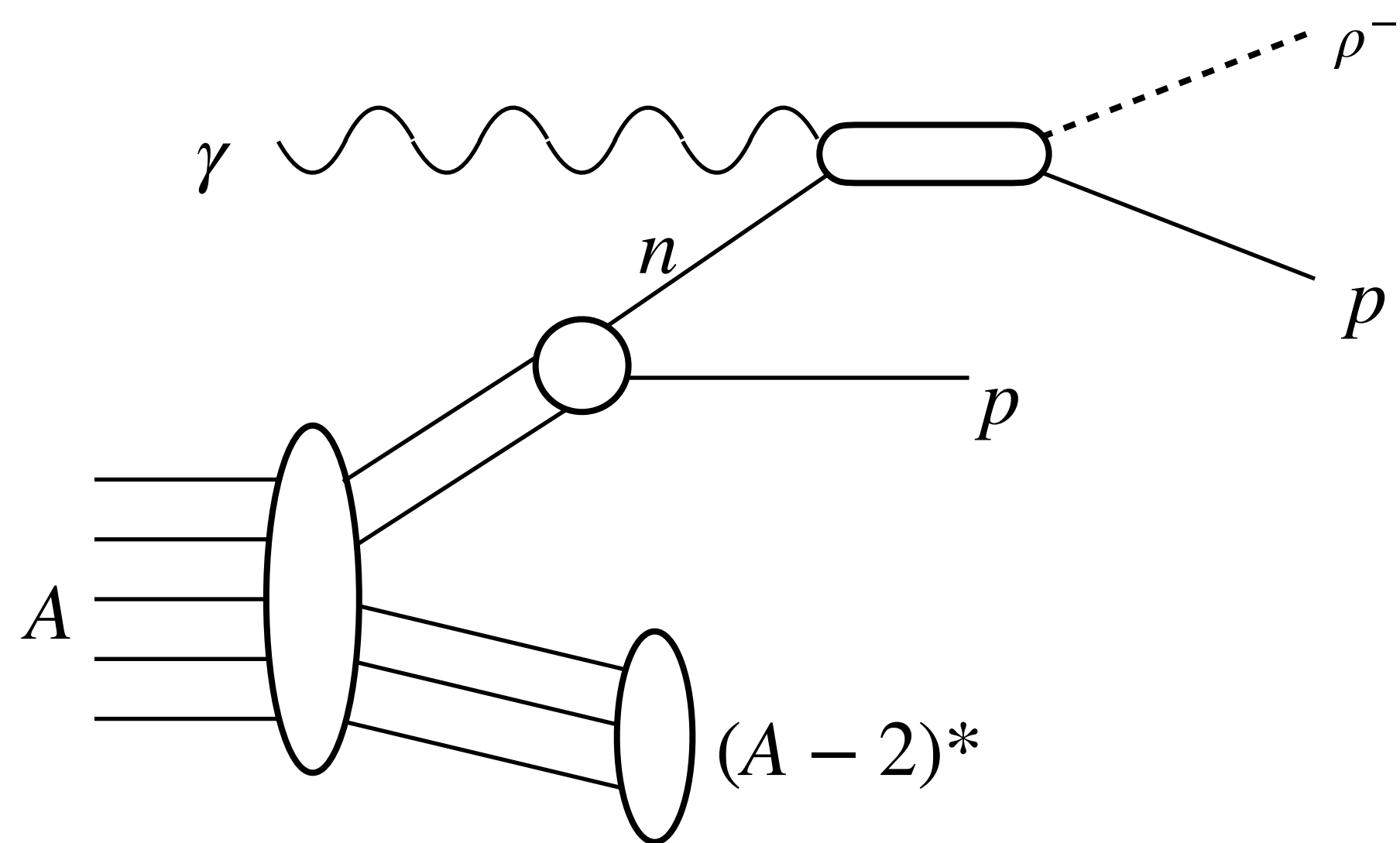


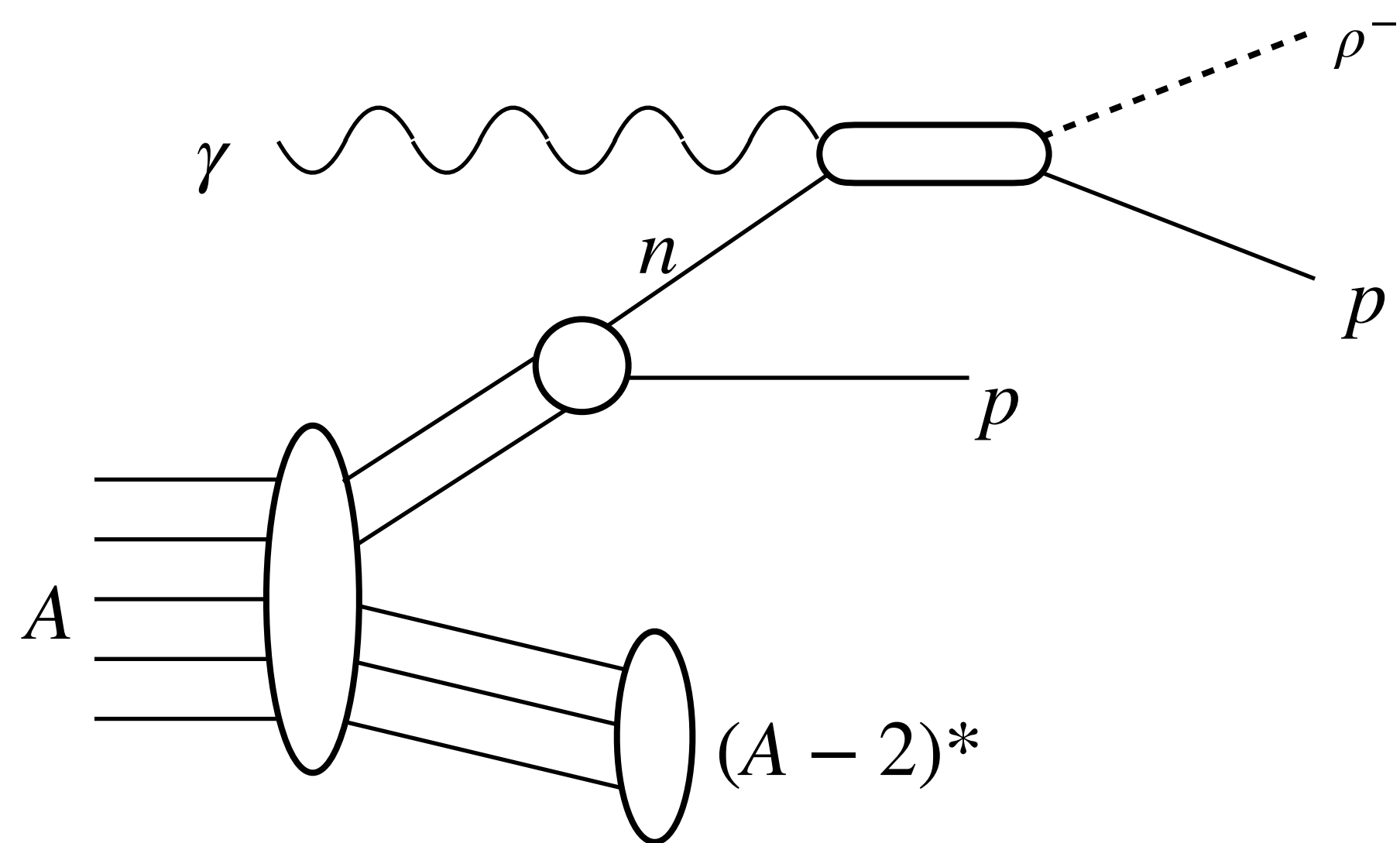
Reaction: $\gamma np \rightarrow \rho^- pp \rightarrow (\pi^- \pi^0) pp \rightarrow (\pi^- (\gamma\gamma)) pp$

Requiring 2 positive tracks, 1 negative track, 2 neutral showers.
Kinematic fit to vertex position and π^0 mass



Cuts:

- Kinematic Fit Confidence Level > 0.0001
- dE/dx and timing cuts for PID
- Vertex cuts
- Calorimeter neutral shower + timing cuts
- Background cuts for ω events
- $E_\rho + E_p > 7 \text{ GeV}$.
- $E_\gamma > 6 \text{ GeV}$
- $|E_\gamma + m_N - E_\rho - E_p| < 1 \text{ GeV}$
- $0.65 < m_{\pi\pi} < 0.9 \text{ GeV}$
- $k_{miss} > 0.4 \text{ GeV}$
- Recoil proton momentum $> 0.3 \text{ GeV}$



Event generator:

Cross section model for ρ^0 photoproduction fit to existing measurements taken at lower photon energies $\sim 3\text{-}5$ GeV. Shape for ρ^- photoproduction assumed to be similar,

$$\sigma(\gamma n \rightarrow \rho^- p) \propto \sigma(\gamma p \rightarrow \rho^0 p)$$

Generalized Contact Formalism provides model of SRC energy-momentum distribution

Event generator convolves free nucleon photoproduction cross section with nuclear decay function to generate complete final-state of meson, leading baryon, recoil nucleon

Generated events are passed through GEANT3, and GEANT3 output uses same analysis plugins as data

Simulation has been area-normalized to data

Current events for $A(\gamma, \rho^- pp)$

Nucleus	$-t > 1 \text{ GeV}^2$	$-t > 2 \text{ GeV}^2$
^2H	400	48
^4He	3500	280
^{12}C	4400	550

Final events for $A(\gamma, \rho^- pp)$

No Target Change

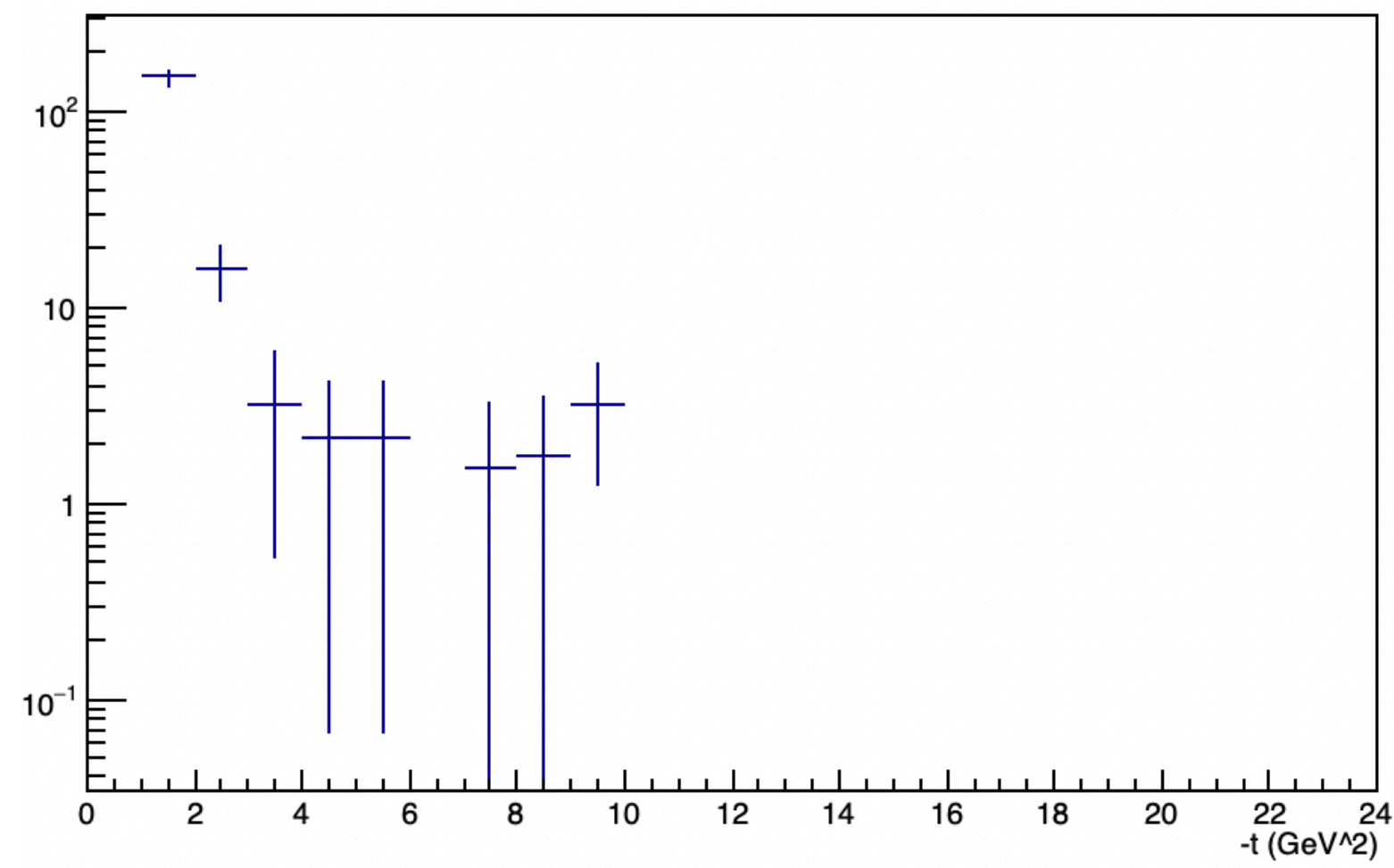
Nucleus	$-t > 1$ GeV ²	$-t > 2$ GeV ²
² H	1560	190
⁴ He	3500	280
¹² C	4400	550

Target Change Friday

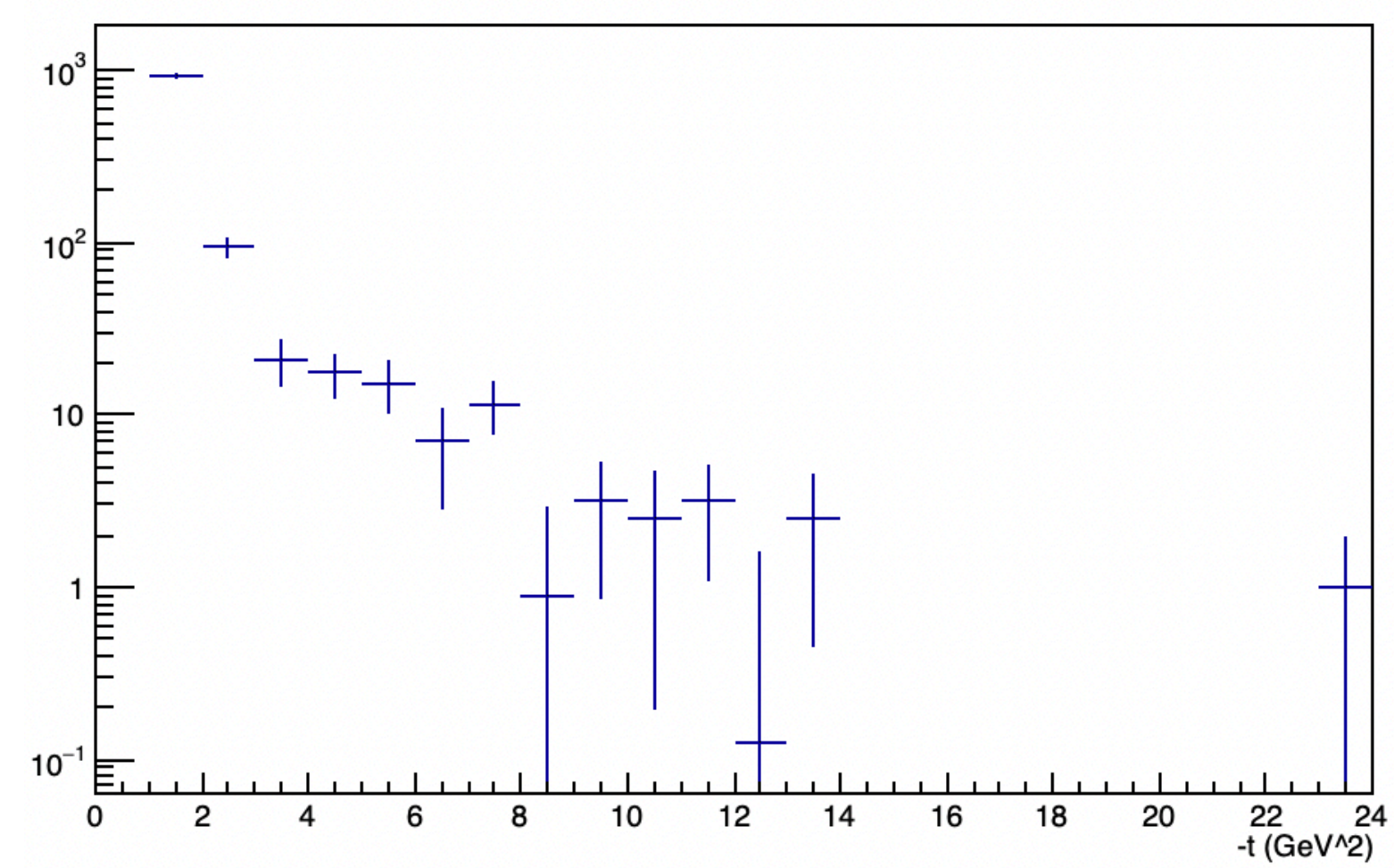
Nucleus	$-t > 1$ GeV ²	$-t > 2$ GeV ²
² H	830	100
⁴ He	4300	350
¹² C	4400	550

