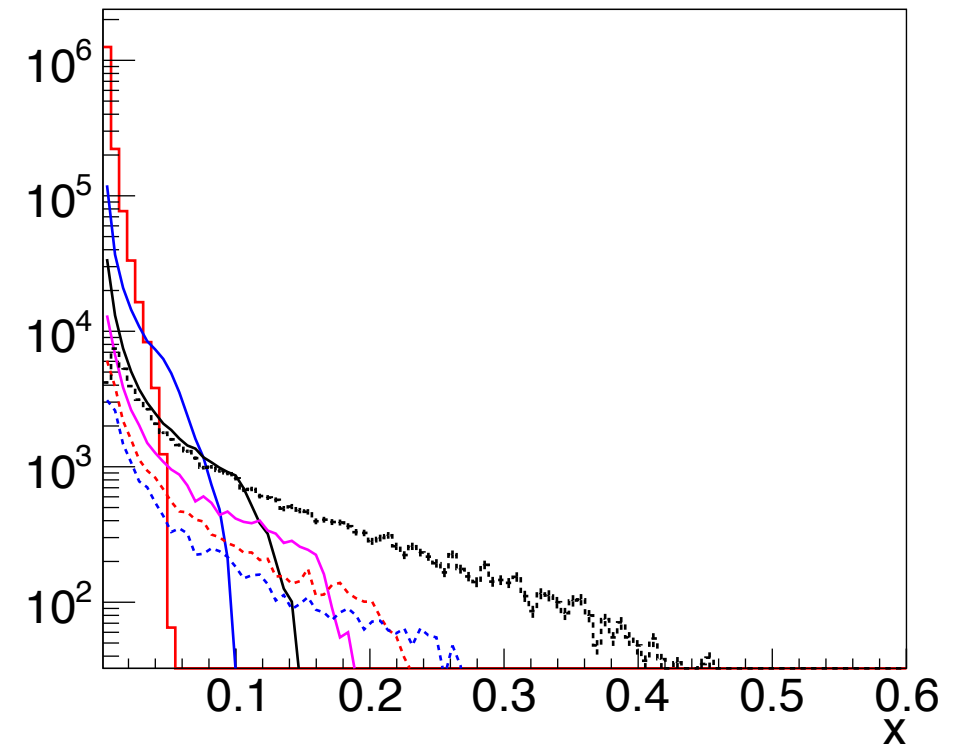
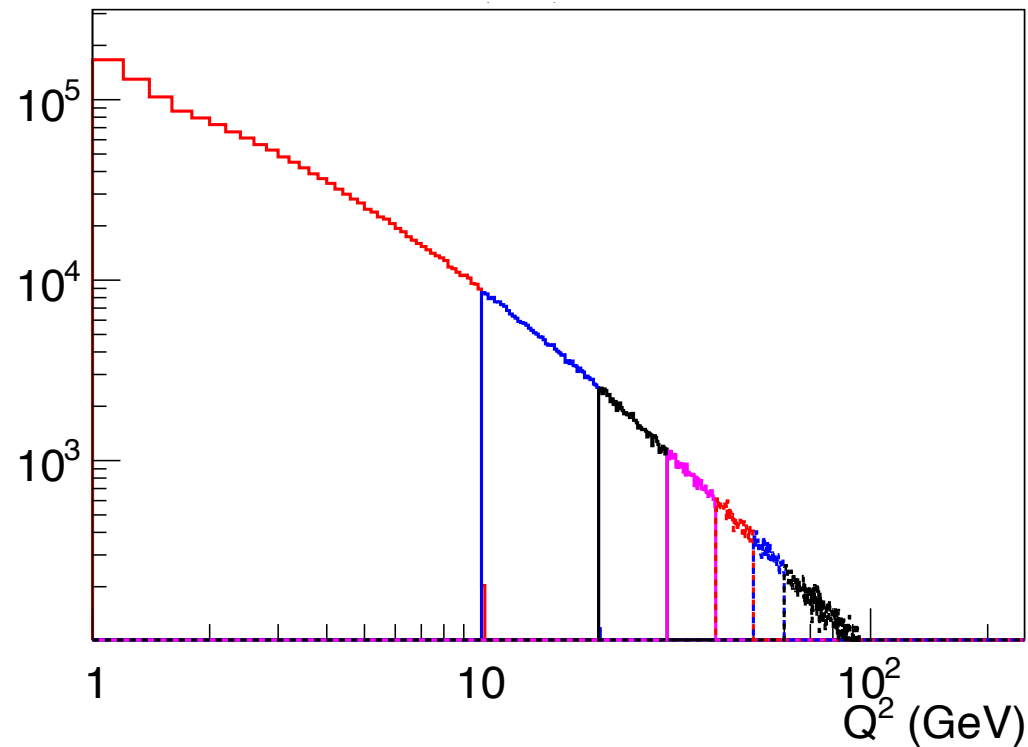


