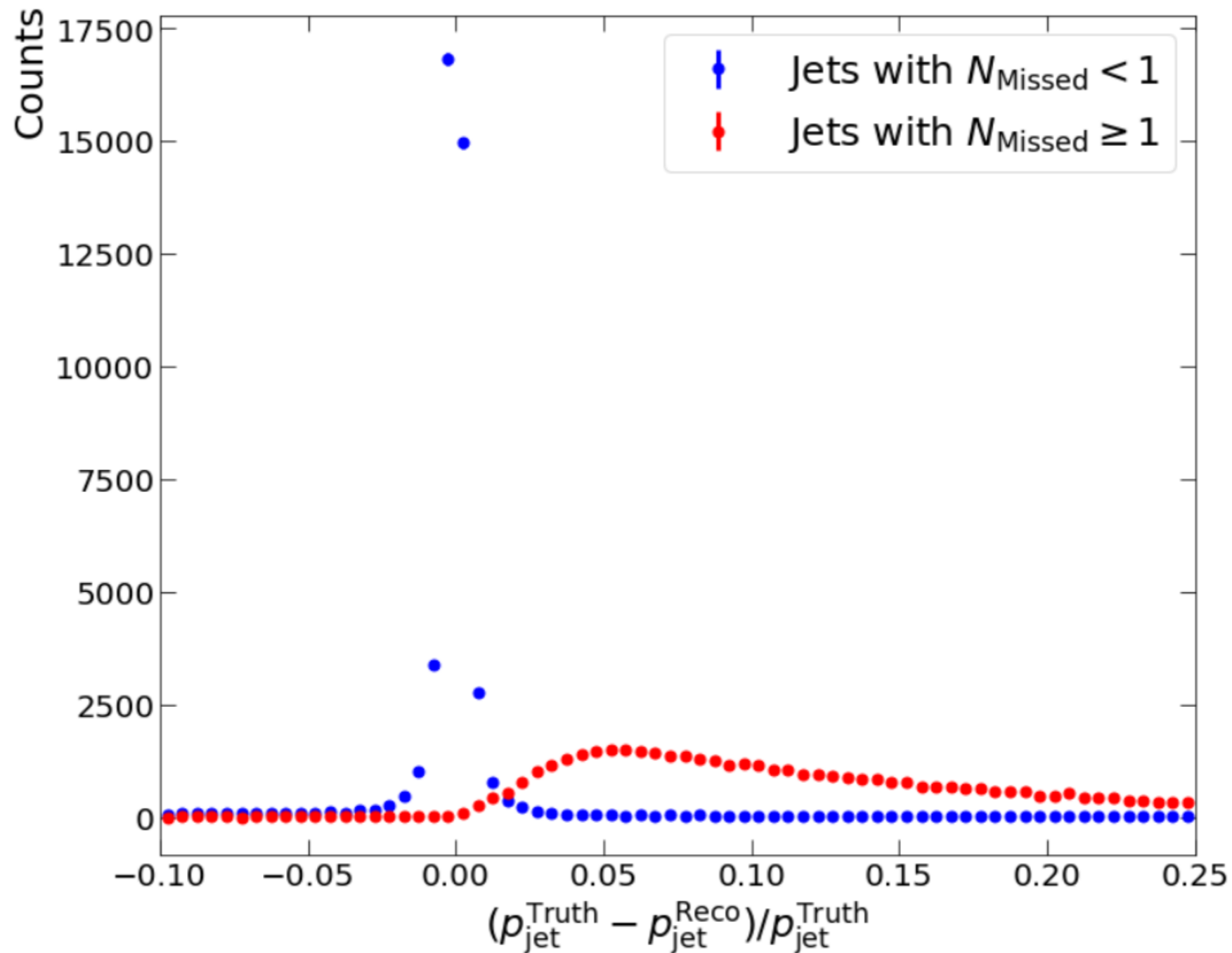


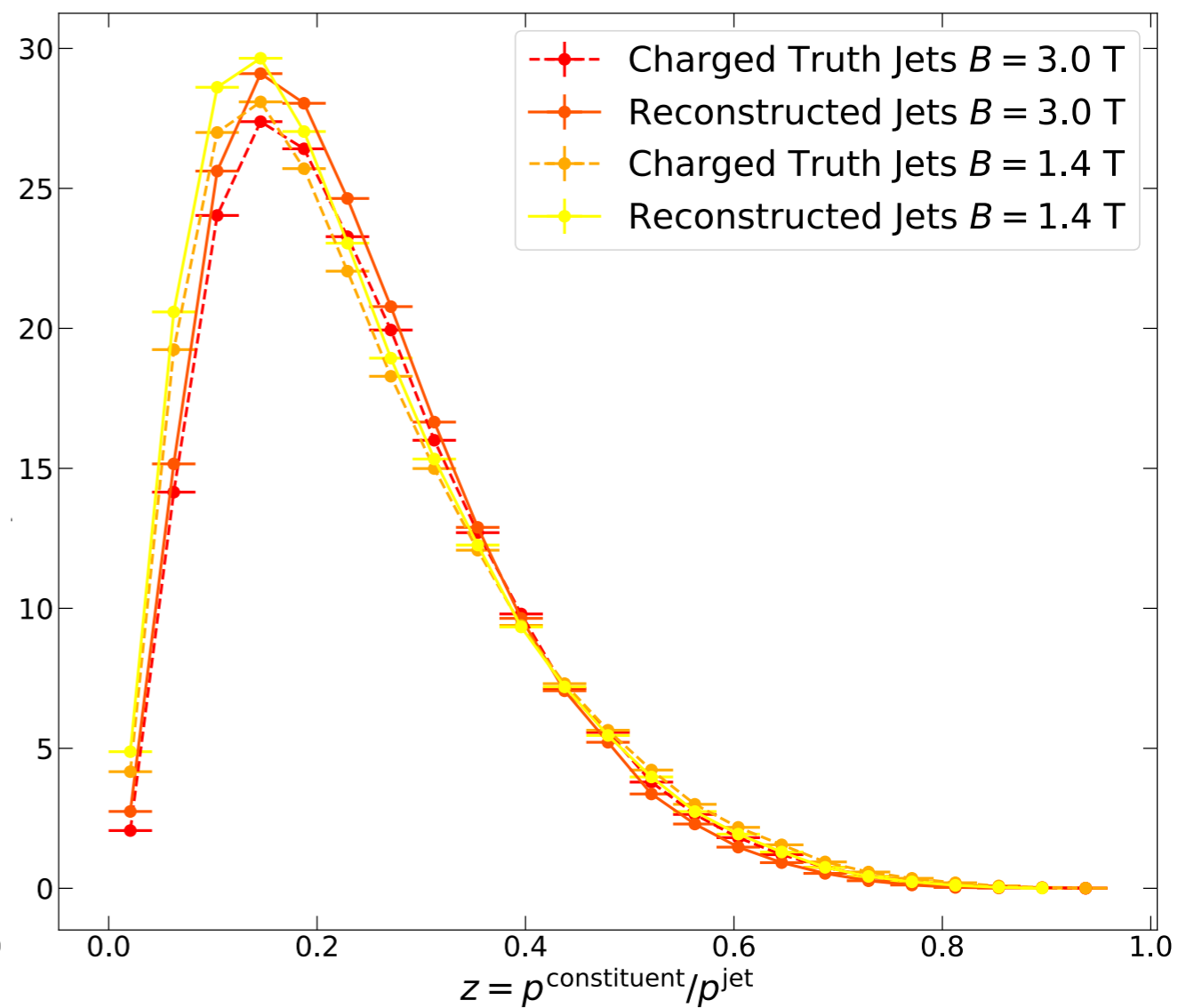
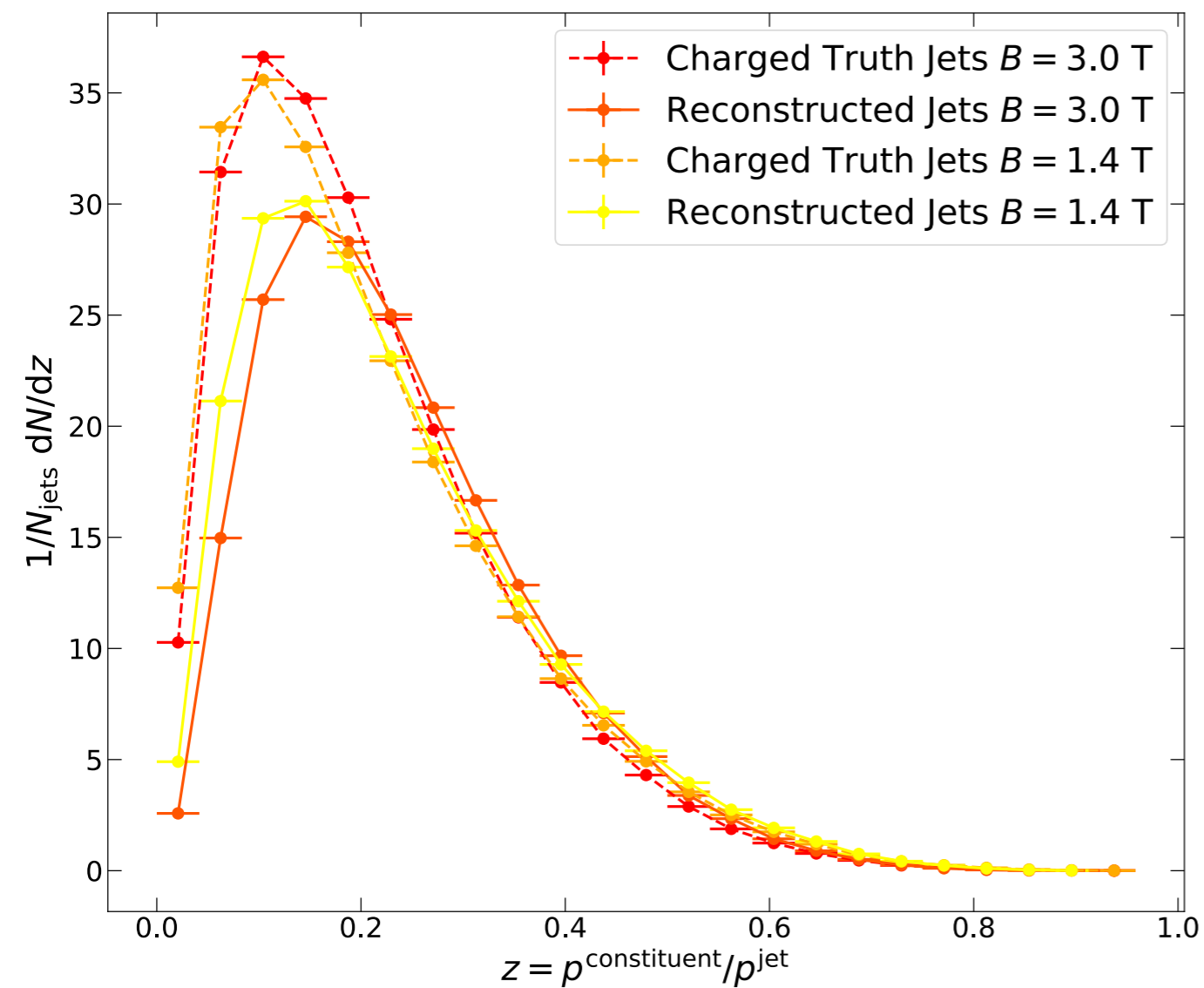
# EIC Jet Plots without Constituent Cut