t Distributions

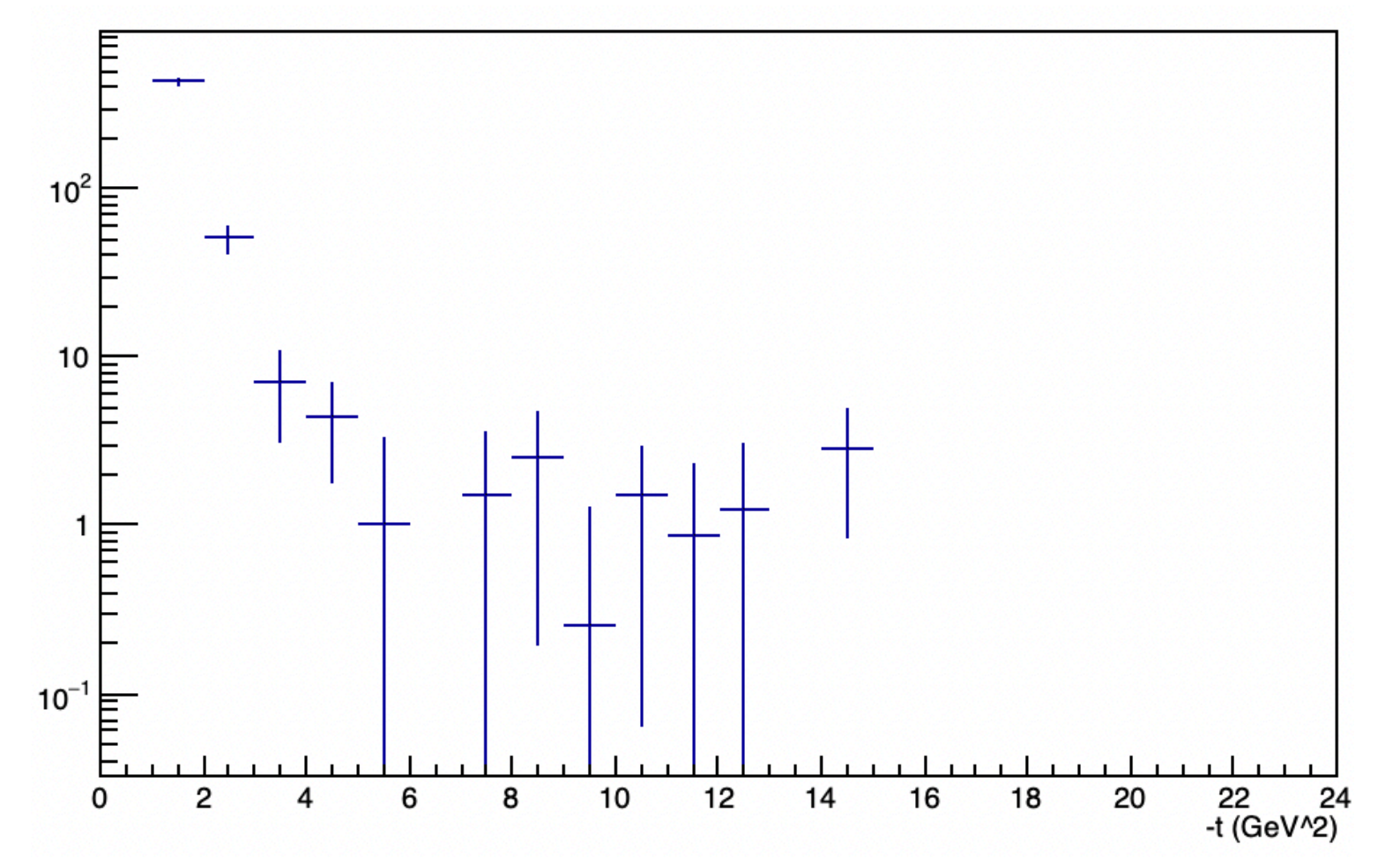
25% 2H

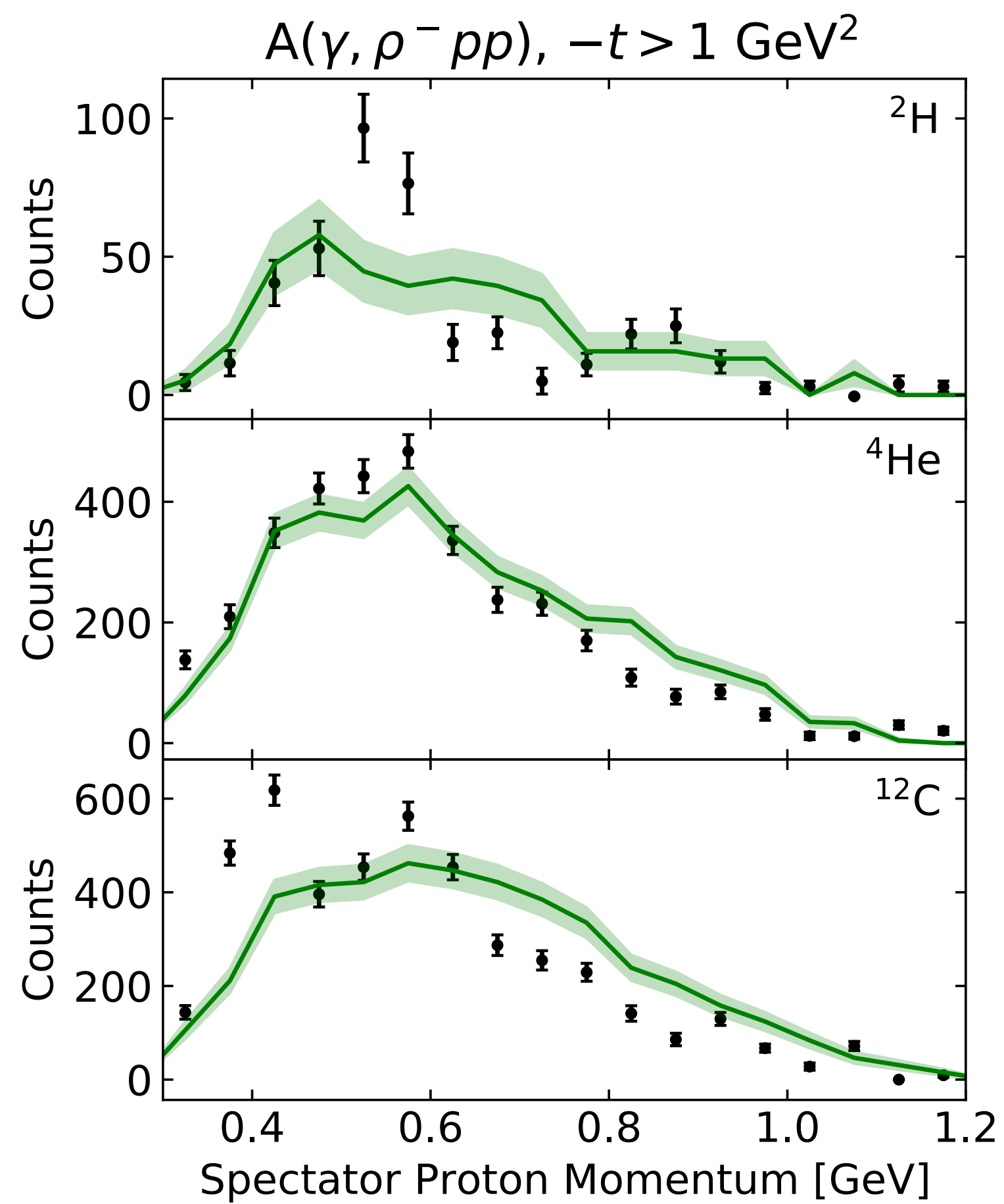
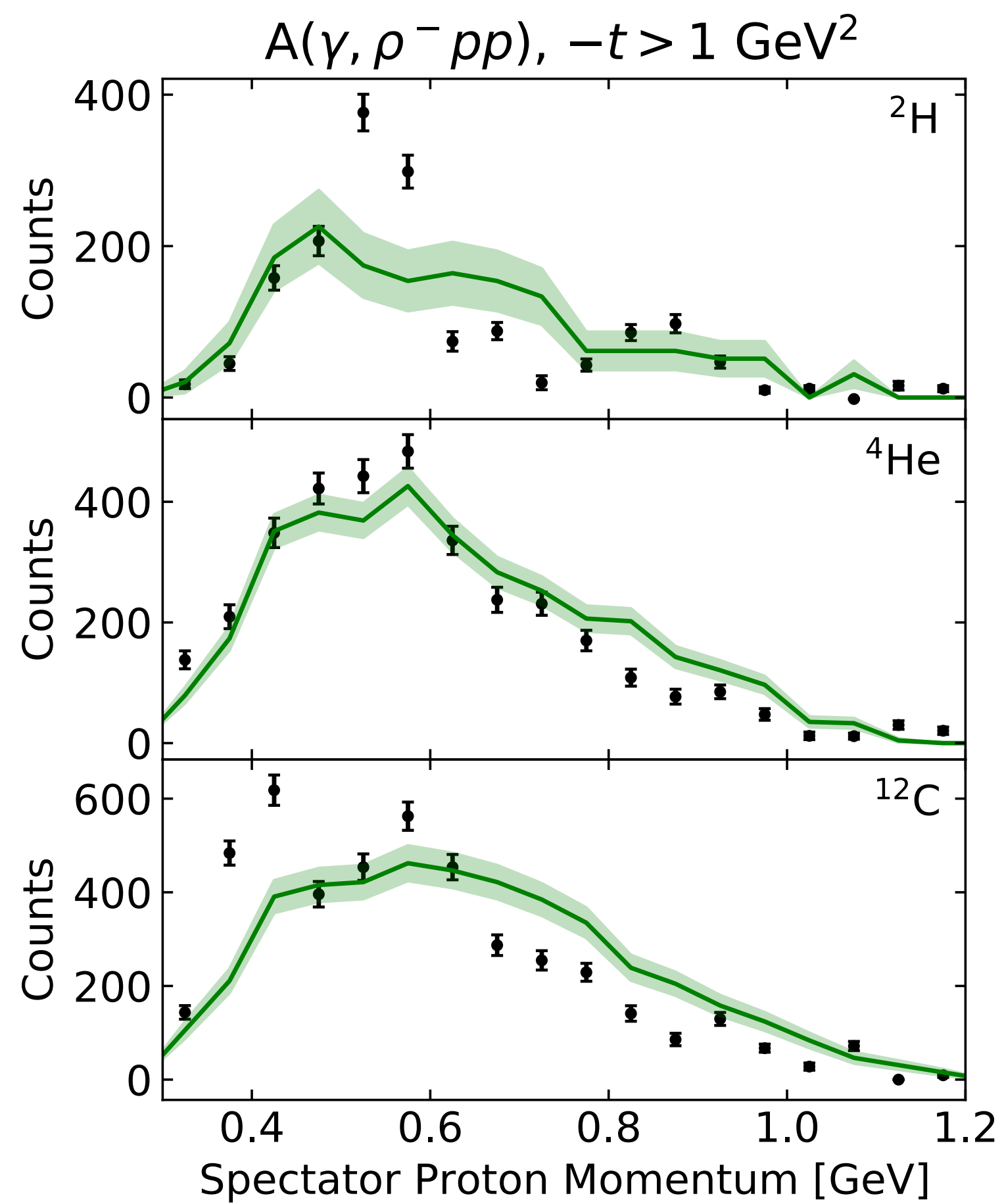
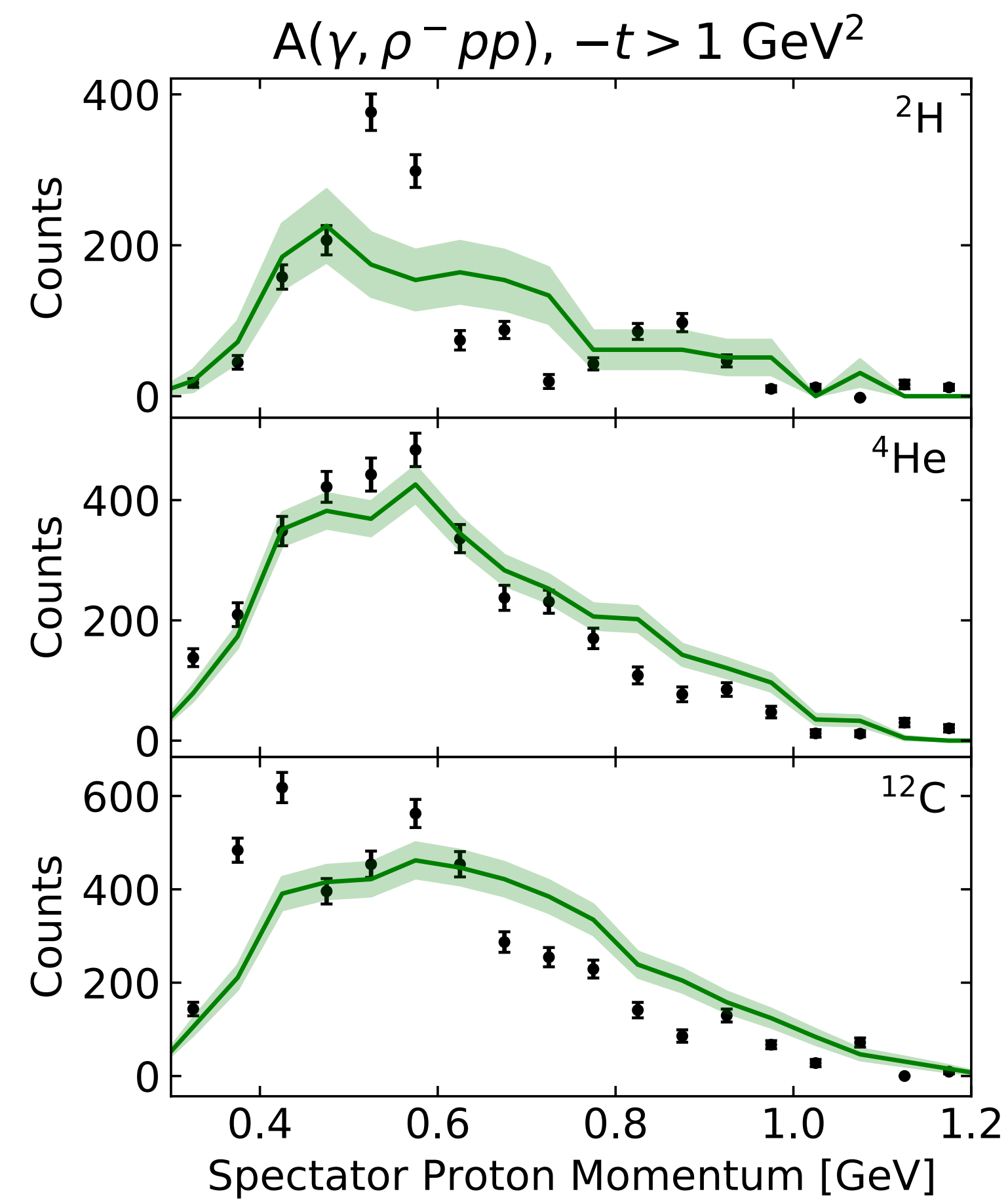


