Public Results

Blessed July 14, 2006

Dijet Production in DPE and Exclusive Dijet Production

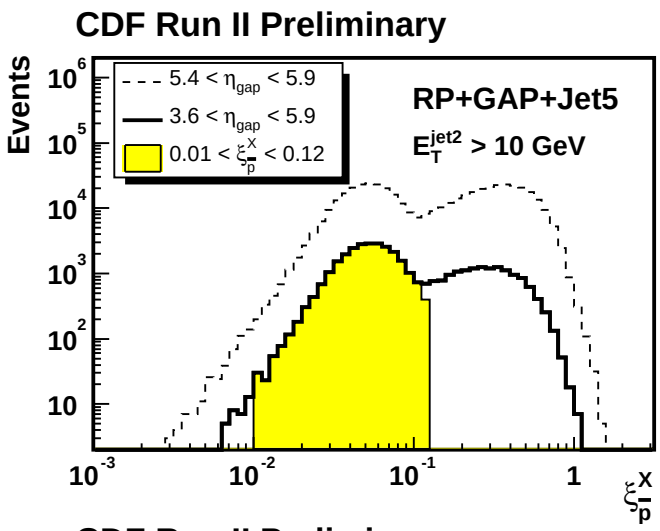
ξ^X Distributions

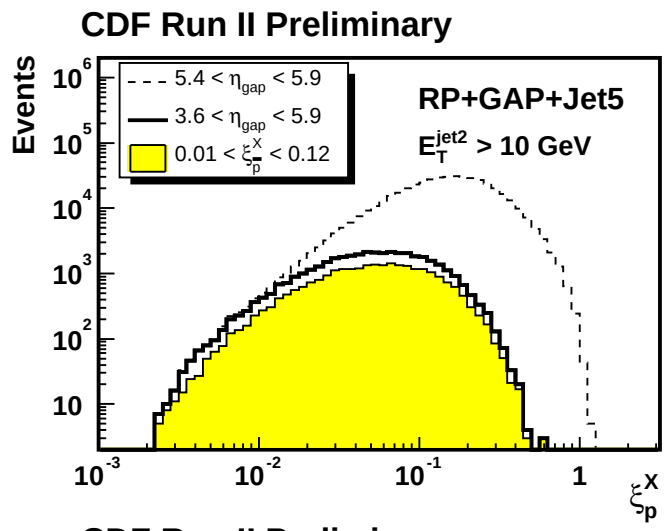
$$\xi^X_{\bar{p}(p)} \approx \frac{\sum_i E_T^i e^{-(+)\eta_i}}{\sqrt{s}}$$

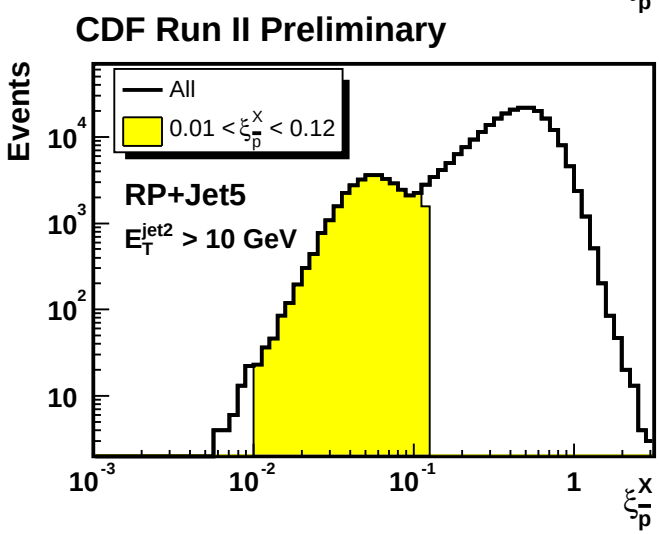
Reconstructed from calorimeter towers

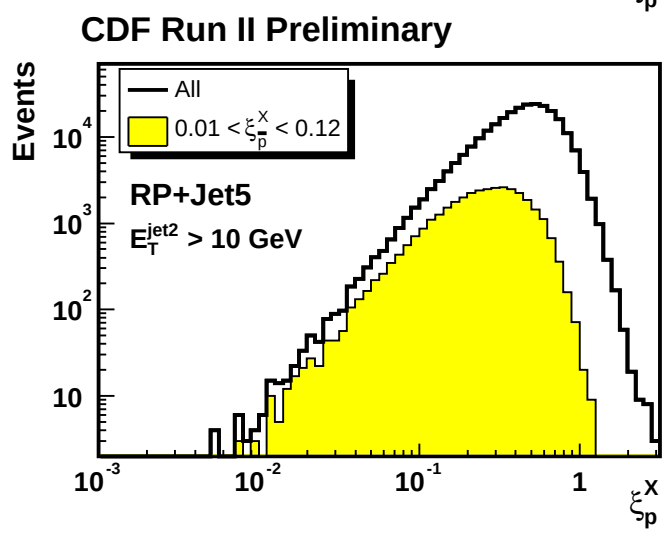
E_T >100 MeV (Central/Plug)

E_T >20 MeV (MiniPlug)

