

Q^2 acceptance

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CEA Saclay

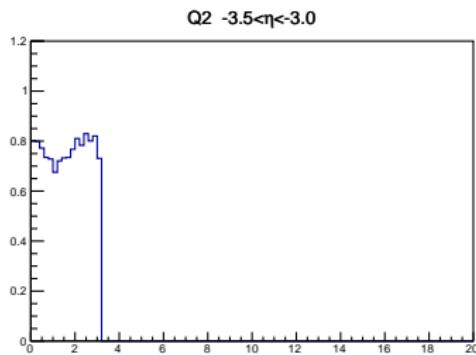
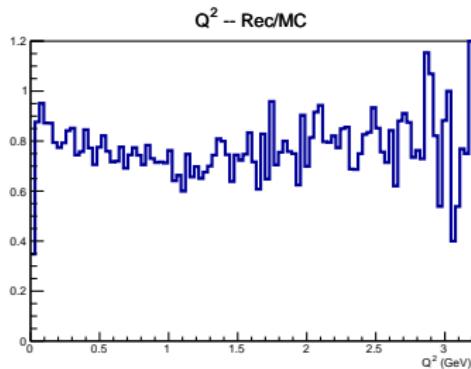
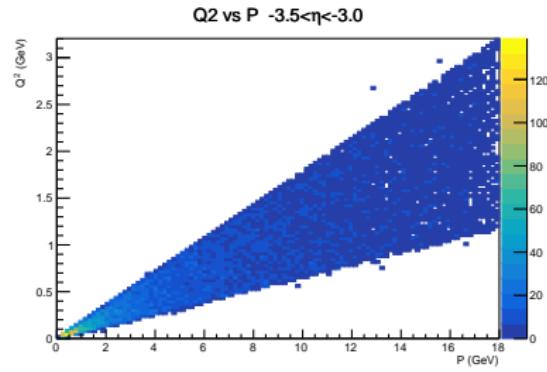
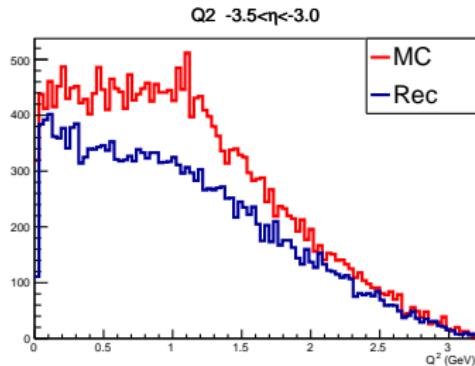
February 2, 2023

Setup

- ▶ Single electron simulation (gun)
- ▶ **Flat in theta and momentum**
- ▶ $Q^2 = -(beam - e')^2$
- ▶ $beam = (0, 0, -E, E)$, $E = 18\text{GeV}$ (other energies in backups)
- ▶ Three regions considered, backward, central, forward. Three bins in rapidity for each region.