Motivation for constituent cut in the first place:



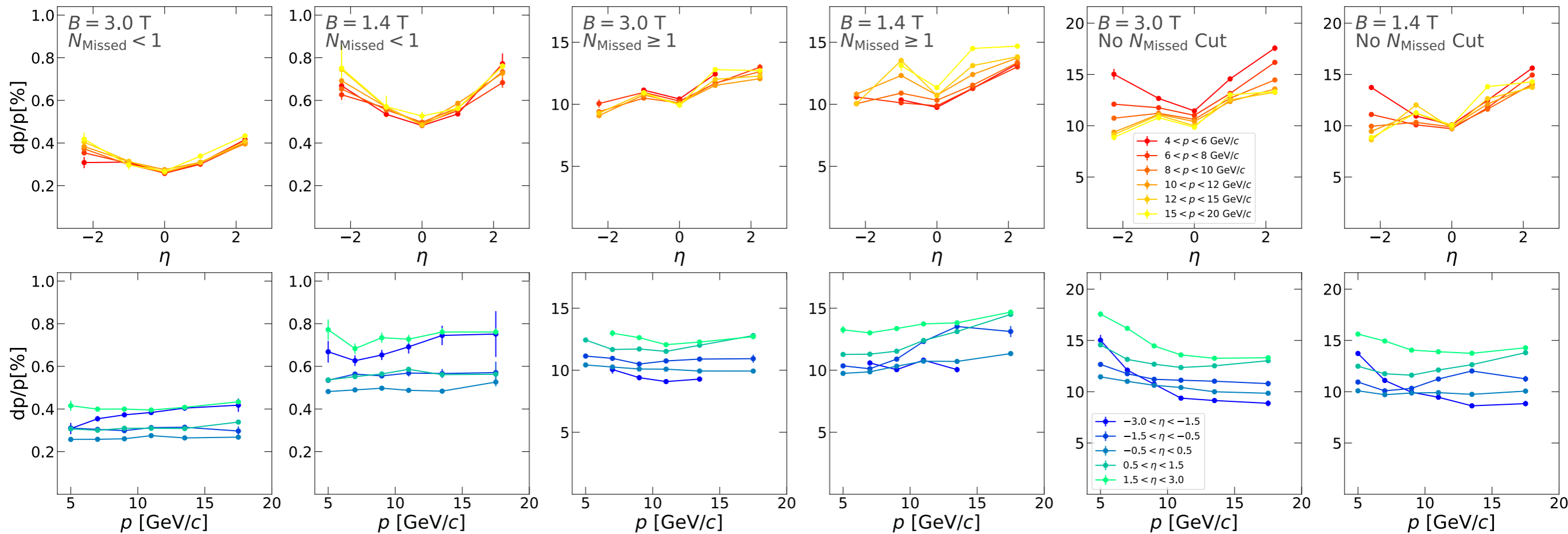
# No Constituent Cut Applied

# Jets with $N_{\text{Missed}} < 1$



# Momentum Resolution ( $\sigma_p$ or StdDev)

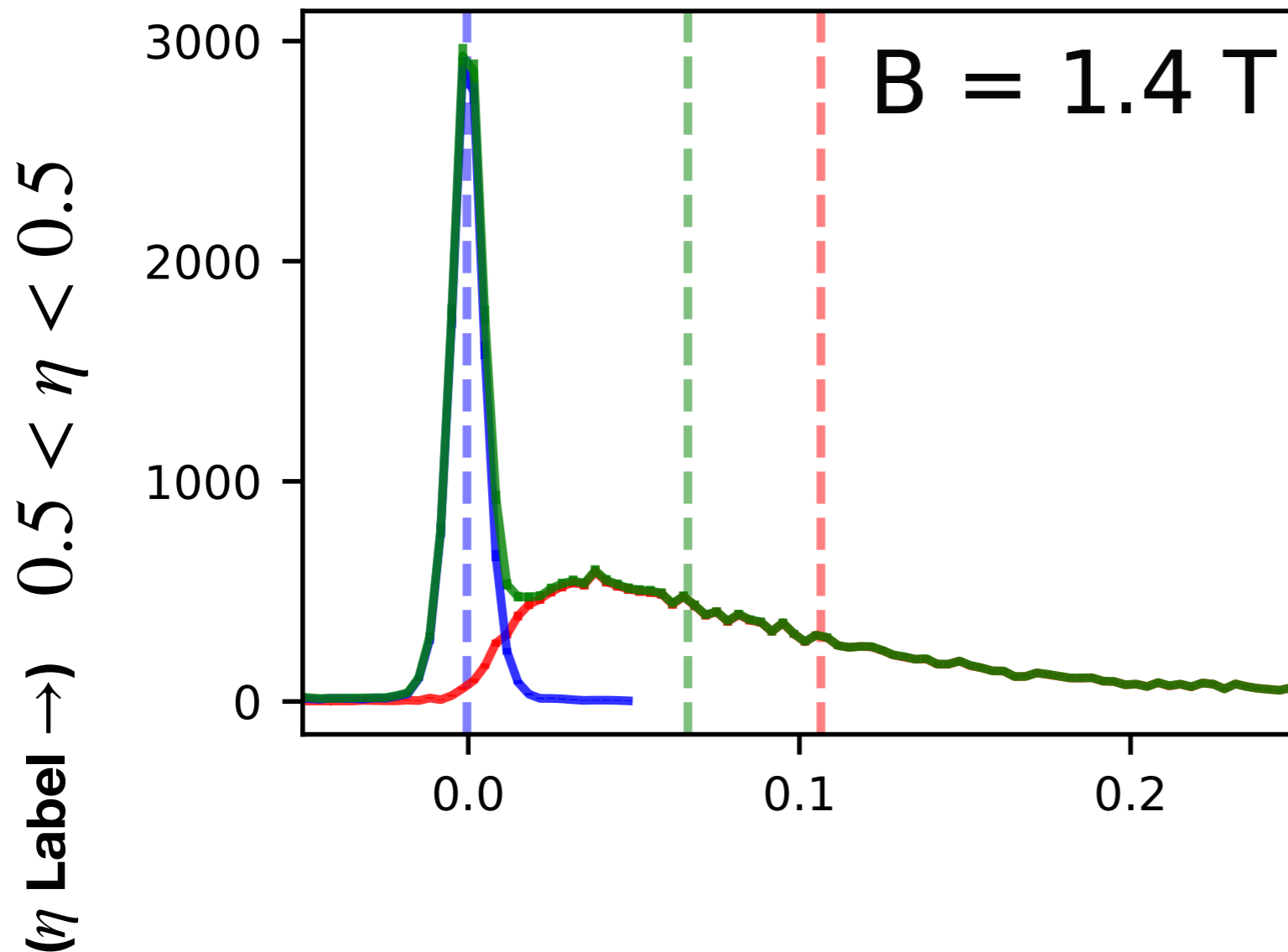
$$\sigma = \sqrt{\frac{\sum (X - \mu)^2}{N}}$$