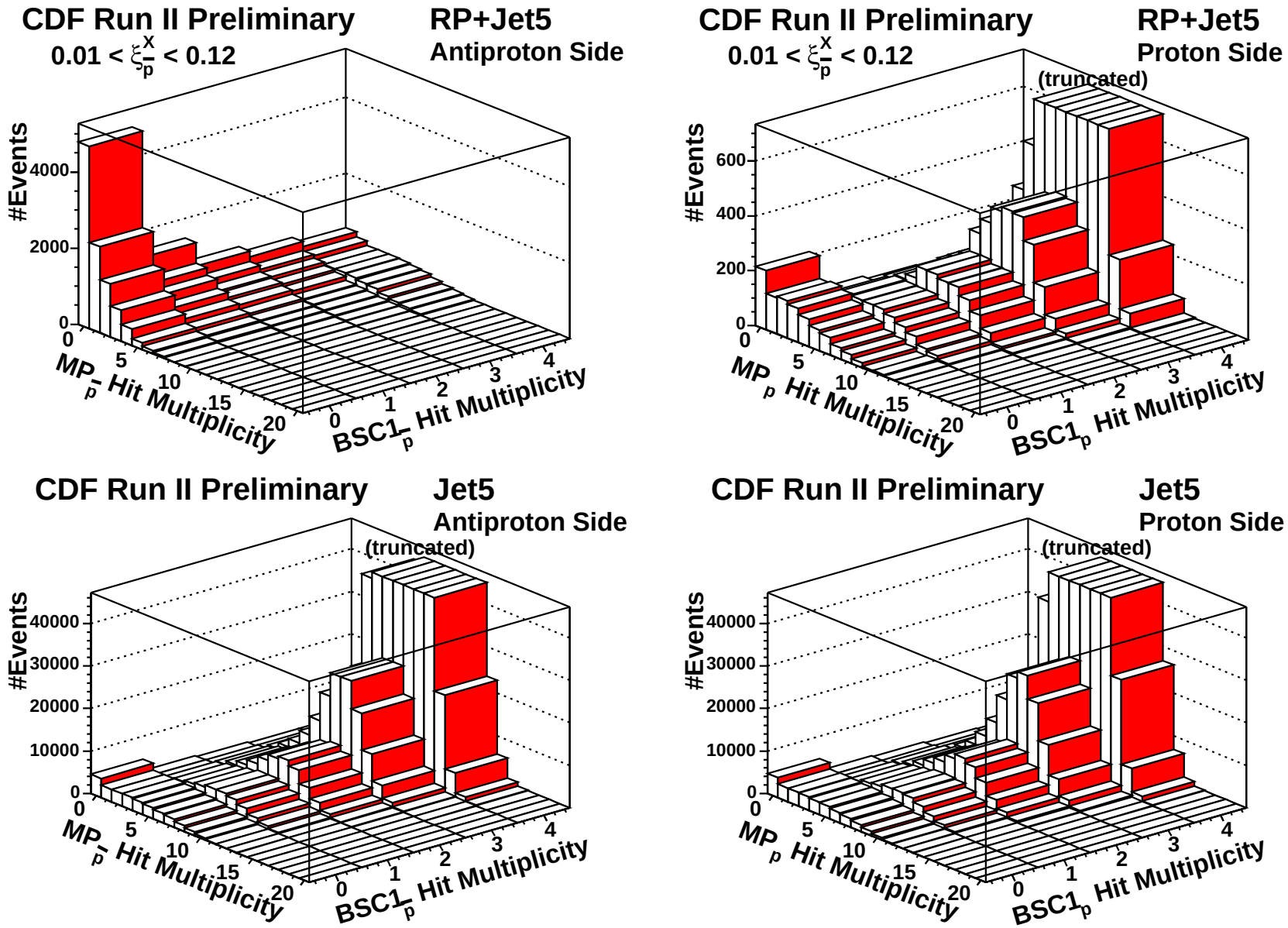




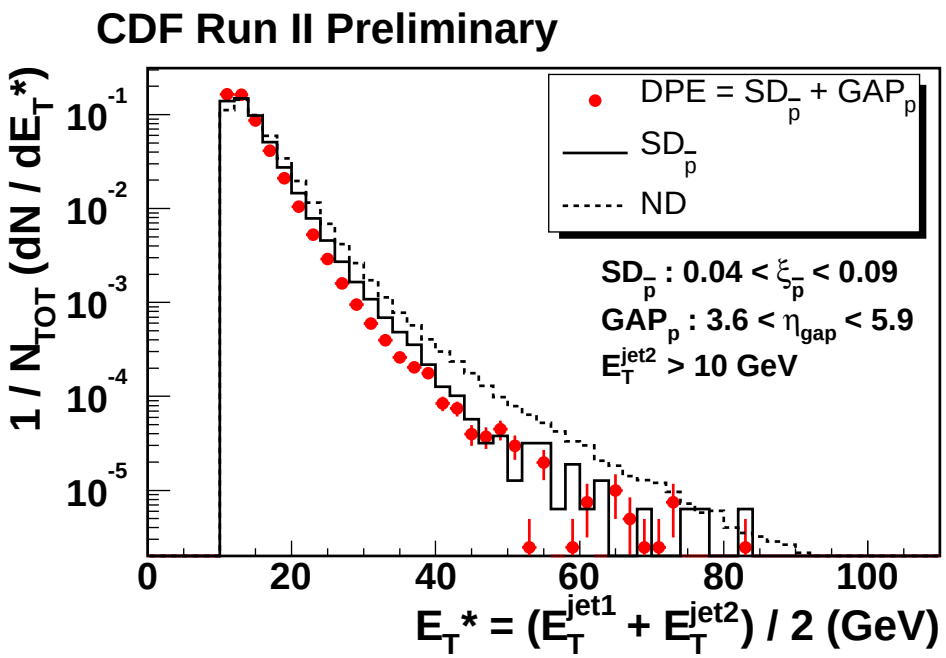


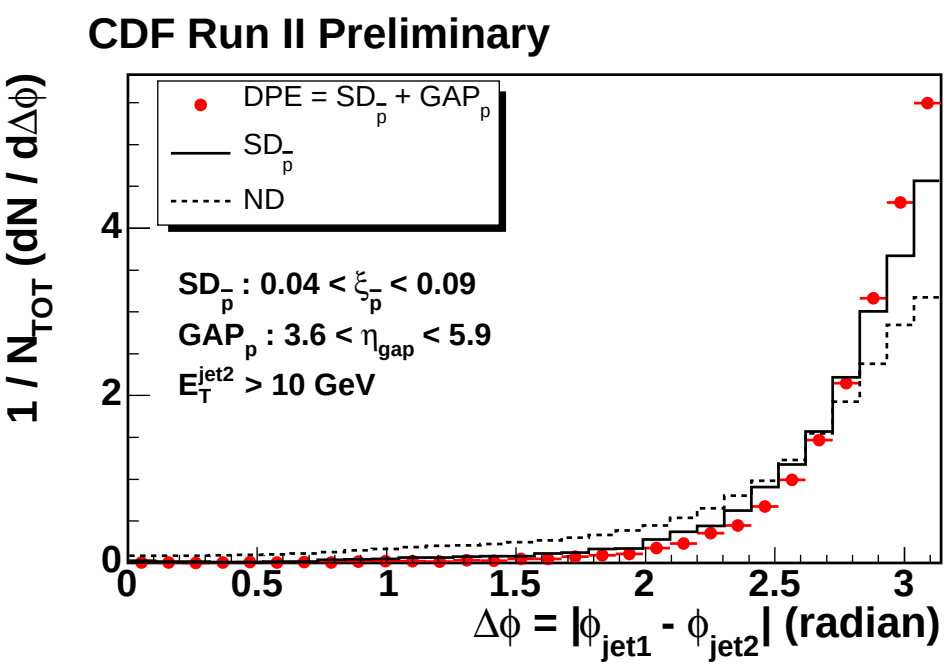


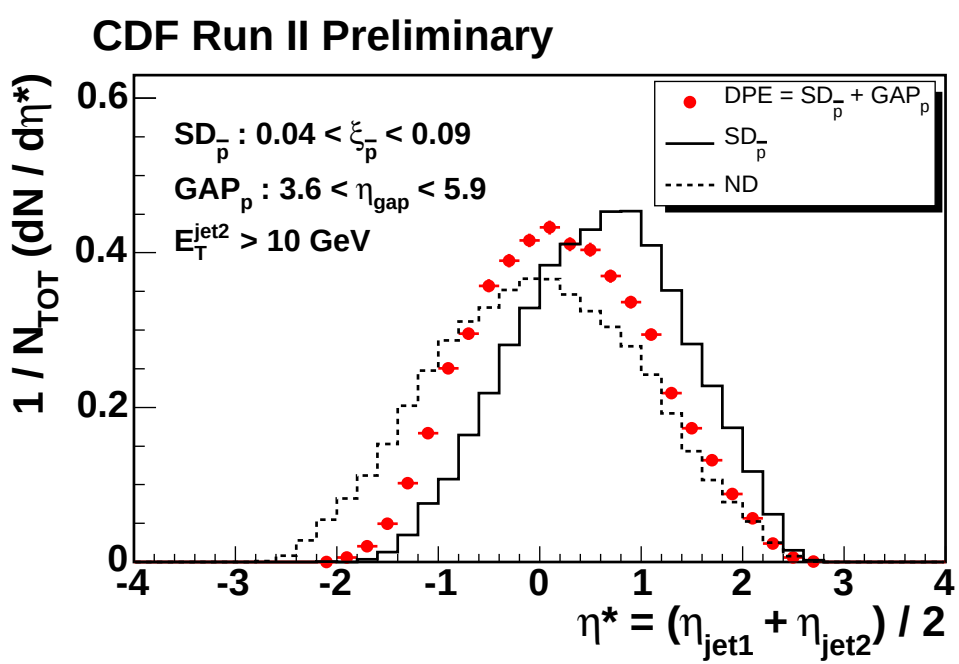
DPE Signal in SD Data



DPE Dijet Kinematic Distributions

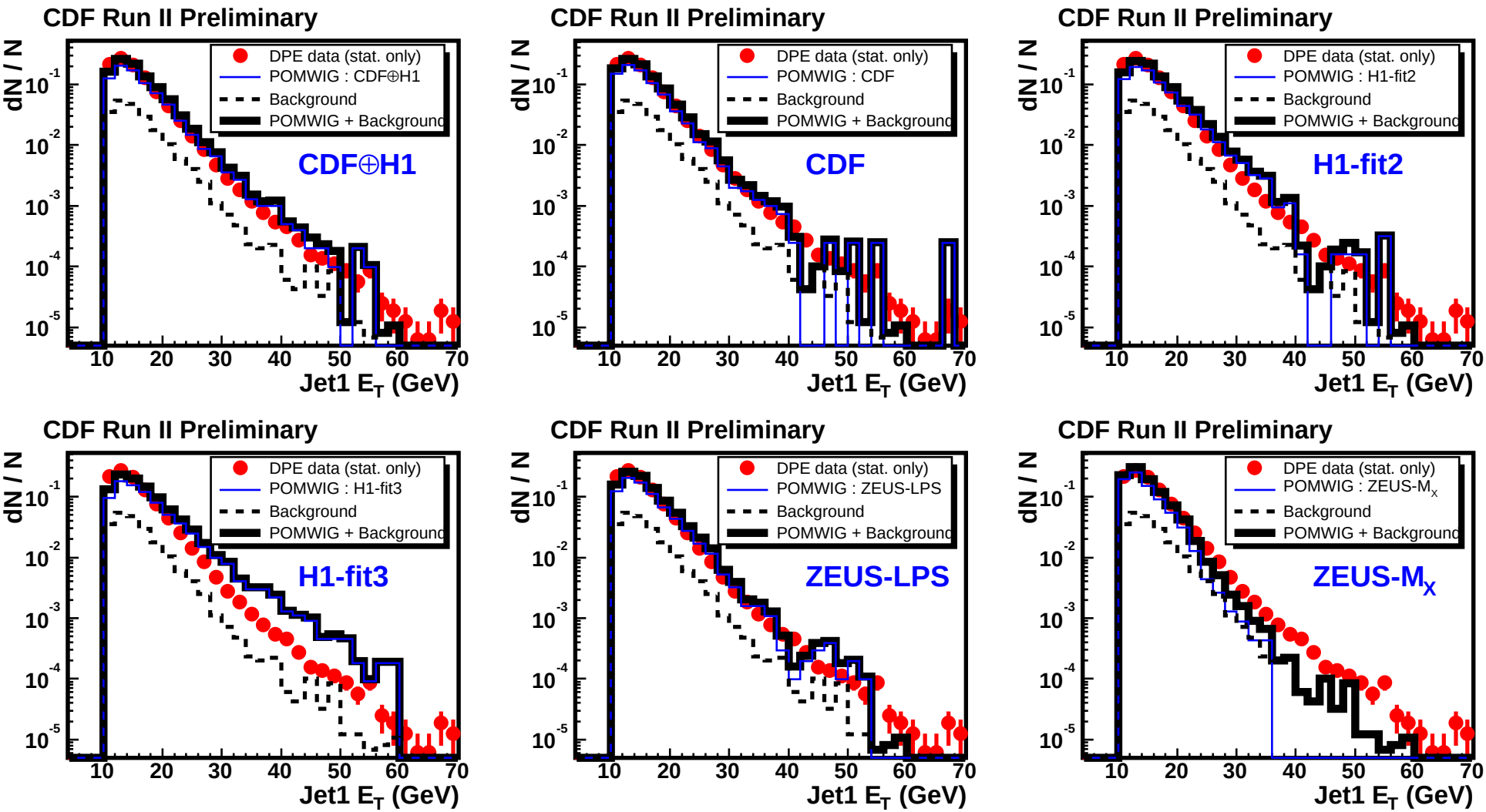






Leading Jet E_T

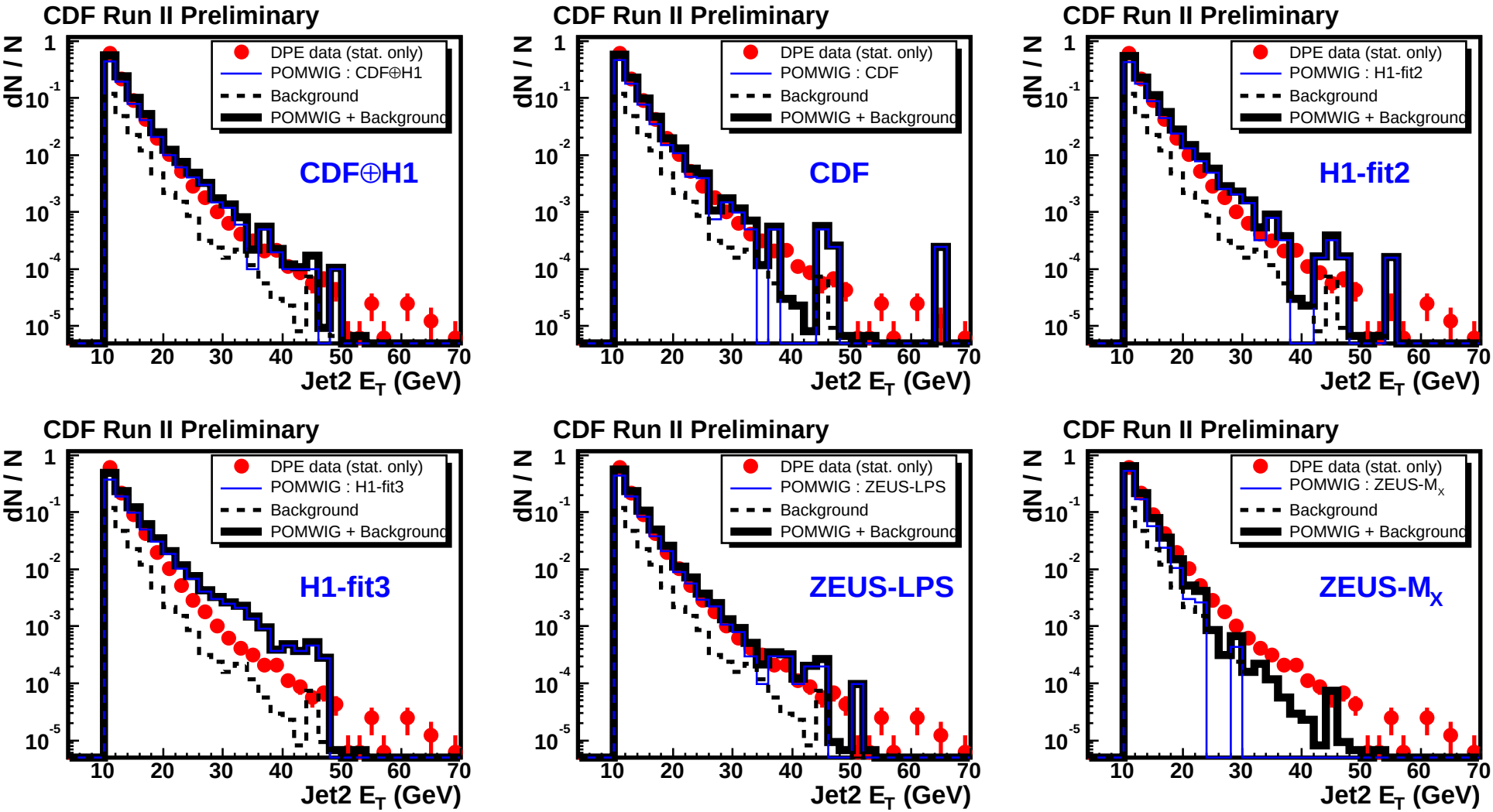
Comparison between Data and POMWIG-MC



POMWIG-MC = POMWIG DPE Signal + Background (from data)

