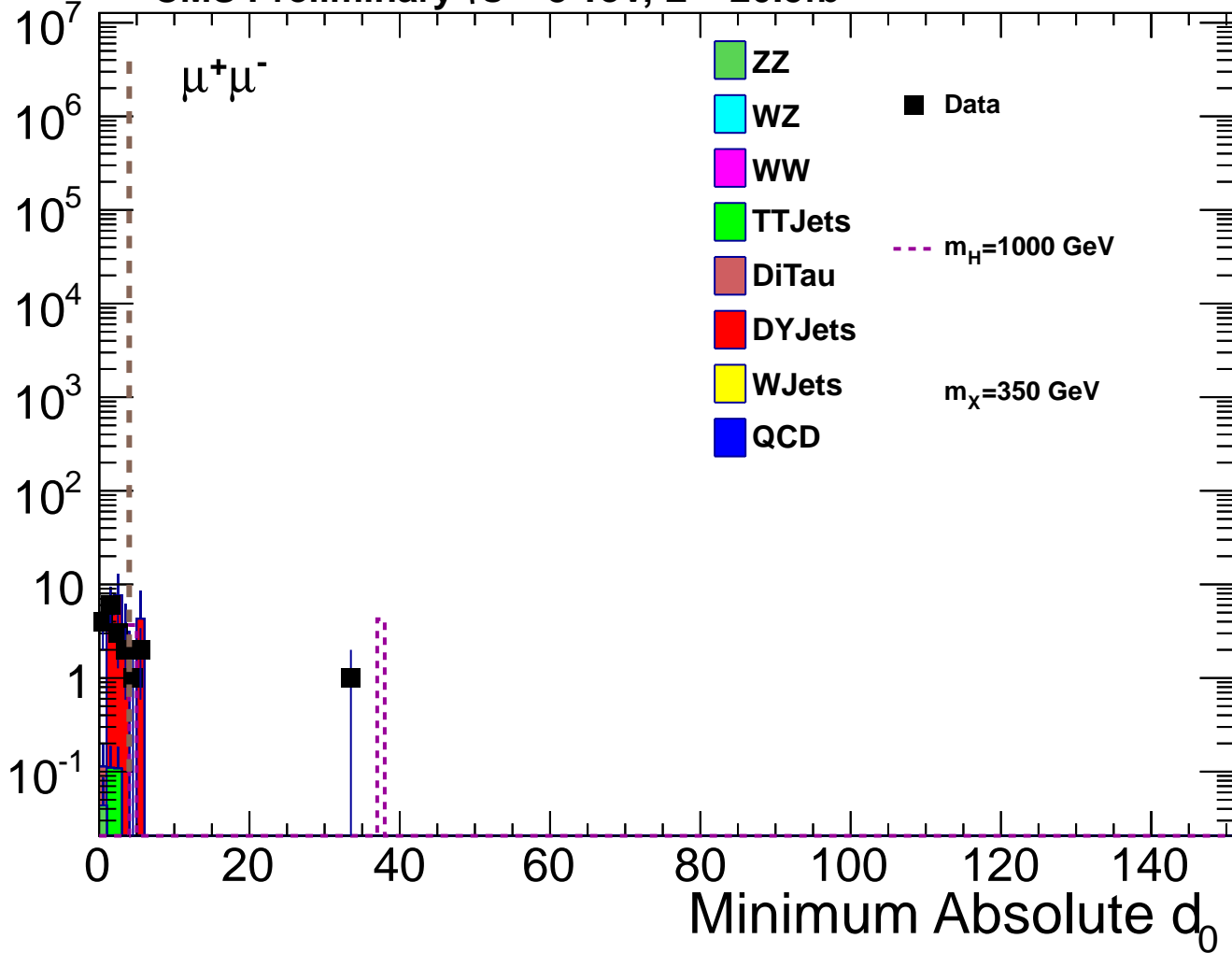


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



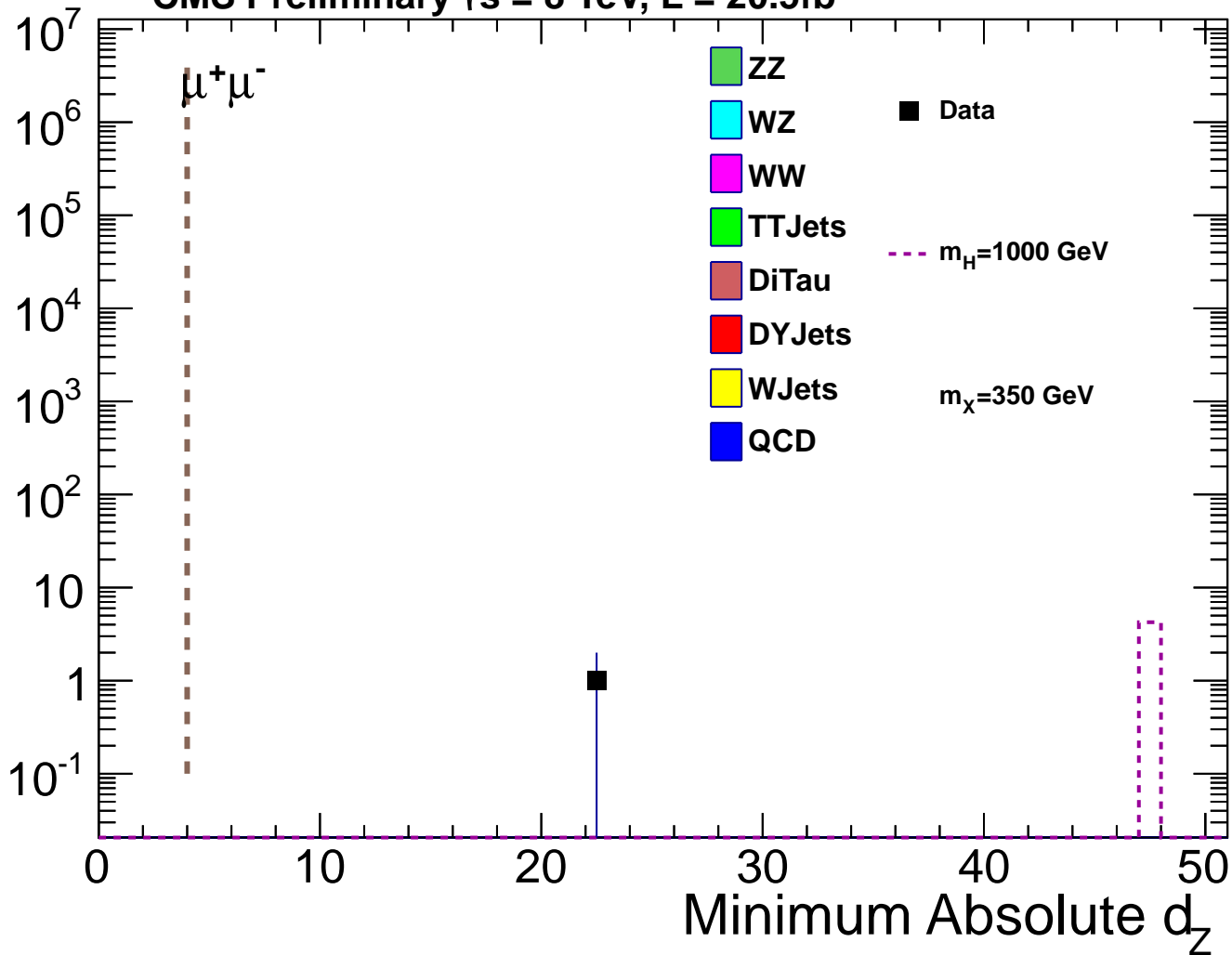
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Entries