Interesting that  $N_{\text{Missed}} \geq 1$  selection has better momentum resolution than No\_Cut

# Example of Distribution

$6 < p < 8 \text{ GeV}/c$  ( $\leftarrow$  Momentum Label)



$$N_{\text{Missed}} < 1$$

$$N_{\text{Missed}} \geq 1$$

No  $N_{\text{Missed}}$  Cut

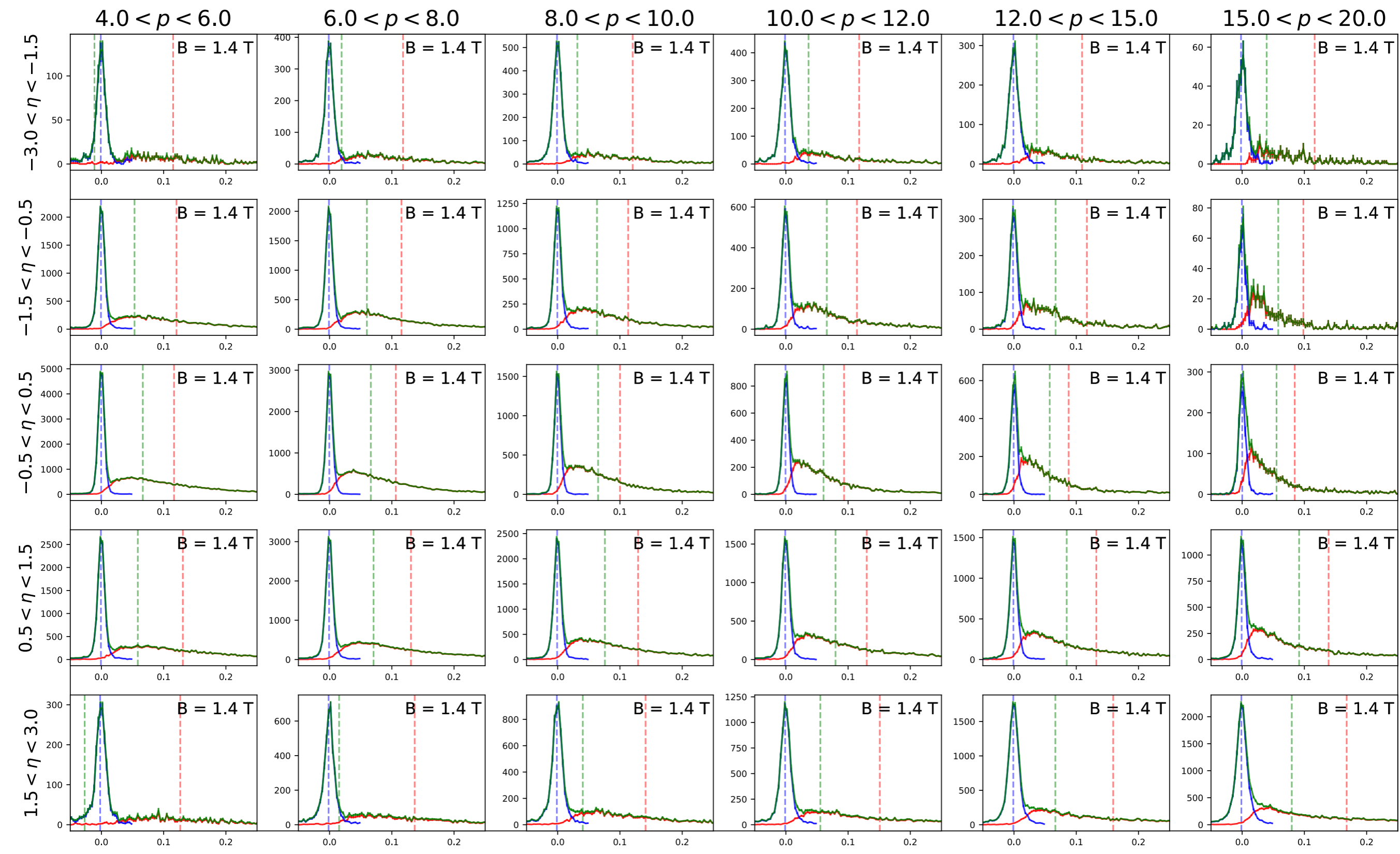
$$\sigma = \sqrt{\frac{\sum (X - \mu)^2}{N}}$$

- **Y-Axis:** Simply the counts (histogram)
- **X-axis:**  $dp/p$  (%), given in title
- **Dashed Lines:** Mean of distribution

$N_{\text{Missed}} < 1$   $N_{\text{Missed}} \geq 1$  No  $N_{\text{Missed}}$  Cut

dp/p[%]