backward – $-3.5 < \eta < -3$

Beam: 18GeV; Single electron gun, flat in theta and momentum

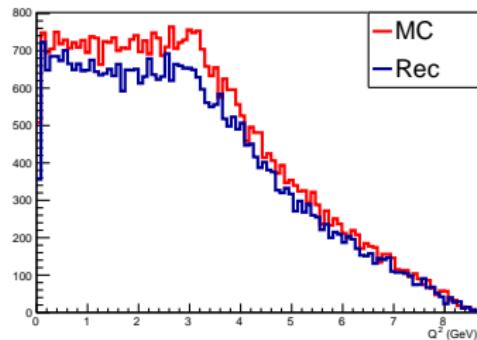


backward –

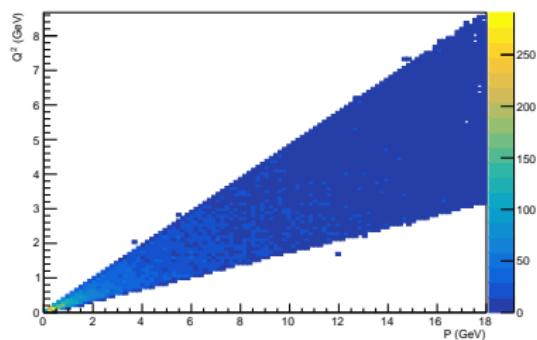
$-3 < \eta < -2.5$

Beam: 18GeV; Single electron gun, flat in theta and momentum

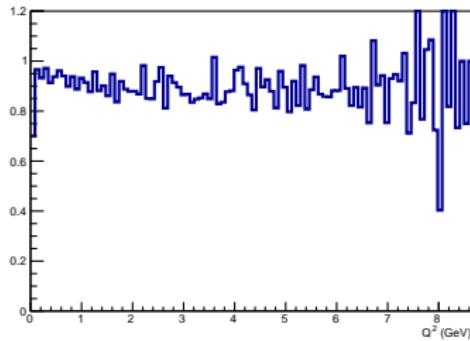
Q2 $-3.0 < \eta < -2.5$



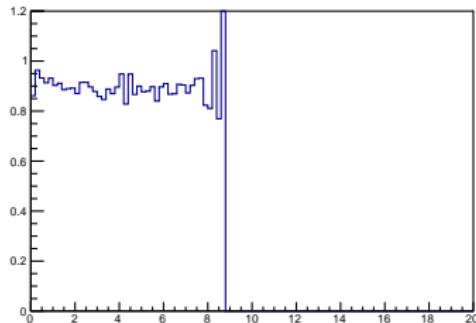
Q2 vs P $-3.0 < \eta < -2.5$



$Q^2 - \text{Rec}/\text{MC}$



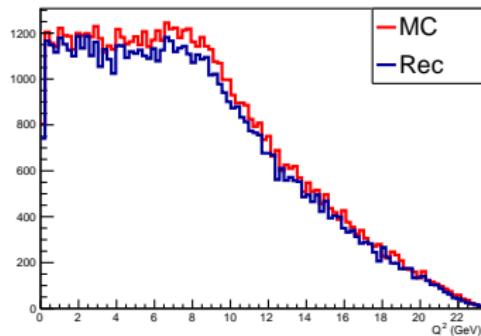
Q2 $-3.0 < \eta < -2.5$



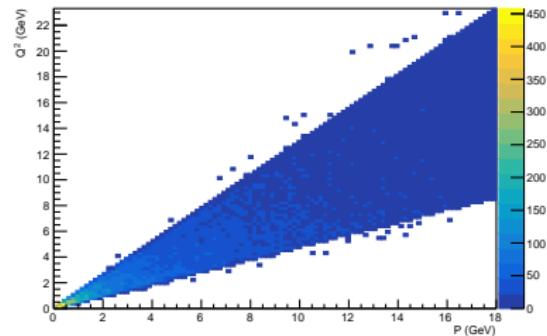
backward – $-2.5 < \eta < -2$