Goal

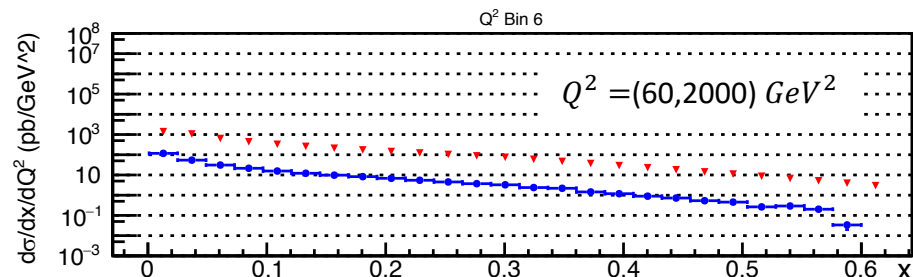
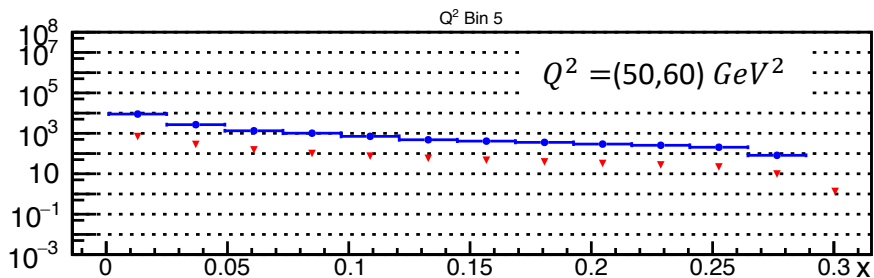
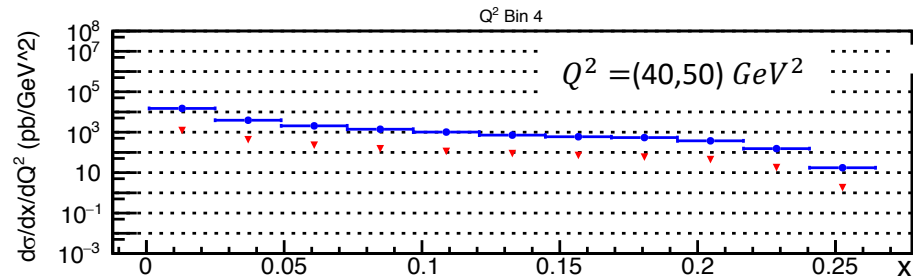
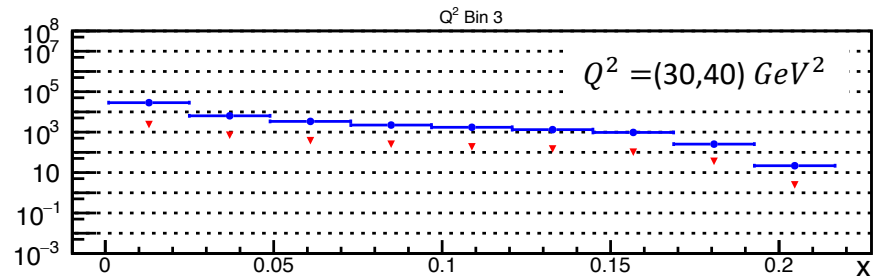
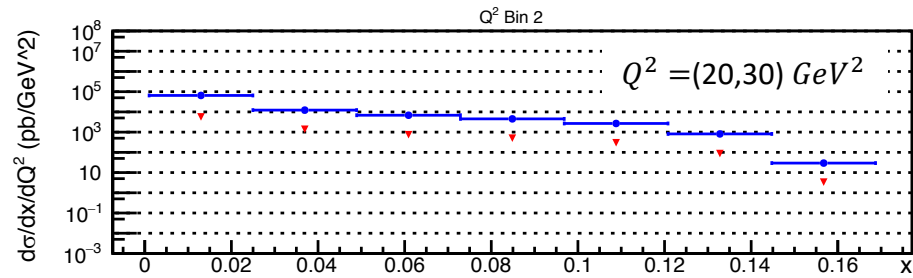
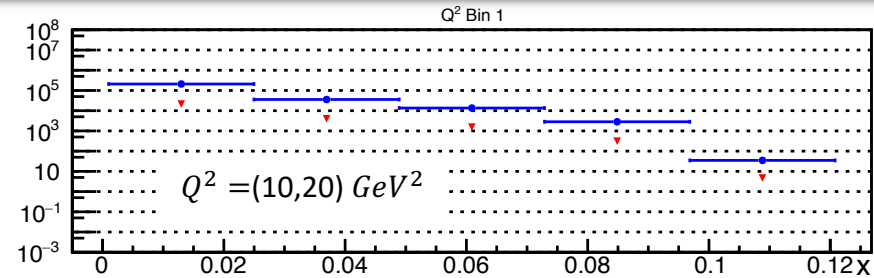
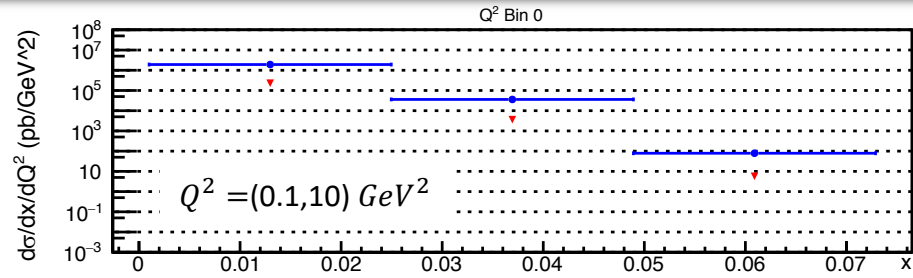
1. Use MC generator to simulate collisions
 - DJANGHO (no radiative corrections) located on BNL EIC machine
 - </afs/rhic.bnl.gov/eic/restructured/env/dev/bin/djangoh>
2. Generate theory curves from PDFs
 - Use JAMEIC PDFs to generate unpolarized cross sections
 - Code from Nobuo: <https://github.com/JeffersonLab/txgrids>
3. Reweight MC simulated event distributions with theory values