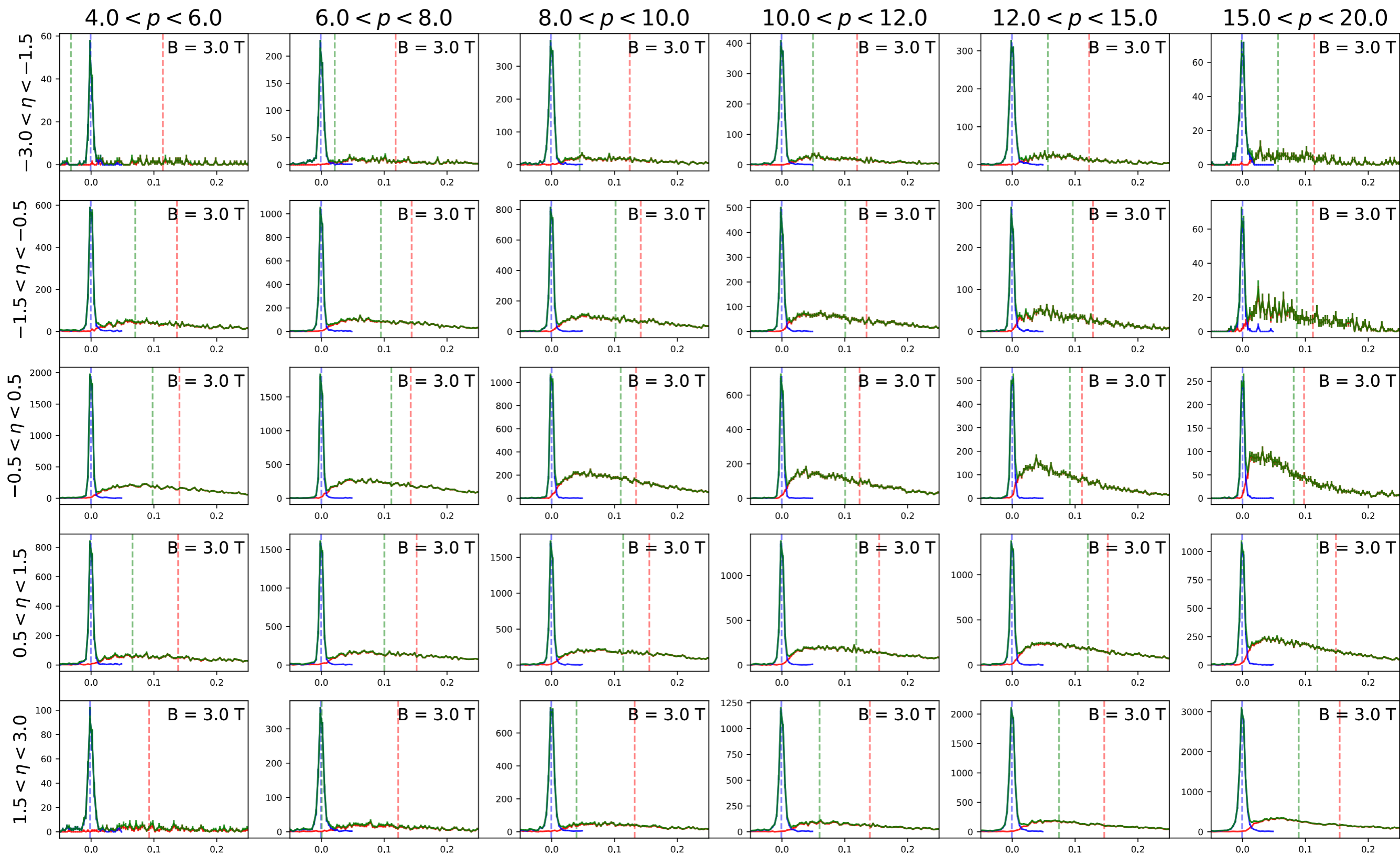
B = 1.4 T



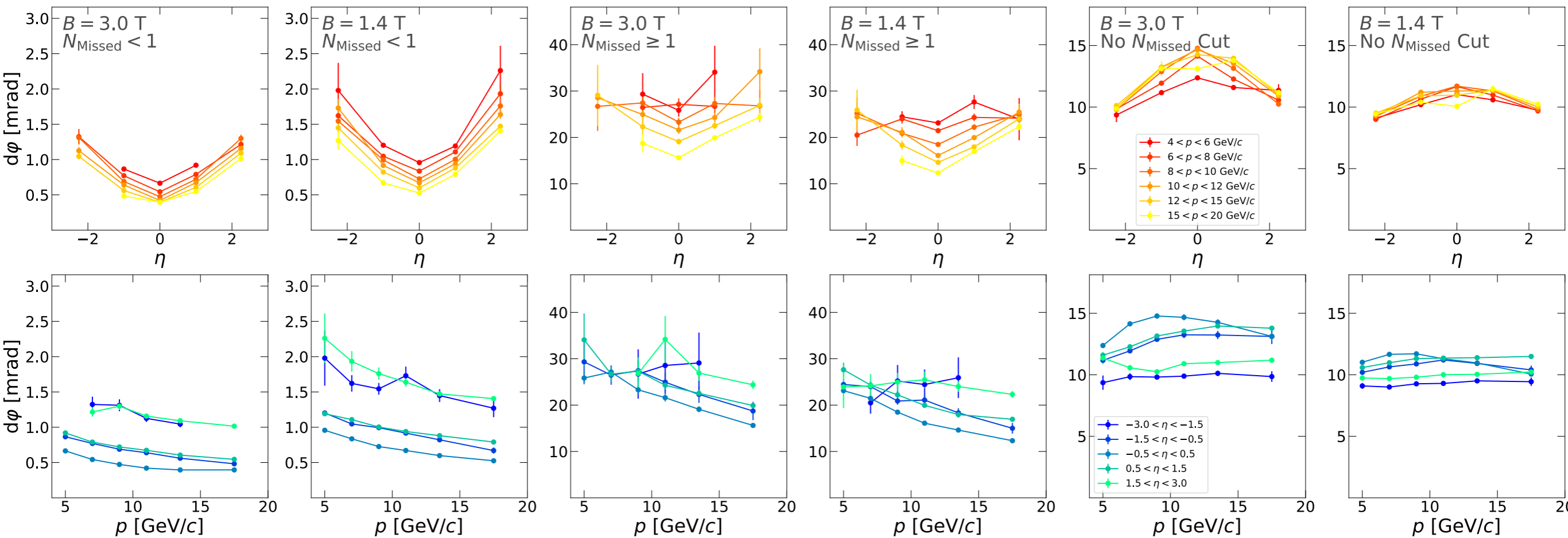
$N_{\text{Missed}} < 1$   $N_{\text{Missed}} \geq 1$  No  $N_{\text{Missed}}$  Cut

**B = 3.0 T**

dp/p[%]

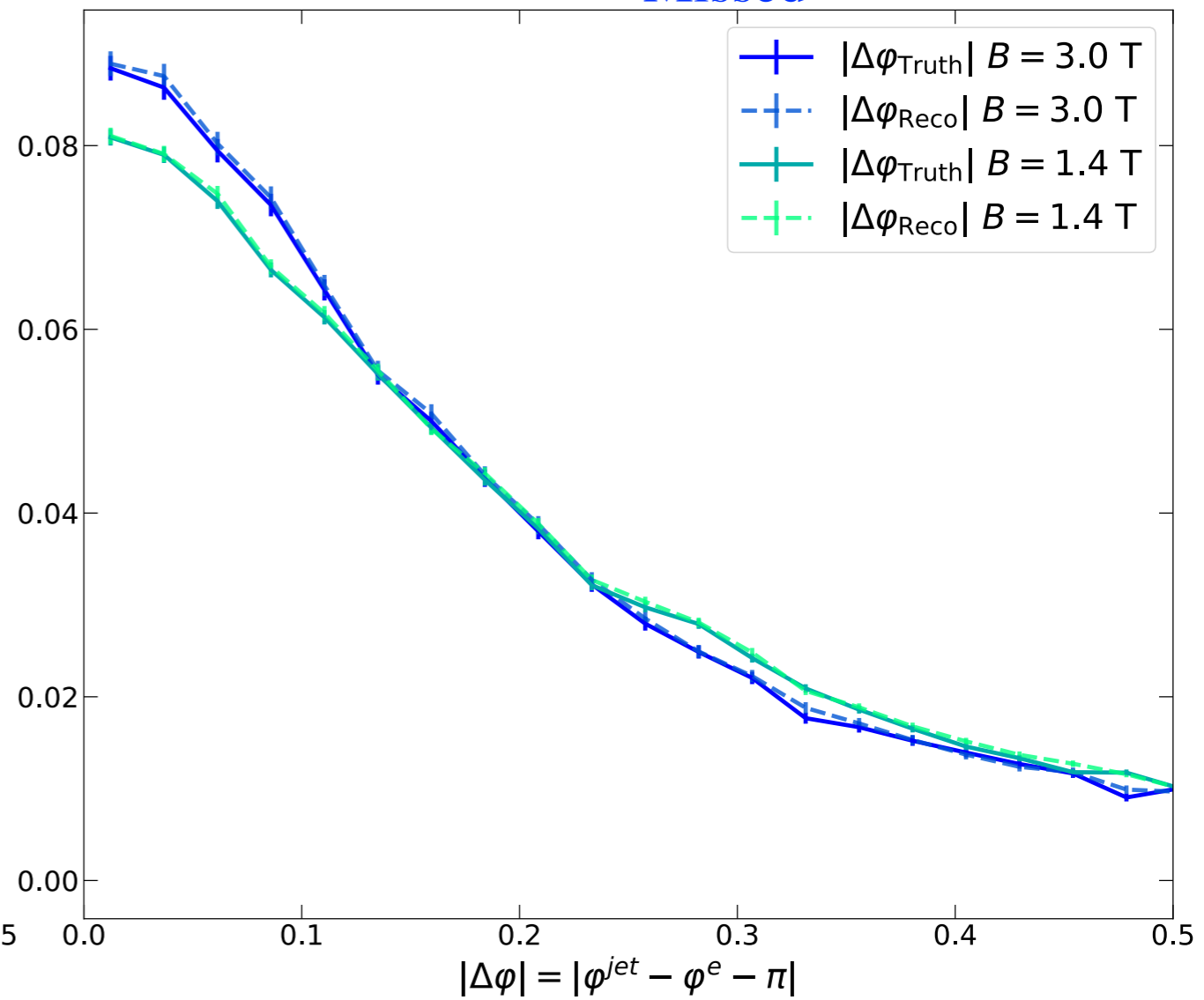
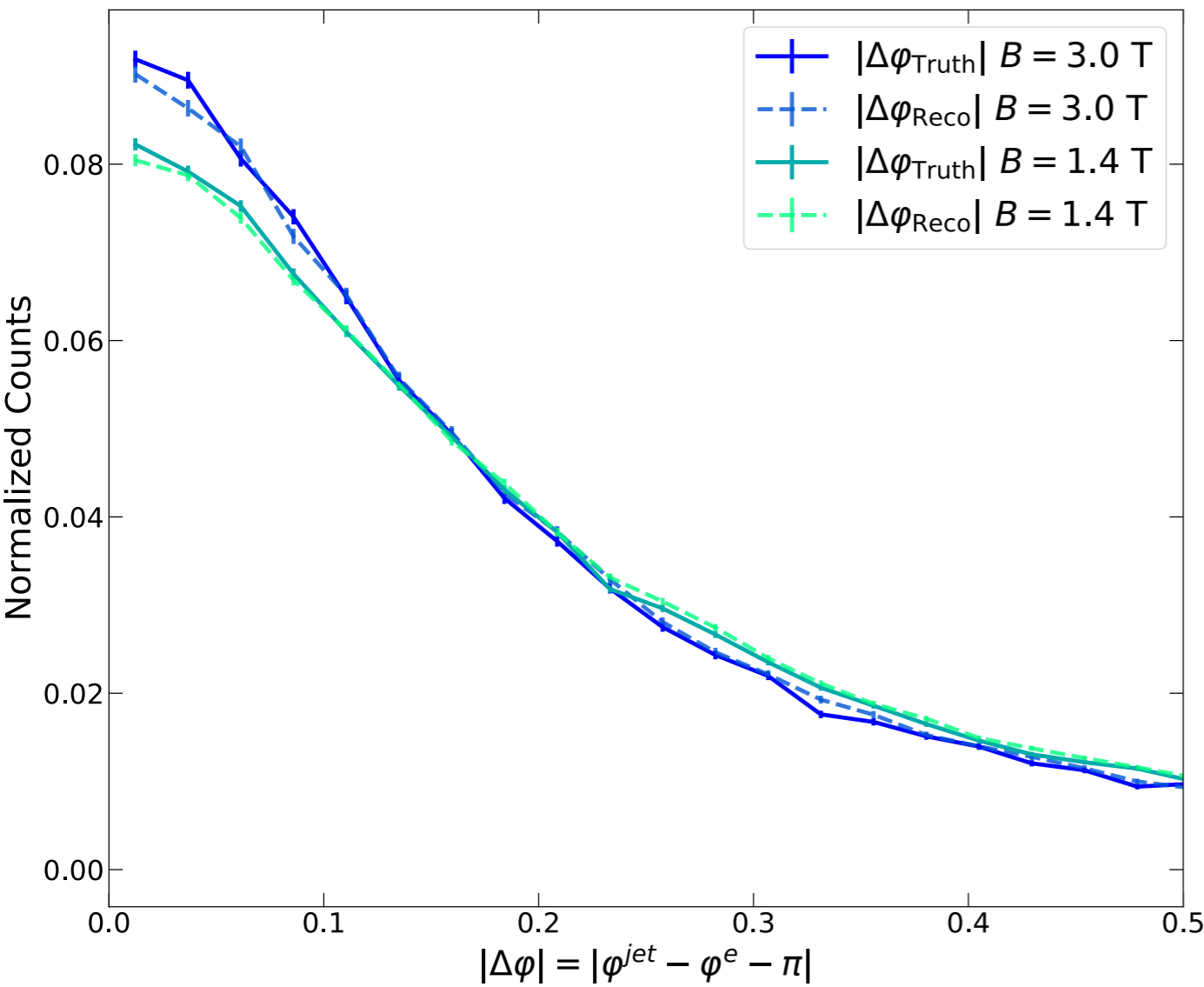