Beam: 18GeV; Single electron gun, flat in theta and momentum

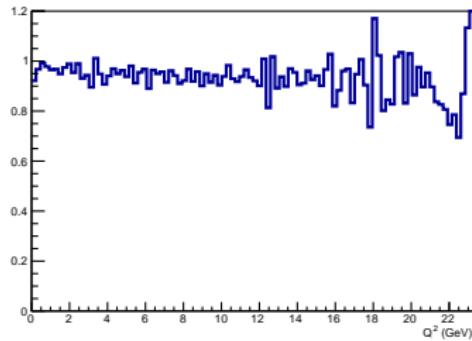
Q2 $-2.5 < \eta < 2.0$



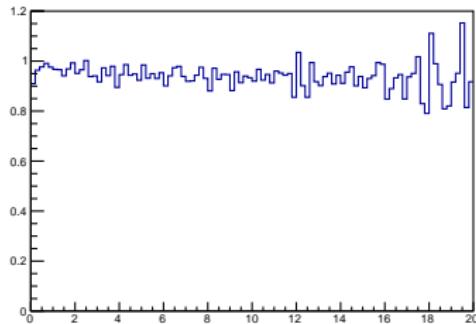
Q2 vs P $-2.5 < \eta < 2.0$



$Q^2 - \text{Rec/MC}$



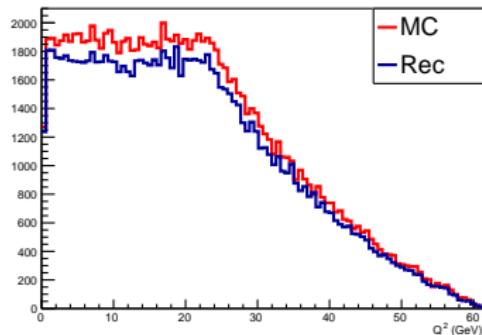
Q2 $-2.5 < \eta < 2.0$



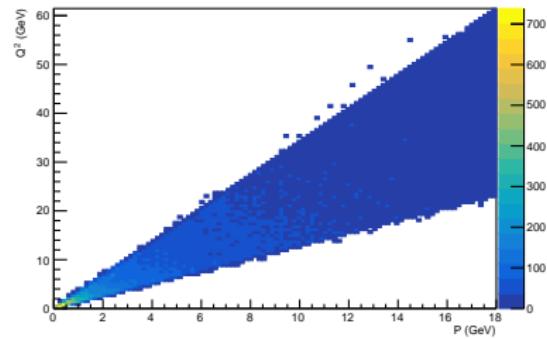
backward – $-2 < \eta < -1.5$

Beam: 18GeV; Single electron gun, flat in theta and momentum

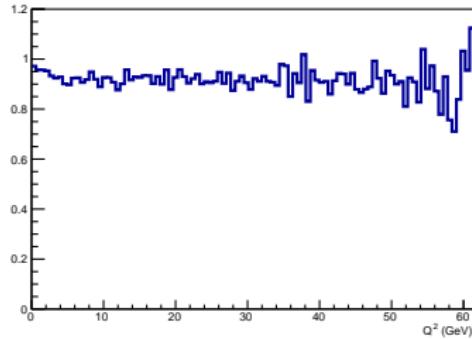
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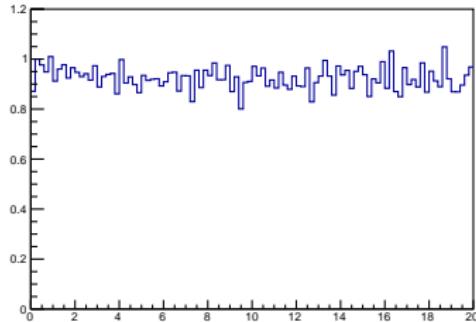
Q2 vs P $-2.0 < \eta < -1.5$