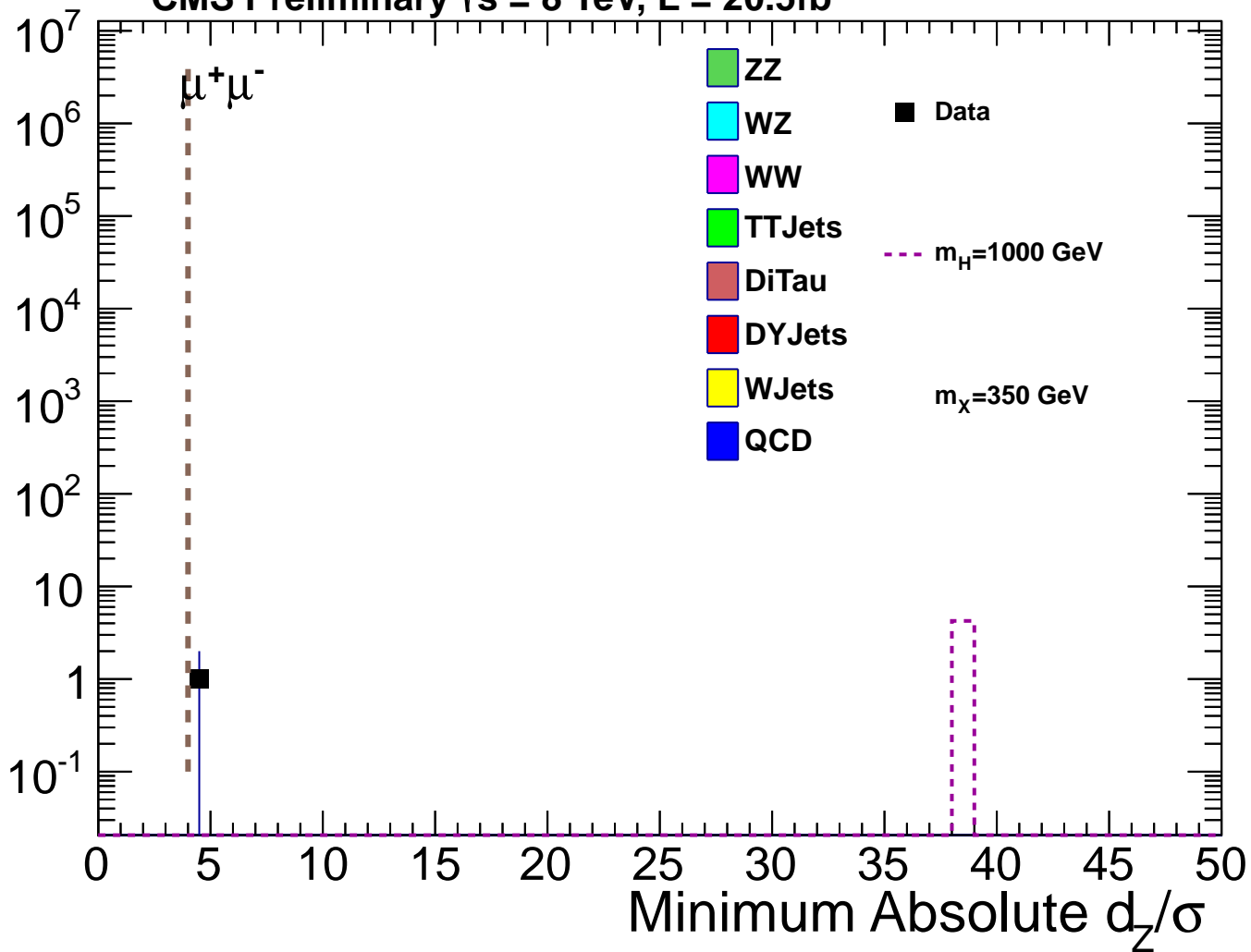
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries



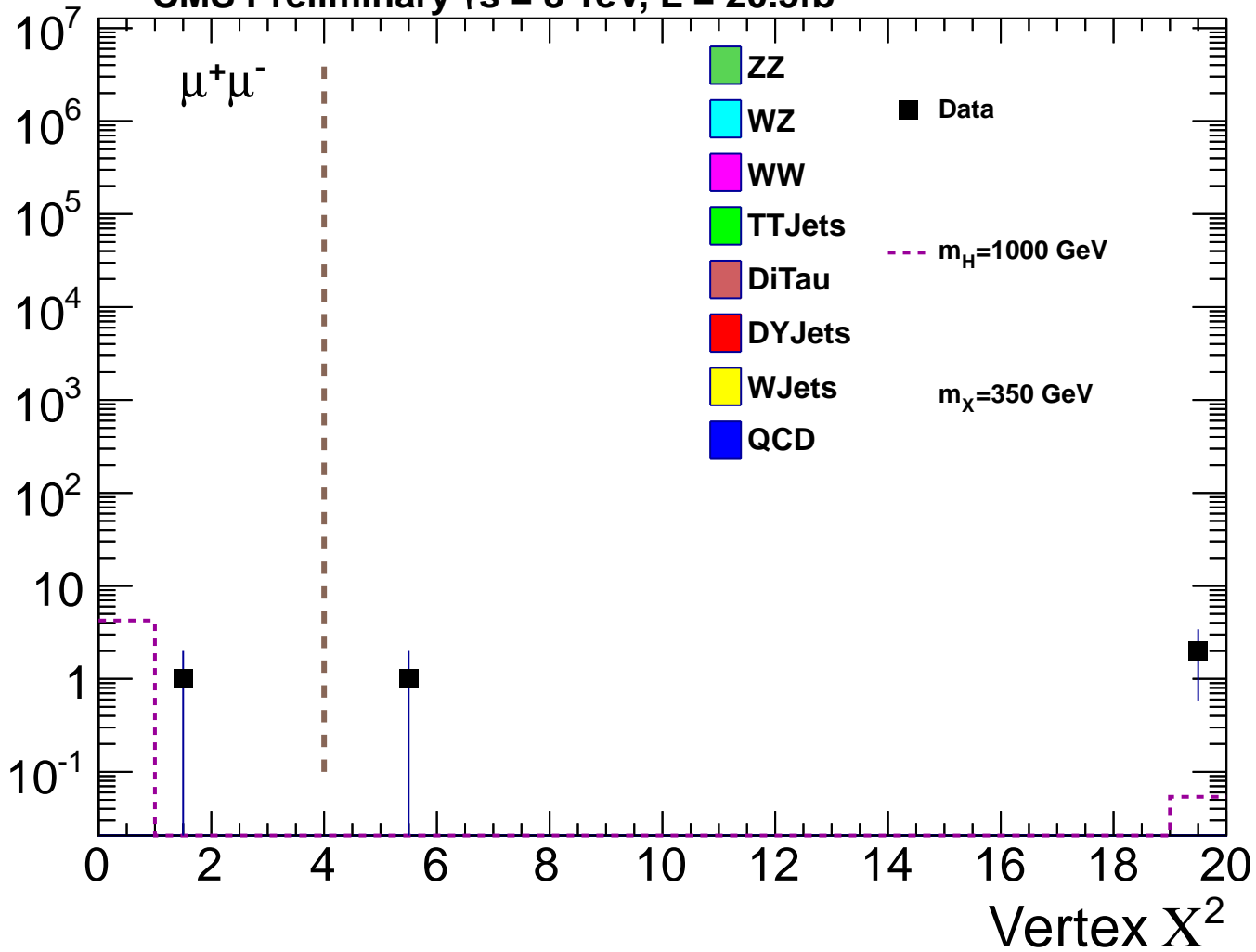
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Entries