25% 4He

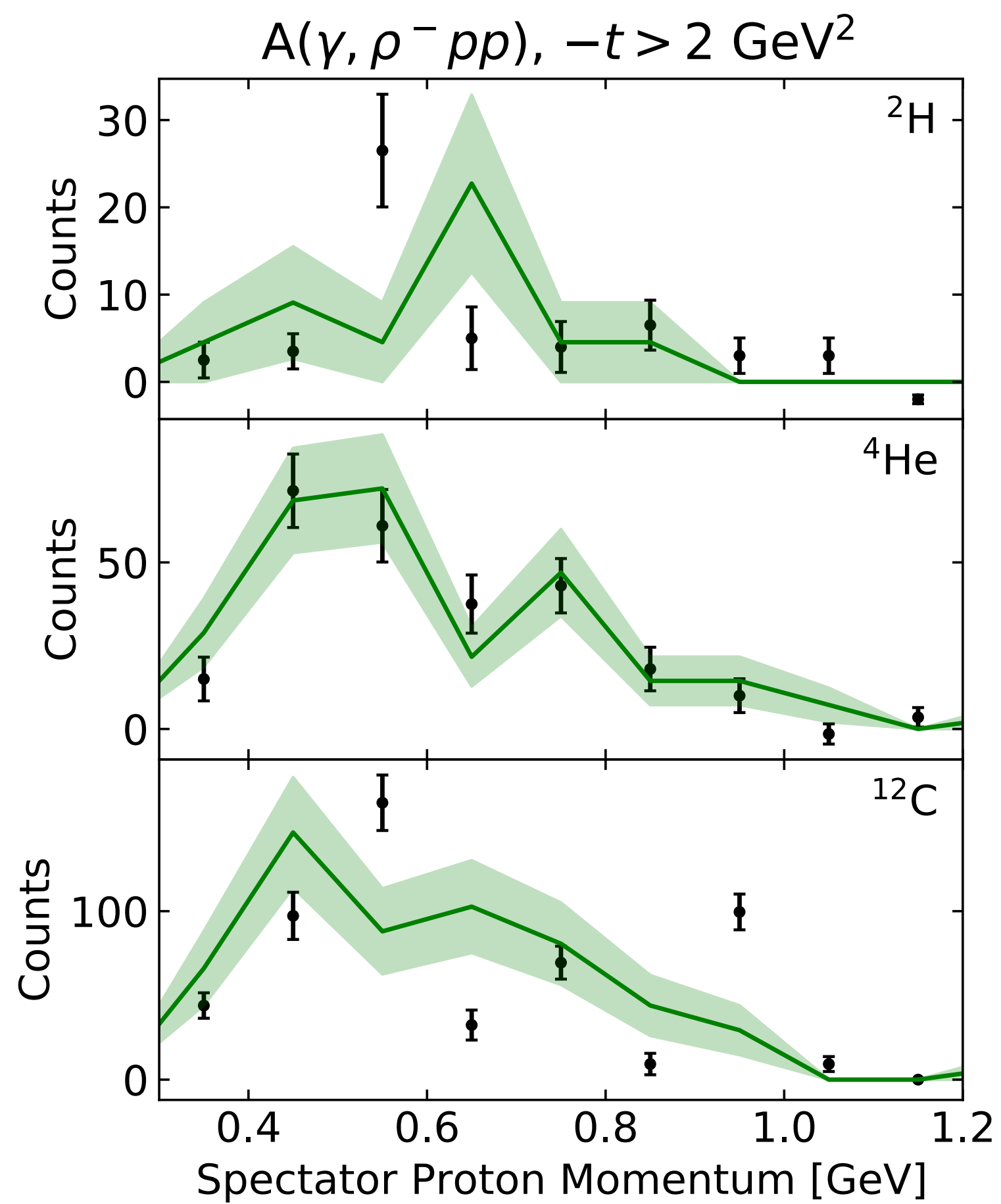


6% 12C

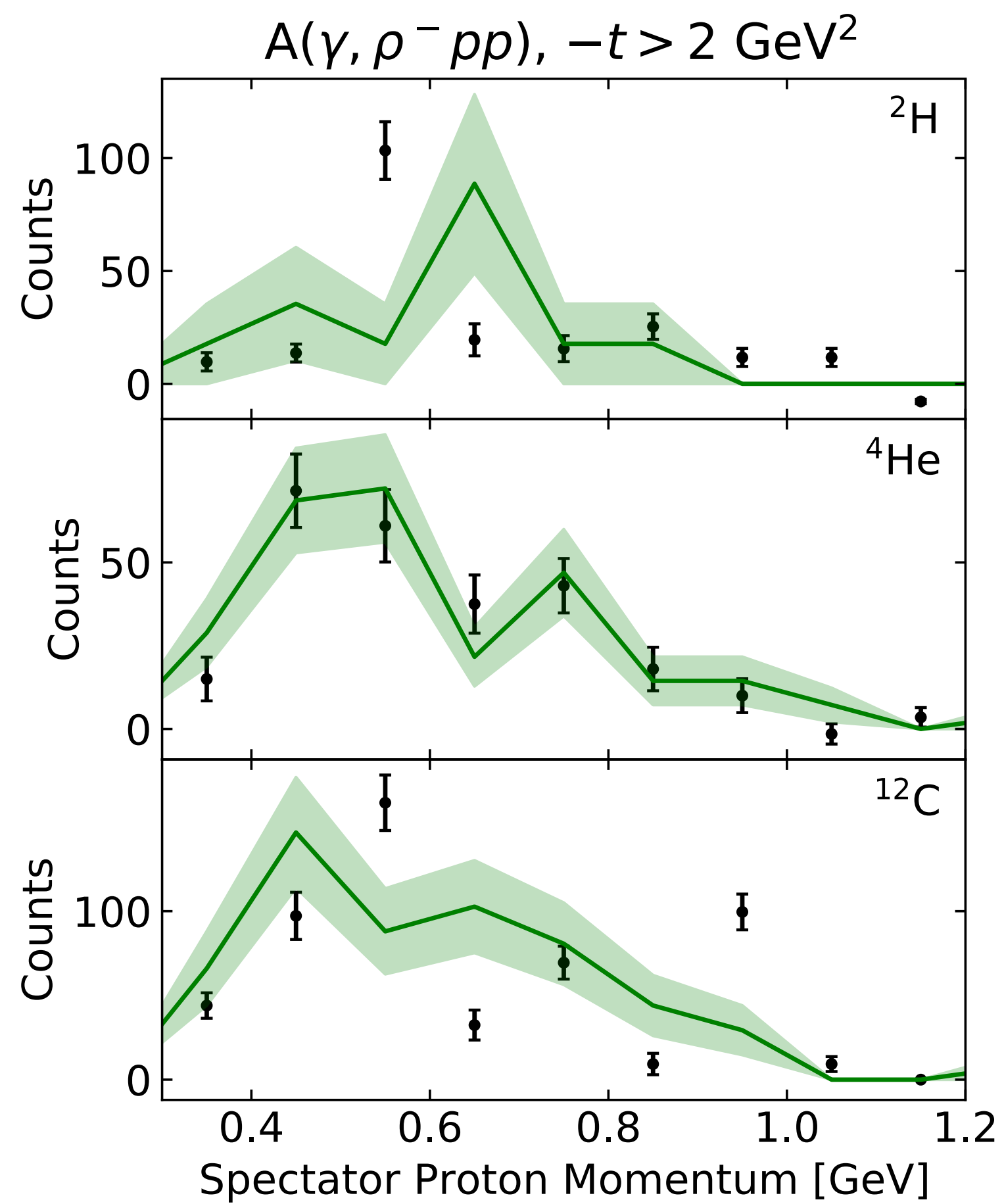


Current Data**No target change****Target change Friday**

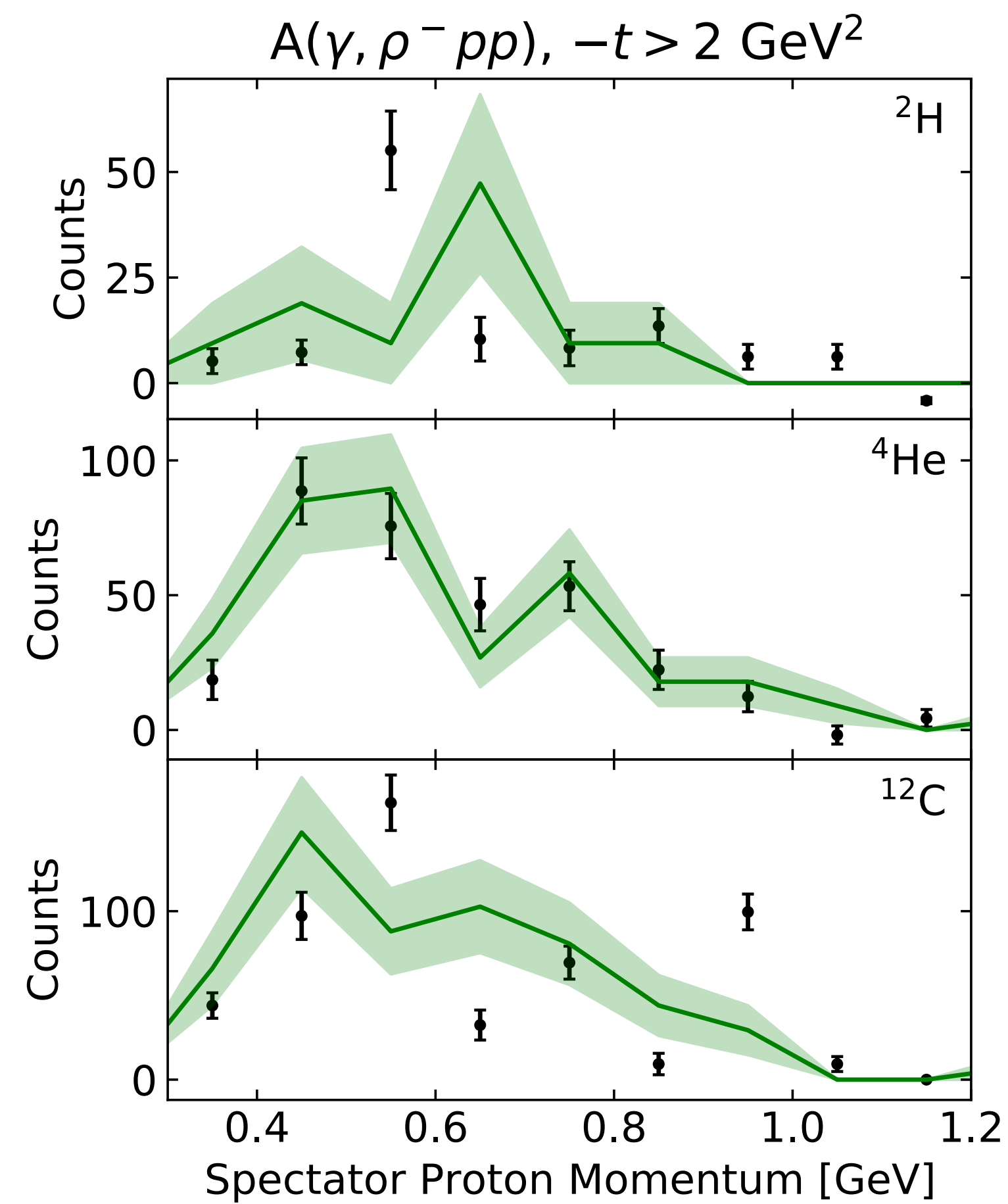
Current Data



No target change

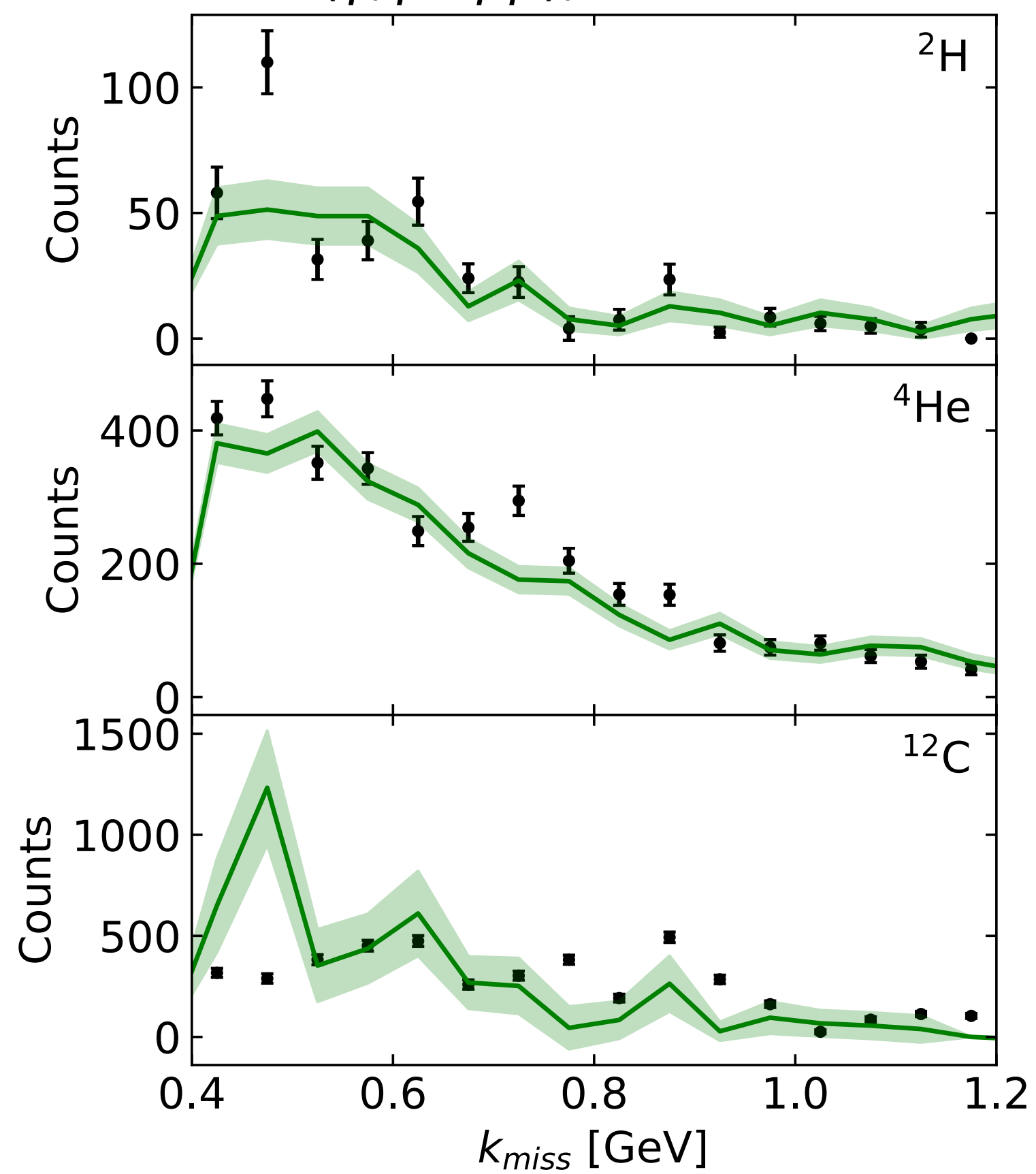


Target change Friday



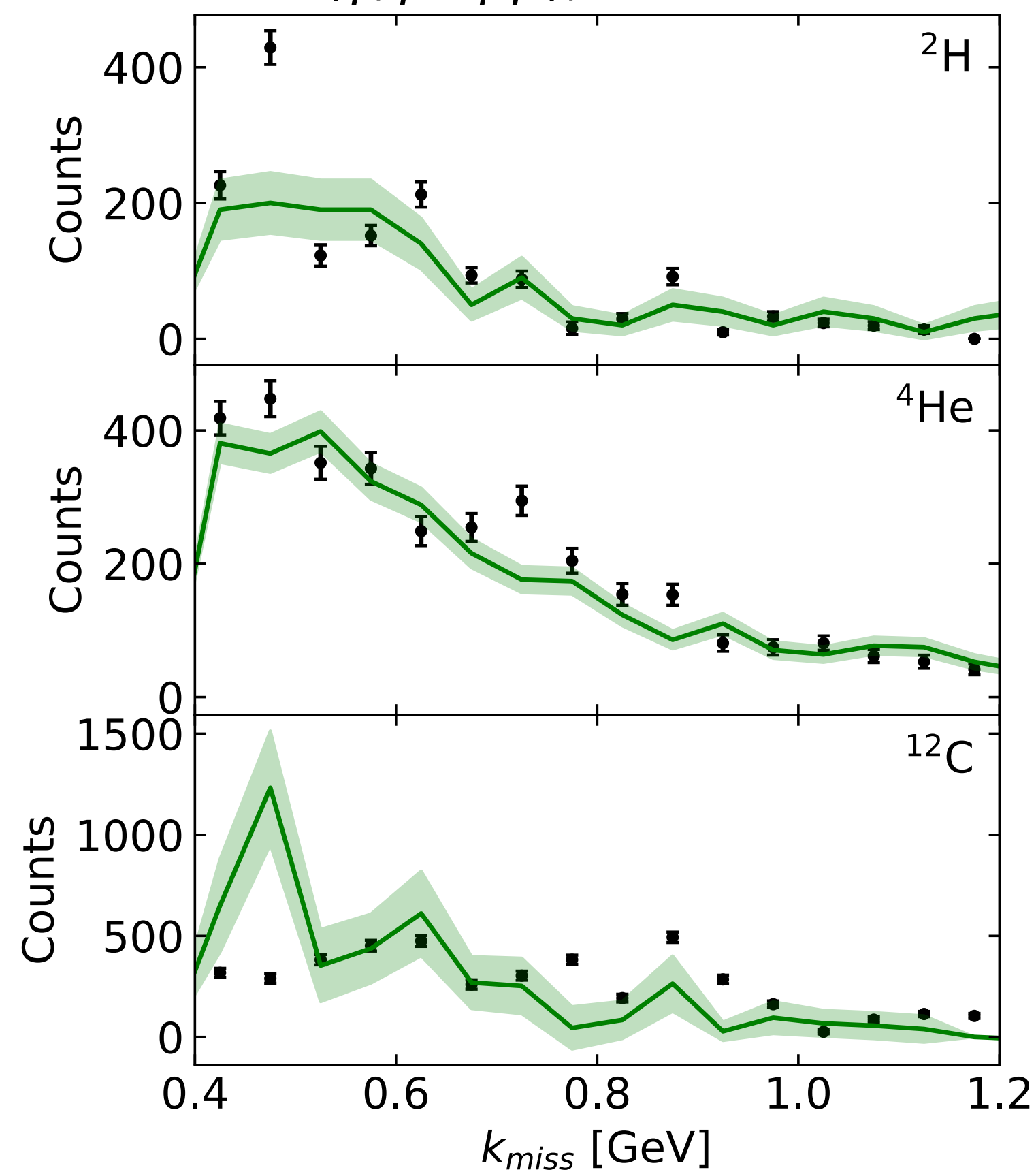
Current Data

$A(\gamma, \rho^- pp), -t > 1 \text{ GeV}^2$