$Q^2 - \text{Rec/MC}$



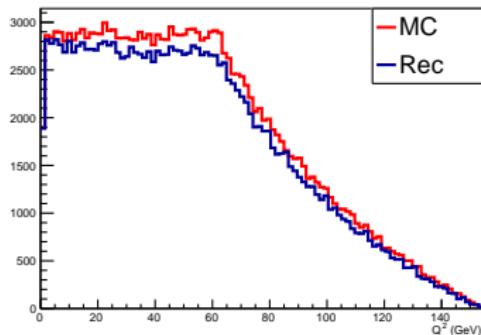
Q2 $-2.0 < \eta < -1.5$



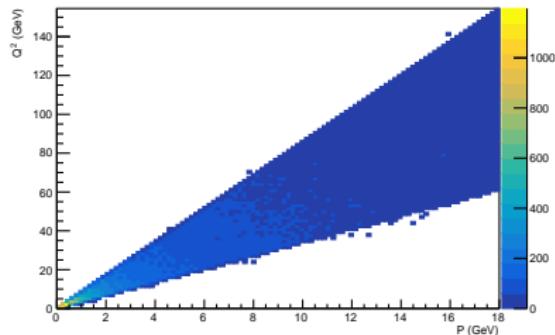
backward – $-1.5 < \eta < -1$

Beam: 18GeV; Single electron gun, flat in theta and momentum

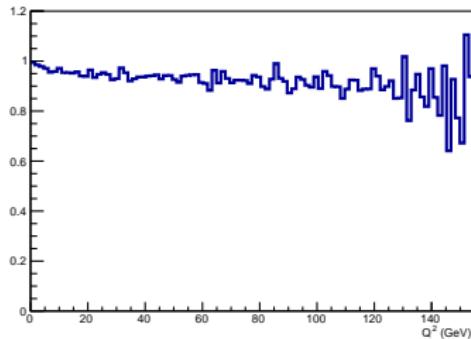
Q2 $-1.5 < \eta < -1.0$



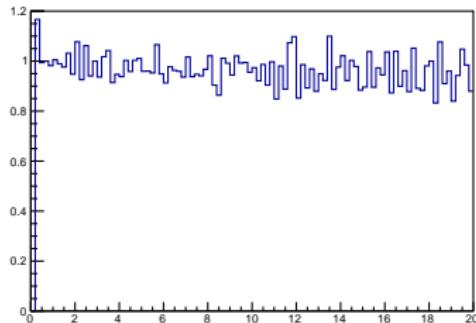
Q2 vs P $-1.5 < \eta < -1.0$



$Q^2 - \text{Rec/MC}$

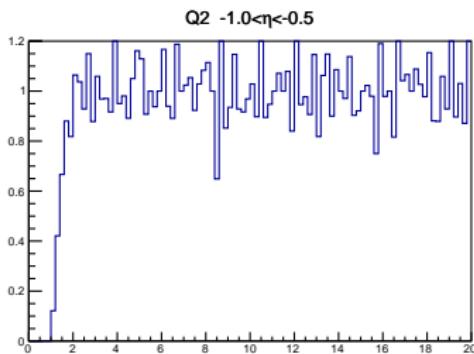
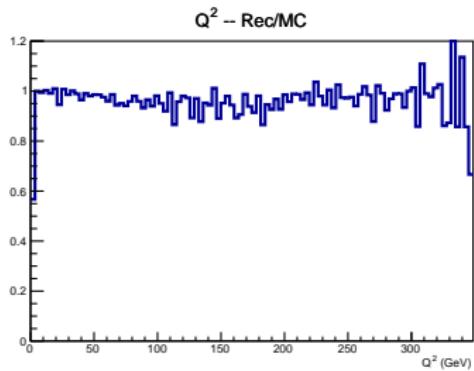
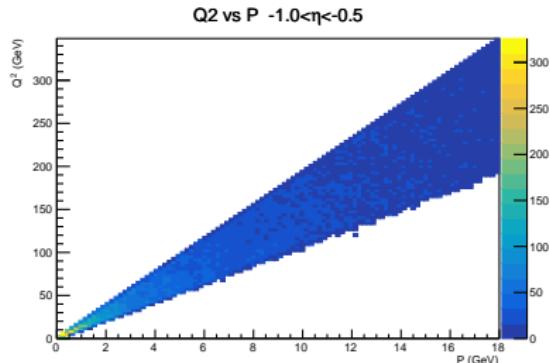
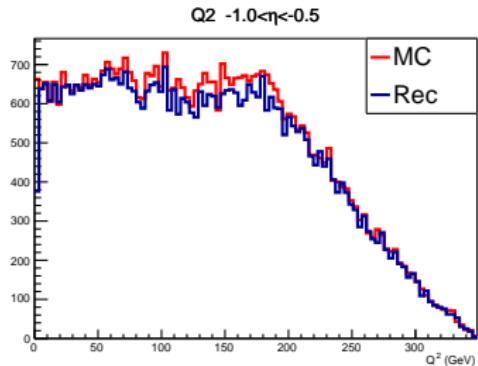


Q2 $-1.5 < \eta < -1.0$



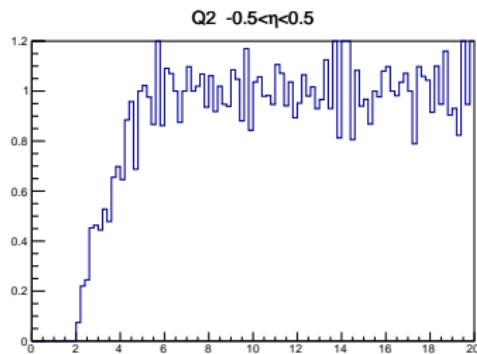
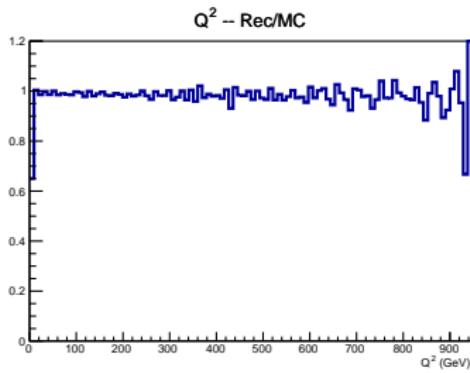
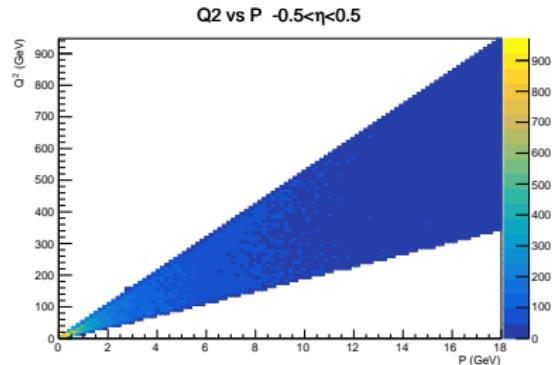
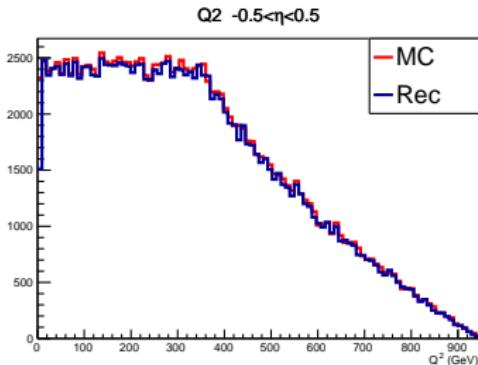
central – $-1 < \eta < -0.5$