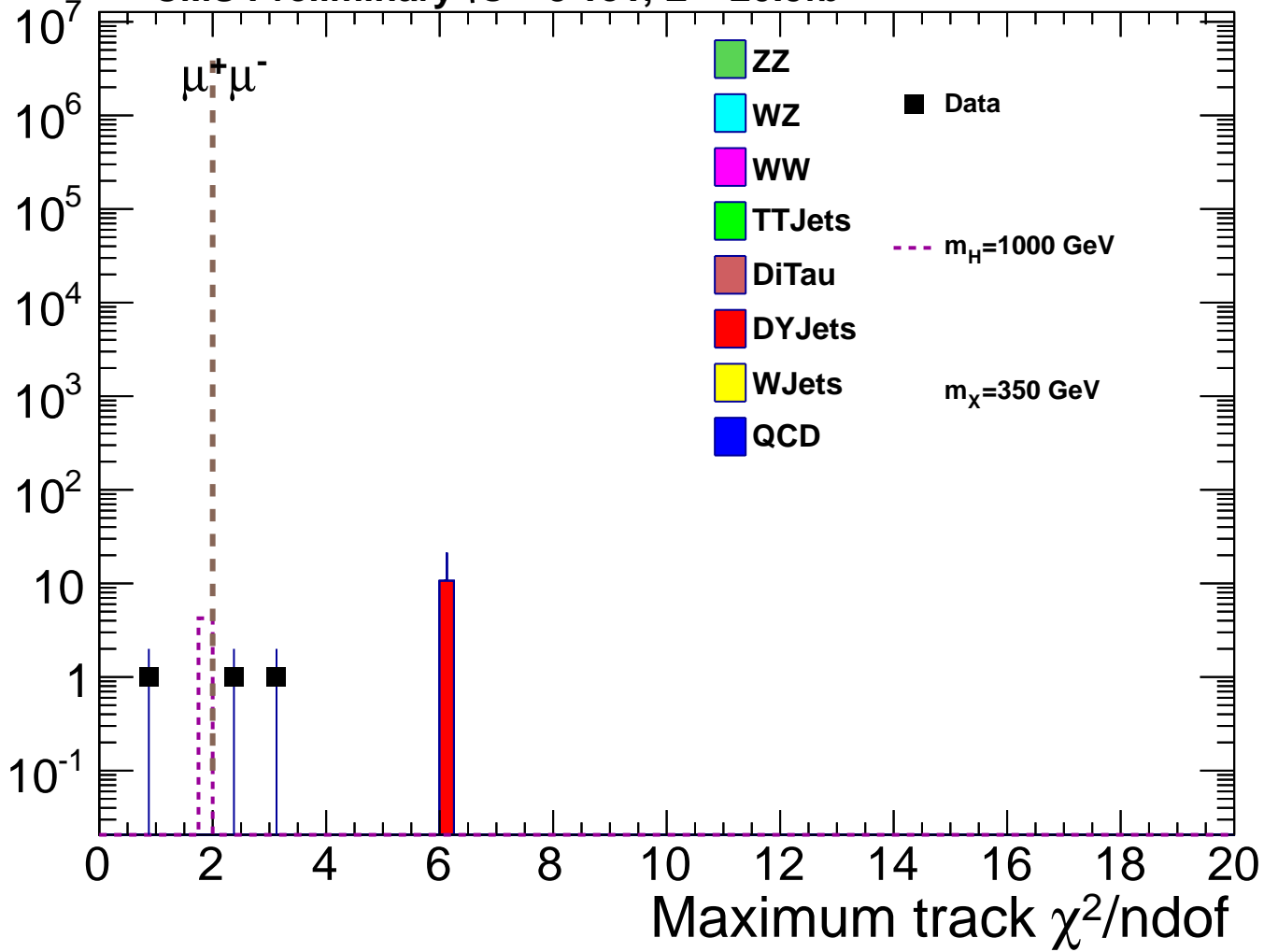
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Entries