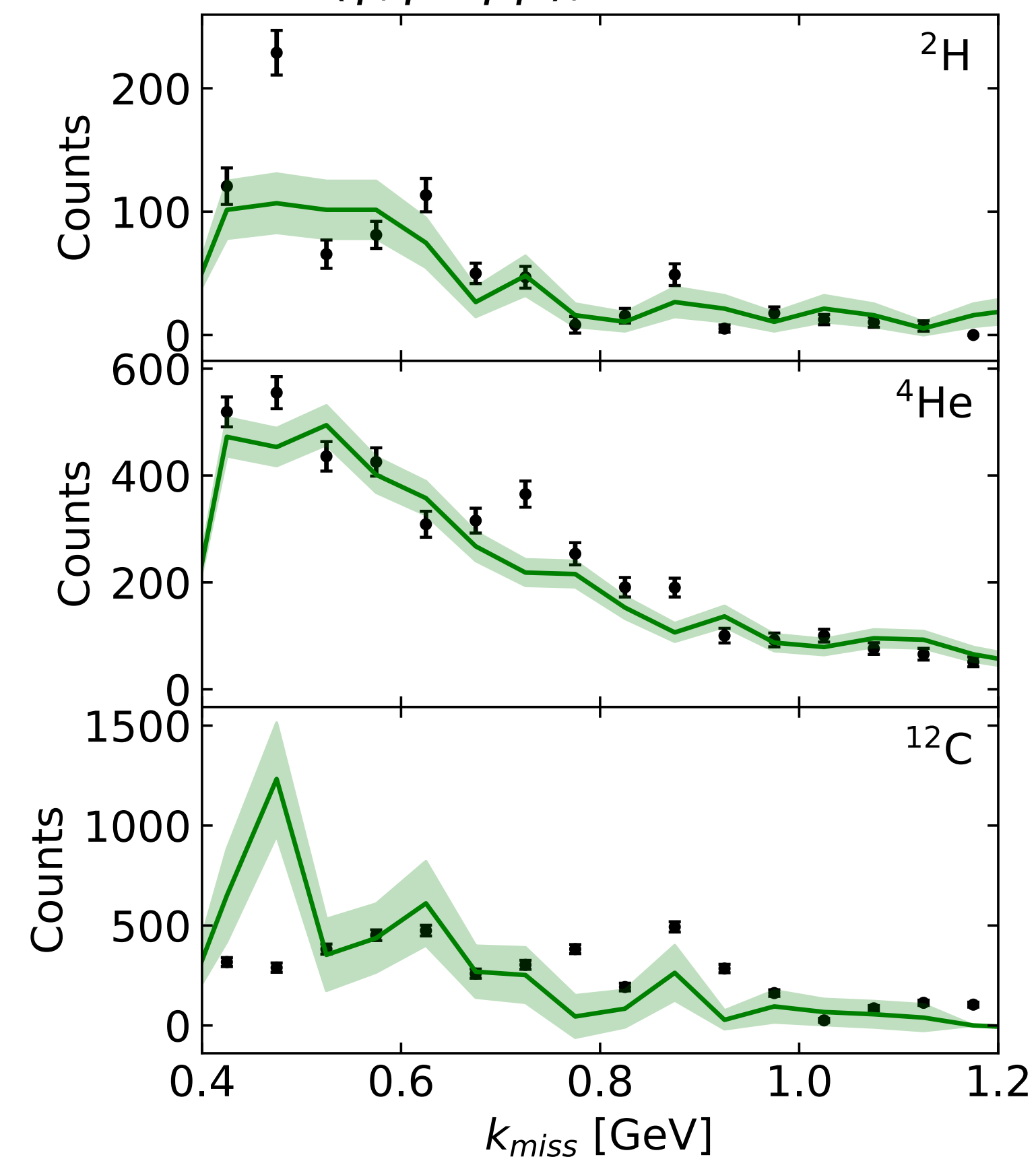
No target change

$A(\gamma, \rho^- pp), -t > 1 \text{ GeV}^2$

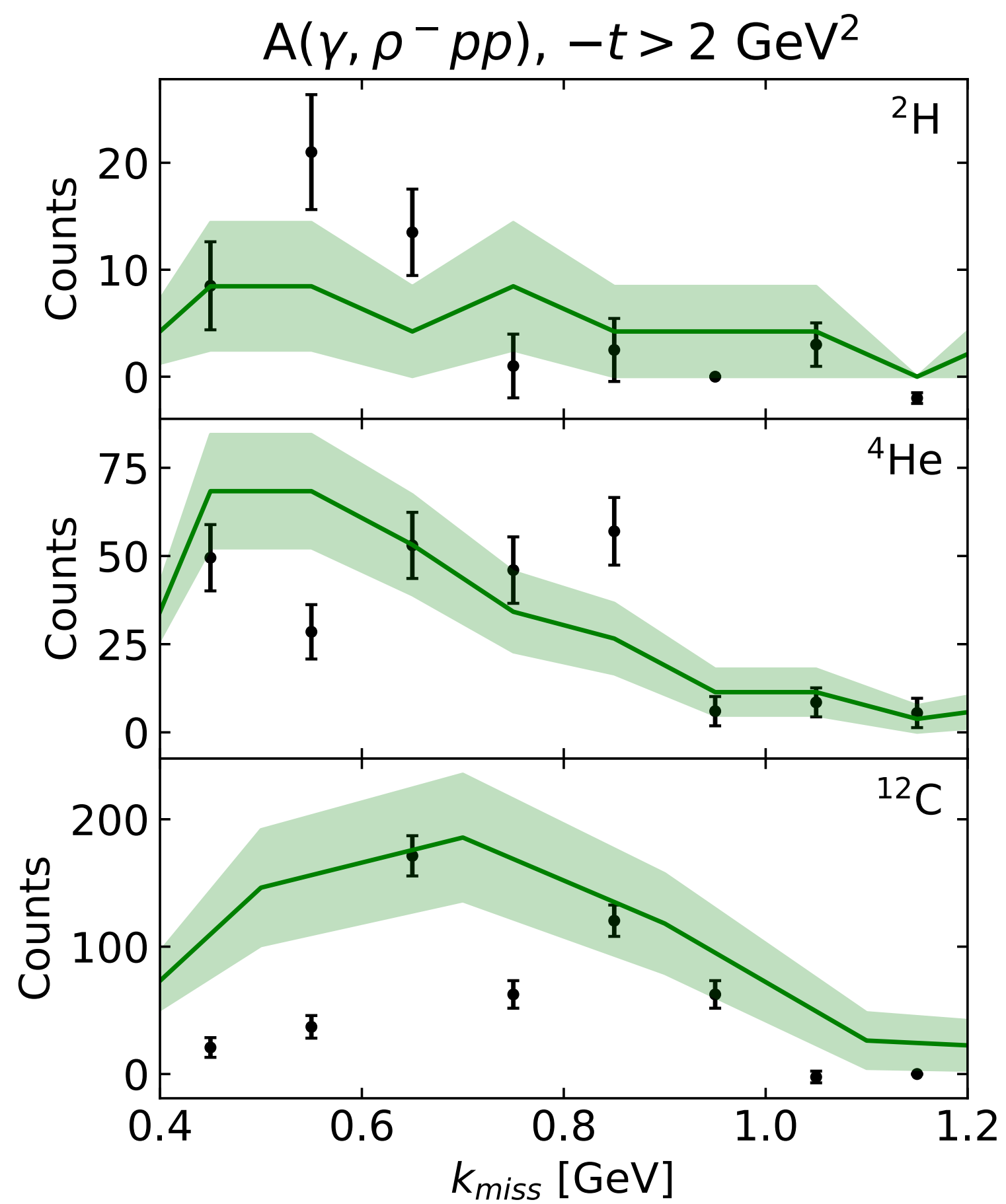


Target change Friday

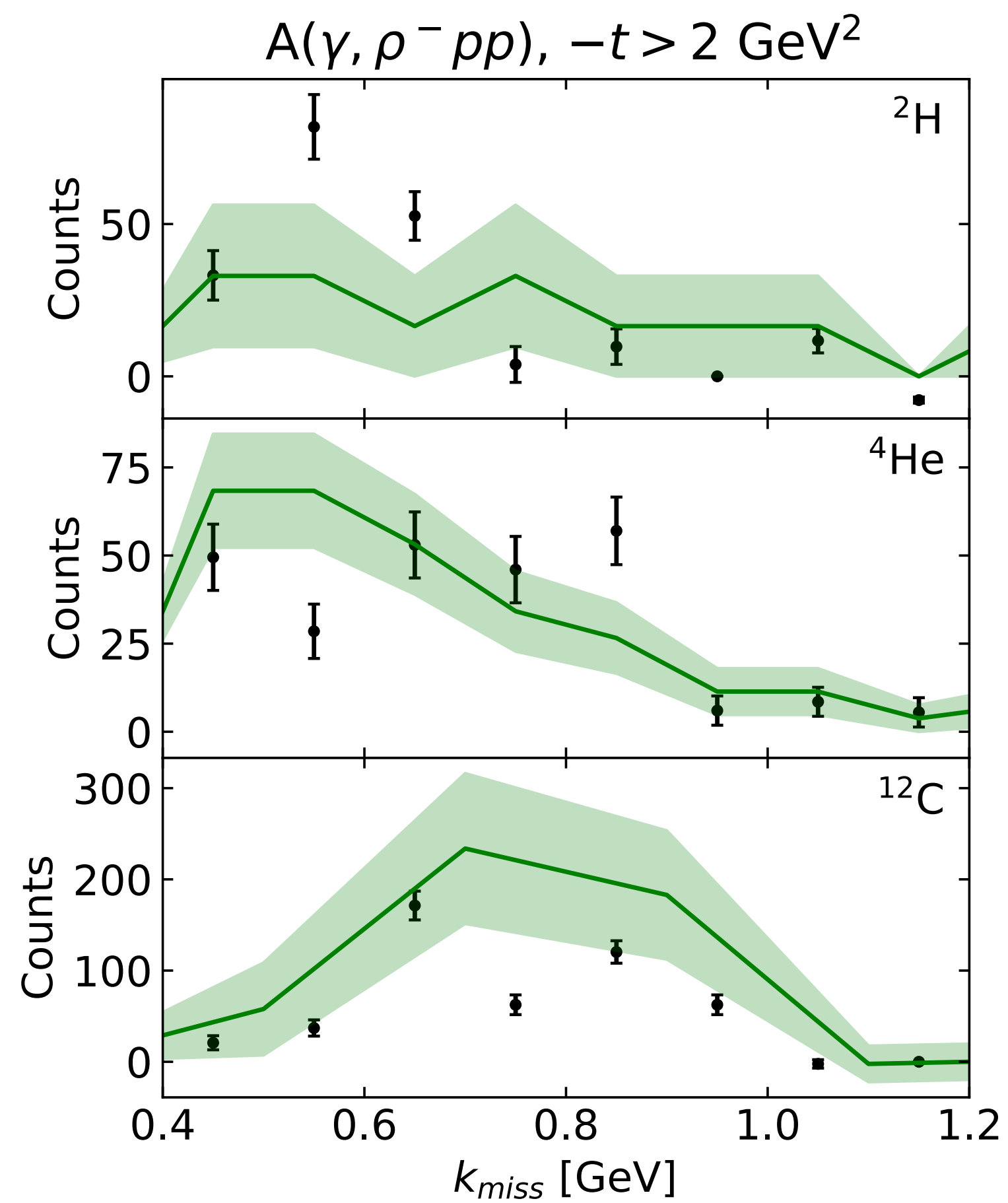
$A(\gamma, \rho^- pp), -t > 1 \text{ GeV}^2$



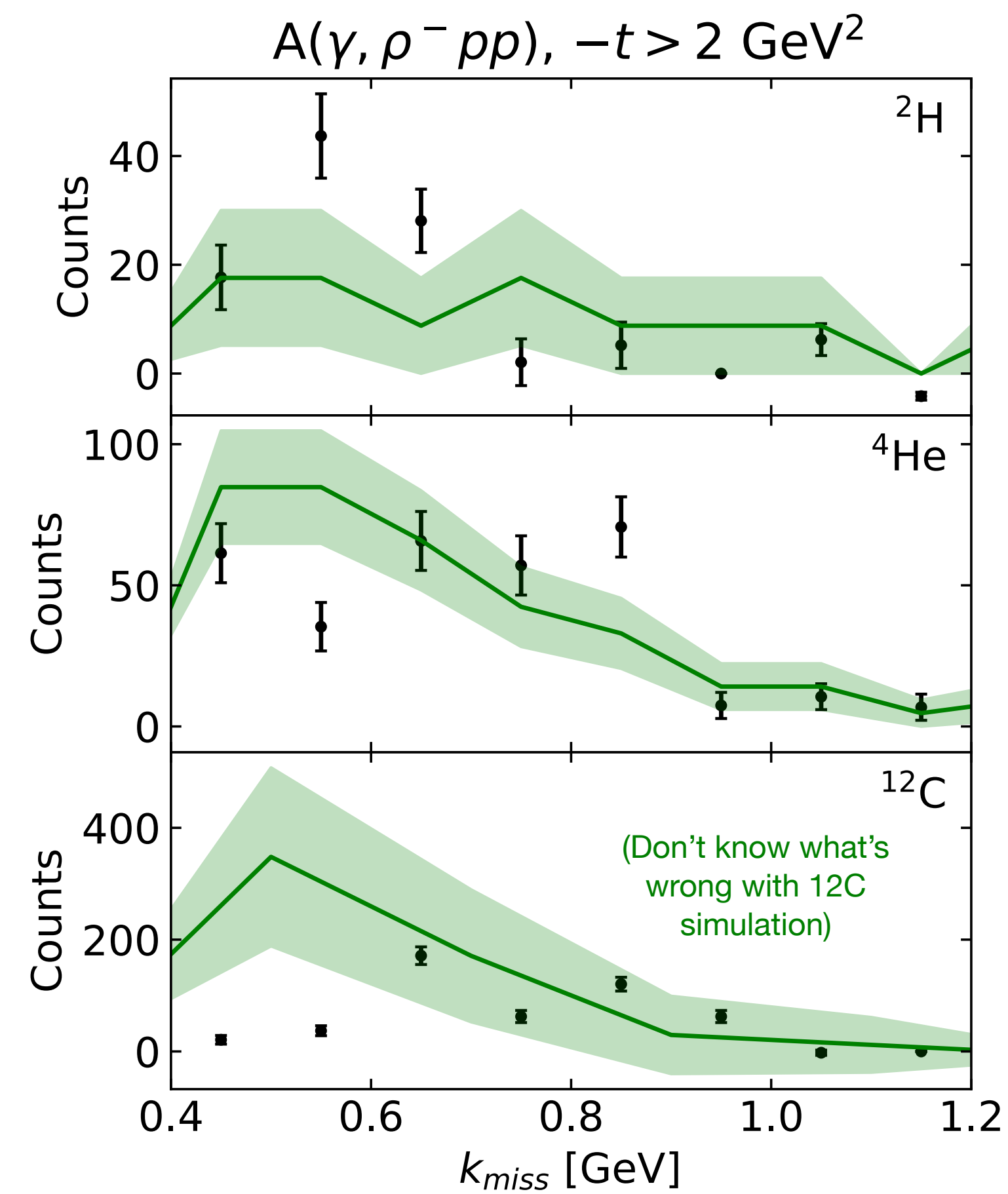
Current Data



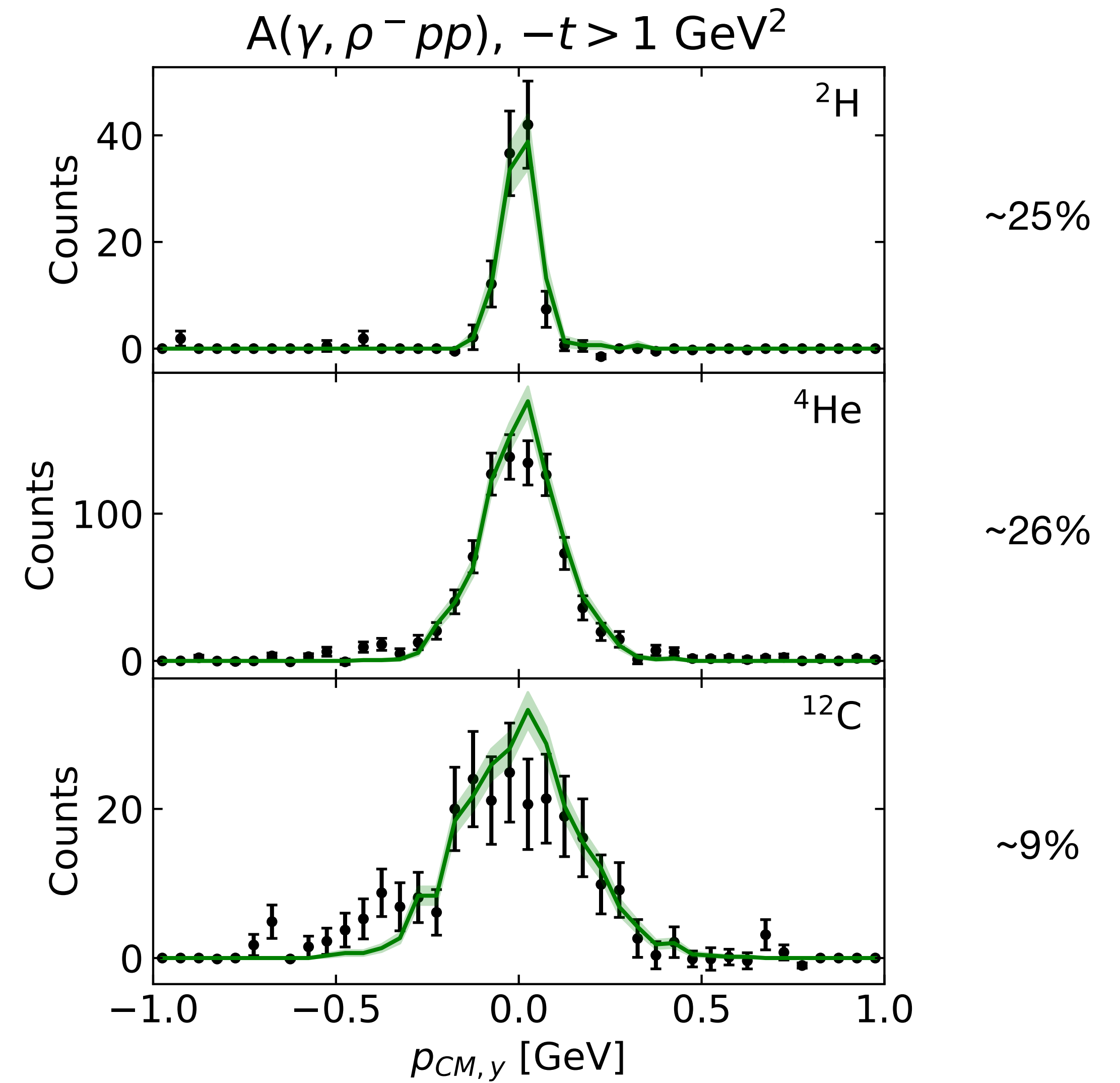
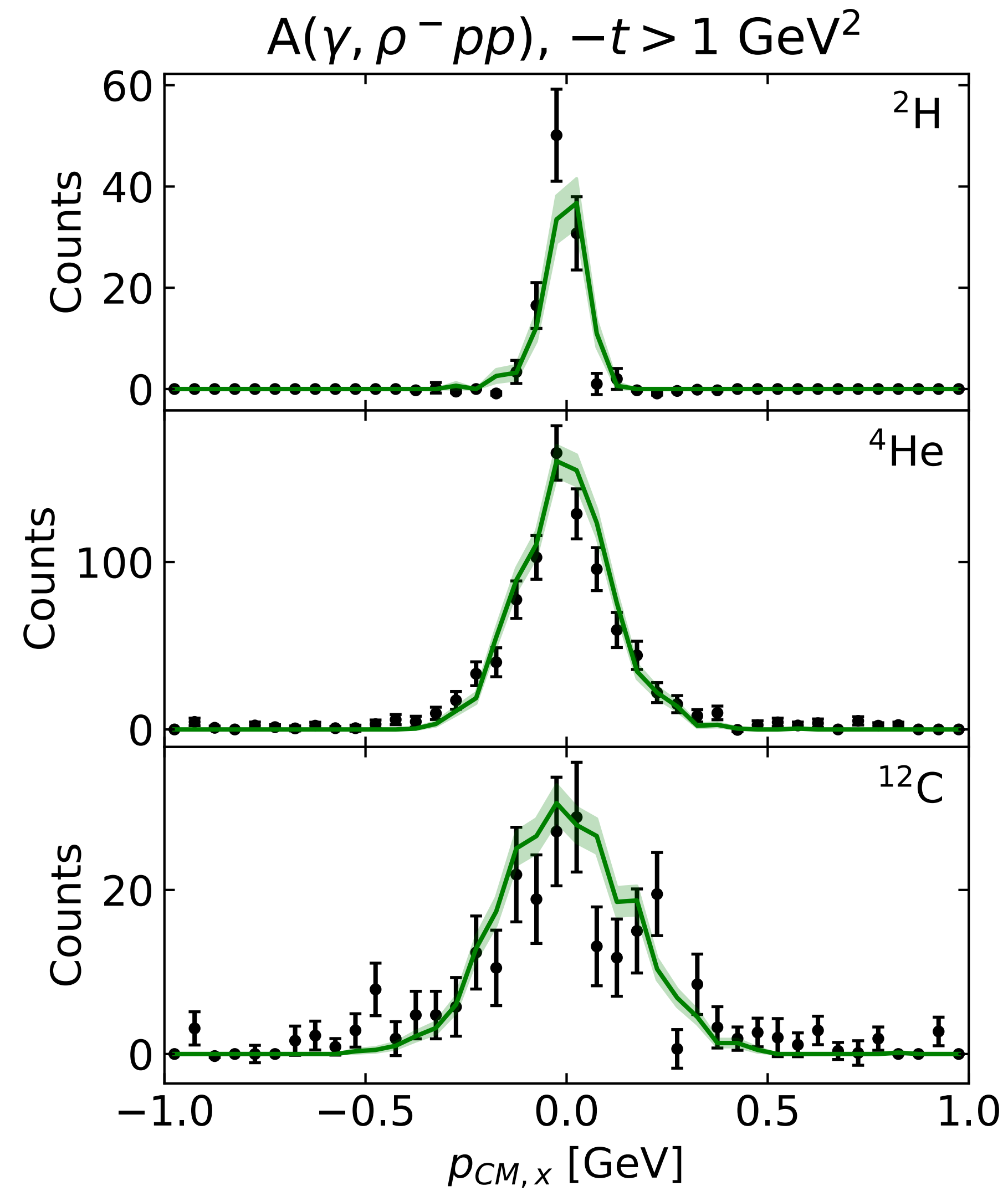
No target change