Second Jet E_T

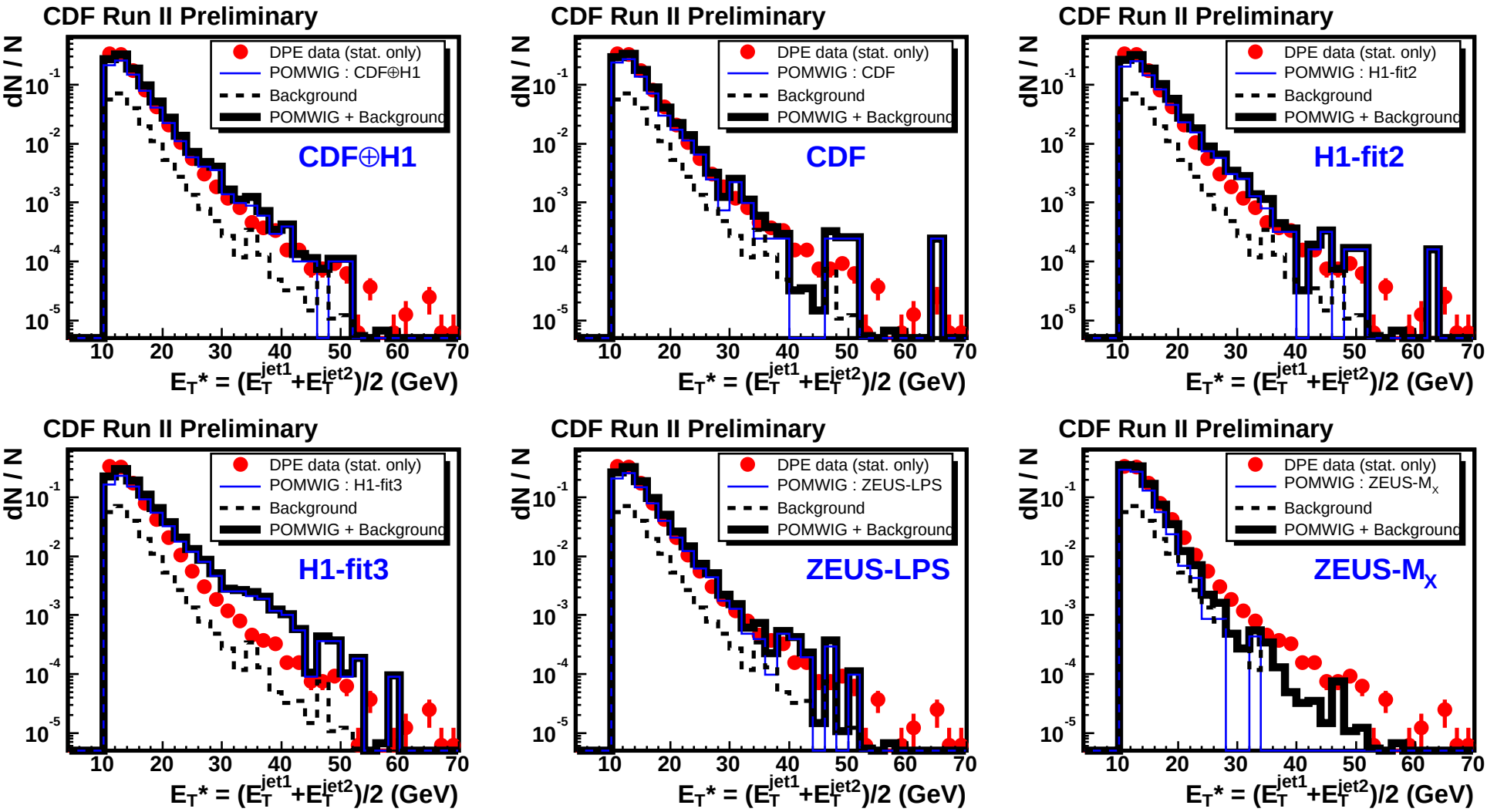
Comparison between Data and POMWIG-MC



POMWIG-MC = POMWIG DPE Signal + Background (from data)

Mean Jet E_T

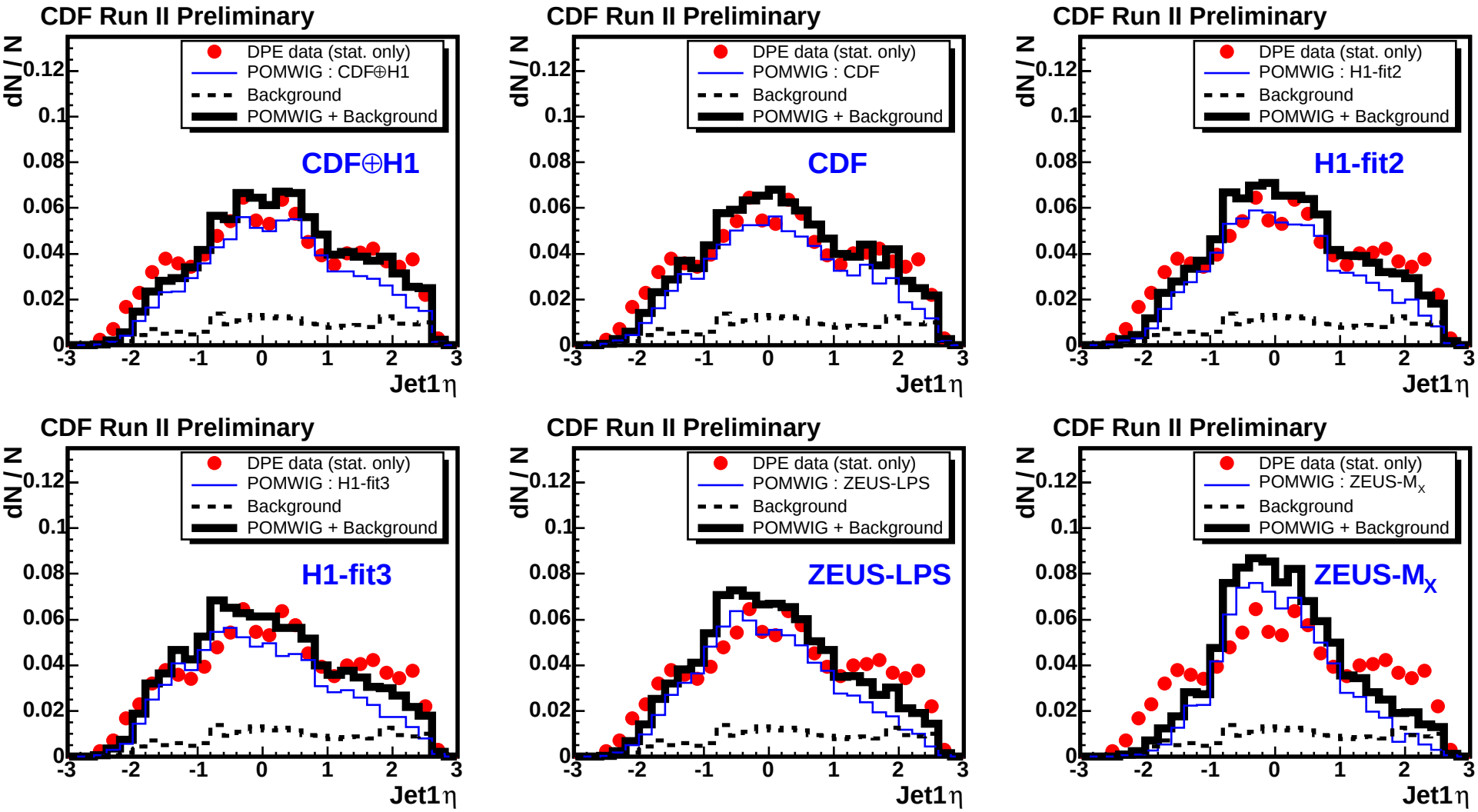
Comparison between Data and POMWIG-MC



POMWIG-MC = POMWIG DPE Signal + Background (from data)

Leading Jet η

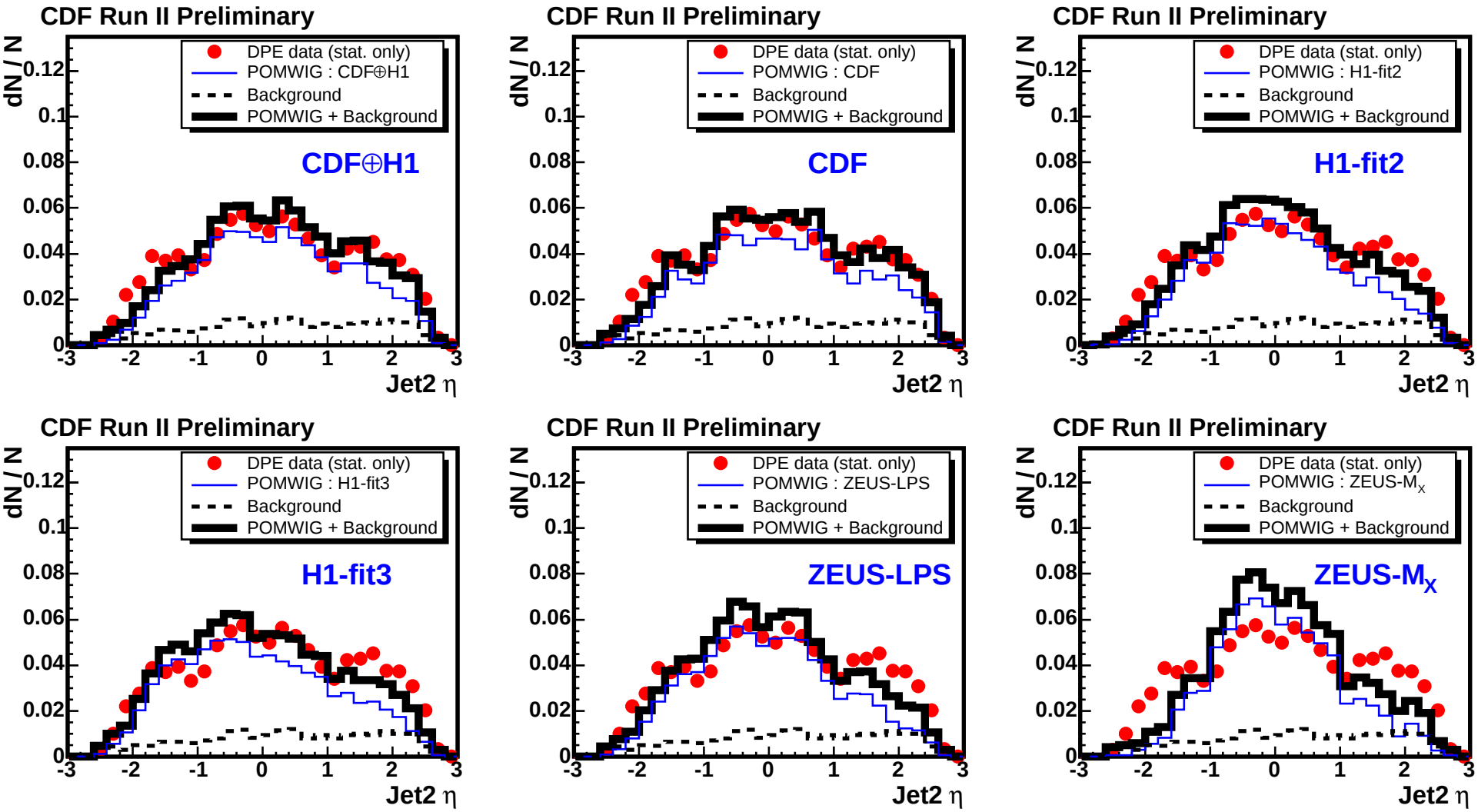
Comparison between Data and POMWIG-MC



POMWIG-MC = POMWIG DPE Signal + Background (from data)