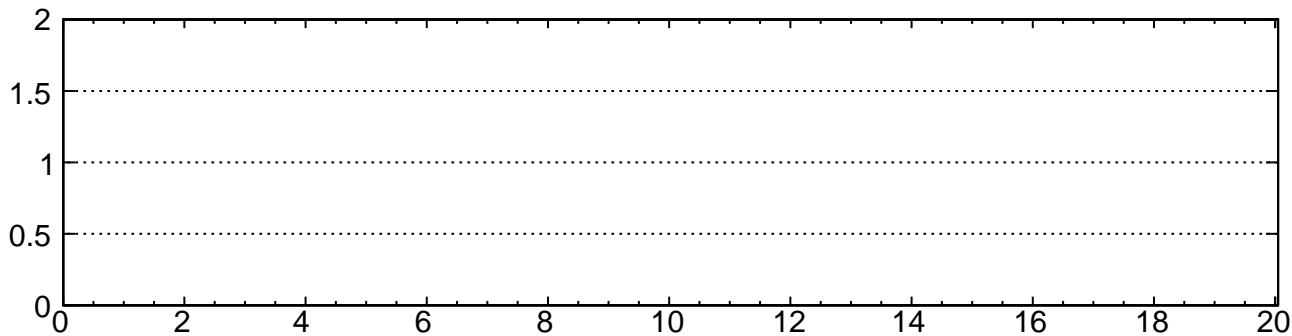


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries



MC/Data



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

$\mu^+\mu^-$

ZZ

WZ

WW

TTJets

DiTau

DYJets

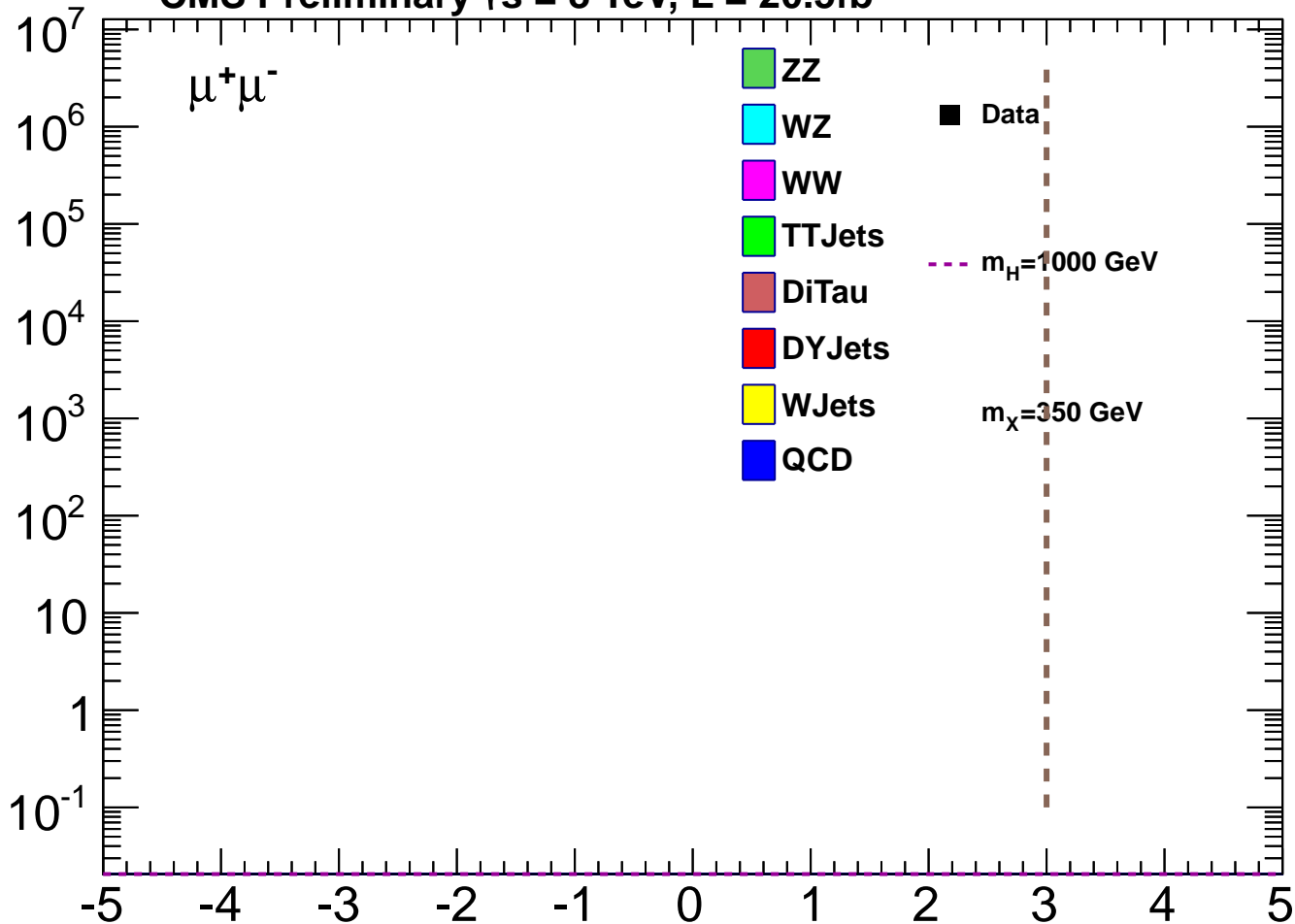
WJets

QCD

■ Data

--- $m_H = 1000 \text{ GeV}$

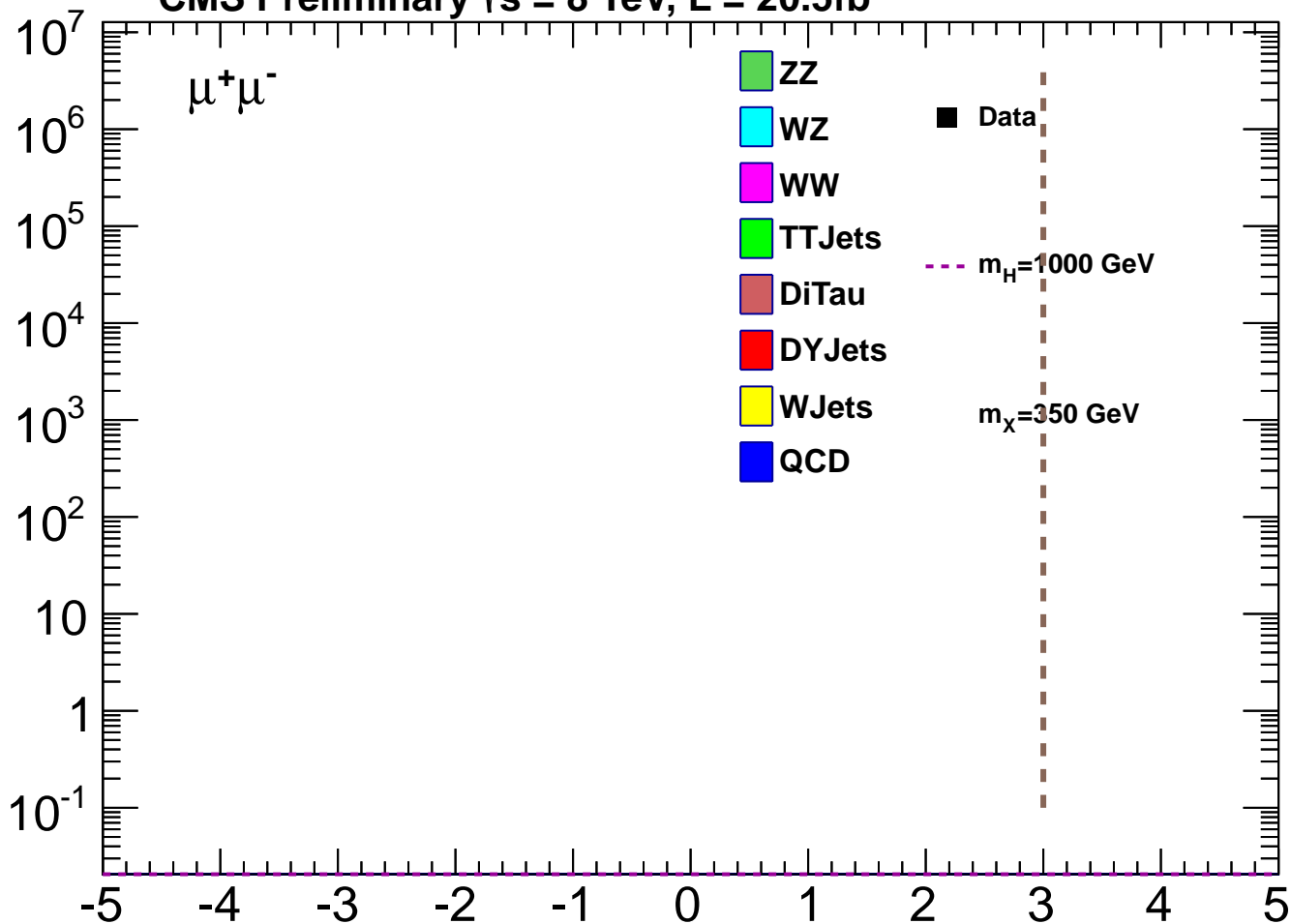
$m_X = 350 \text{ GeV}$