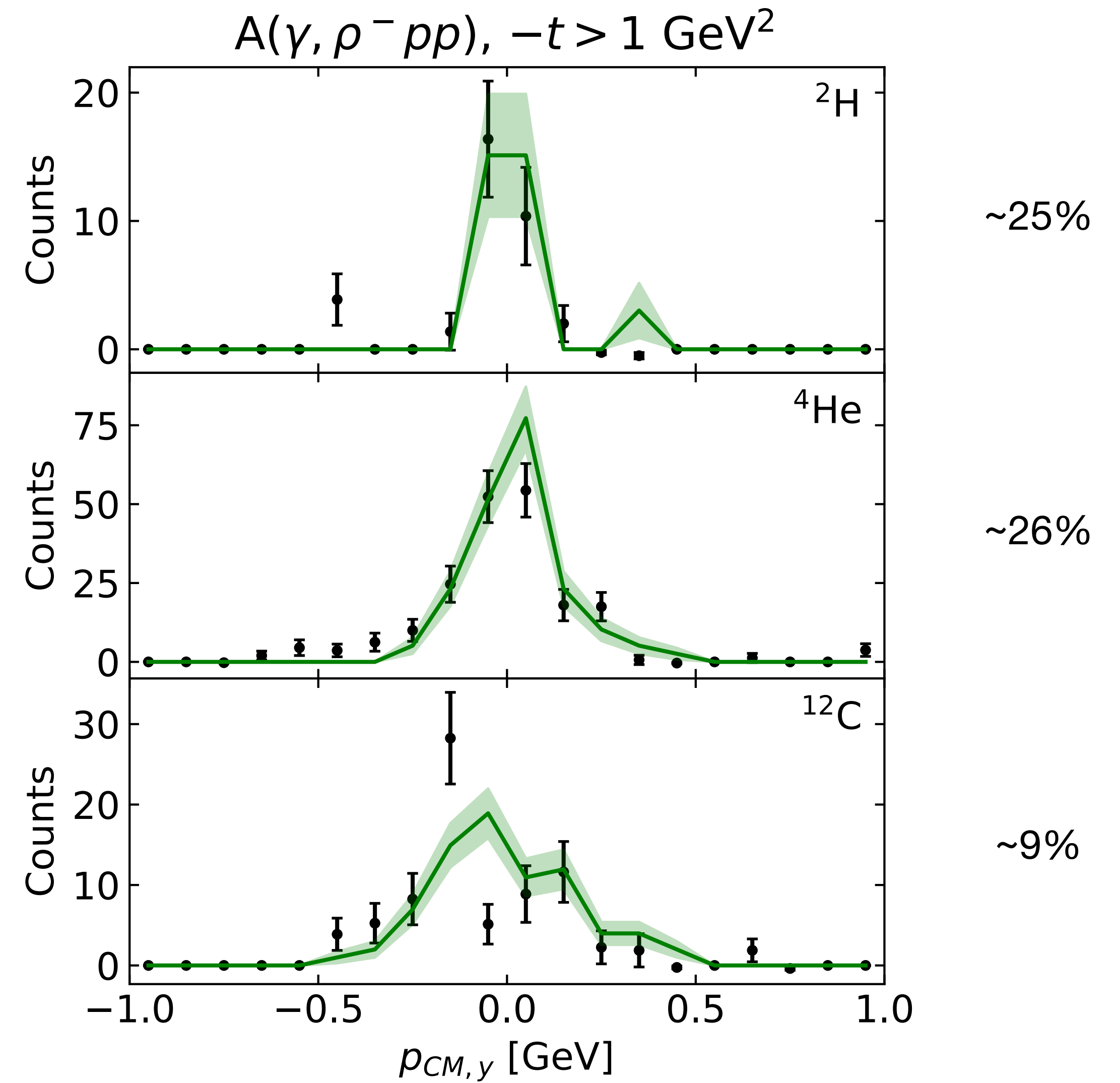
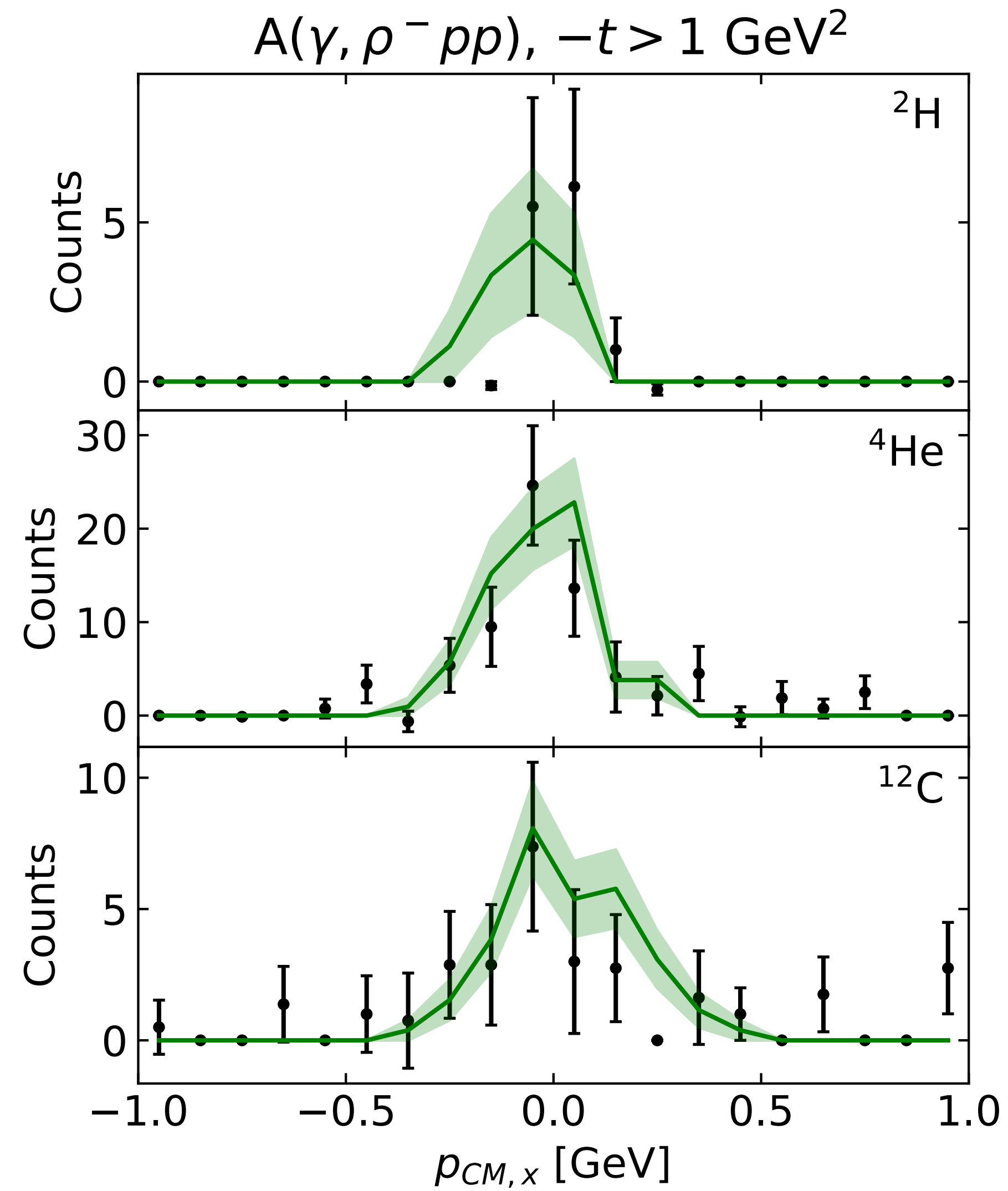
Target change Friday



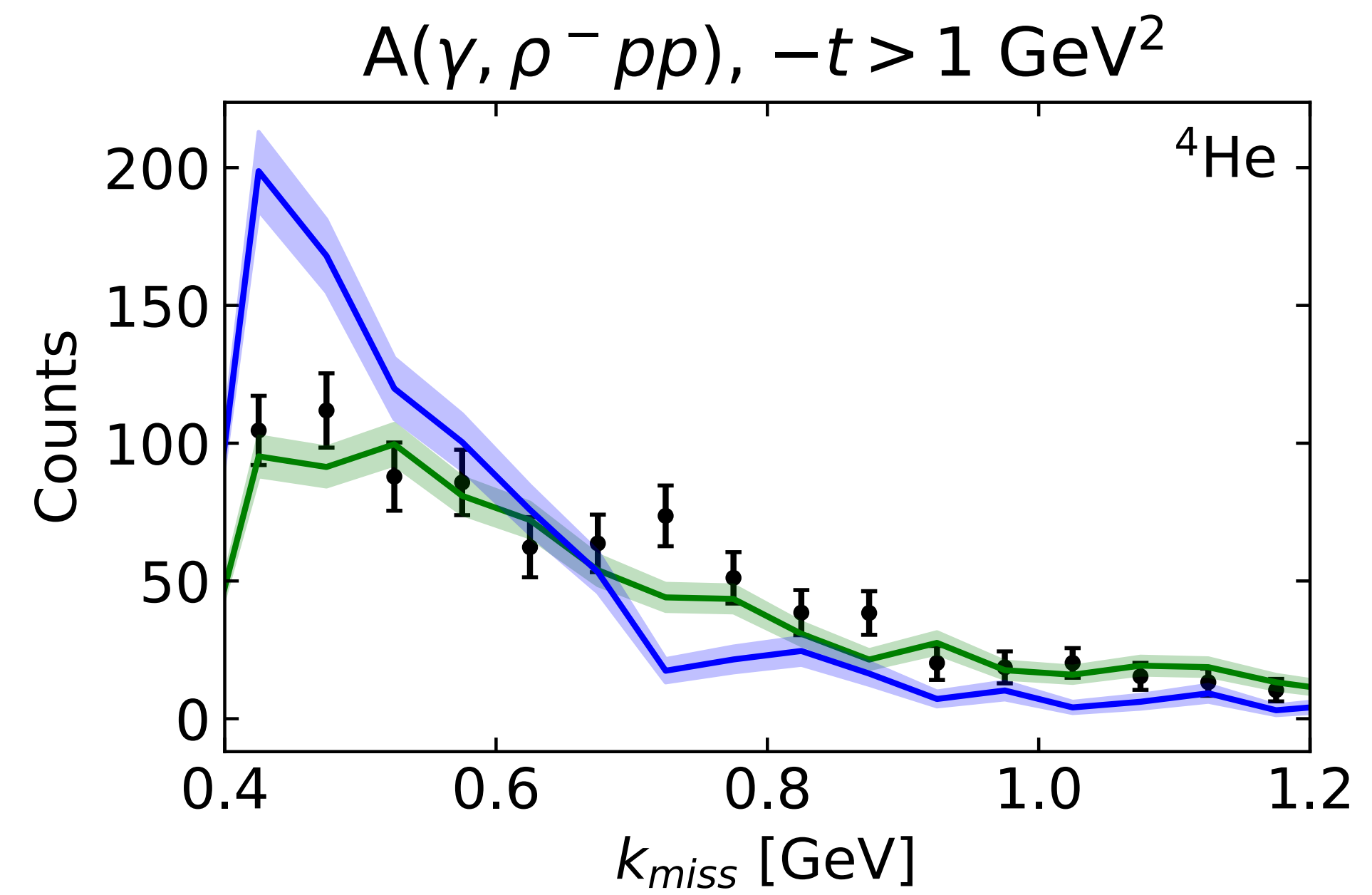
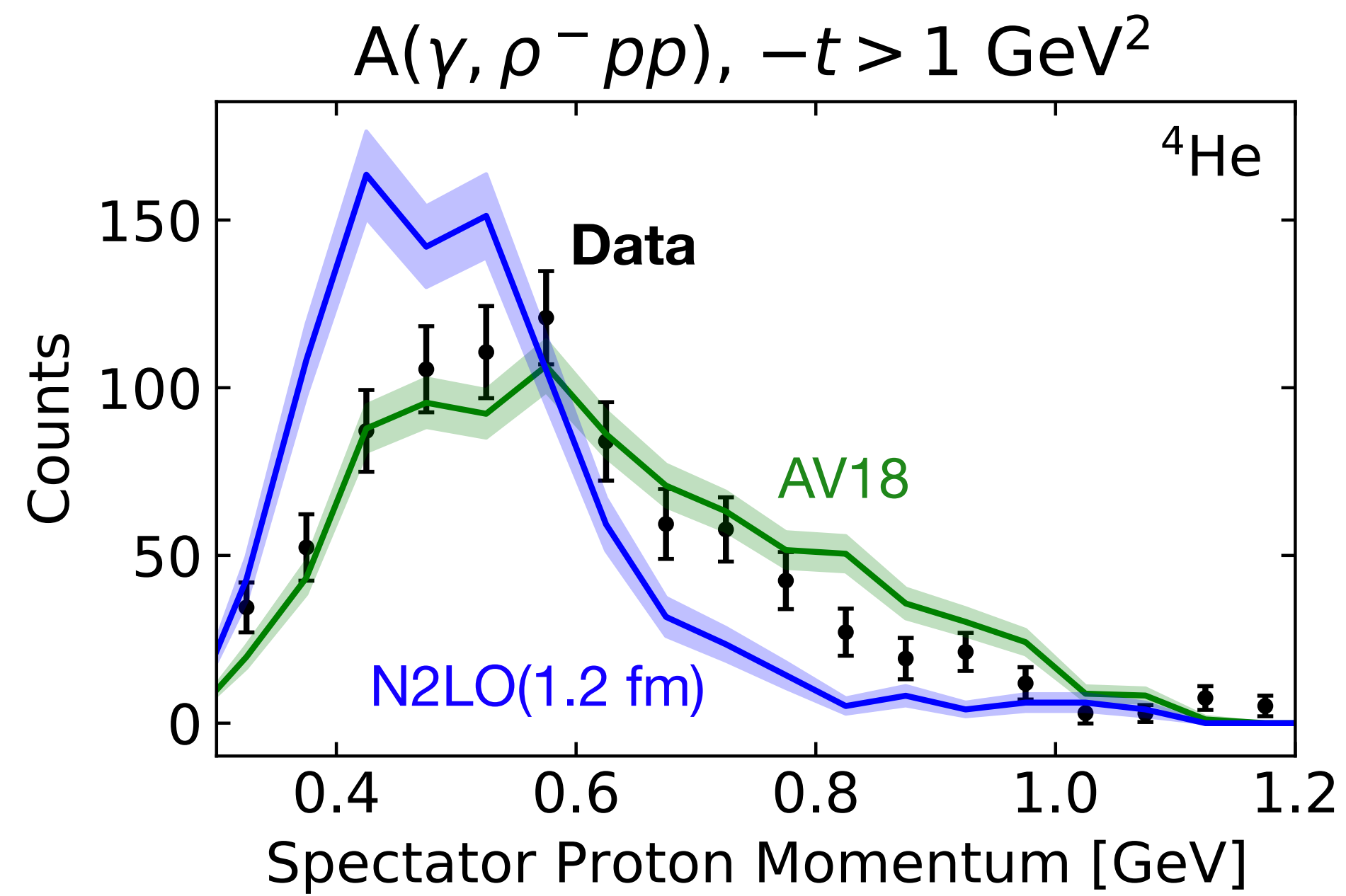
SRC signal has expected nuclear dependence



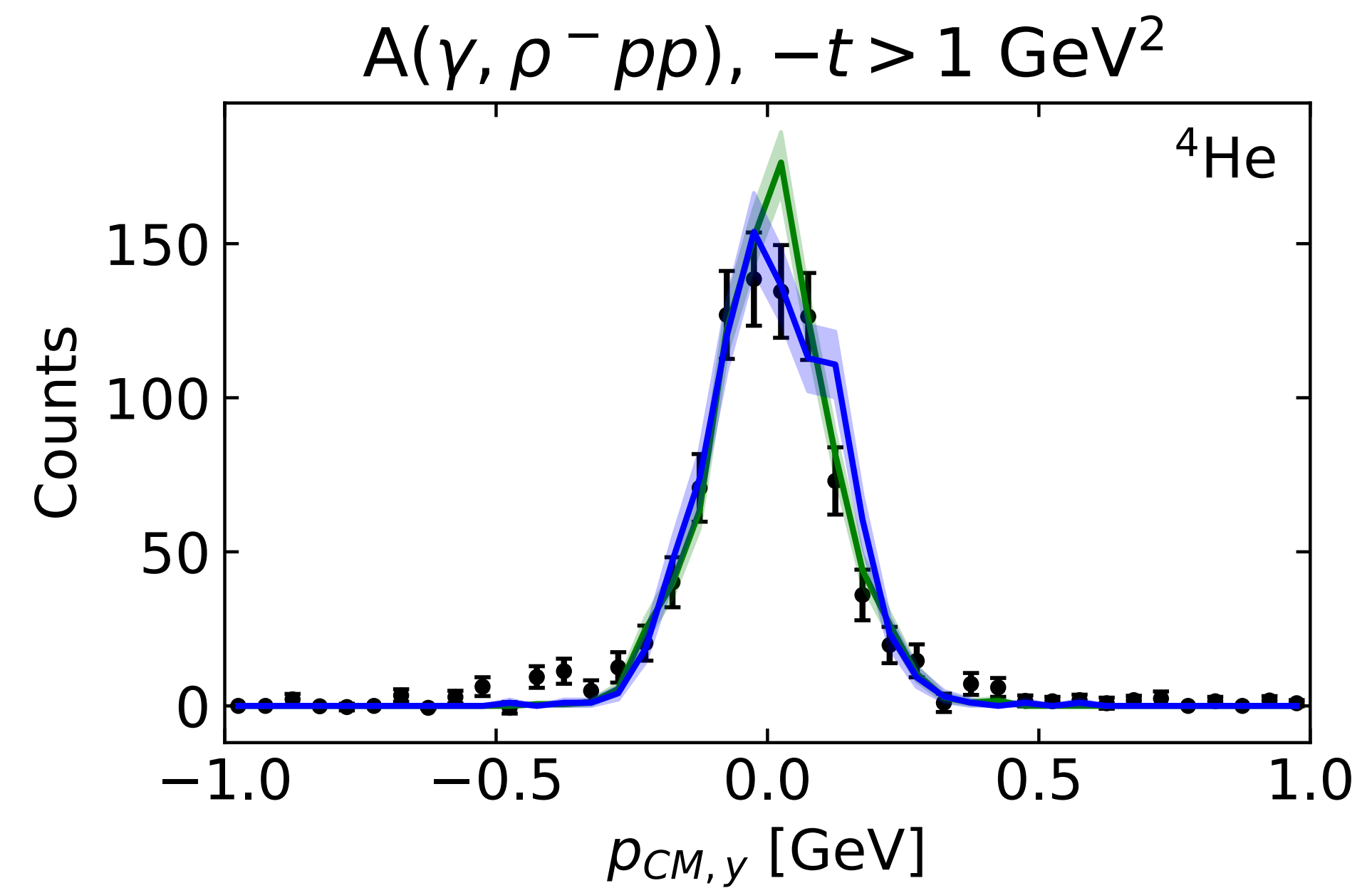
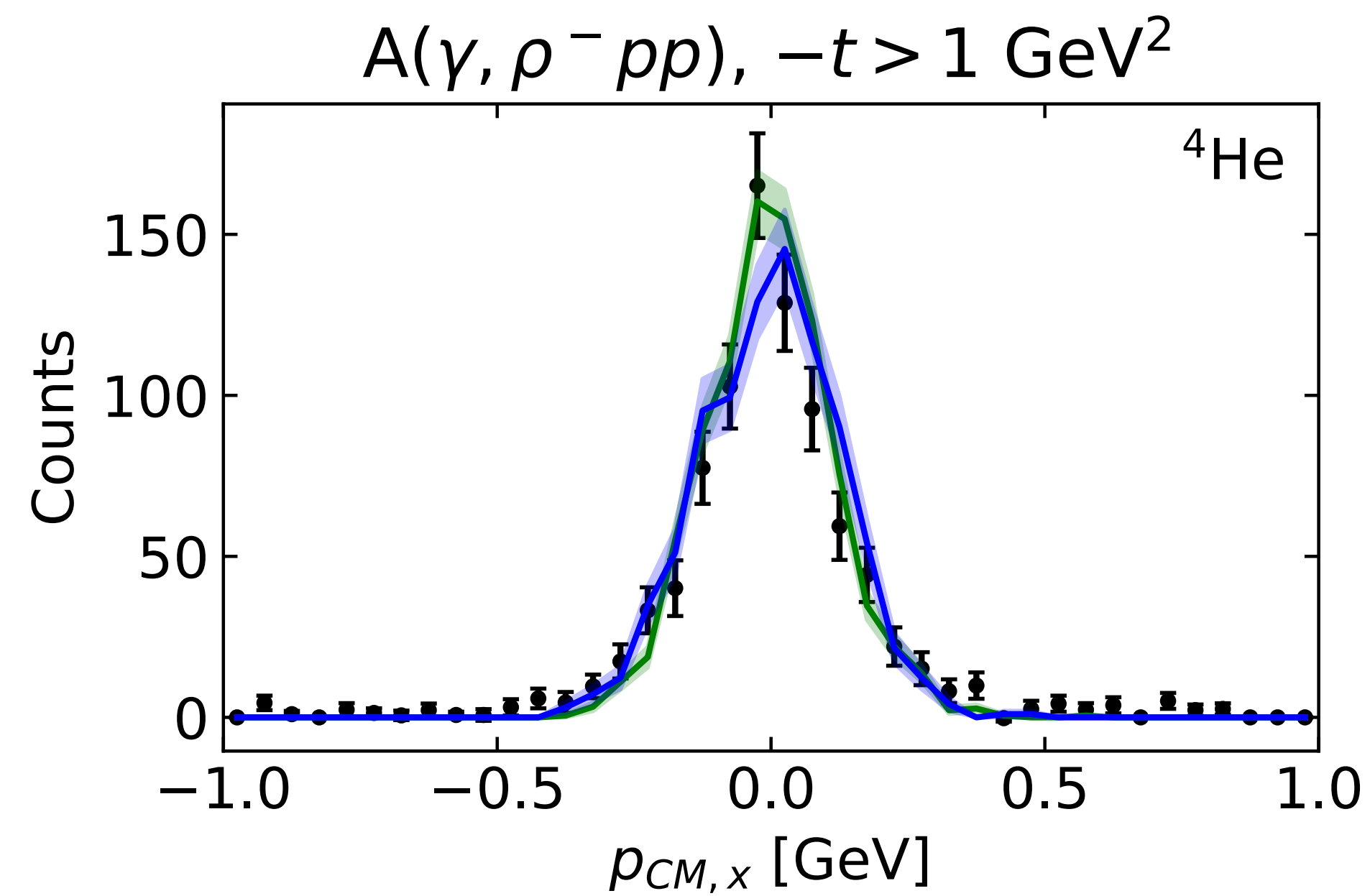
SRC signal has expected nuclear dependence