Beam: 18GeV; Single electron gun, flat in theta and momentum



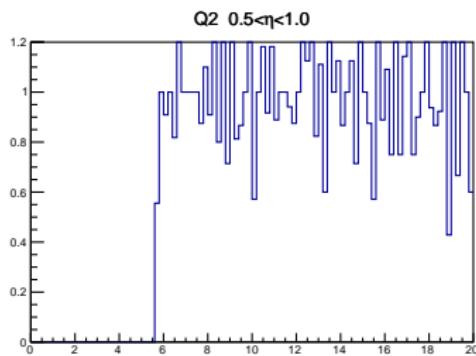
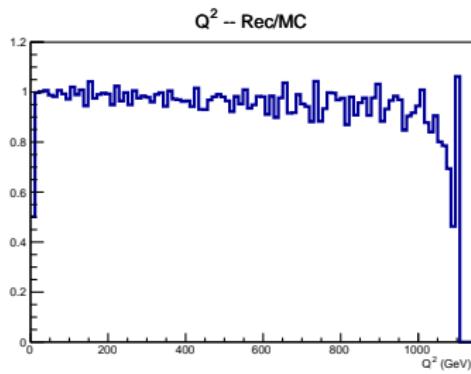
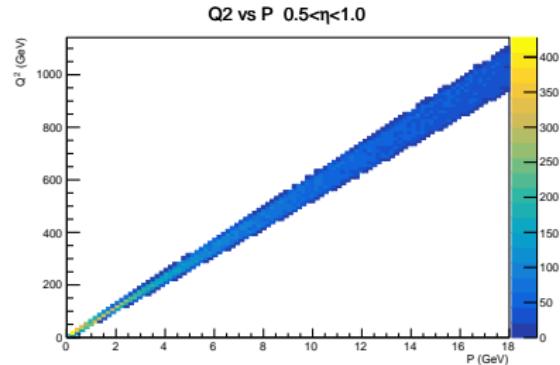
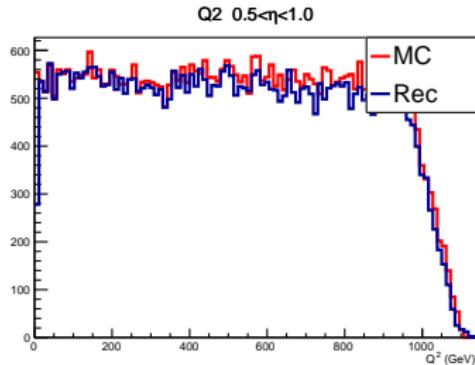
central – $-0.5 < \eta < 0.5$

Beam: 18GeV; Single electron gun, flat in theta and momentum



central – $0.5 < \eta < 1$

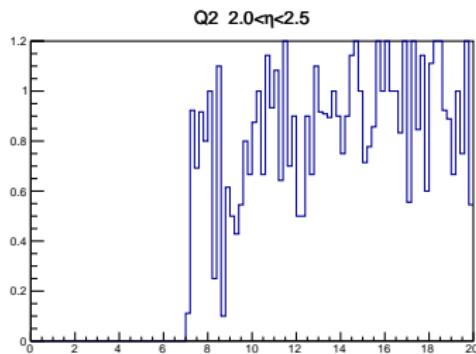
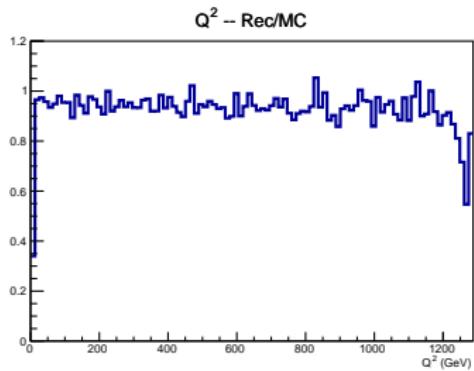
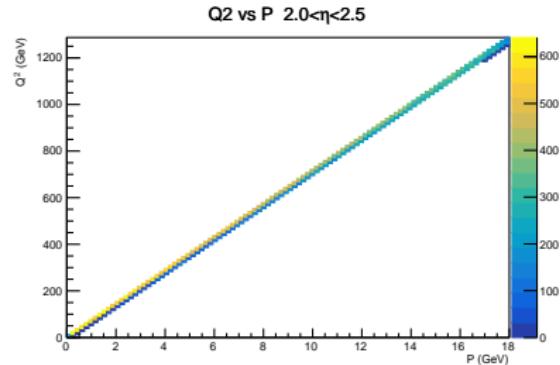
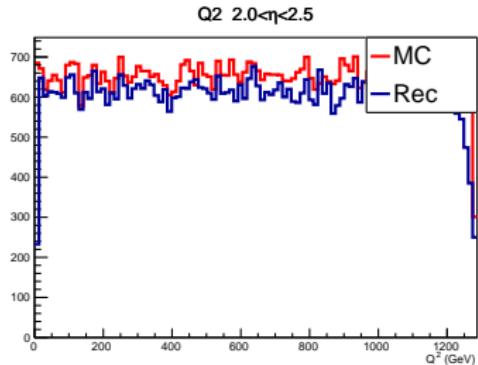
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forward –