MC Generation

- DJANGHO MC Generation
 - Neutral current
 - 18×275 ep ($\sqrt{s} = 140.7$ GeV)
 - 1 Million events
 - No radiative corrections
 - Cuts: $W^2 > 10$ GeV², $0.01 < y < 0.95$, $Q^2 > 1$, $id = 11$
 - 7 Q^2 bins, 25 x bins: **need to optimize binning**



Cross Section Comparison



● DJANGHO
▼ Theory PDF

$$\circ \frac{d\sigma}{dx dQ^2} = \frac{\text{counts}(x, Q^2)}{dx dQ^2} \times \left(\frac{\sigma_{tot}}{\text{events}} \right)$$

○ Total Cross sections

- JAMEIC PDF: $3.592 \times 10^5 pb$
- DJANGHO: $2.612 \times 10^5 pb$
 - DJANGHO with rad. cor: $3.090 \times 10^5 pb$

DJANGO Input Settings (Selected)

GSW-PARAM

2 0 3 1 0 0 2 1 1 1 1

INT-OPT-NC

1 0 0 0 0 0 0 0 0 0

SAM-OPT-NC

1 0 0 0 0 0 0 0 0 0

STRUCTFUNC

0 2 10150

POLPDF

0

LHAPATH

/eic/data/LHAPDF-5.9.1/lhapdf/PDFsets

FLONG