Momentum distributions sensitive to NN interaction



CM momentum does not depend on NN interaction

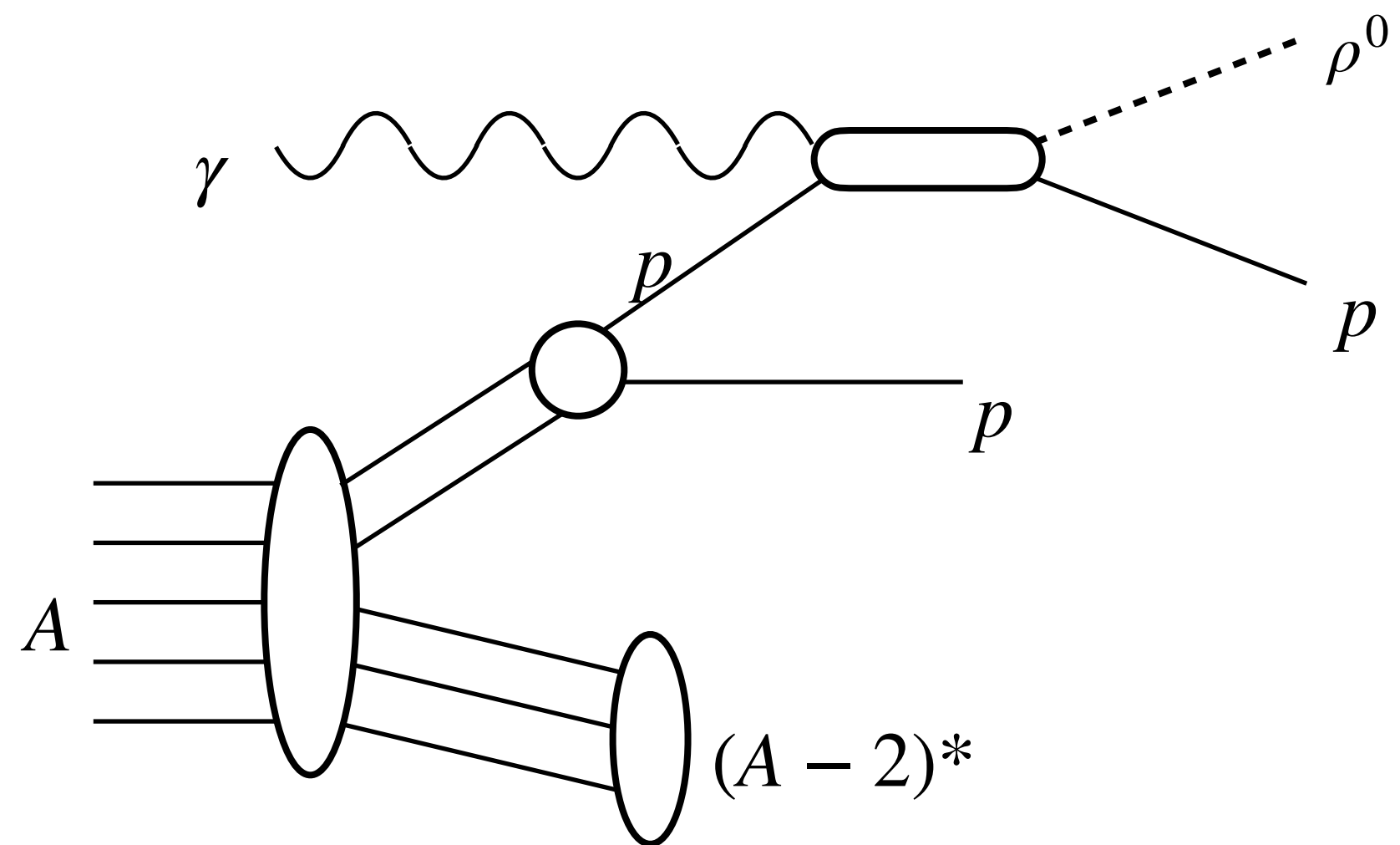


Reaction: $\gamma pp \rightarrow \rho^0 pp \rightarrow (\pi^+ \pi^-) pp$

Requiring 2 positive tracks, 1 negative track, <2 neutral showers.
Kinematic fit to vertex position

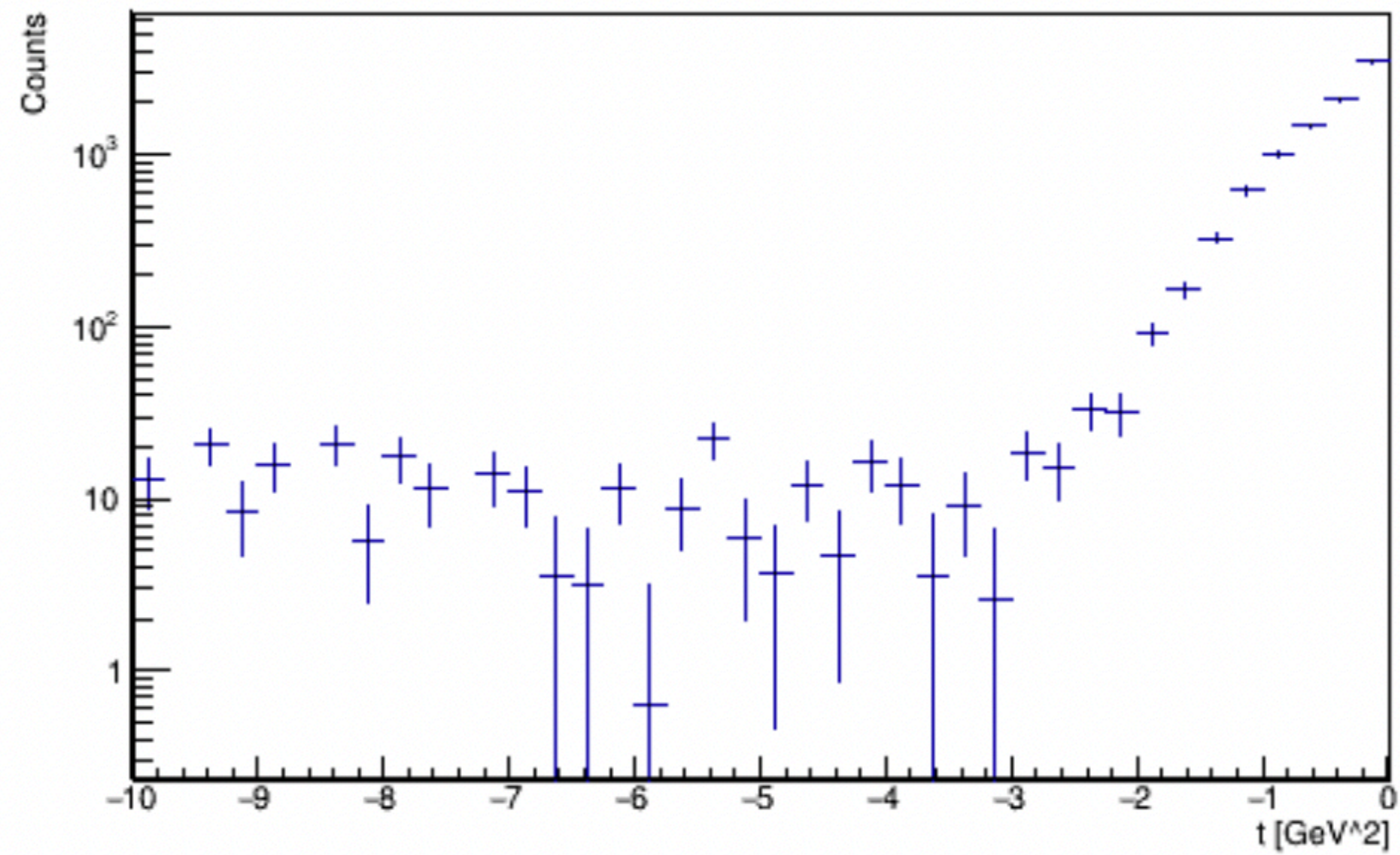
Cuts:

- Kinematic Fit Confidence Level > 0.05
- dE/dx and timing cuts for PID
- Vertex cuts
- $E_\rho + E_p > 7$ GeV
- $E_\gamma > 6$ GeV
- $|E_\gamma + m_N - E_\rho - E_p| < 1$ GeV
- $0.65 < m_{\pi\pi} < 0.9$ GeV
- $k_{miss} > 0.4$ GeV
- Recoil proton momentum > 0.3 GeV
- $\cos \gamma < -0.9$
- $\theta_{rec} > 50^\circ$