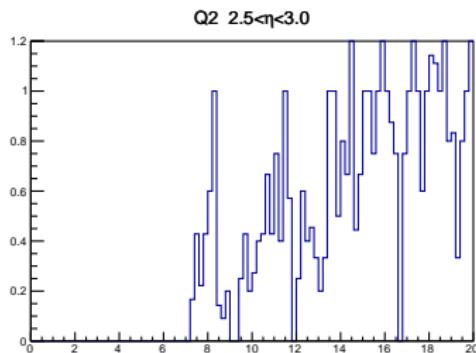
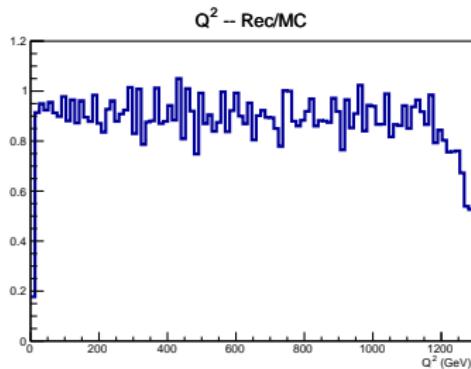
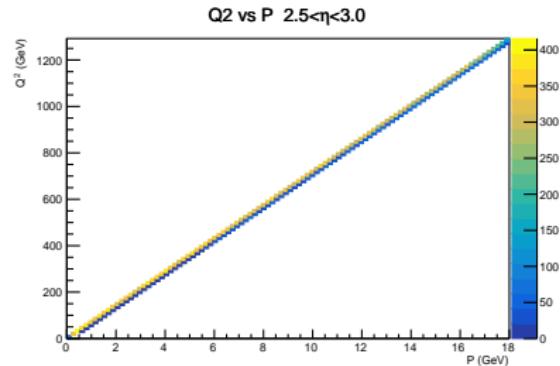
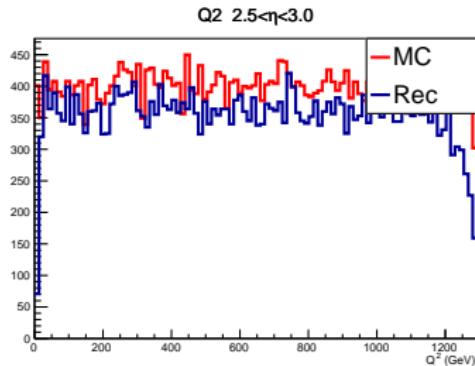
$$2 < \eta < 2.5$$

Beam: 18GeV; Single electron gun, flat in theta and momentum



forward – $2.5 < \eta < 3$

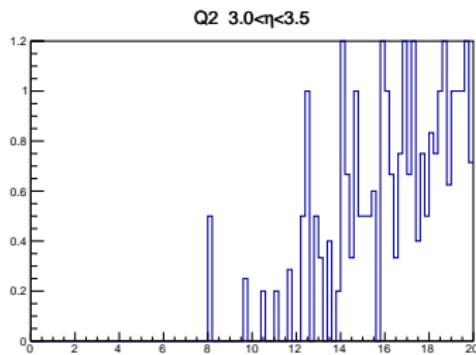
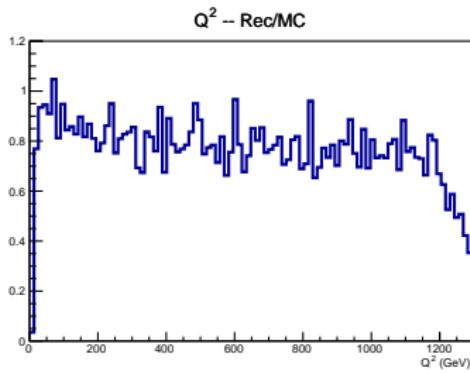
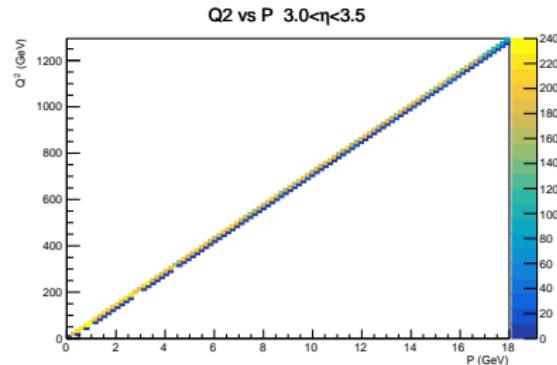
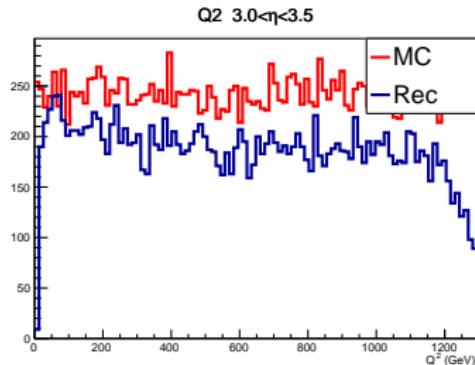
Beam: 18GeV; Single electron gun, flat in theta and momentum



forward –

$$3 < \eta < 3.5$$

Beam: 18GeV; Single electron gun, flat in theta and momentum



Summary

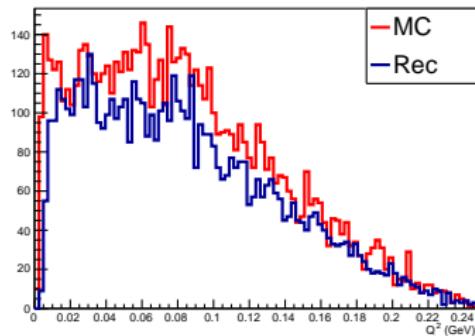
- ▶ Single electron simulation flat in theta and momentum
- ▶ Lower efficiency in the $-3.5 < \eta < -3$ bin.