# $\varphi$ Resolutions



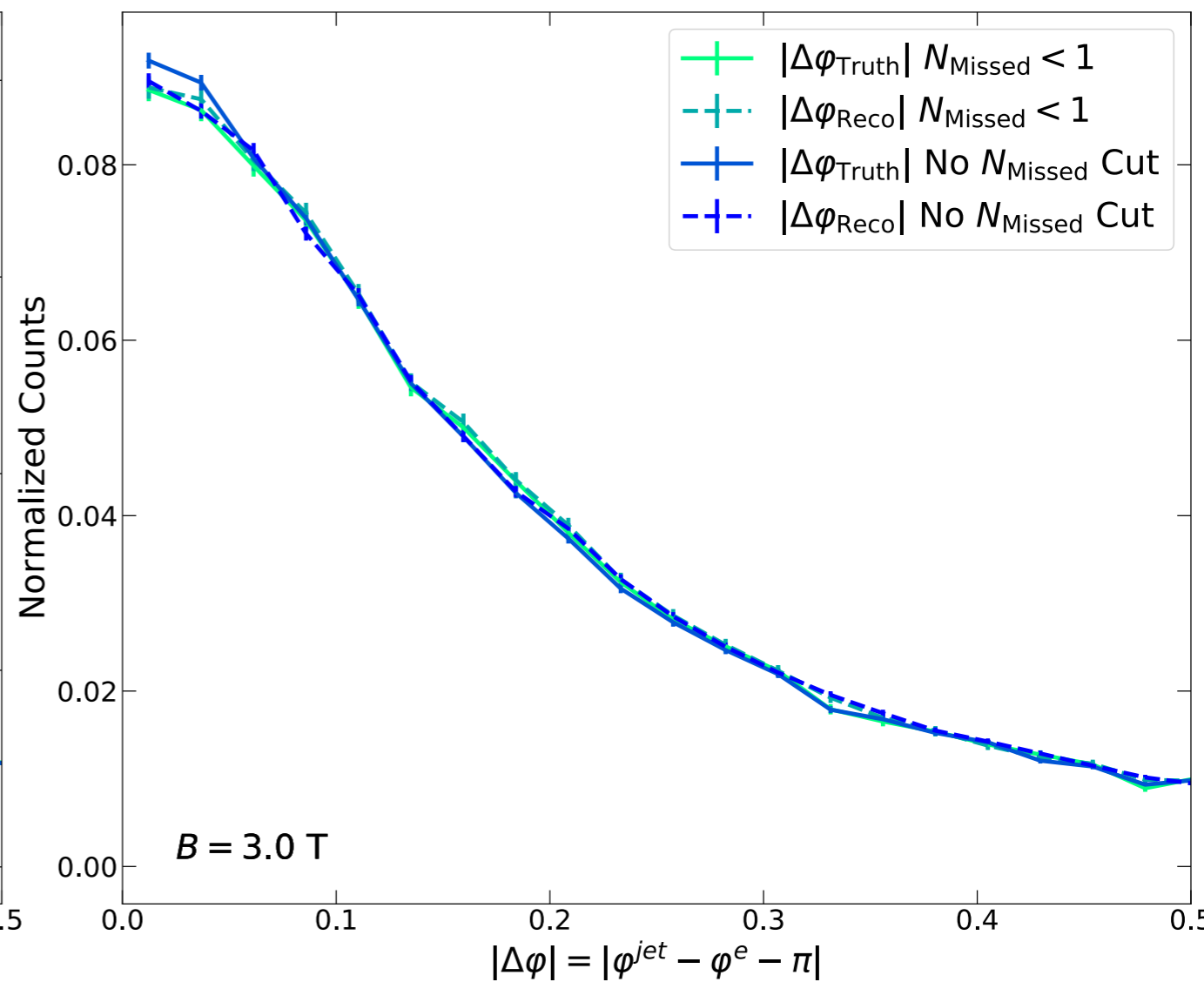
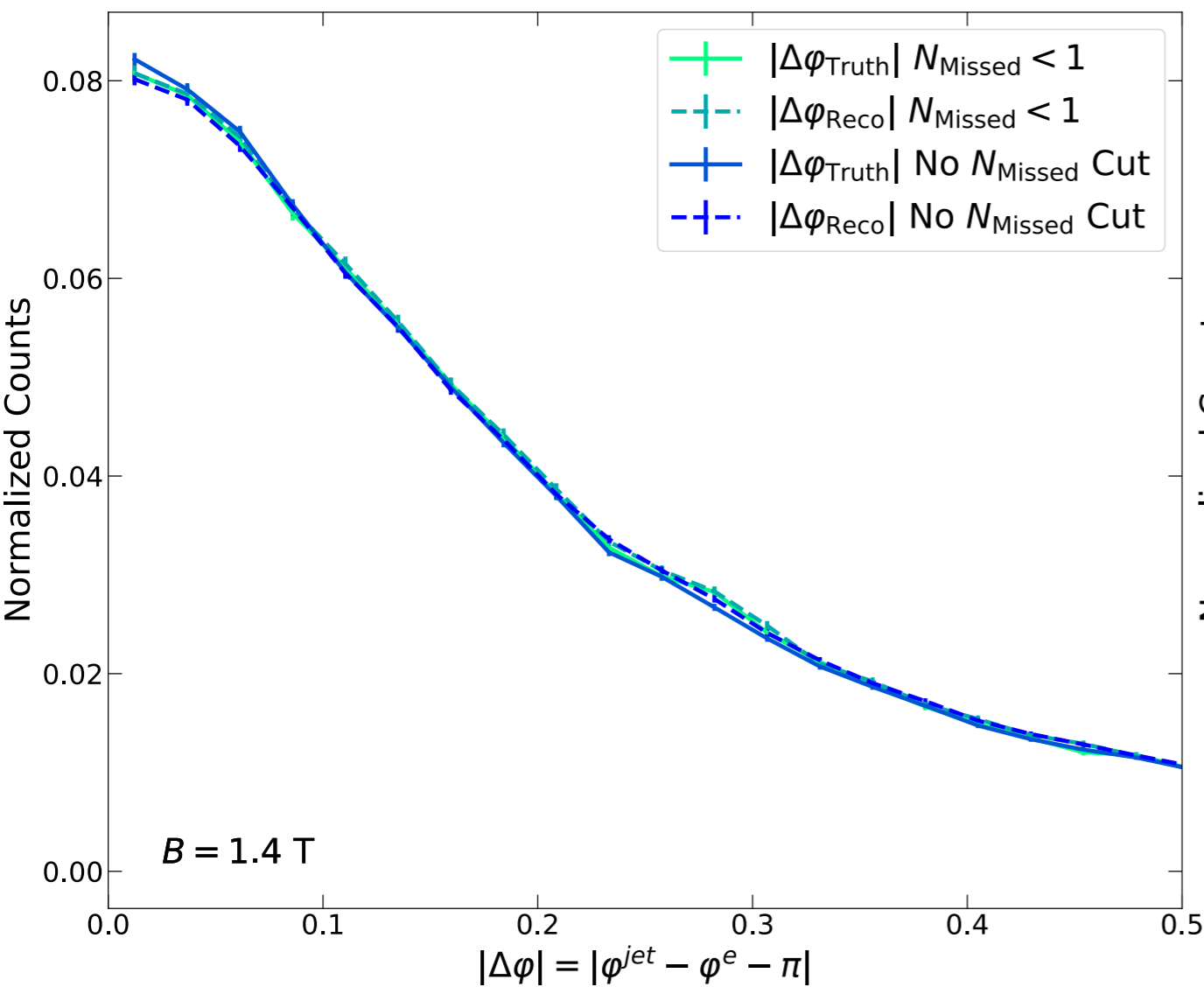
# No Constituent Cut Applied