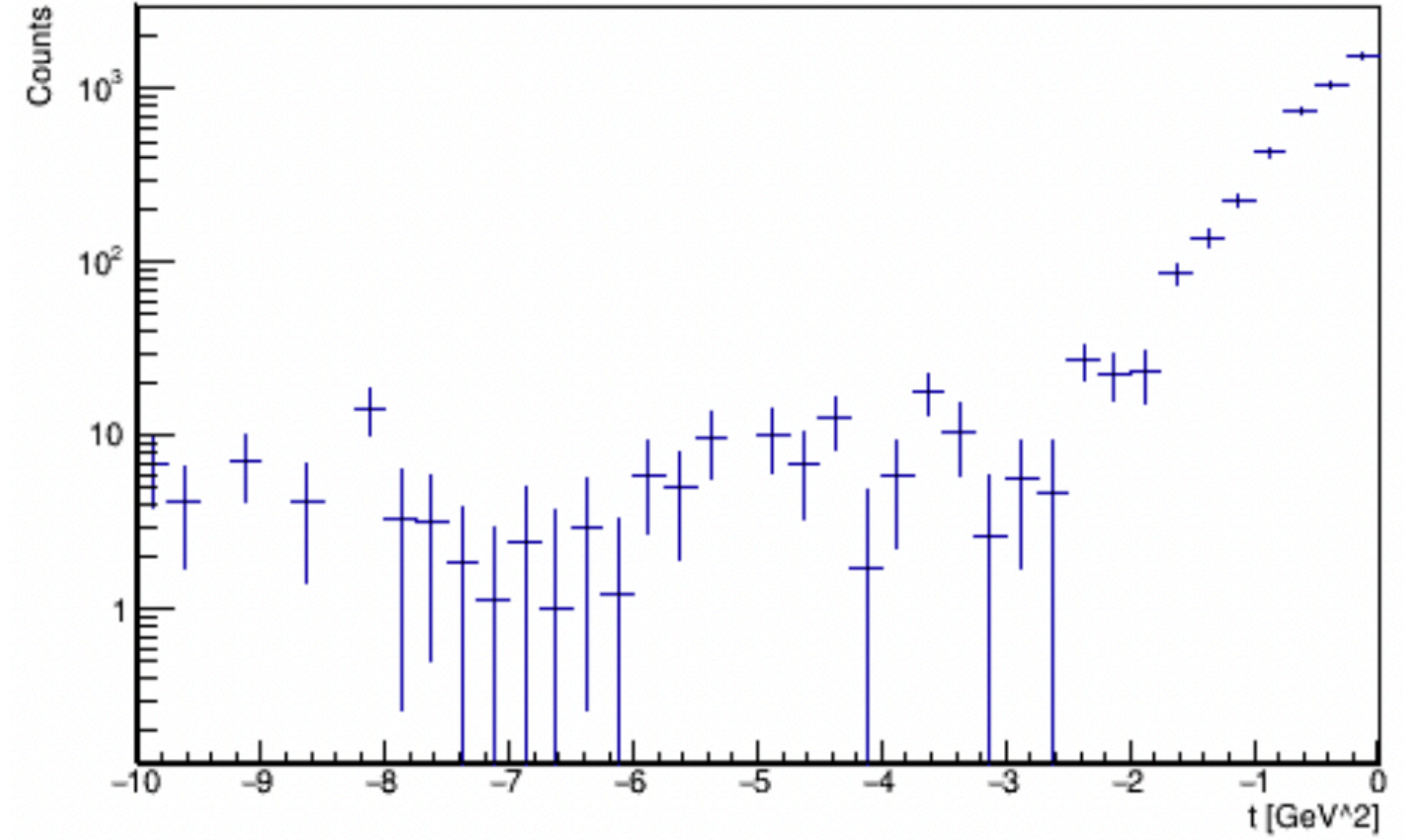


t Distributions

25% 4He



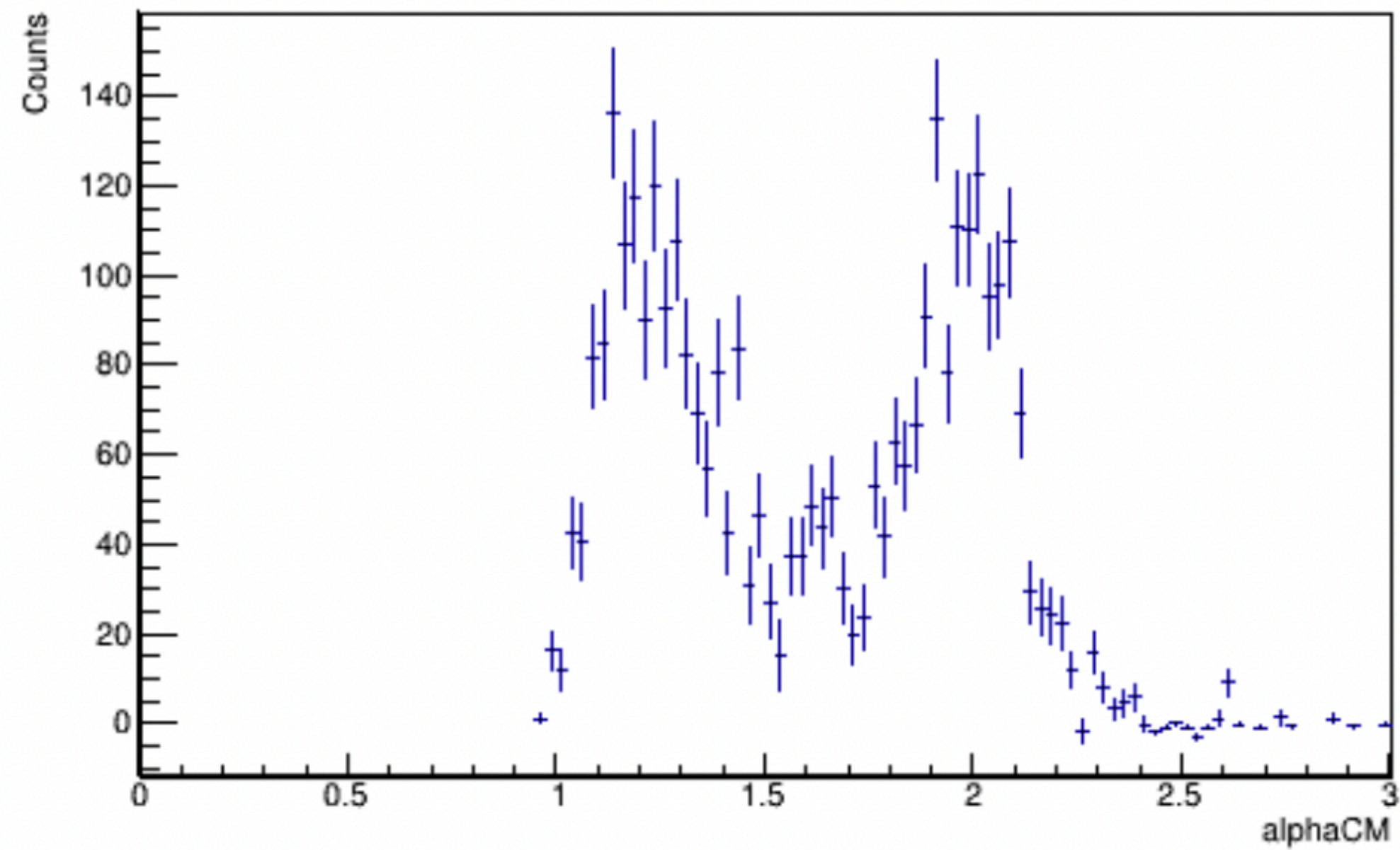
9% ^{12}C



Signal-BG

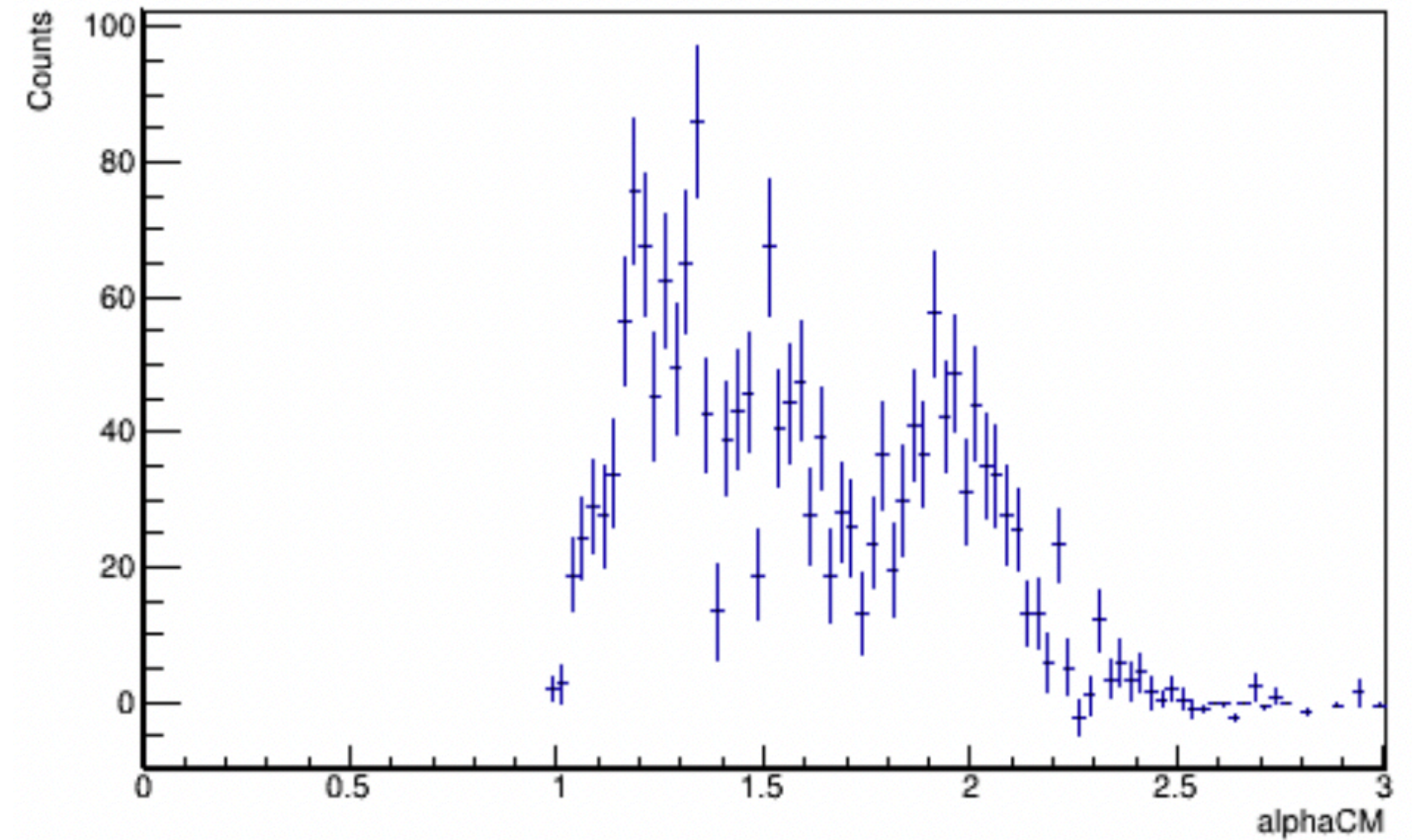
25% 4He

$-t > 1 \text{ GeV}^2$



9% ^{12}C

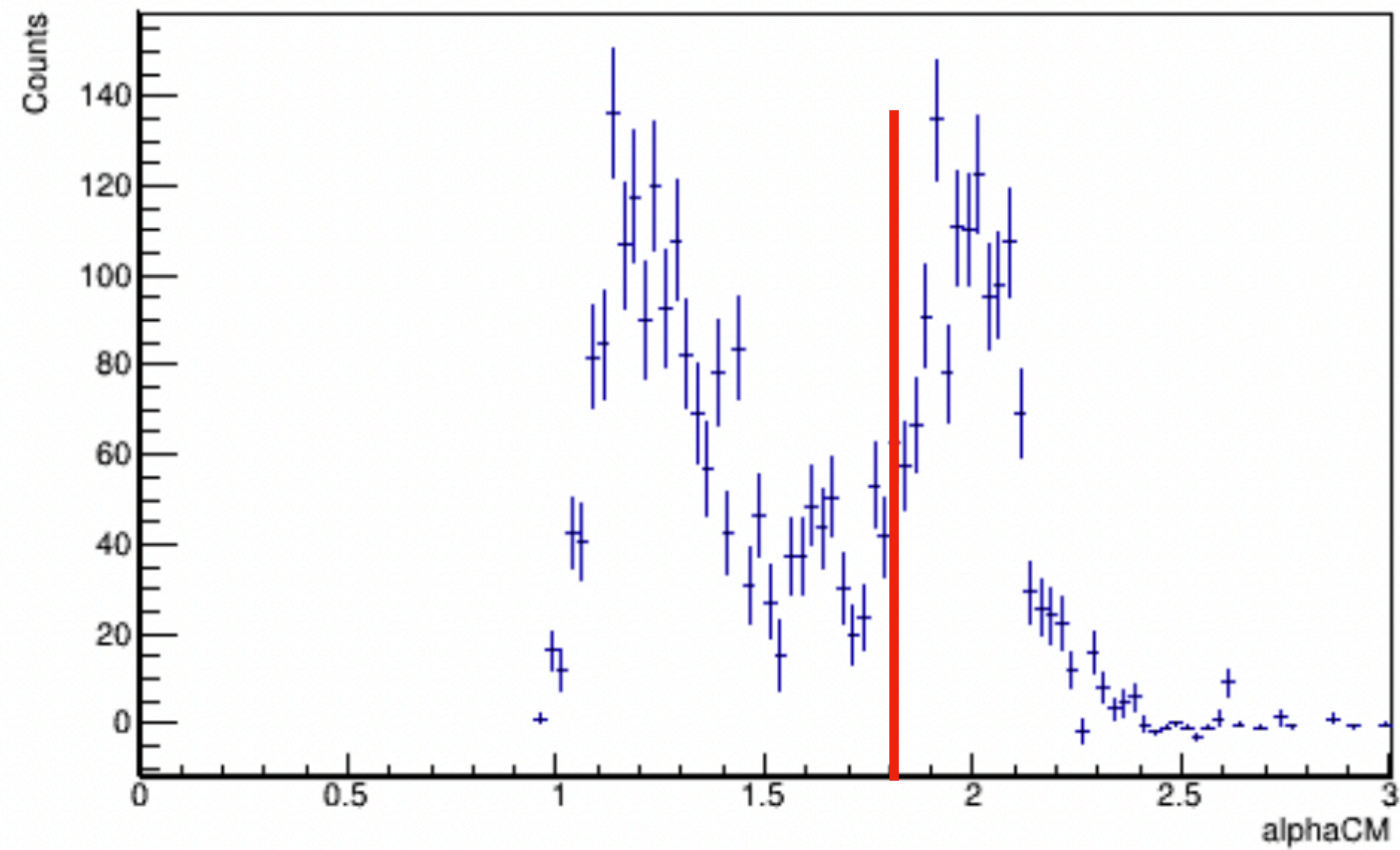
$-t > 1 \text{ GeV}^2$



Signal-BG

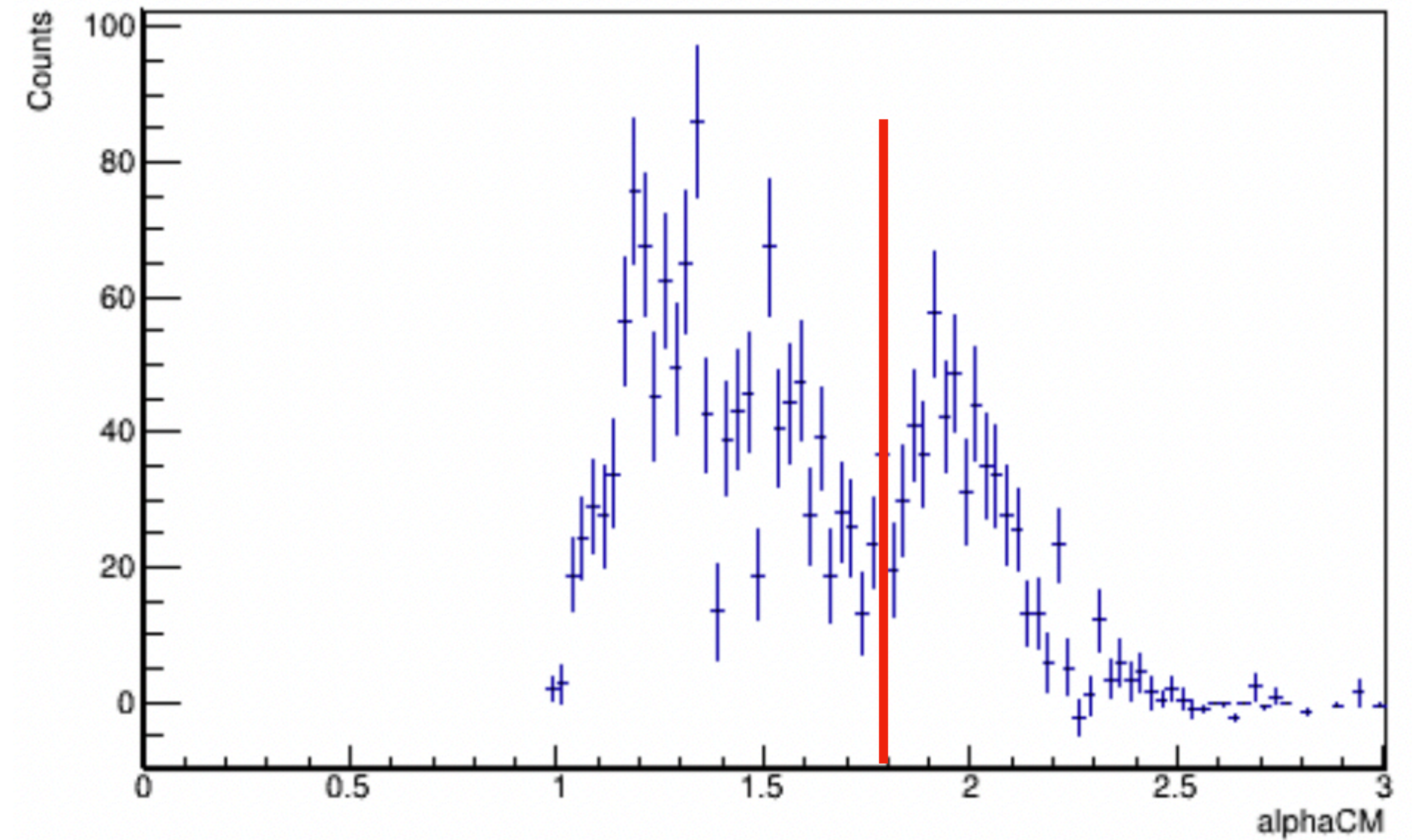
25% 4He

$-t > 1 \text{ GeV}^2$



9% 12C

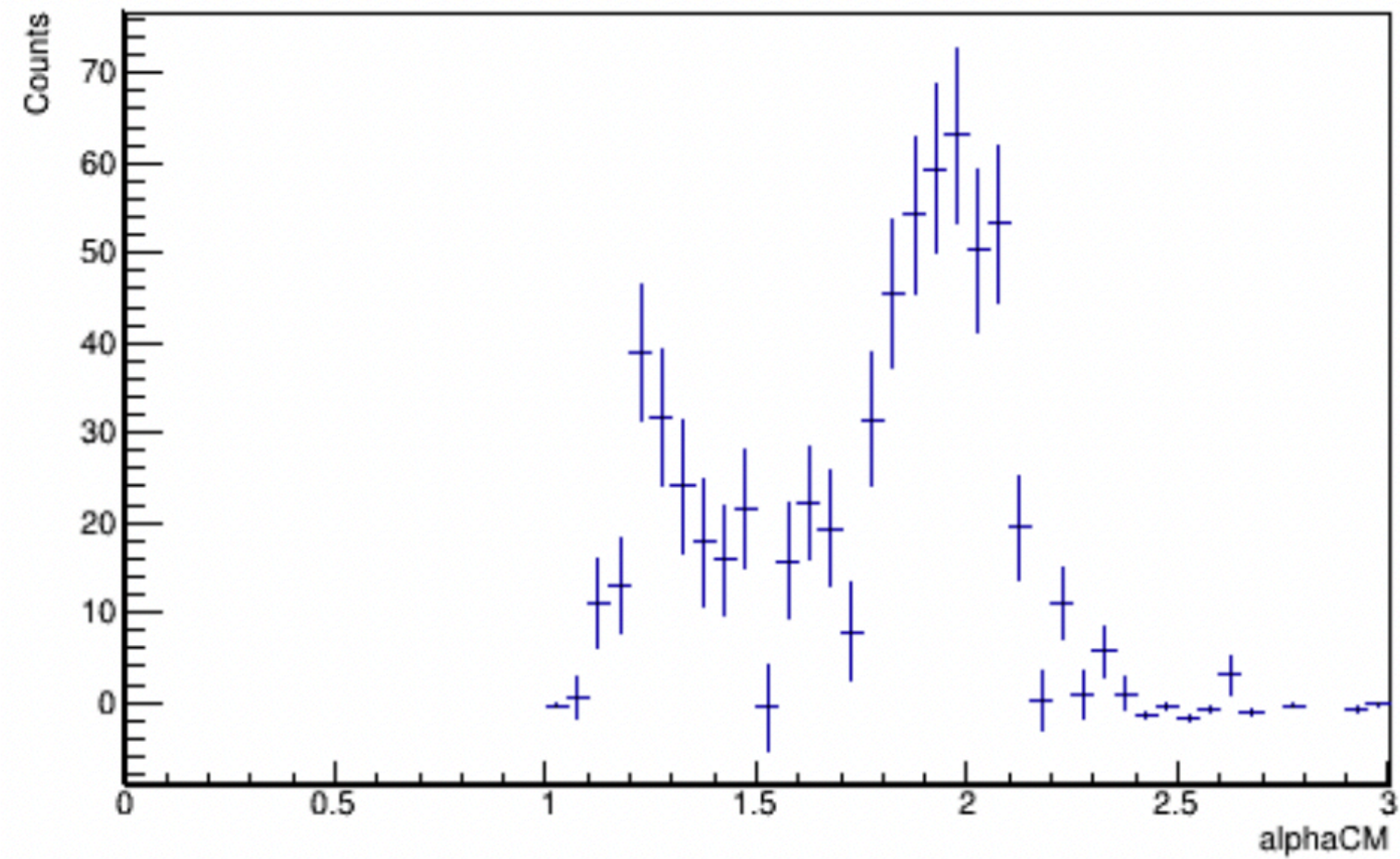
$-t > 1 \text{ GeV}^2$



Signal-BG

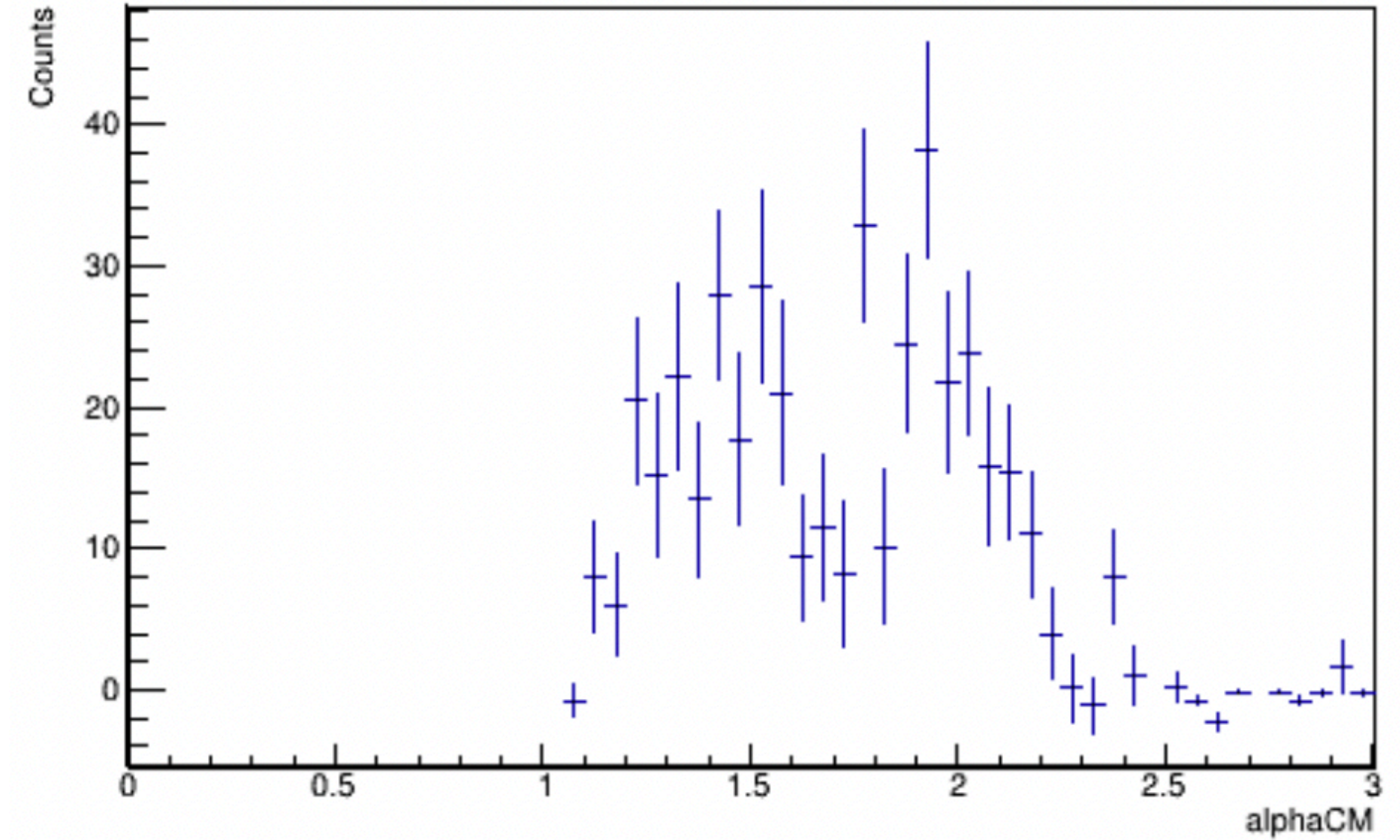