Inverse Beta

CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

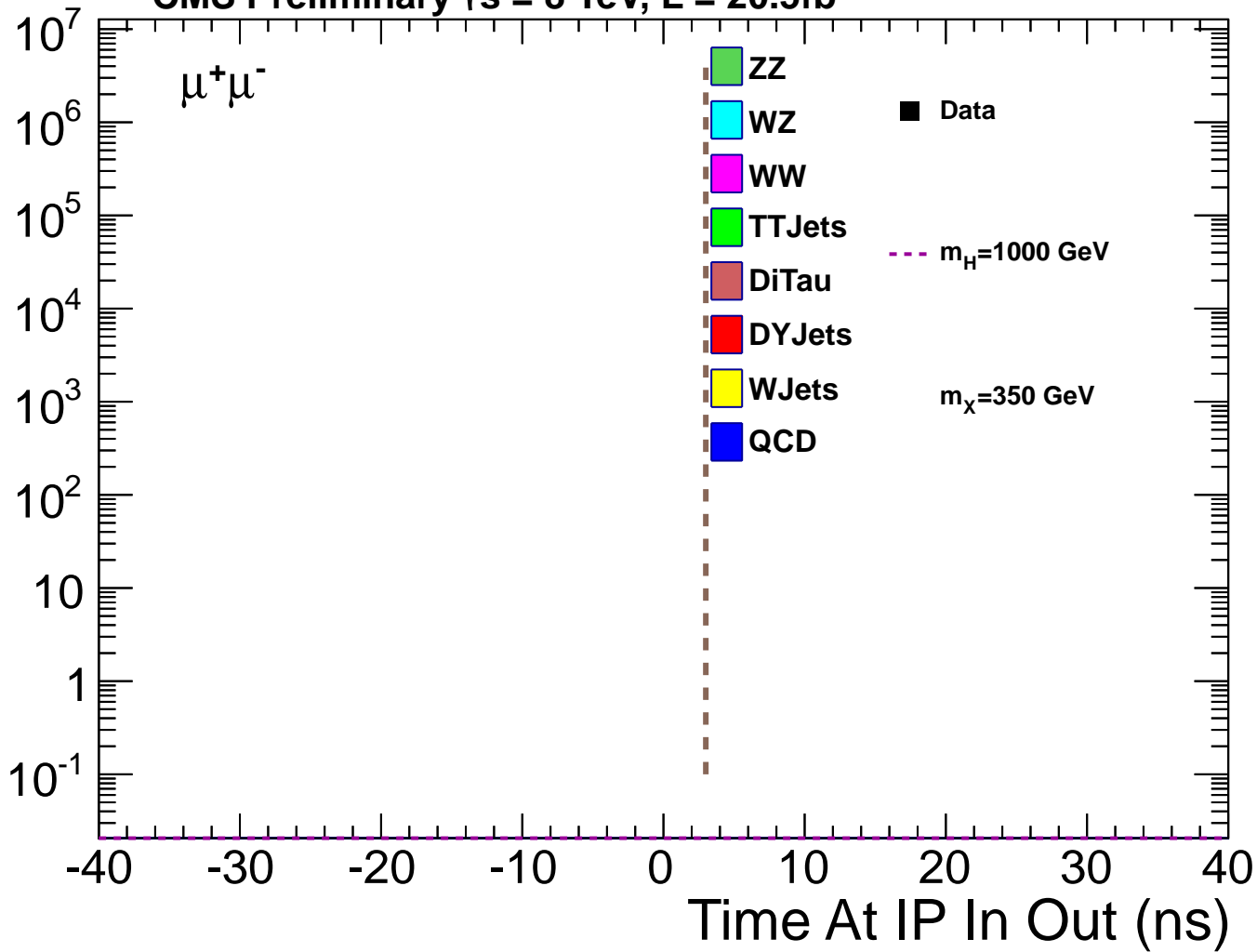
Entries



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

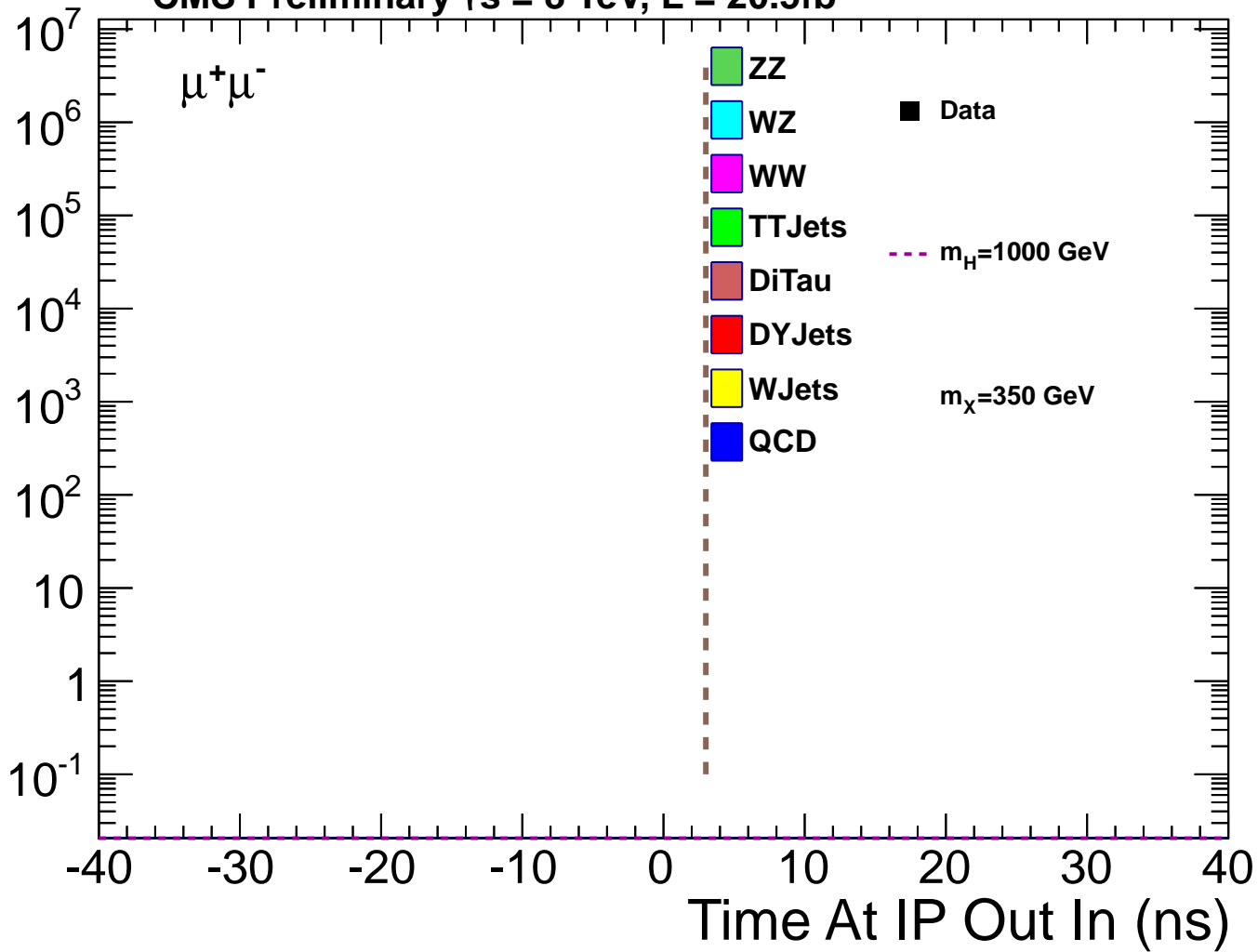
$\mu^+\mu^-$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

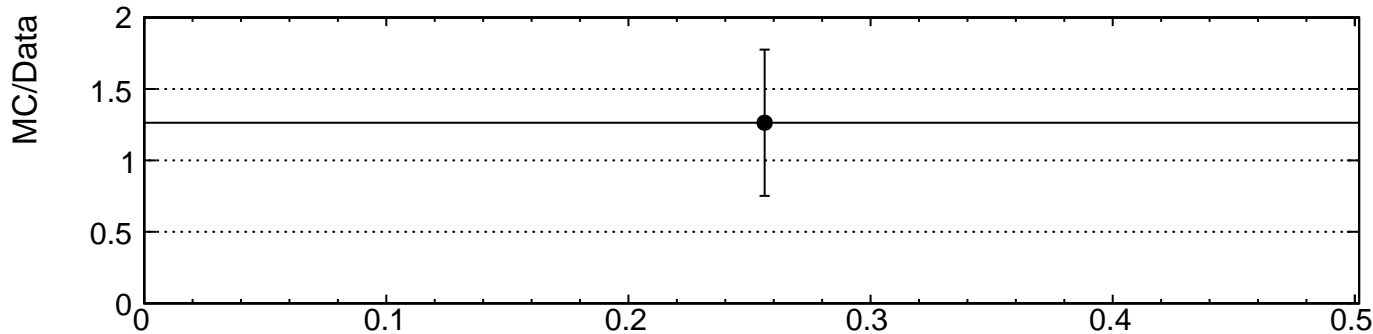
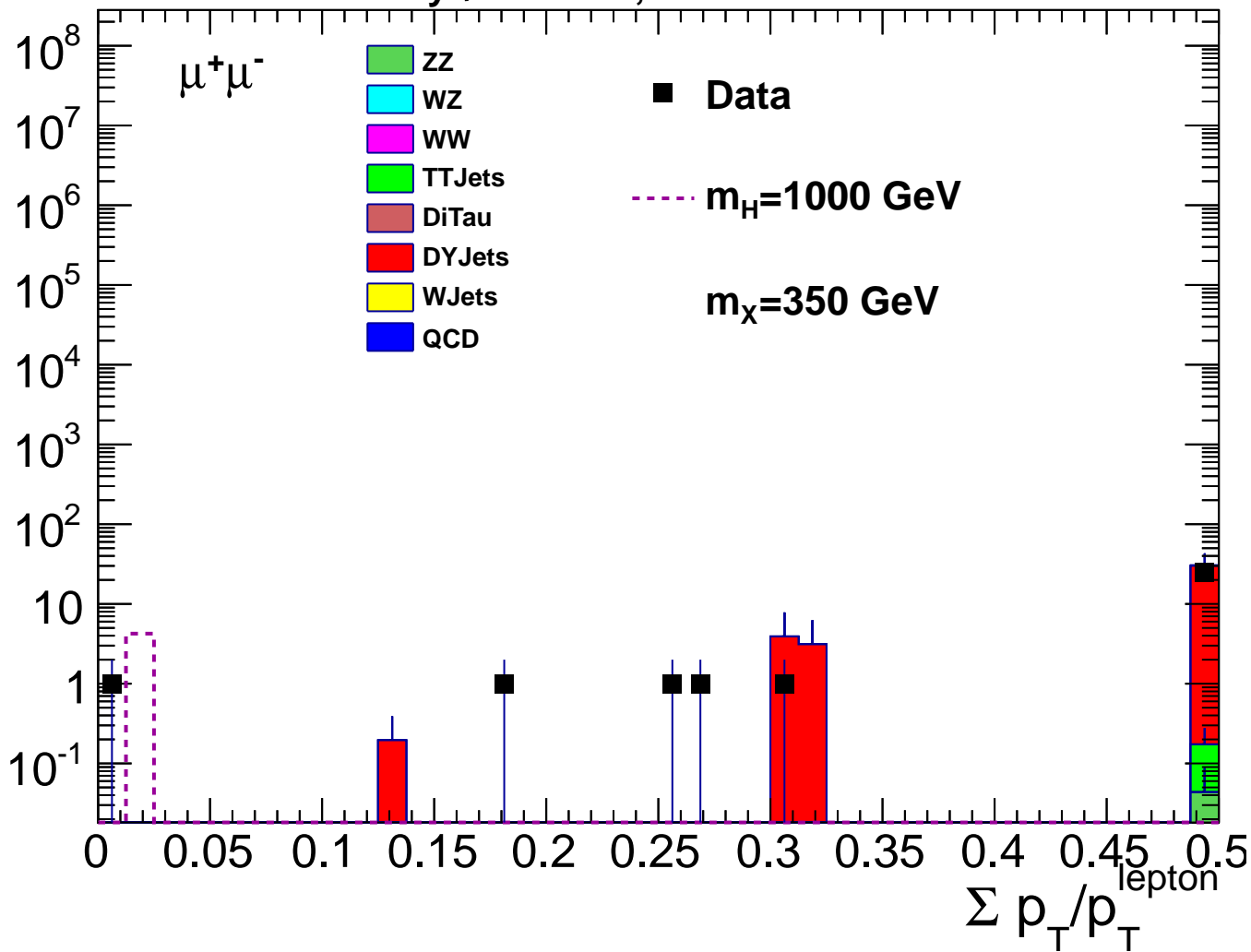
Entries