[Corrected]  
Jets with  $N_{\text{Missed}} < 1$



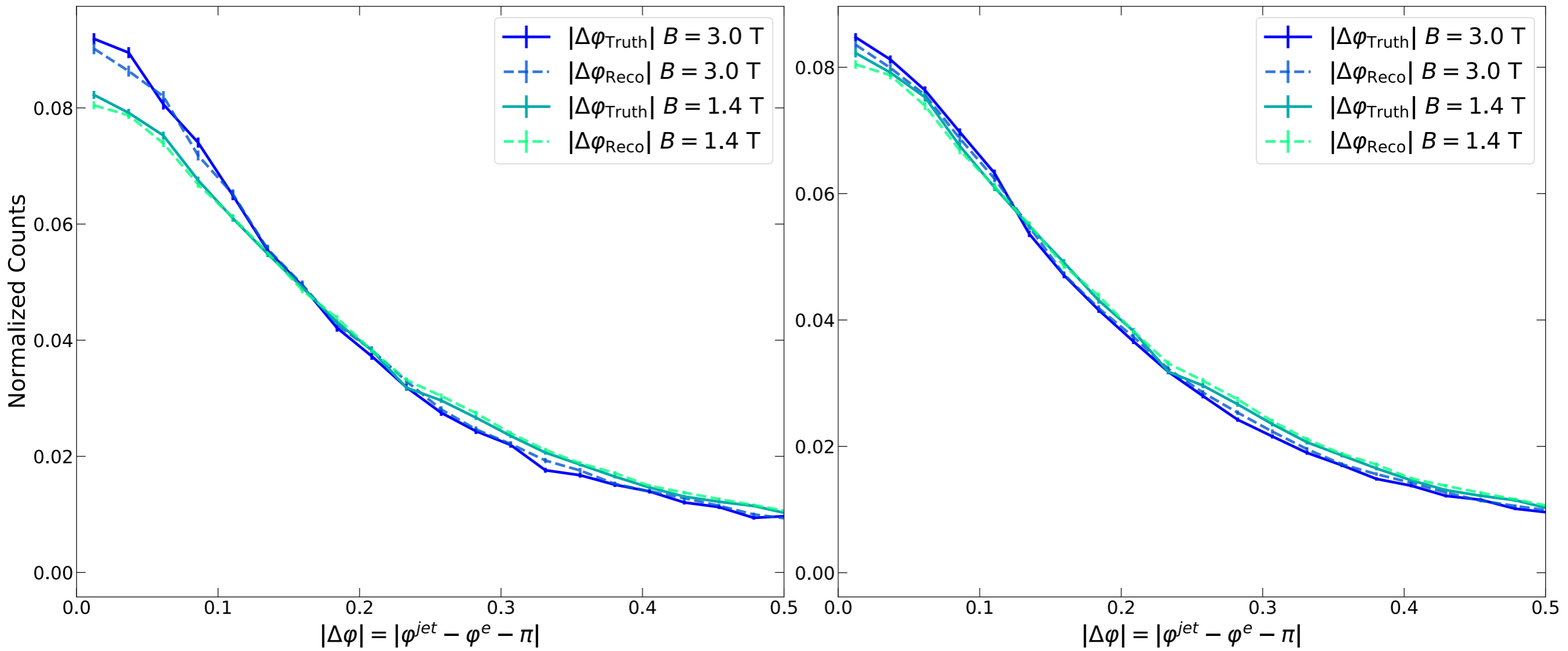


# Overlay $N_{\text{Missed}} \geq 1$ and No $N_{\text{Missed}}$ Cut



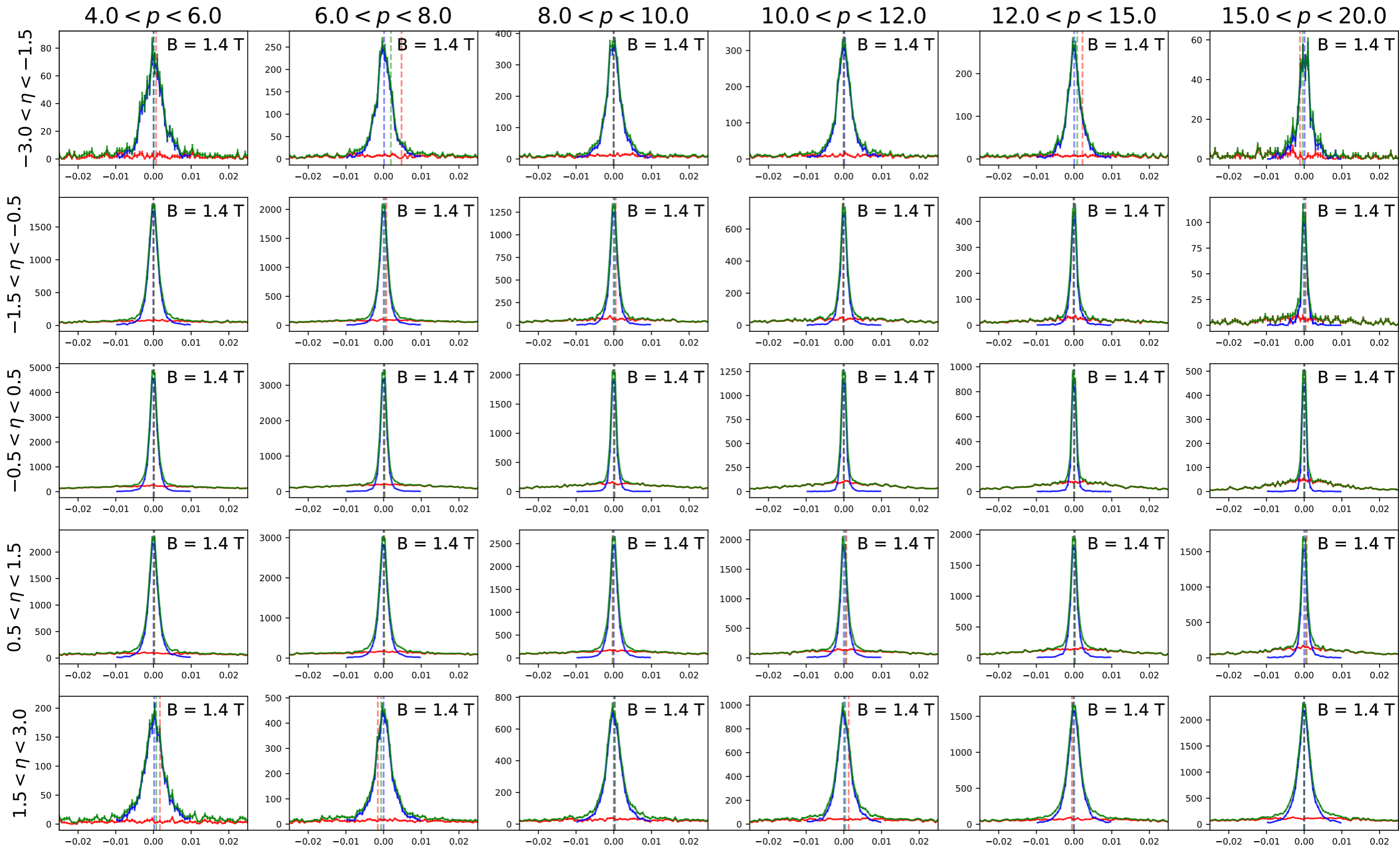
No Constituent Cut Applied

Plotting Bug  
Jets with  $N_{\text{Missed}} < 1$

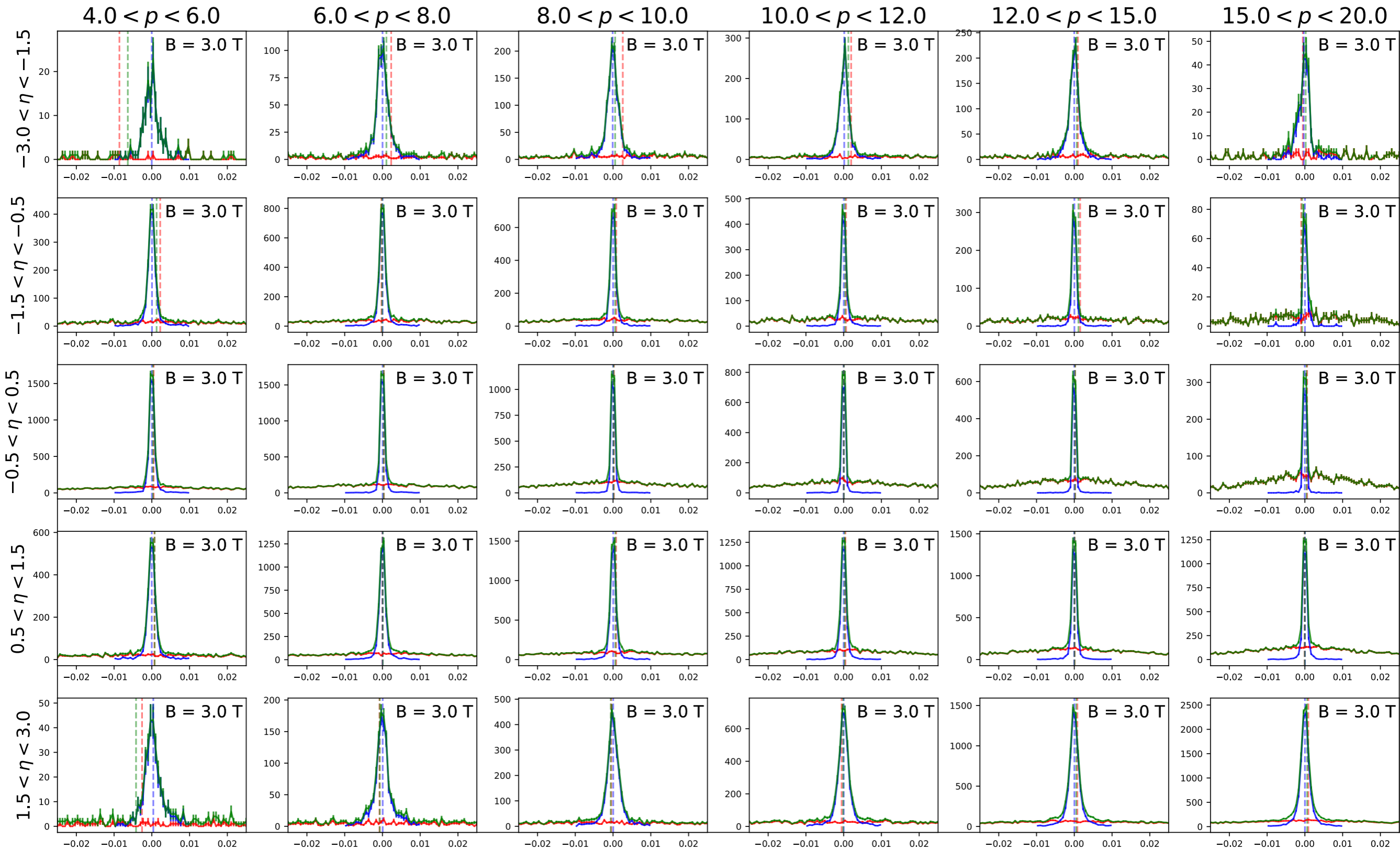


Plotting code (Python+Matplotlib) pointed to wrong ROOT file