Second Jet η

Comparison between Data and POMWIG-MC



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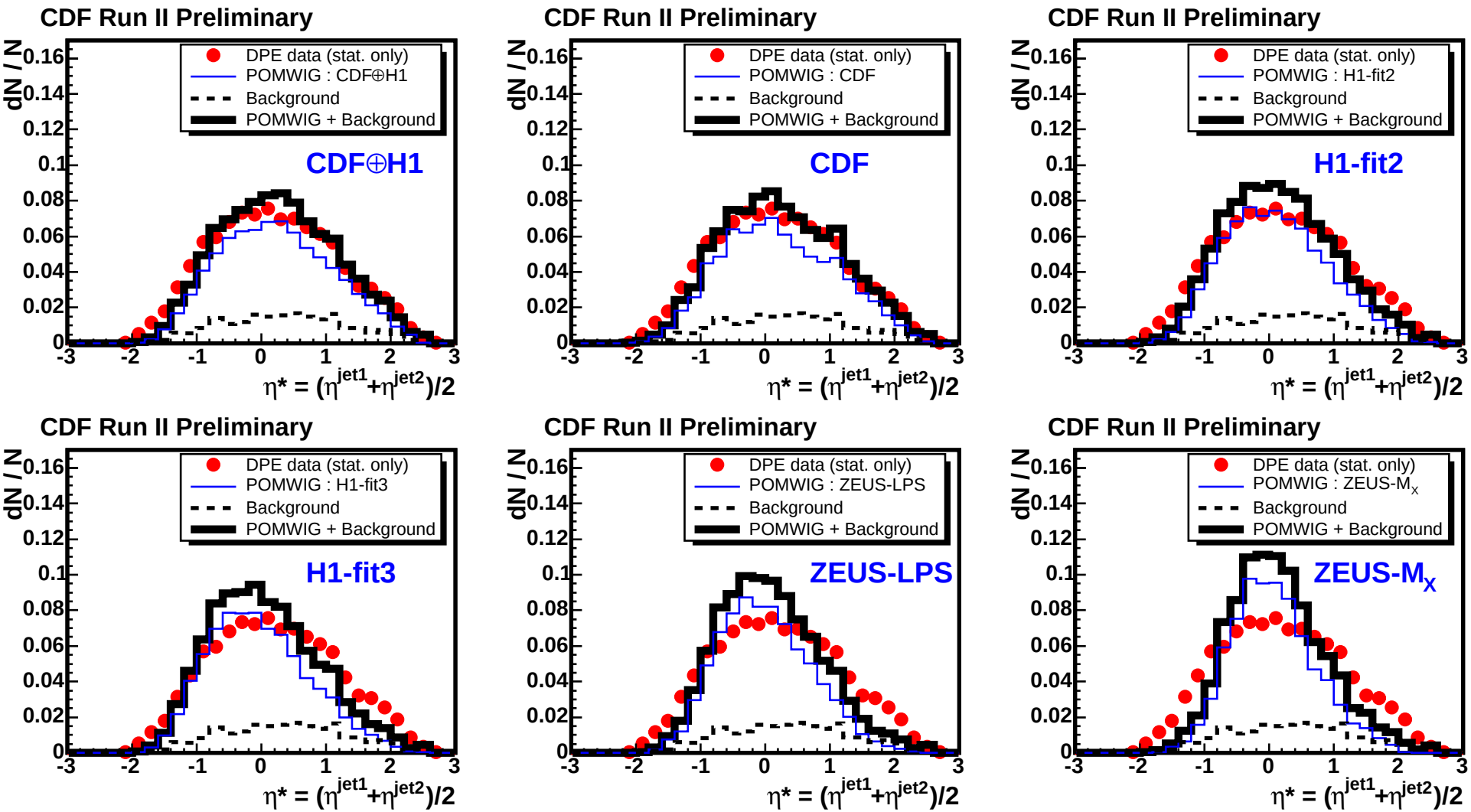
Mean Jet η

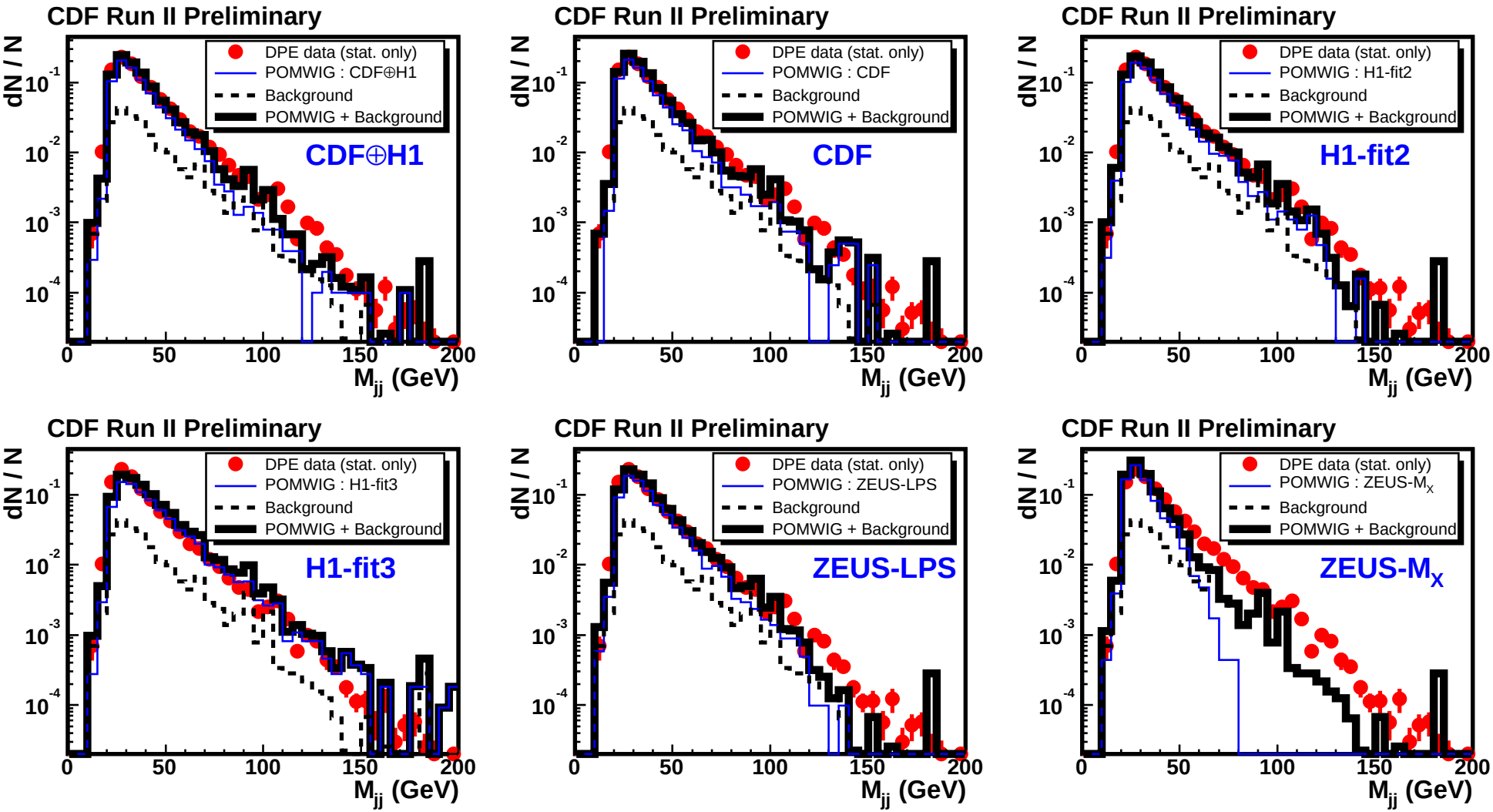
Comparison between Data and POMWIG-MC



POMWIG-MC = POMWIG DPE Signal + Background (from data)

Dijet Mass

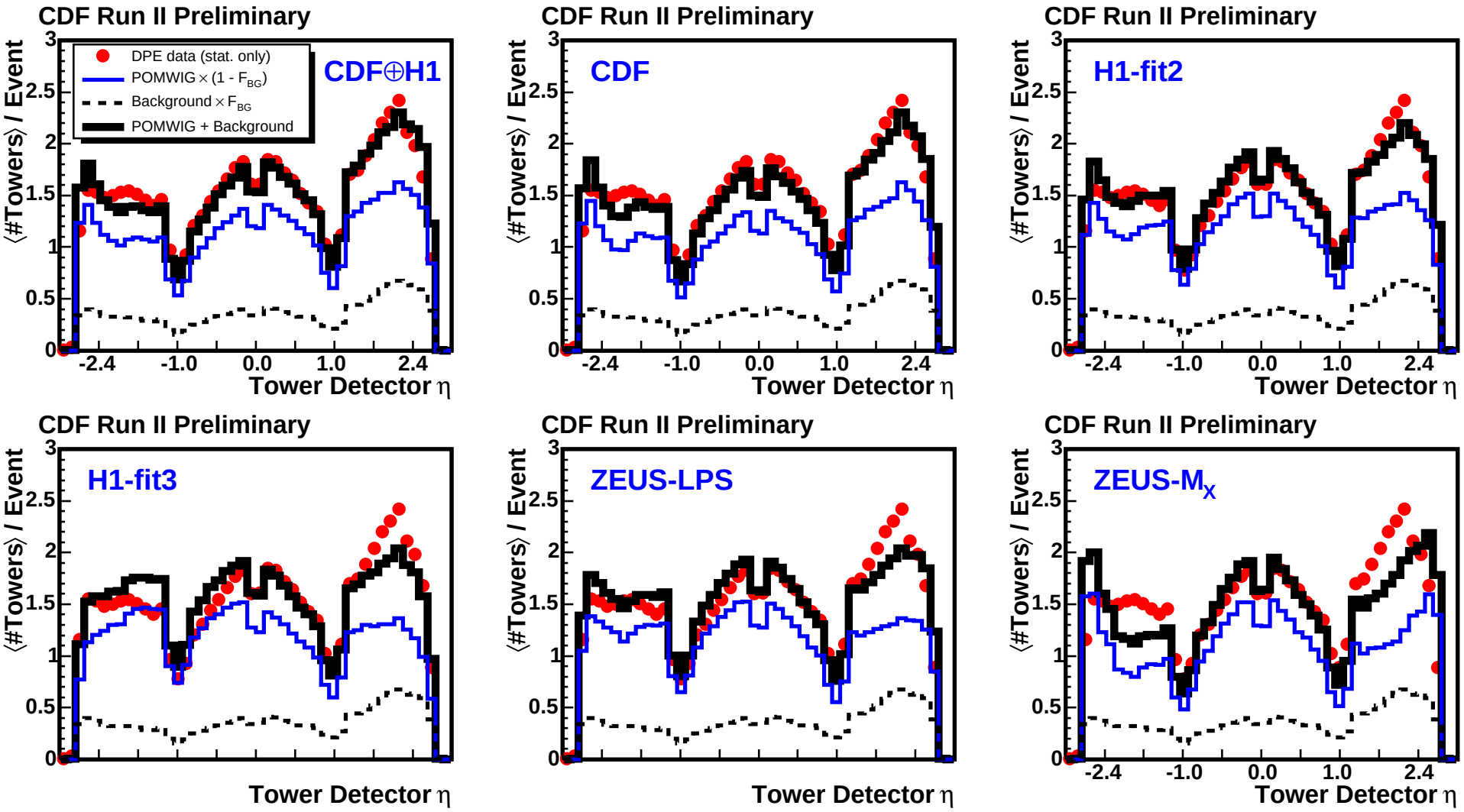
Comparison between Data and POMWIG-MC



POMWIG-MC = POMWIG DPE Signal + Background (from data)