backup

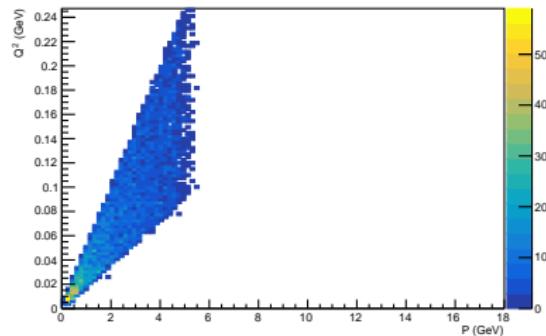
backward – $-3.5 < \eta < -3$

Beam: 18GeV; Single electron gun, flat in theta and momentum

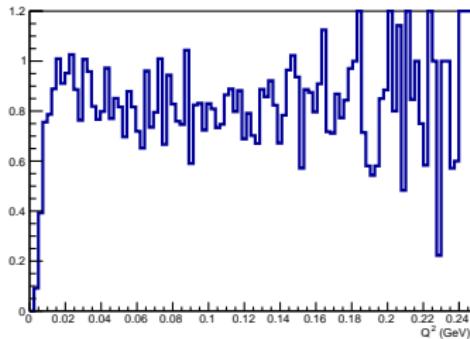
Q2 $-3.5 < \eta < -3.0$



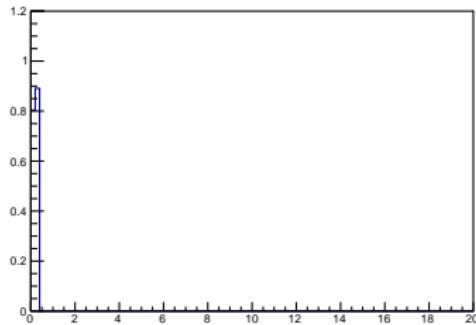
Q2 vs P $-3.5 < \eta < -3.0$



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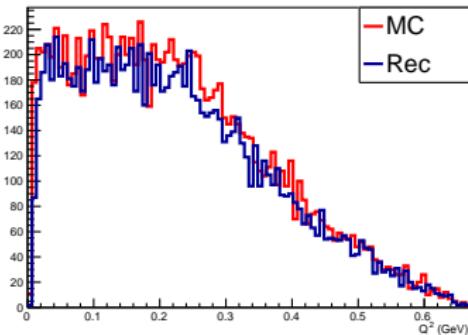
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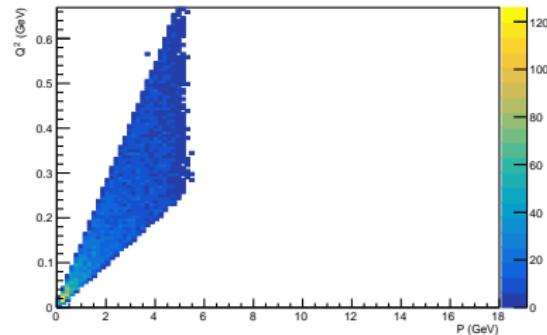
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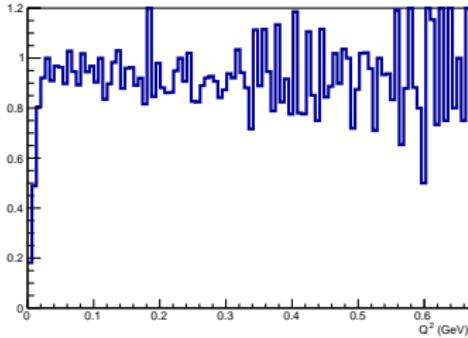
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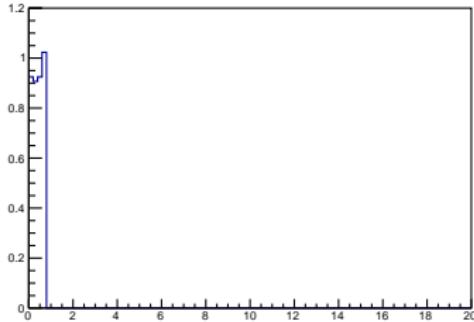