$\mu^+\mu^-$



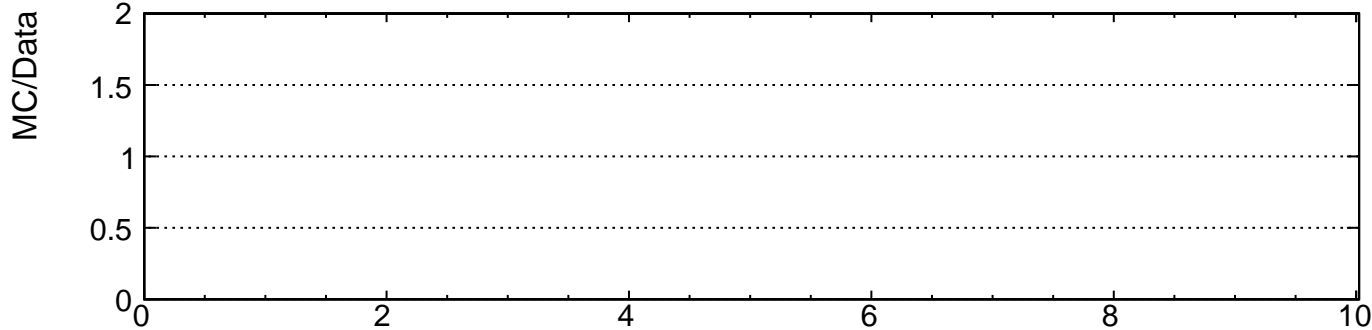
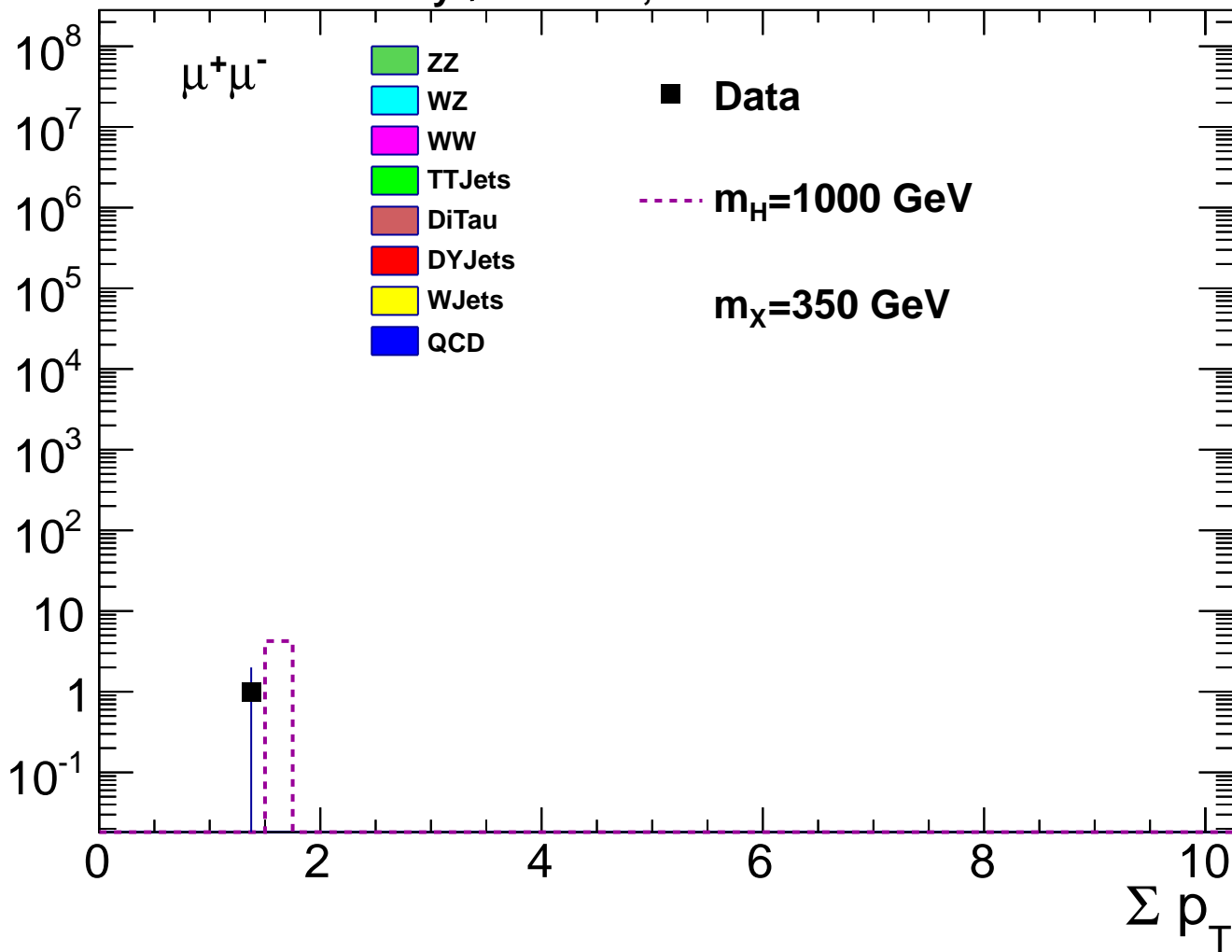
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries



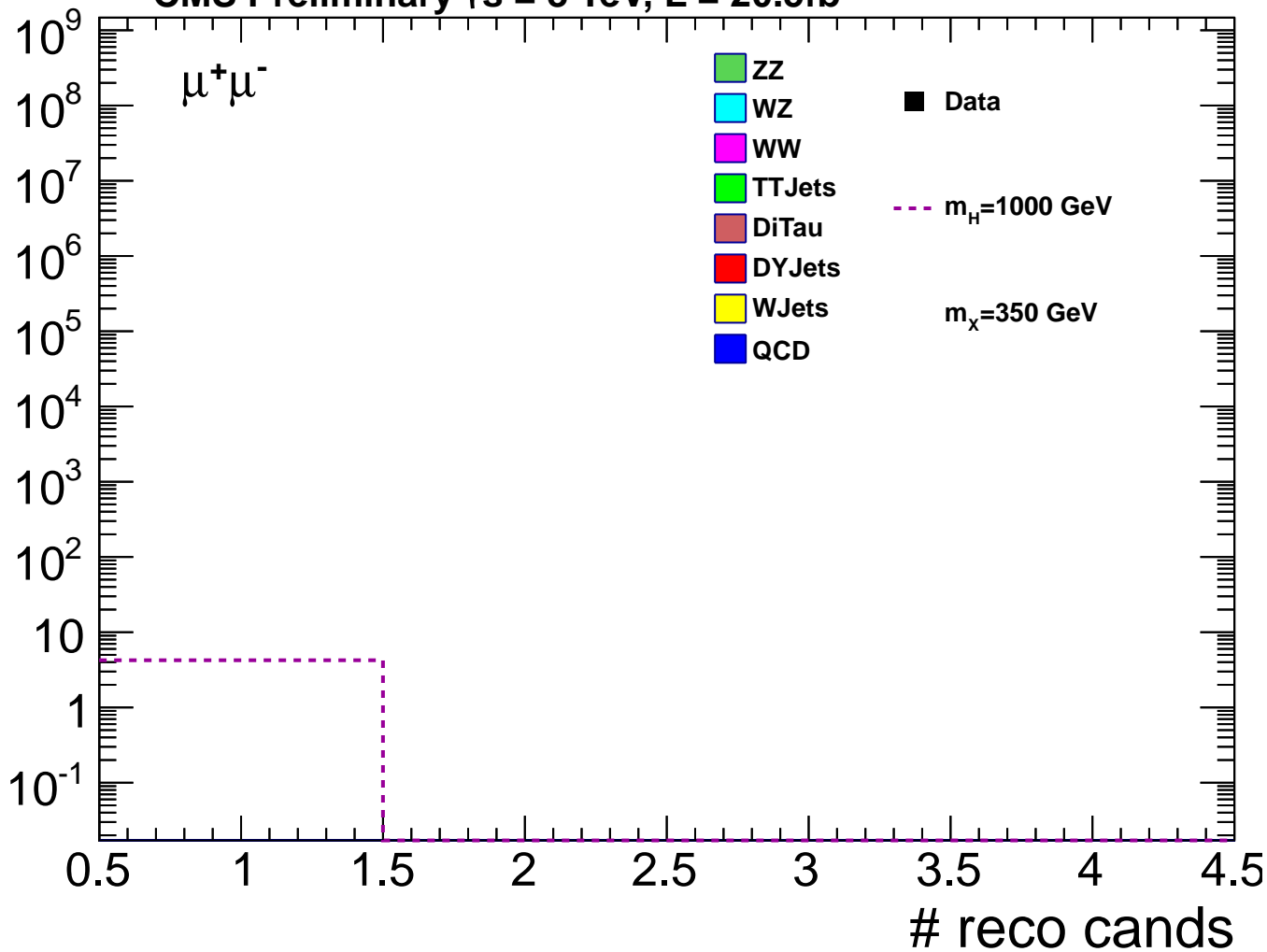
CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