# $d\phi$ [mrad]



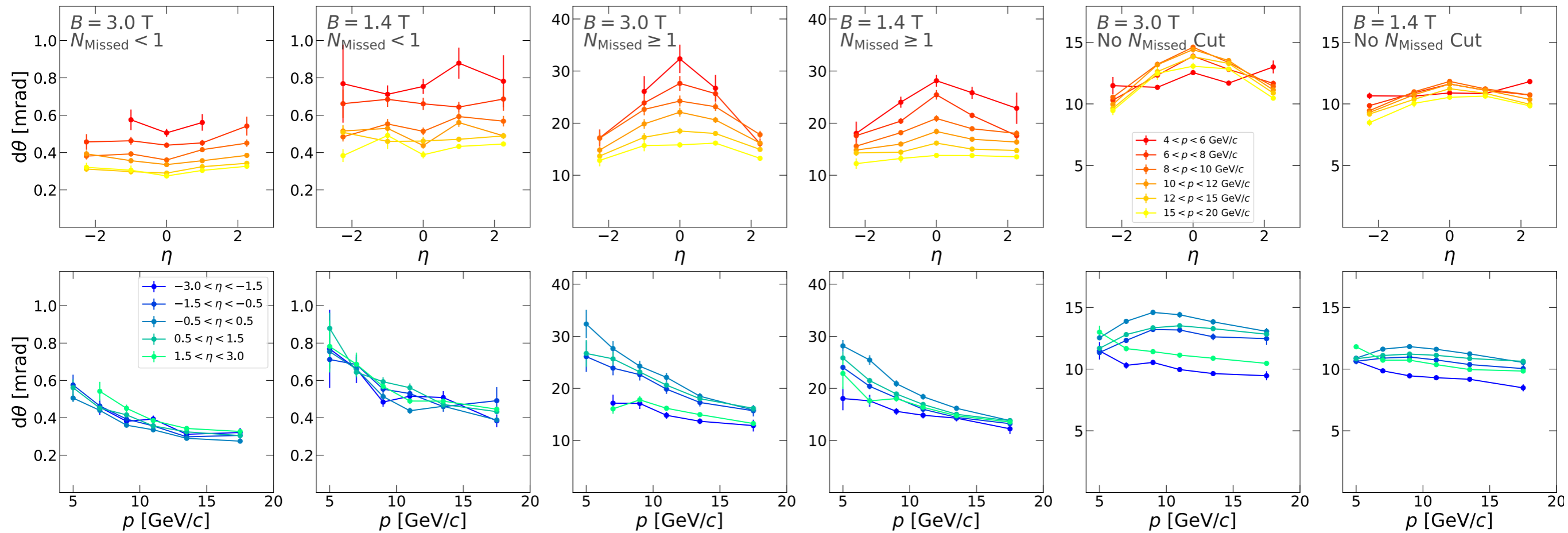
# $d\phi$ [mrad]



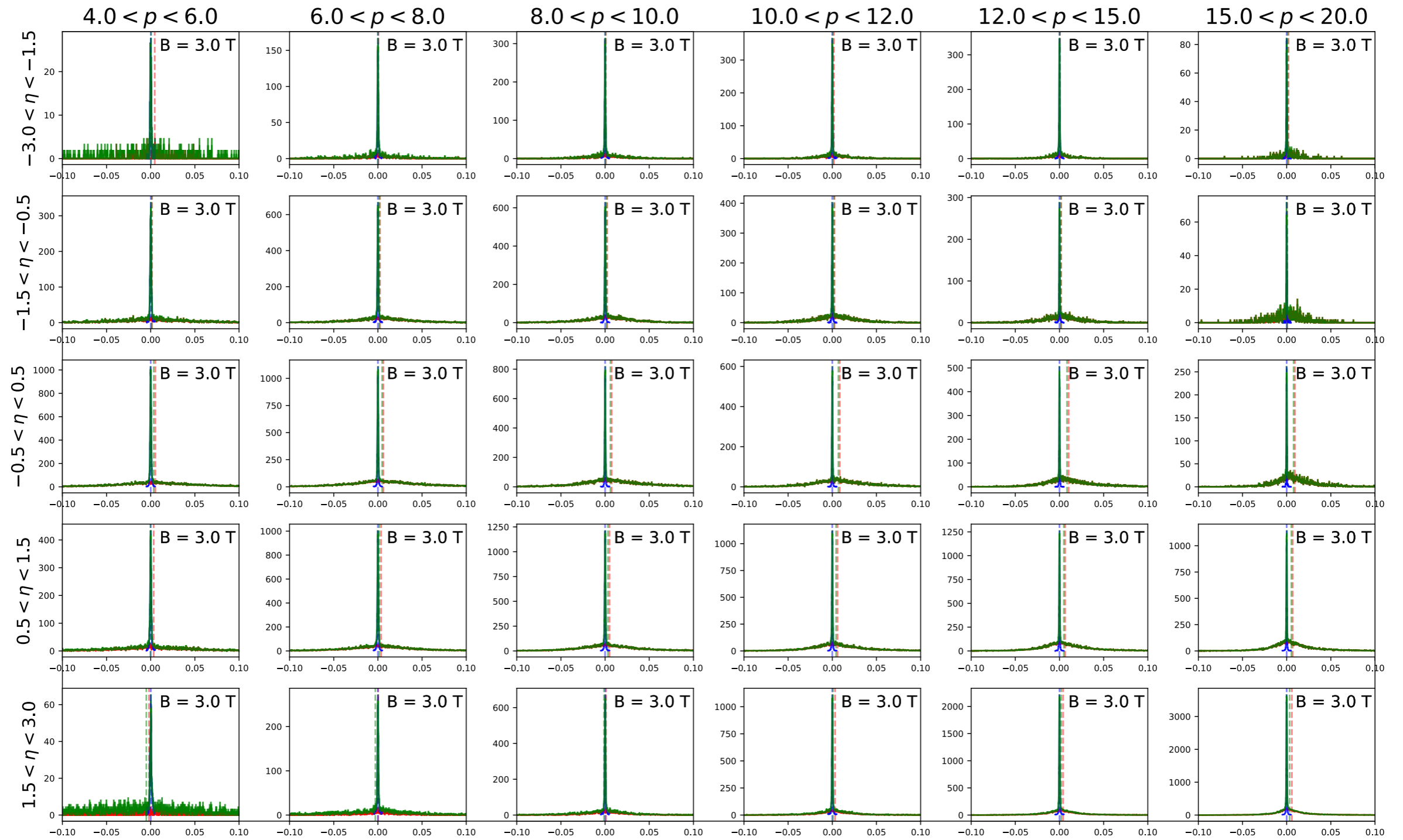
# Finalizing Steps

- Luminosity X Cross Section for Observables
  - e+P collisions,  $Q^2 \geq 20 \text{ GeV}/c$
- Smear Electron Truth information and apply E/p cluster selection
  - Current observables do not depend on  $E_{\text{Reco}}$
  - This selection ensures correct number of events for electron-jet correlation plot