Tower Multiplicity vs η

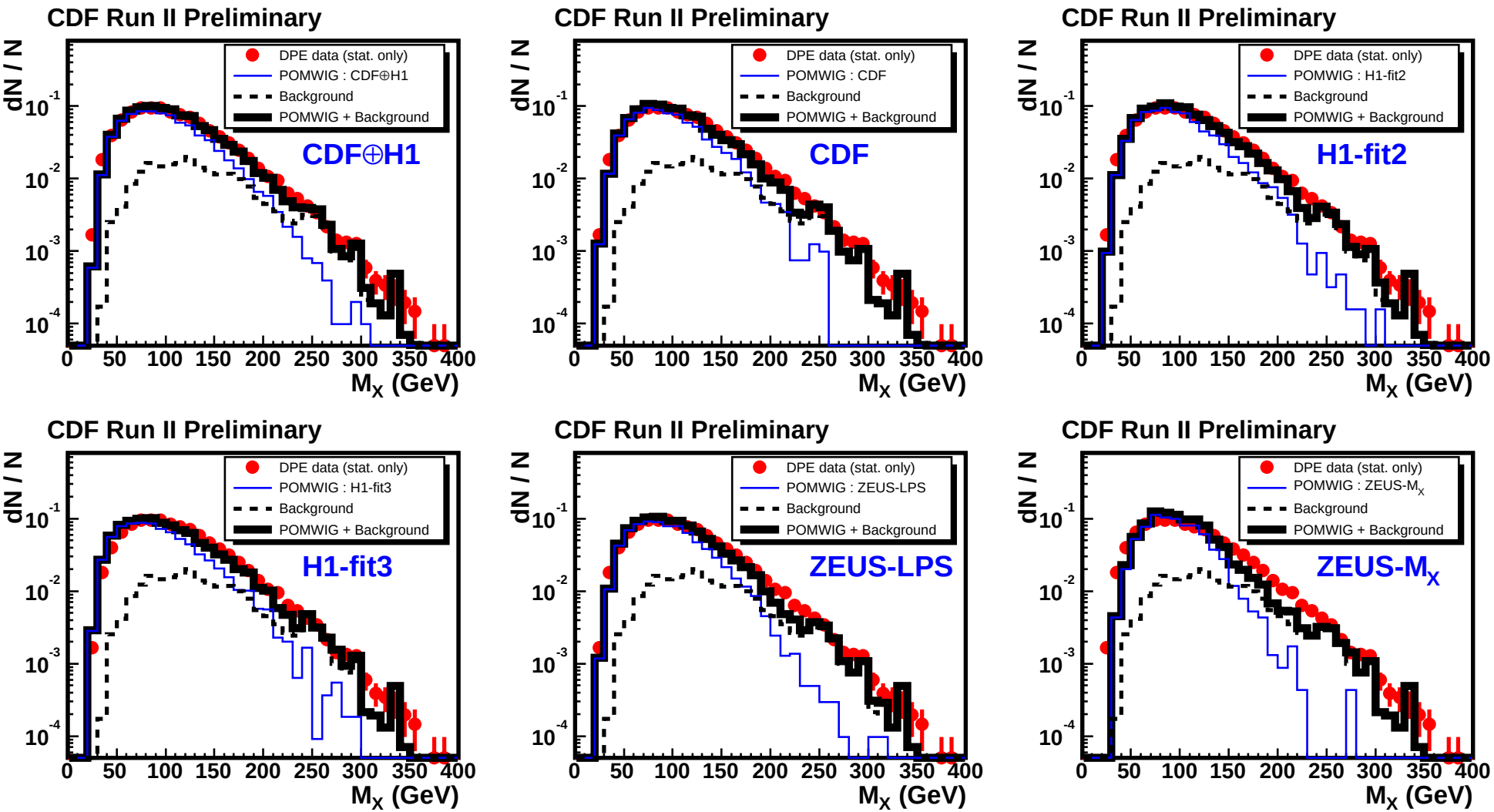
Comparison between Data and POMWIG-MC



POMWIG-MC = POMWIG DPE Signal + Background (from data)

System Mass

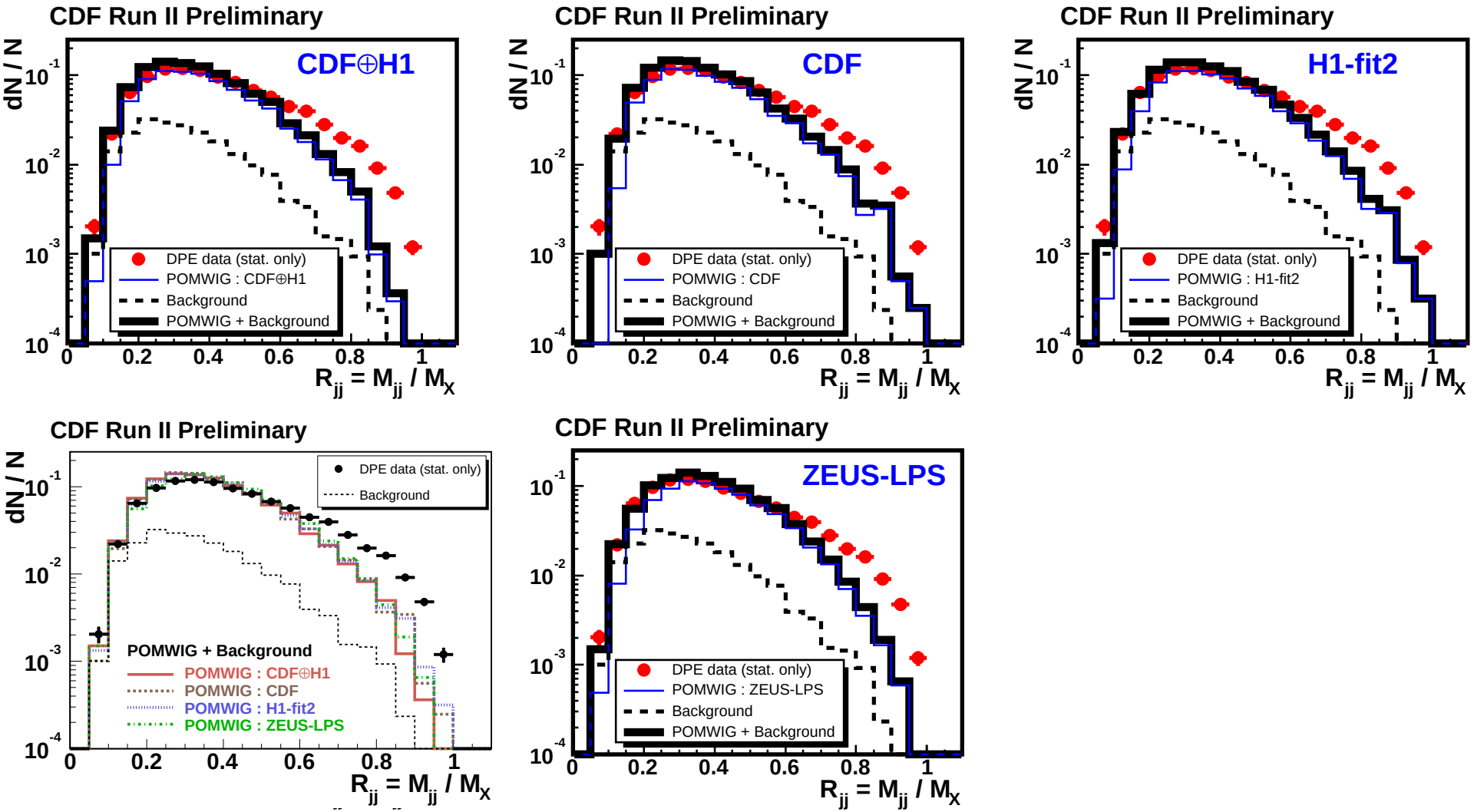
Comparison between Data and POMWIG-MC



POMWIG-MC = POMWIG DPE Signal + Background (from data)

Dijet Mass Fraction

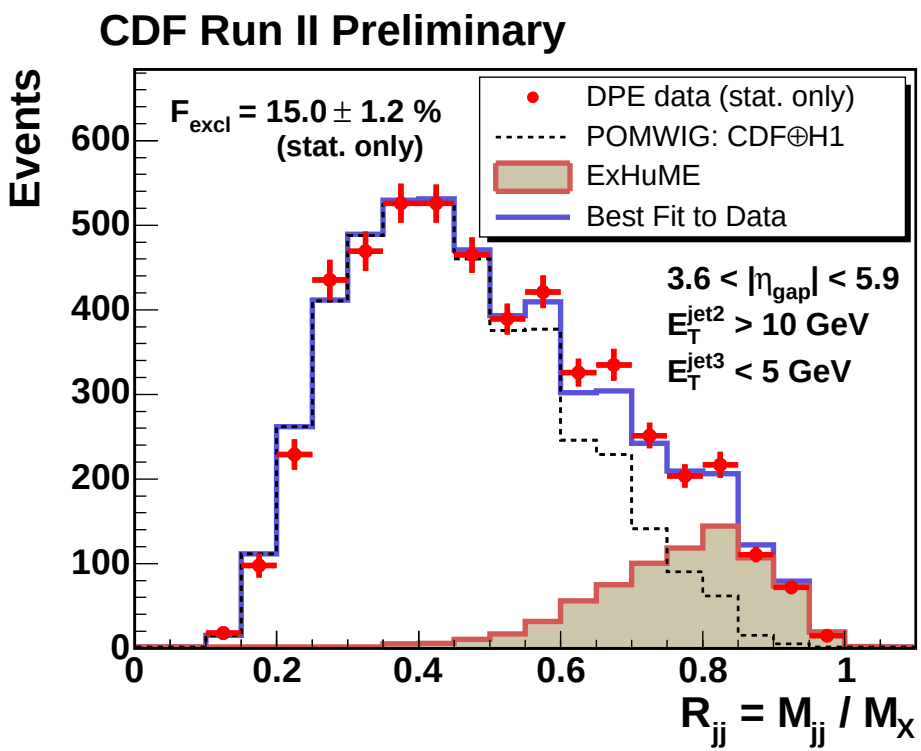
Comparison between Data and POMWIG-MC



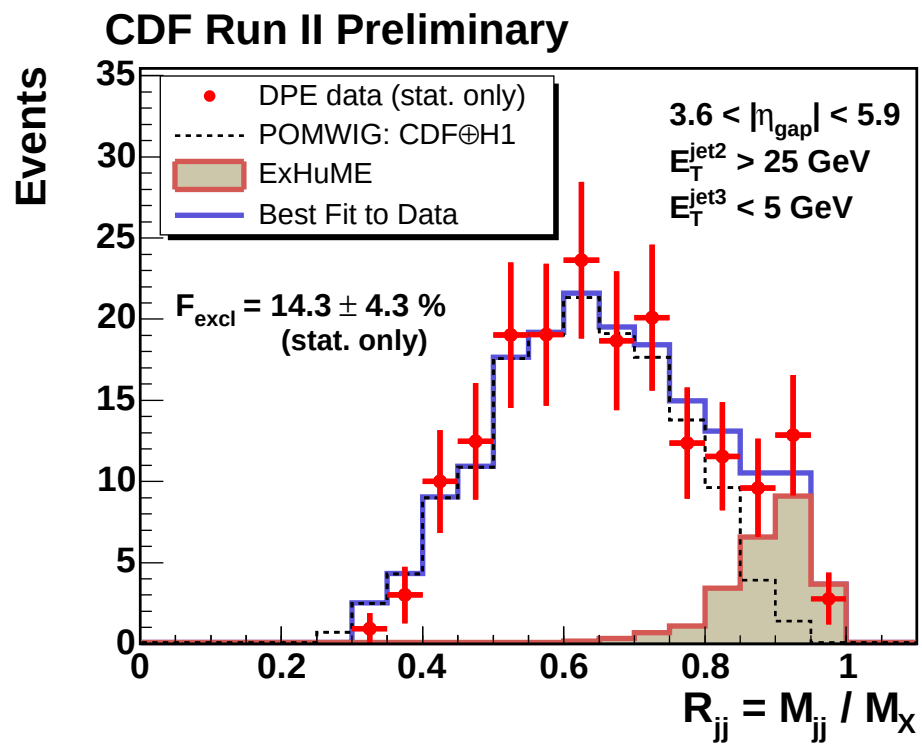
POMWIG-MC = POMWIG DPE Signal + Background (from data)