25% 4He

$-t > 1.5 \text{ GeV}^2$



9% ^{12}C

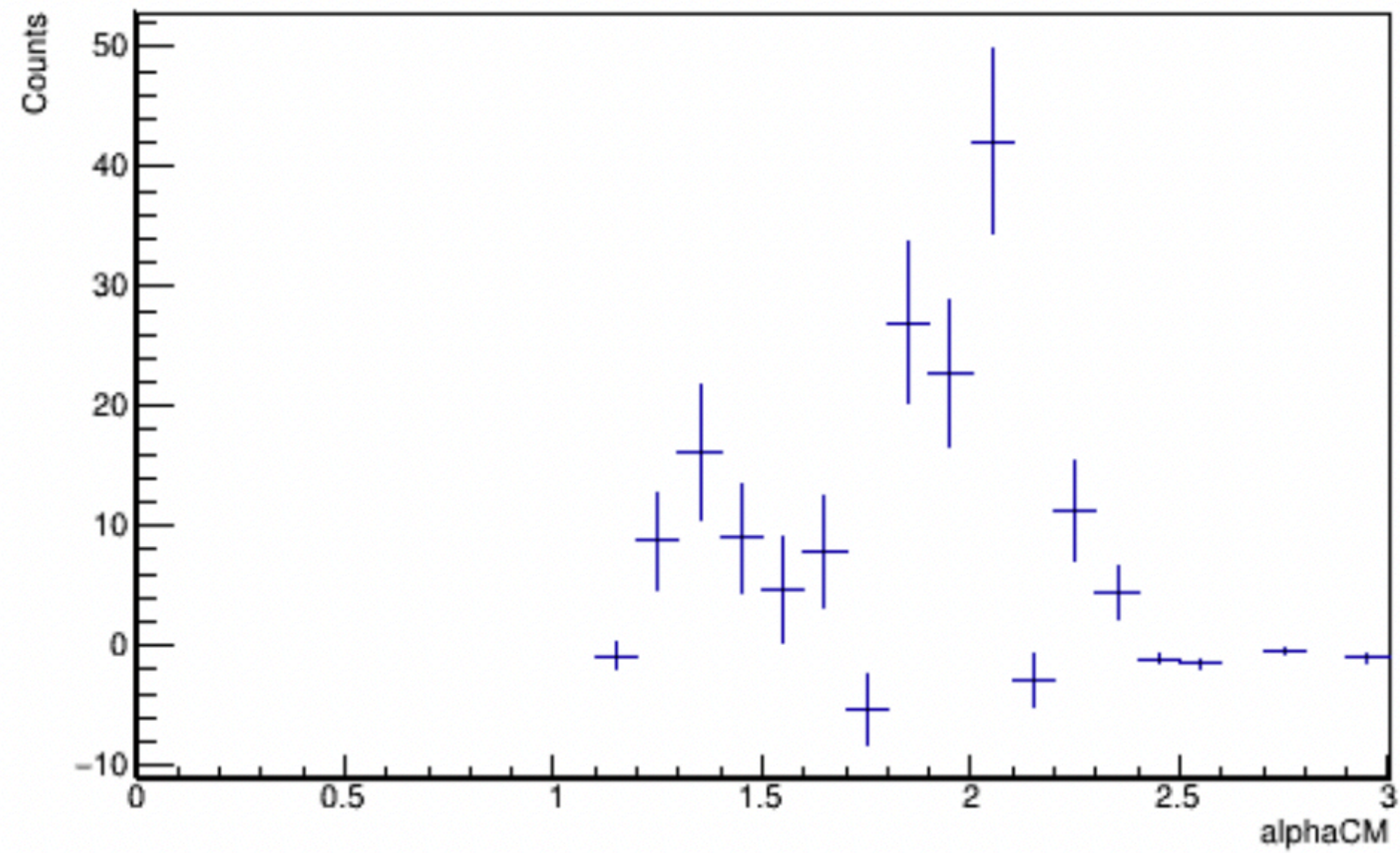
$-t > 1.5 \text{ GeV}^2$



Signal-BG

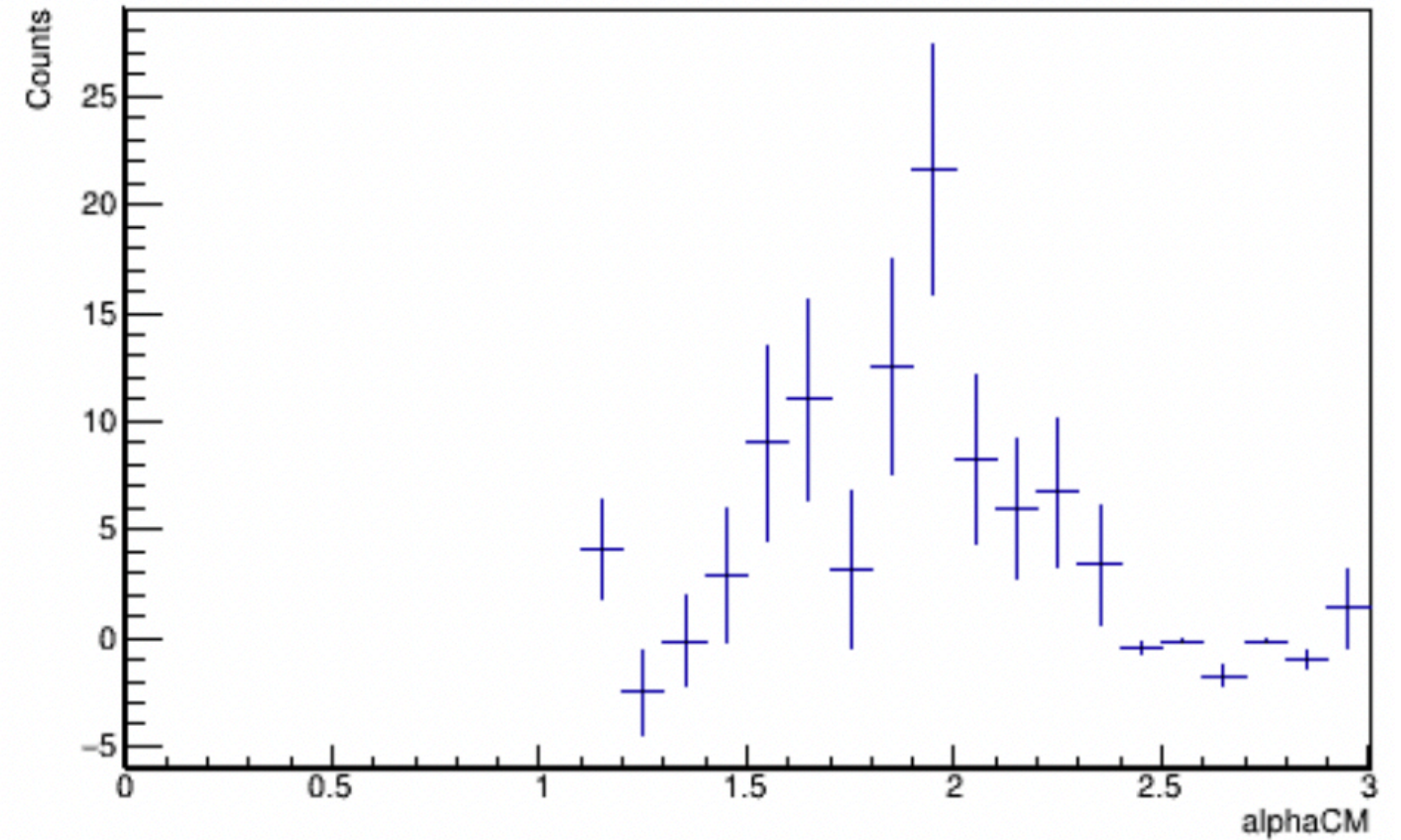
25% 4He

$-t > 2 \text{ GeV}^2$

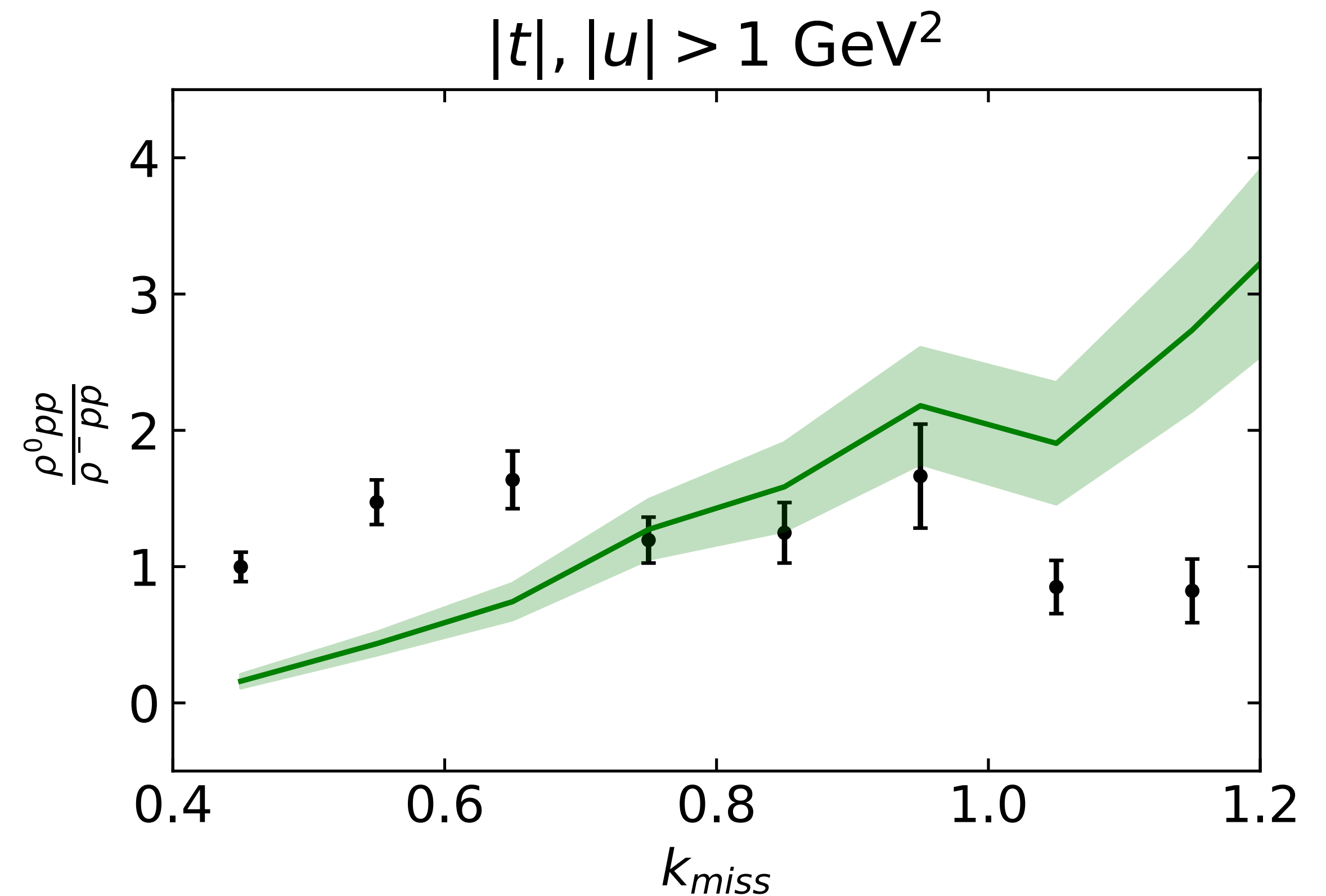
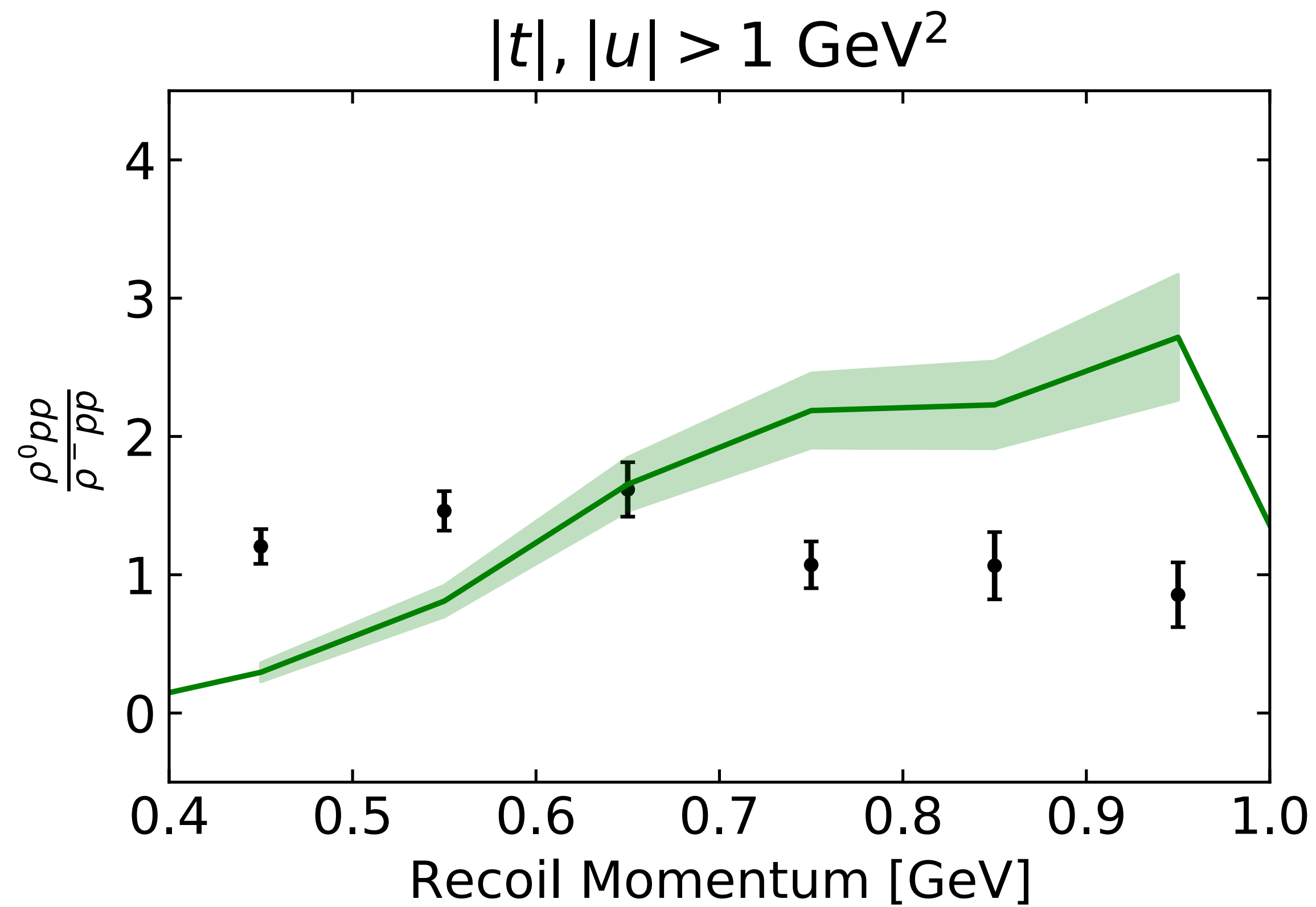


9% ^{12}C

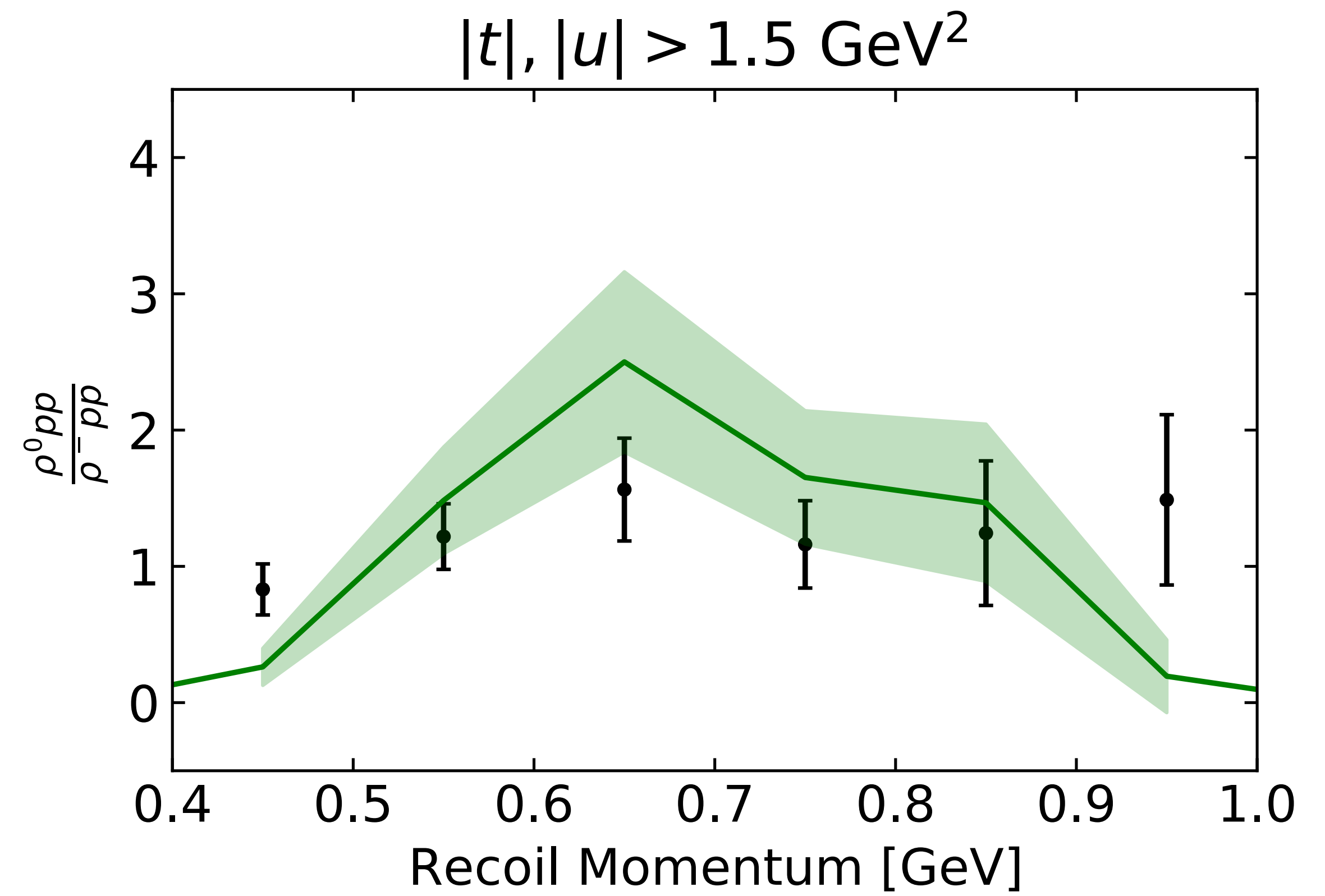
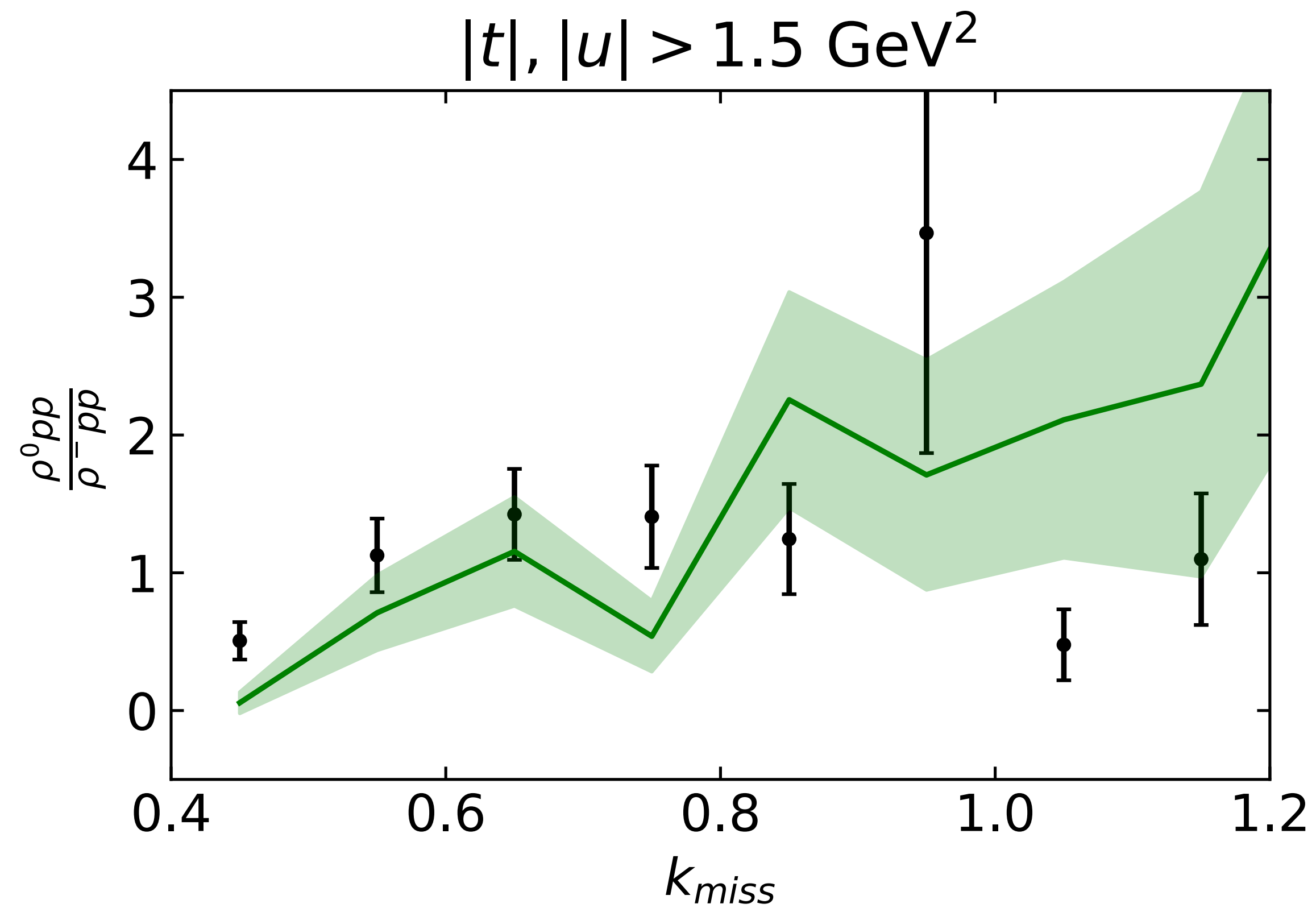
$-t > 2 \text{ GeV}^2$



Ratios with current (25%) 4He



Ratios with current (25%) 4He



Ratios with current (25%) 4He