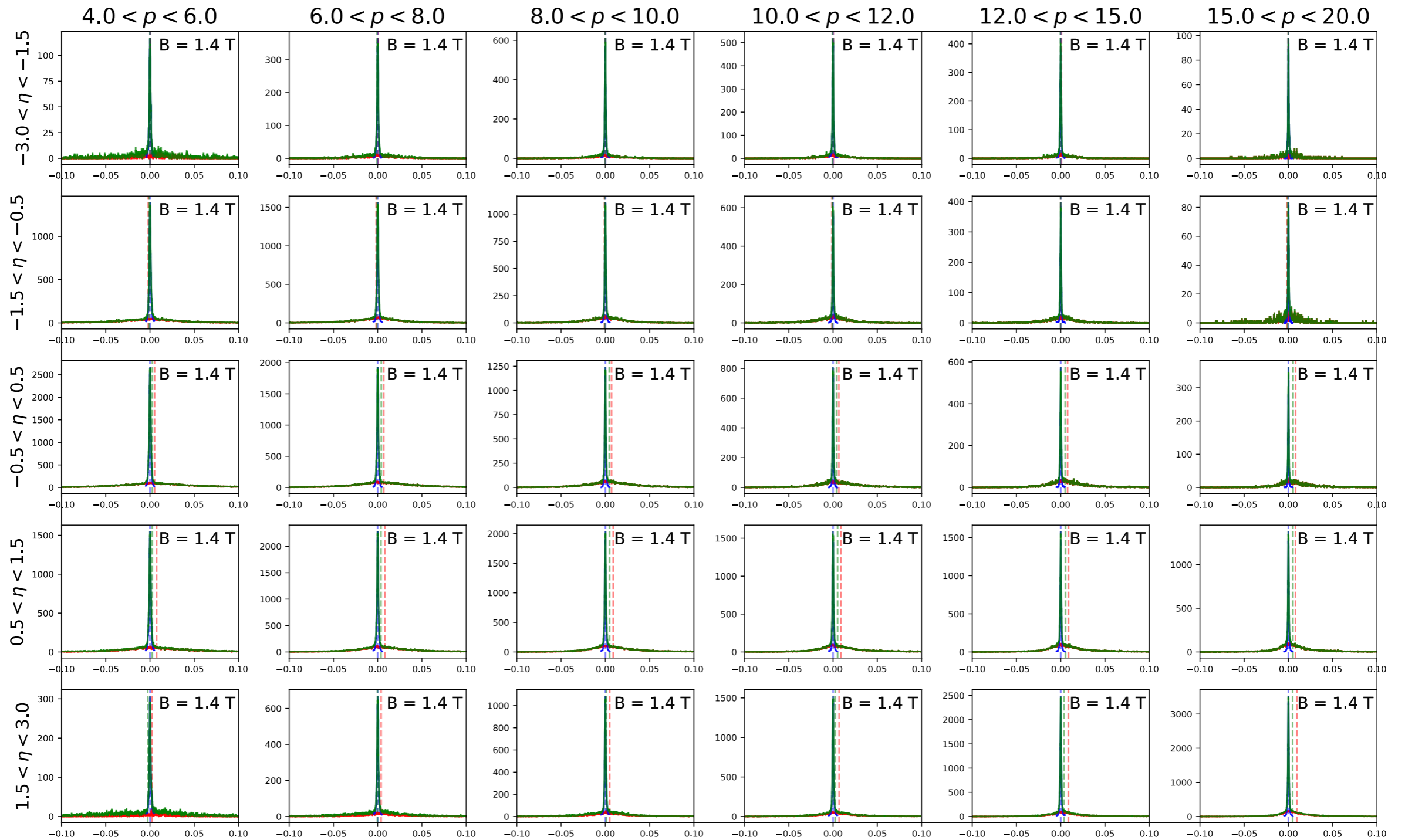
# $\theta$ Resolutions



$d\theta$  [mrad]

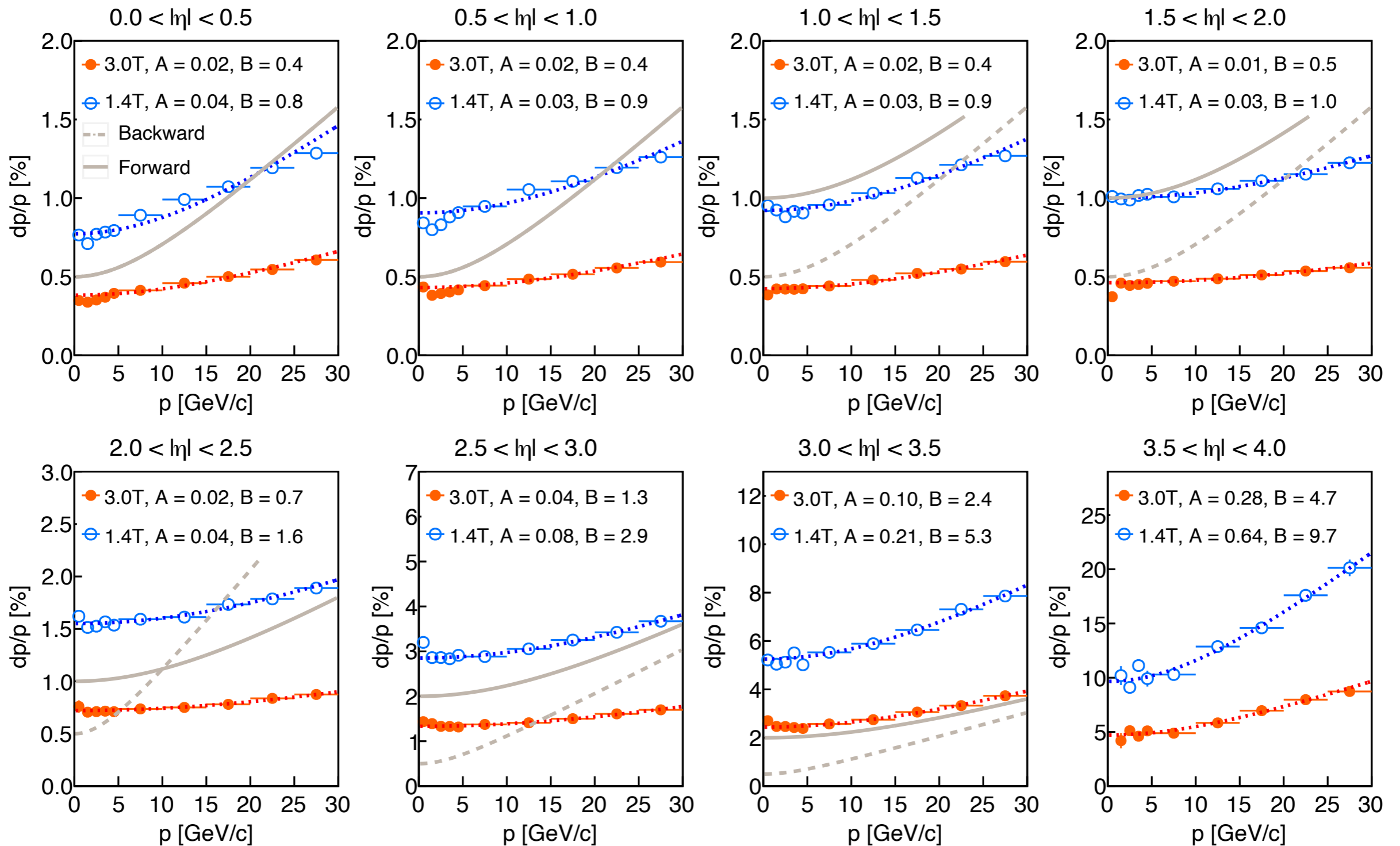


# $d\theta$ [mrad]





# Single Particle Momentum Resolutions



# Single Particle $\varphi$ Resolutions