POMWIG+ExHuME Fit to Data : 3rd Jet Veto

$E_T^{jet2} > 10$ GeV

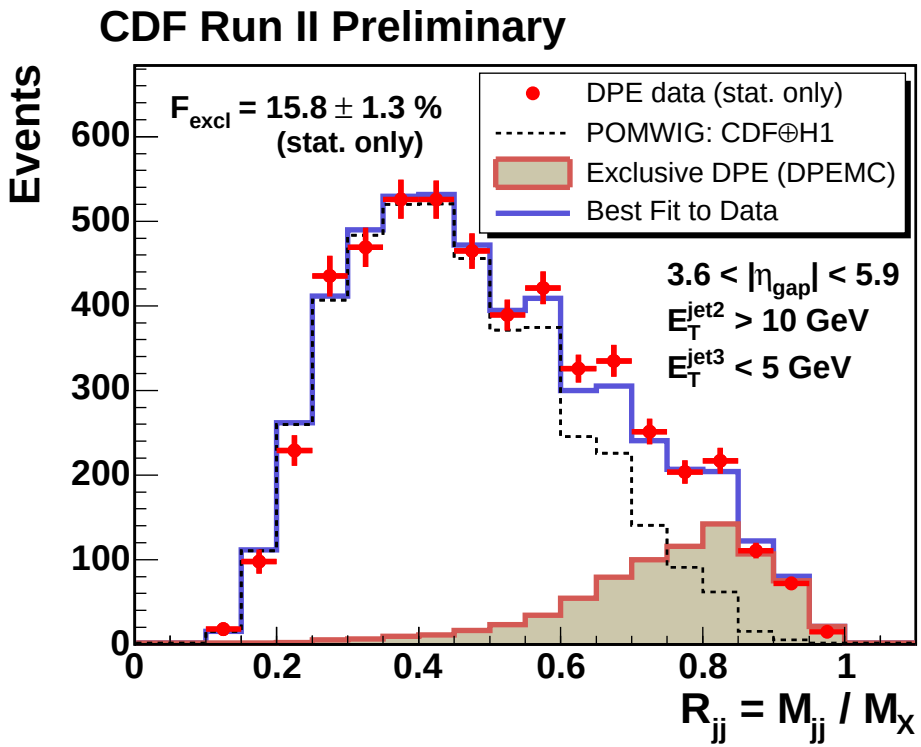


$E_T^{jet2} > 25$ GeV

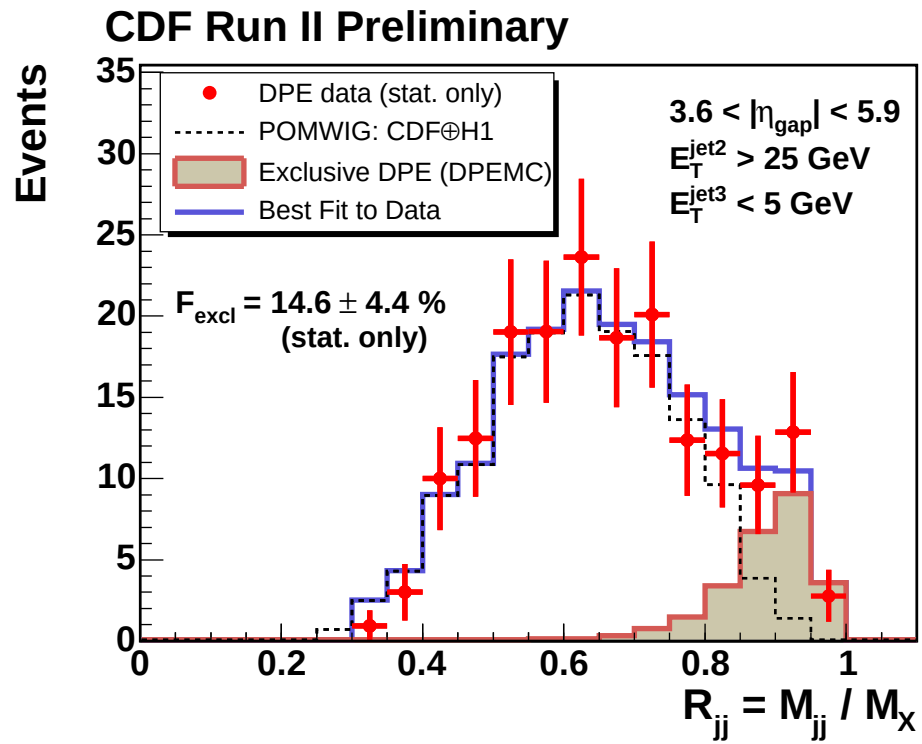


POMWIG+ExclDPE Fit to Data : 3rd Jet Veto

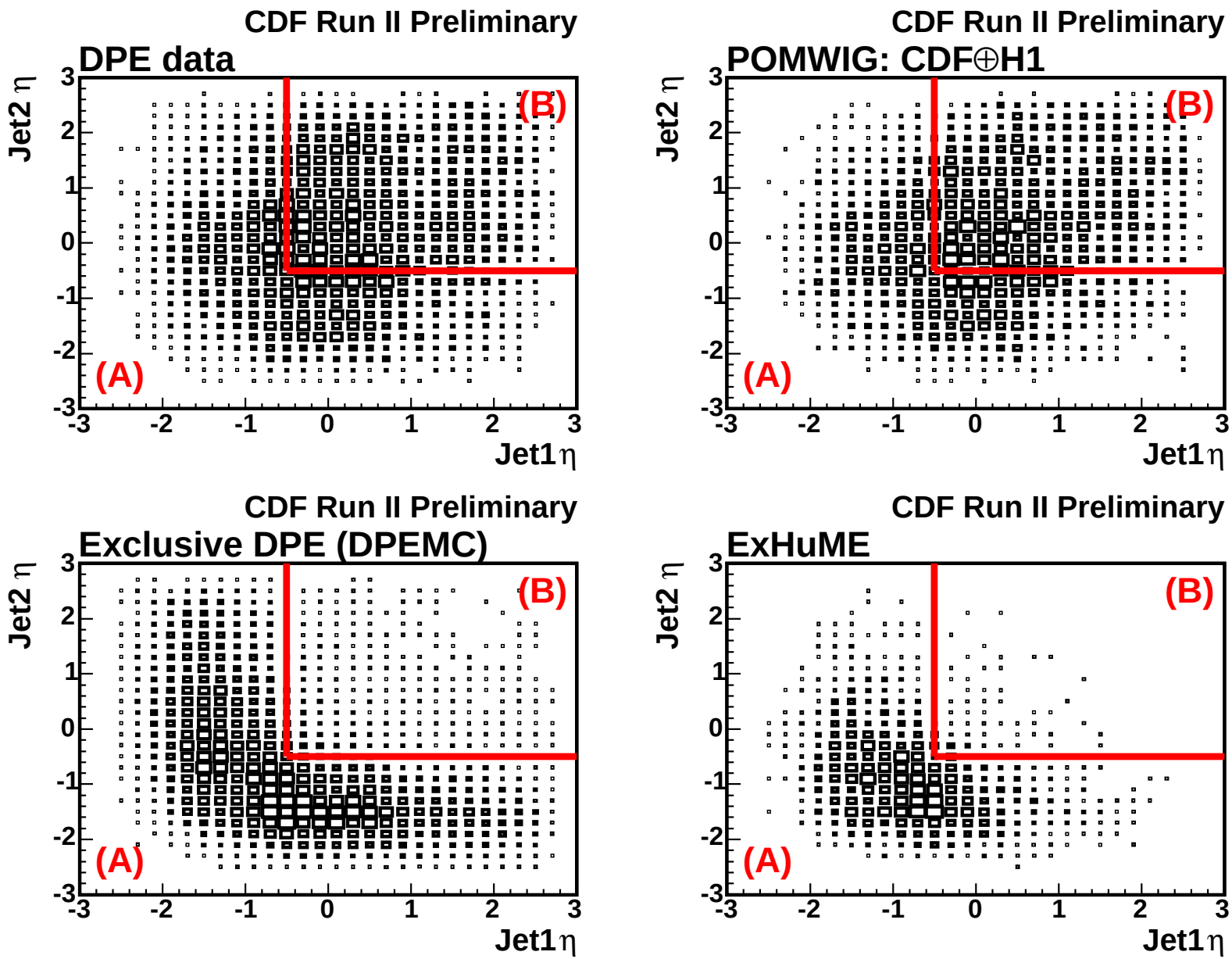
$E_T^{jet2} > 10$ GeV



$E_T^{jet2} > 25$ GeV

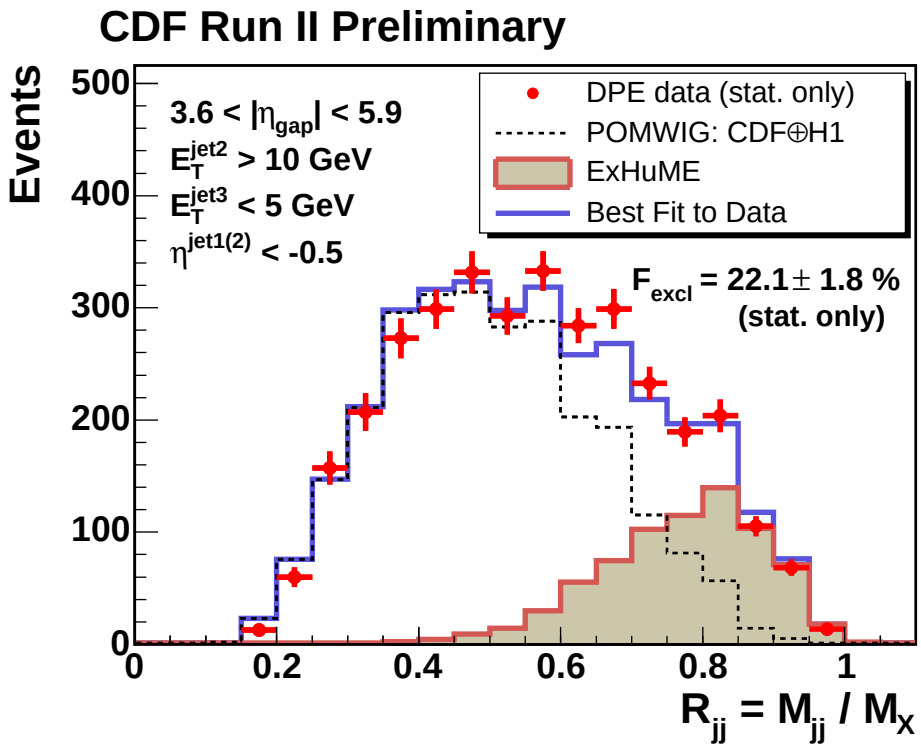


Jet1&2 Pseudorapidity Cuts

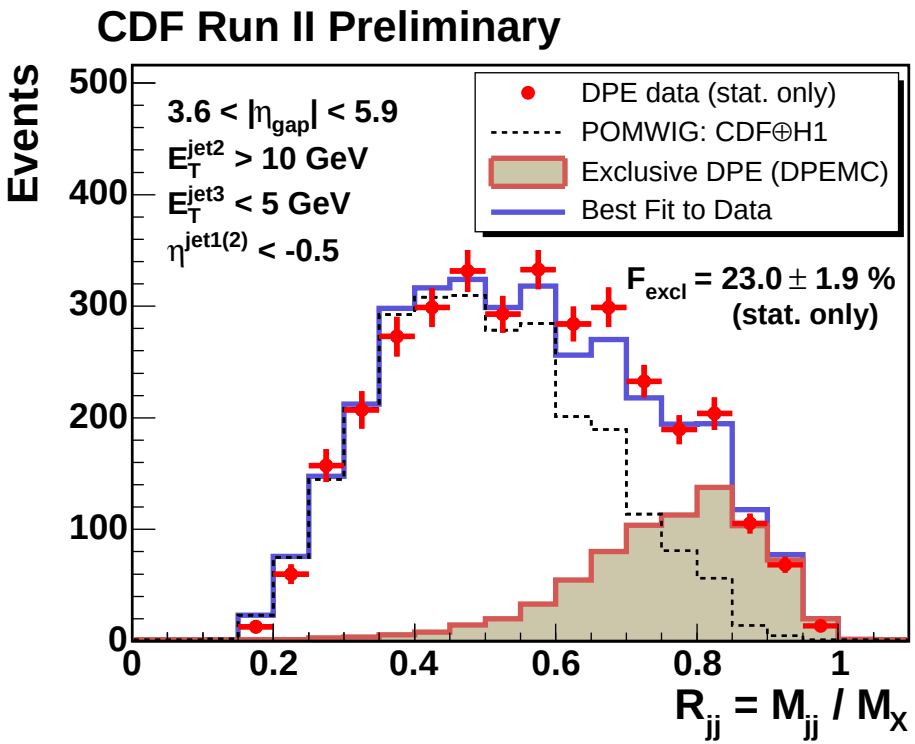


POMWIG+Exclusive Fit to Data : 3rd Jet Veto + Jet1&2 η cut (A)