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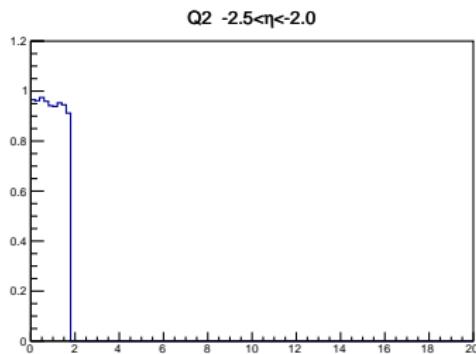
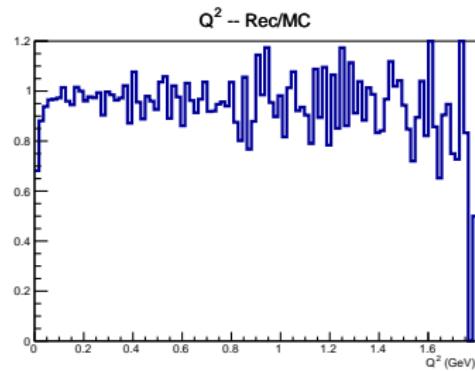
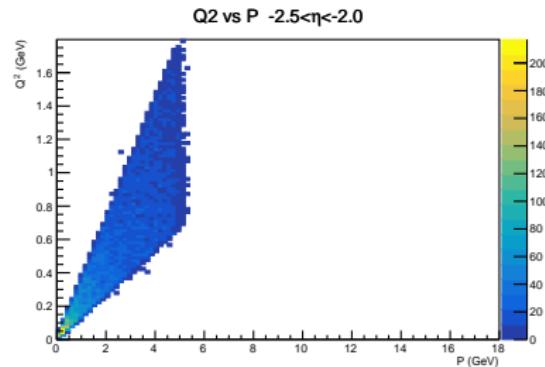
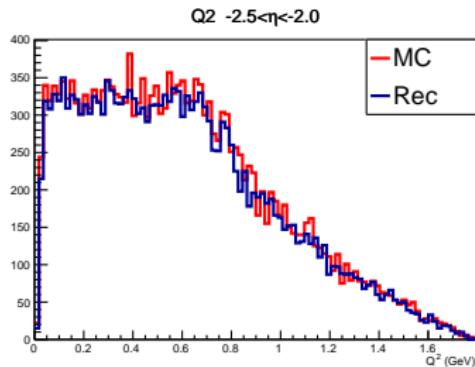


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backward – $-2.5 < \eta < -2$

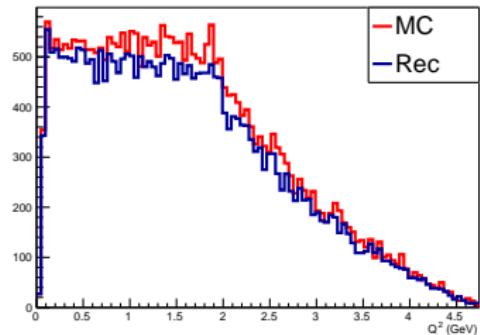
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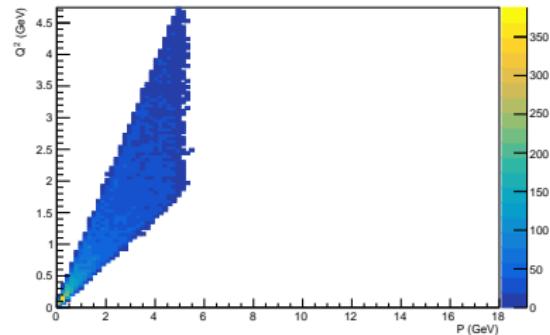
backward – $-2 < \eta < -1.5$

Beam: 18GeV; Single electron gun, flat in theta and momentum

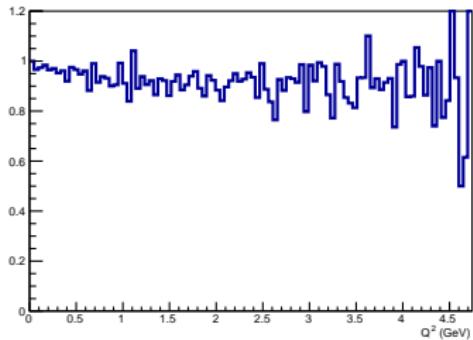
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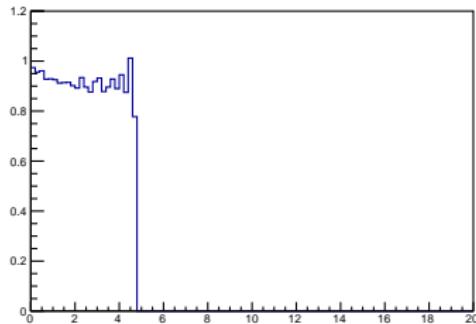
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