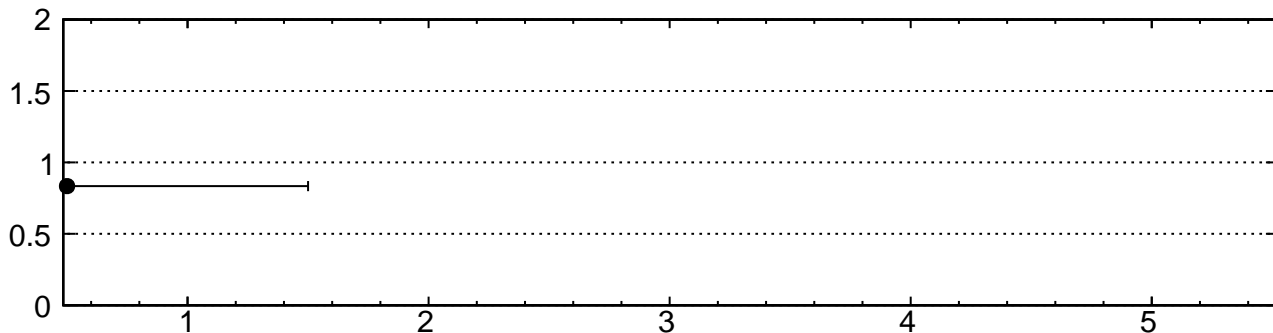


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries



MC/Data



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries

$\mu^+\mu^-$

ZZ

WZ

WW

TTJets

DiTau

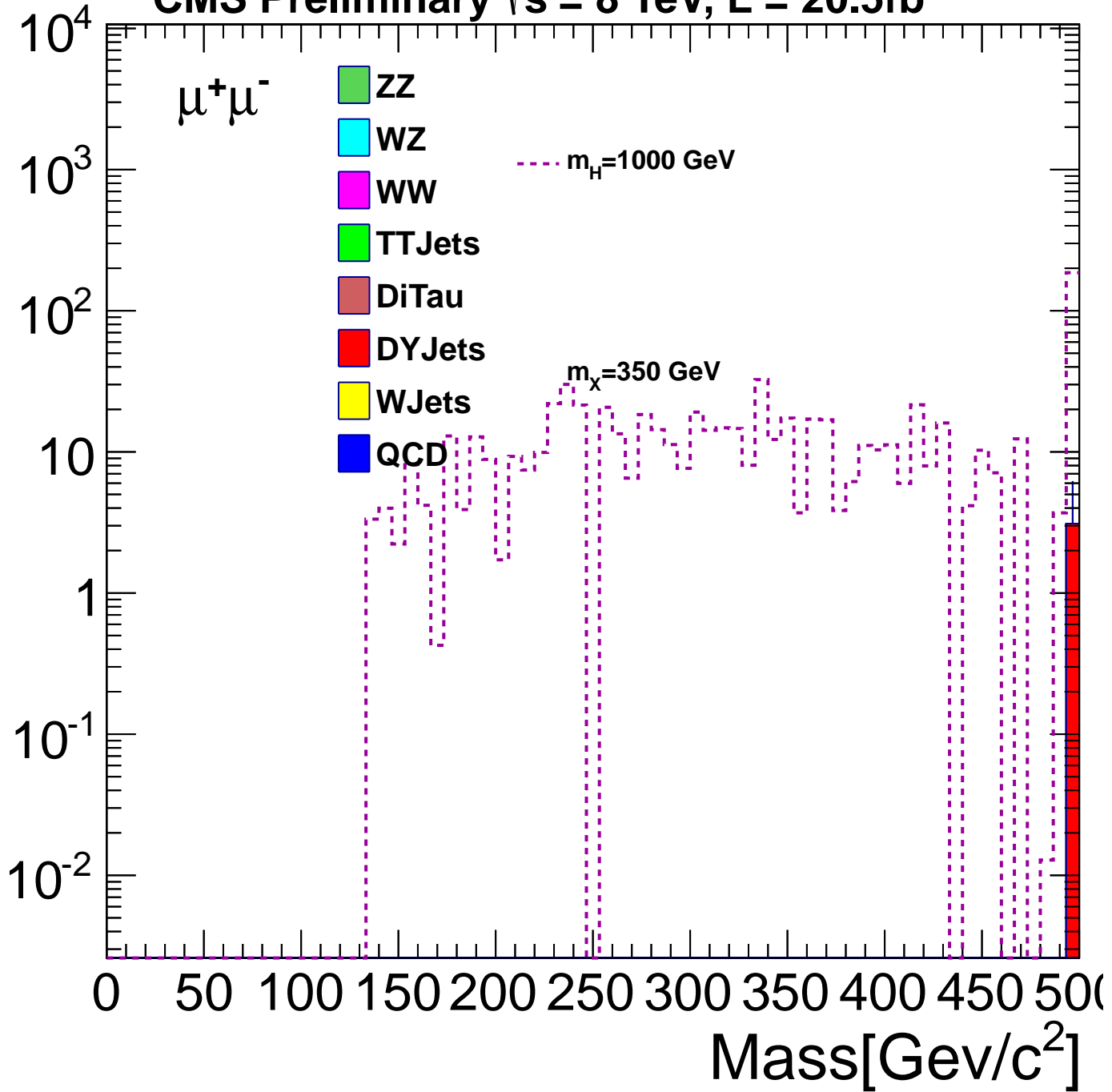
DYJets

WJets

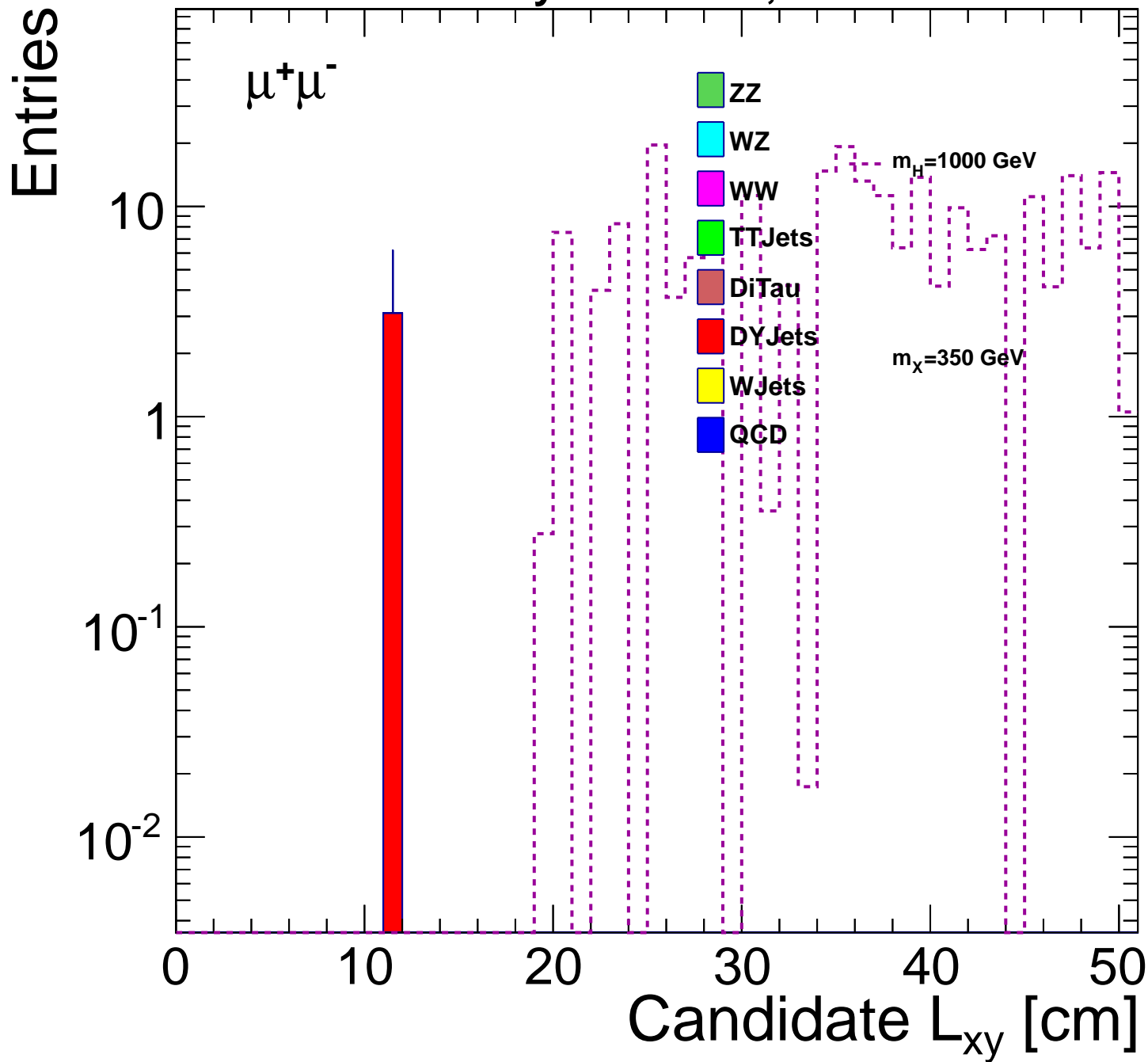
QCD

$m_H = 1000 \text{ GeV}$

$m_X = 350 \text{ GeV}$

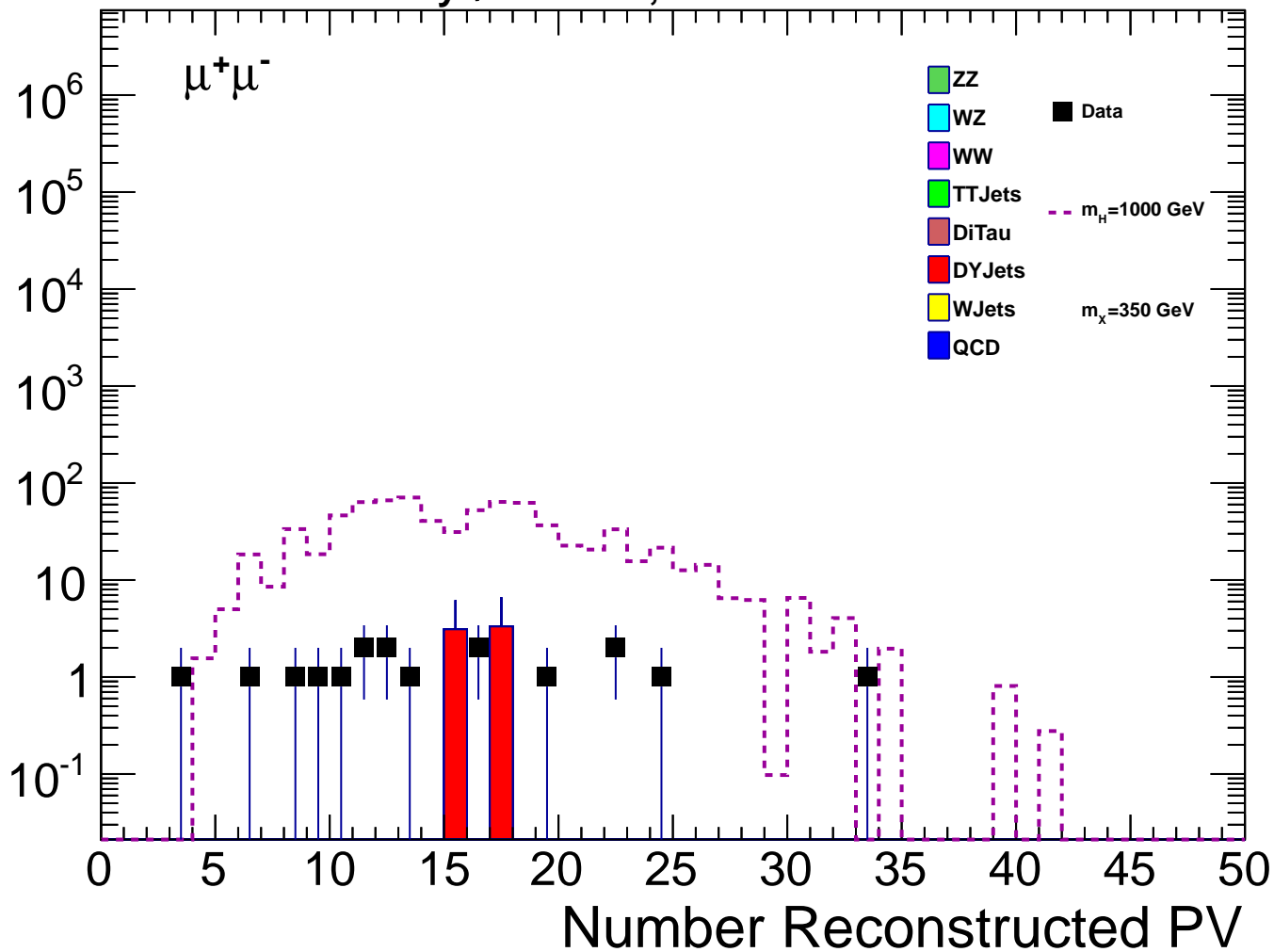


CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$



CMS Preliminary $\sqrt{s} = 8 \text{ TeV}$, $L = 20.5 \text{ fb}^{-1}$

Entries



MC/Data