POMWIG+ExHuME



POMWIG+ExclDPE



CDF Run II Preliminary

$E_T^{jet1,2}$>10 GeV, $\eta^{jet1(2)}$<-0.5, E_T^{jet3}<5 GeV, 3.6<$|\eta_{gap}|$<5.9, 0.03<$\xi_{\bar{p}}$<0.08, all $t_{\bar{p}}$

POMWIG+ExHuME	
CDF⊕H1	22.1±1.8%
CDF	21.7±1.8%
H1-fit2	24.7±2.0%
ZEUS-LPS	24.3±2.0%

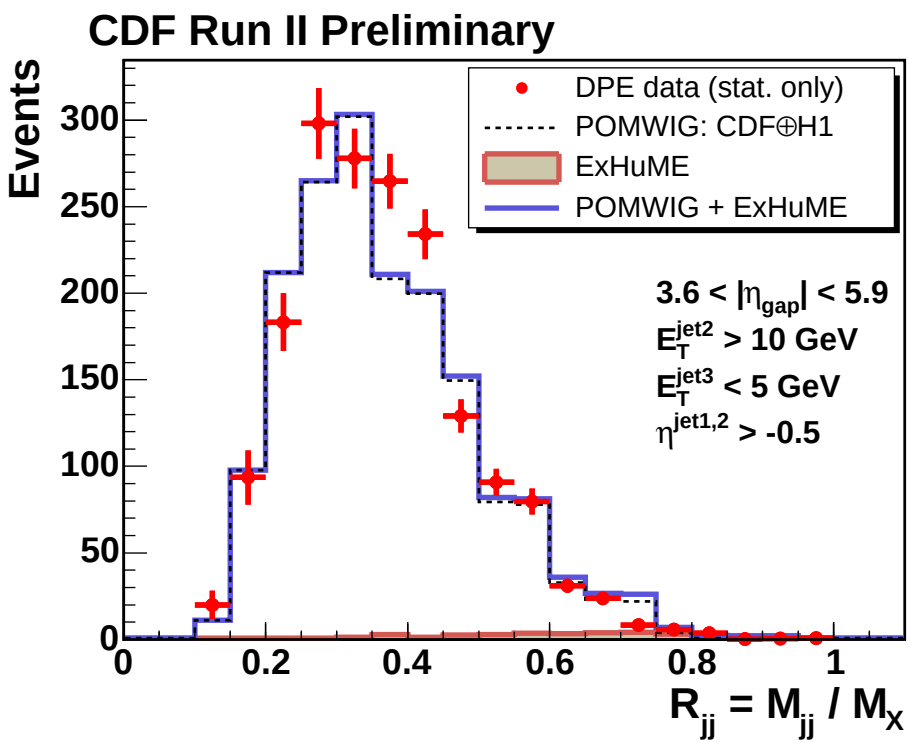
(stat. errors only)

POMWIG+ExclDPE	
CDF⊕H1	23.0±1.9%
CDF	22.6±1.9%
H1-fit2	26.0±2.1%
ZEUS-LPS	25.4±2.1%

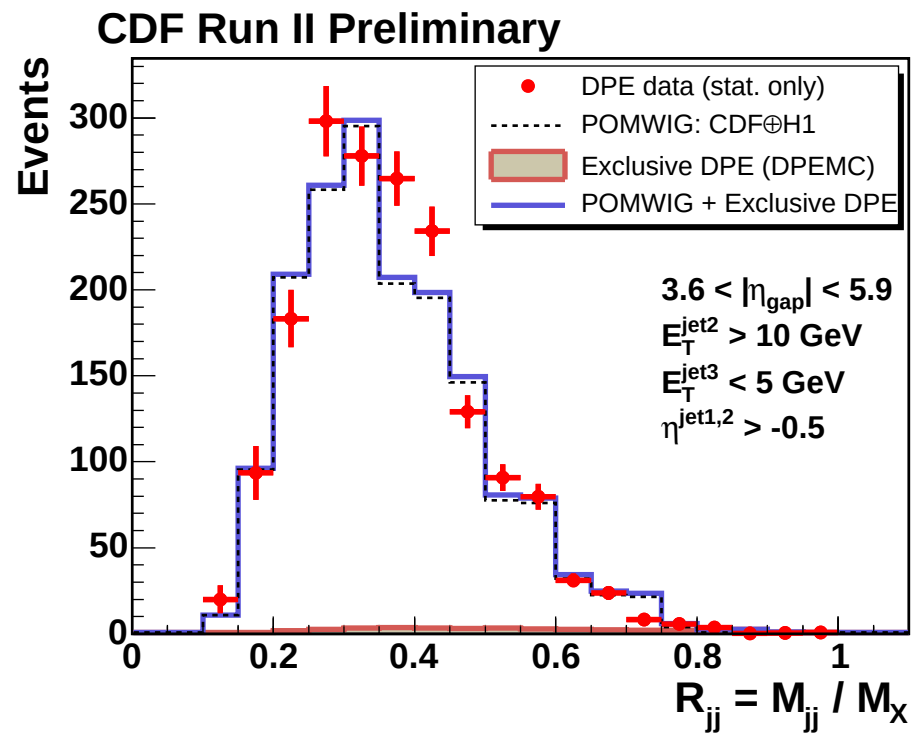
(stat. errors only)

POMWIG+Exclusive vs Data : 3rd Jet Veto + Jet1&2 η cut (B)

POMWIG+ExHuME



POMWIG+ExclDPE

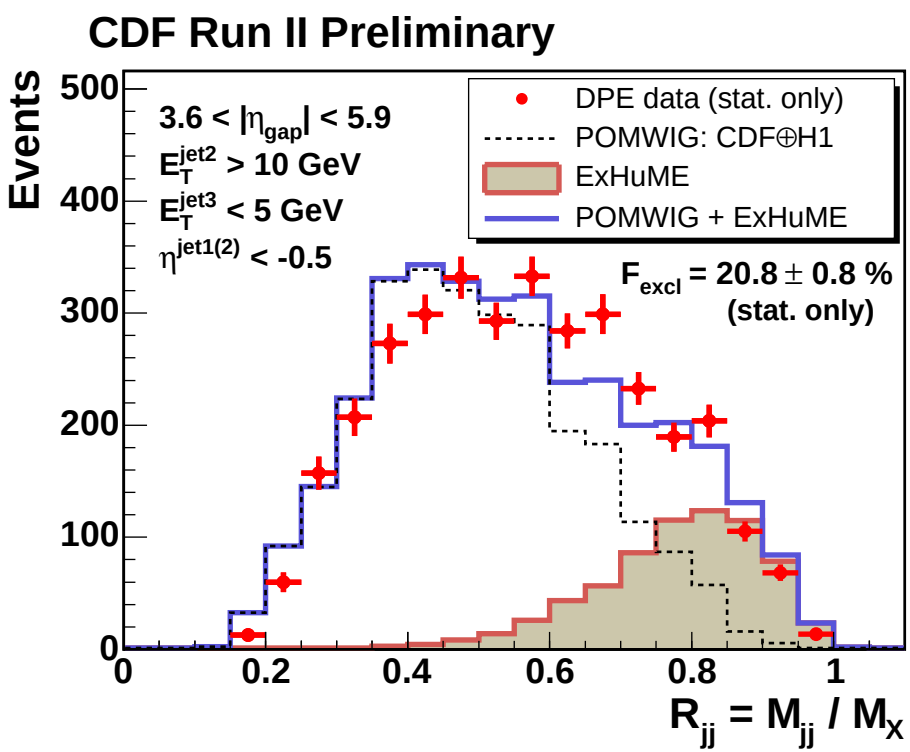


- Normalizations fixed to the ones obtained in fits to 3rd jet veto only case
- Distributions scaled using actual #events falling into (B)

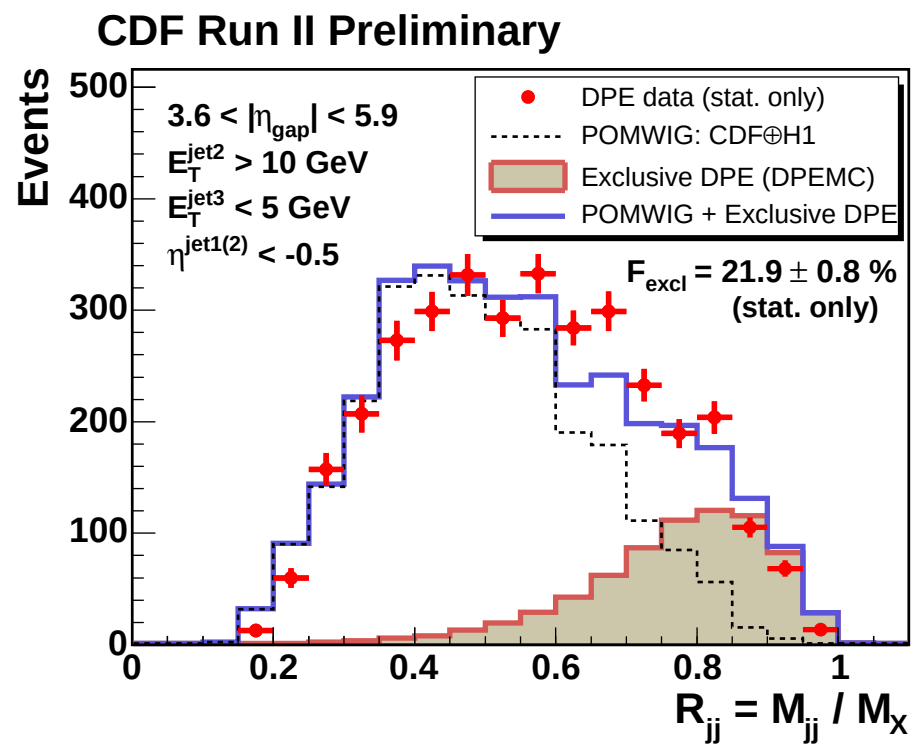
➔ No excess is present in the region where exclusive signal is not expected

POMWIG+Exclusive vs Data : 3rd Jet Veto + Jet1&2 η cut (A)

POMWIG+ExHuME



POMWIG+ExclDPE



- Normalizations fixed to the ones obtained in fits to 3rd jet veto only case
- Distributions scaled using actual #events falling into (A)

➔ Excess events behave consistently with exclusive signal in terms of both shape and normalization

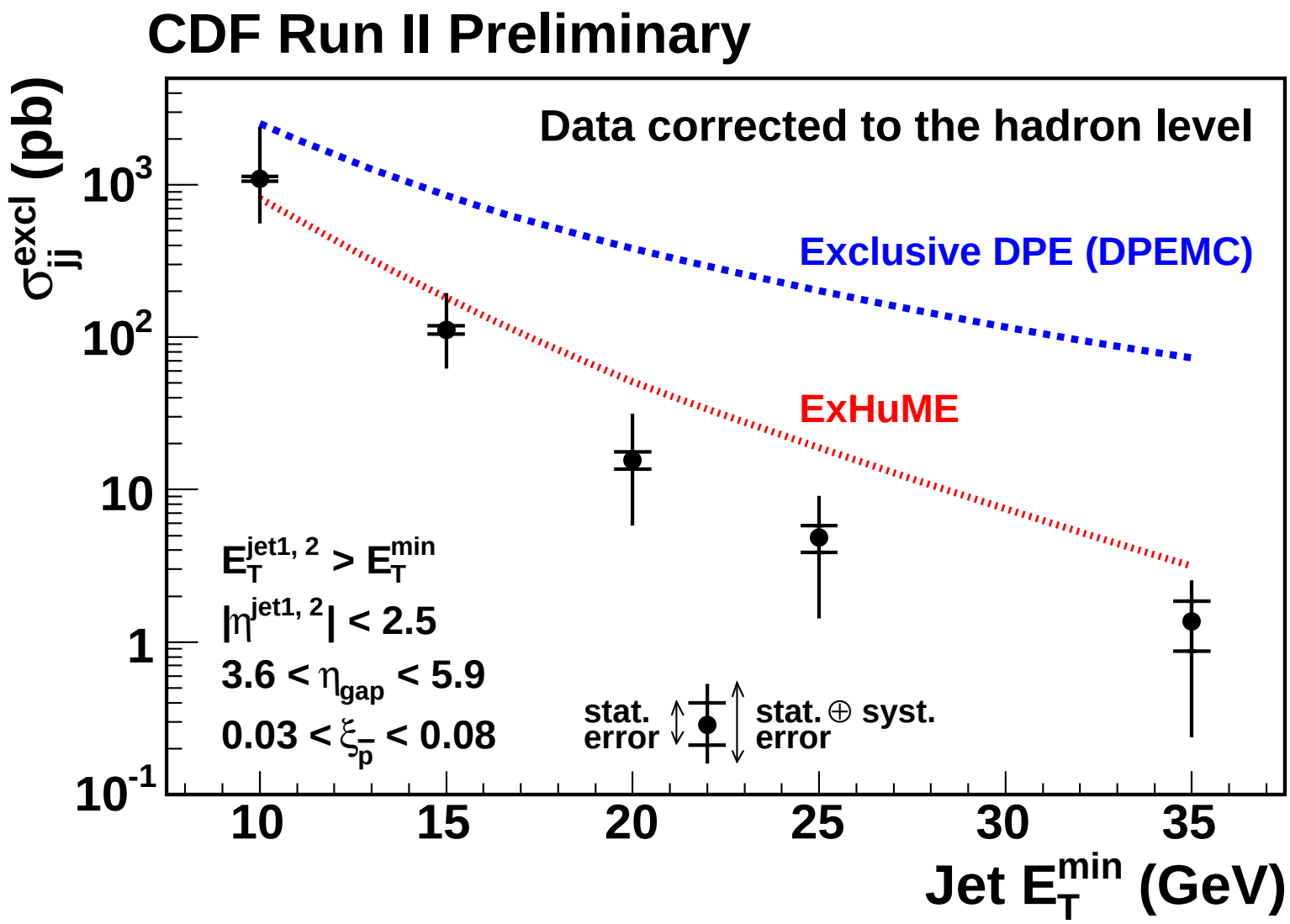
CDF Run II Preliminary

$E_T^{jet1,2} > E_T^{min}$ GeV, $|\eta^{jet1,2}| < 2.5$, $3.6 < \eta_{gap} < 5.9$, $0.03 < \xi_{\bar{p}} < 0.08$, all $t_{\bar{p}}$

E_T^{min}	σincl	σexcl	σexcl/σincl
10	$14.5 \pm 0.1^{+9.8}_{-6.9}$ nb	$1.10 \pm 0.04^{+1.29}_{-0.54}$ nb	$7.6 \pm 0.3^{+2.9}_{-1.2}$ %
15	$1.43 \pm 0.02^{+0.89}_{-0.62}$ nb	$112 \pm 7^{+84}_{-49}$ pb	$7.8 \pm 0.5^{+3.2}_{-1.2}$ %
20	$267 \pm 6^{+166}_{-110}$ pb	$15.7 \pm 2.0^{+15.5}_{-9.6}$ pb	$5.9 \pm 0.8^{+3.0}_{-2.1}$ %
25	$76.0 \pm 2.7^{+37.0}_{-28.6}$ pb	$4.84 \pm 0.96^{+4.11}_{-3.28}$ pb	$6.4 \pm 1.3^{+4.6}_{-3.9}$ %
35	$14.6 \pm 1.2^{+5.3}_{-5.2}$ pb	$1.37 \pm 0.49^{+1.08}_{-1.01}$ pb	$9.3 \pm 3.4^{+6.9}_{-6.6}$ %

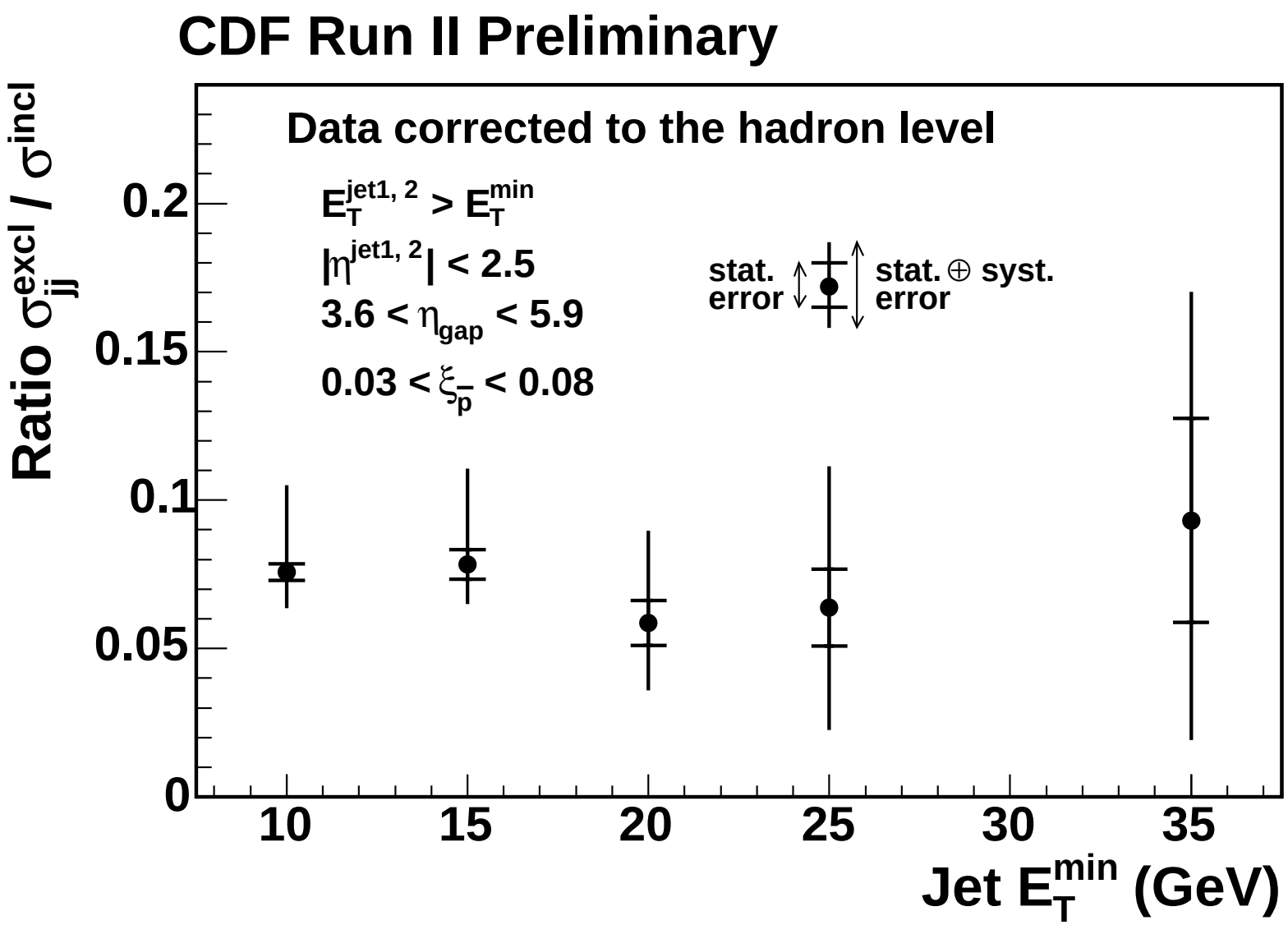
(stat. + syst. errors)

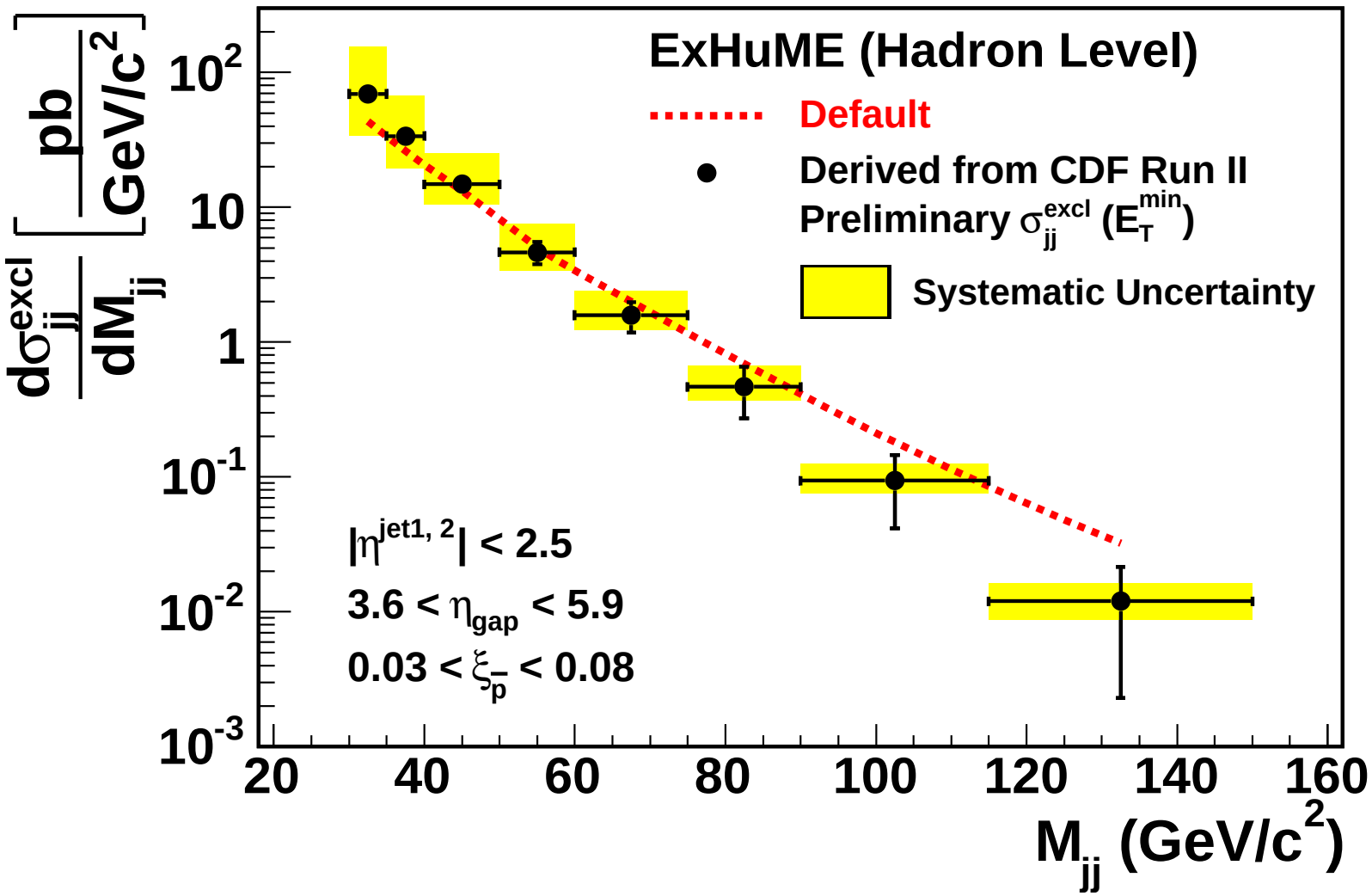
Exclusive Dijet Cross Section vs E_T^{min}



Data prefer ExHuME to Exclusive DPE in DPEMC

Exclusive/Inclusive Ratio vs E_T^{min}



Exclusive Dijet Cross Section vs M_{jj}

This is not CDF Result