# Update on $(\gamma n \rightarrow \rho^- p)$ cross section extraction
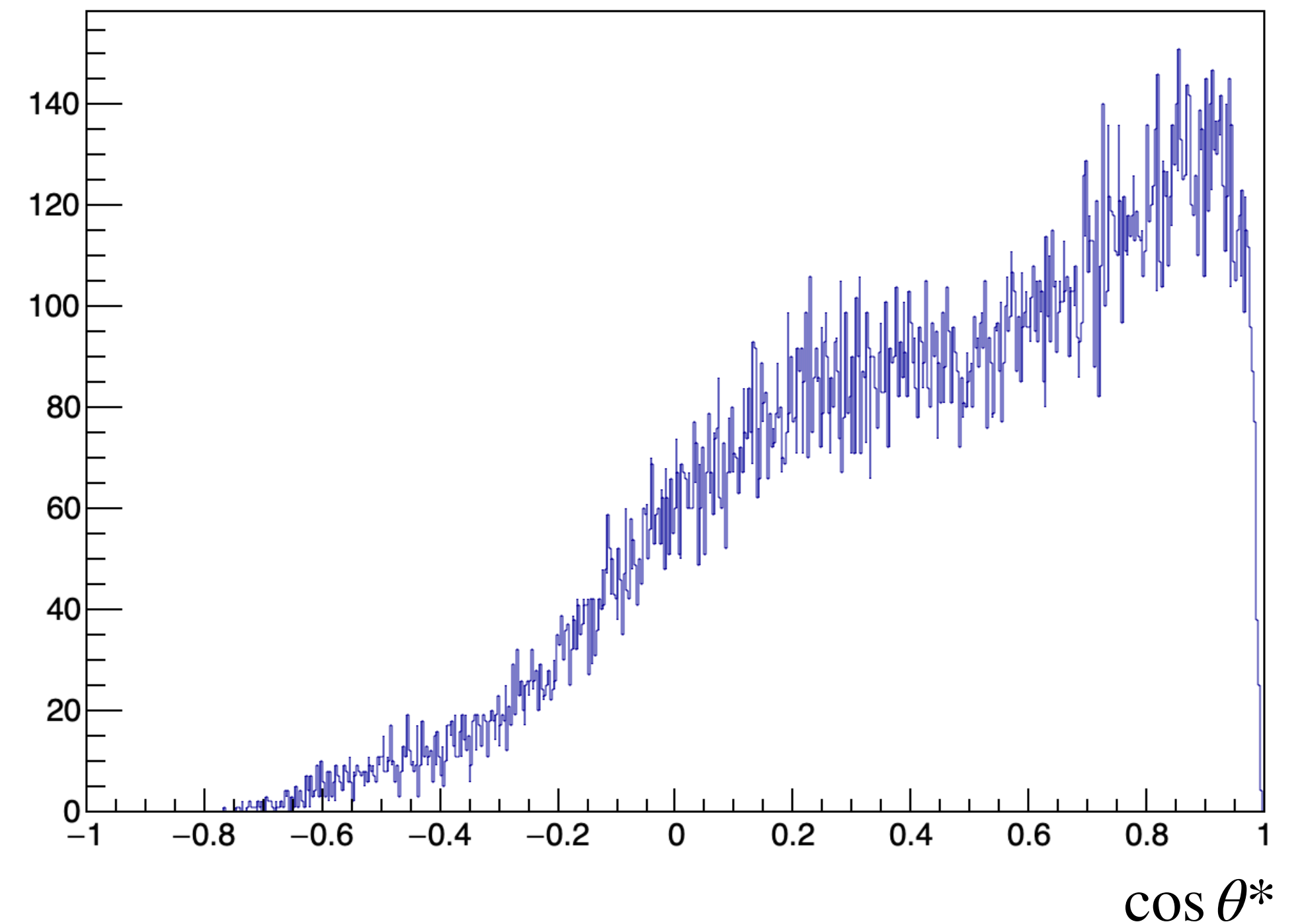
Jackson Pybus

Looking at full $D(\gamma, \rho^- p)p$ data

- Looking at full deuterium data sample, fitting invariant mass in different kinematics

  - Optimizing kinematic binning for cross section extraction

- New, phase-space adjusted Breit-Wigner does a good job of fitting the mass spectrum

  - No excessive negative backgrounds

  - Still need to add $\rho(1680)$ resonance to fit

- Clear evidence of both forward- and backward-peaked ρ^- production
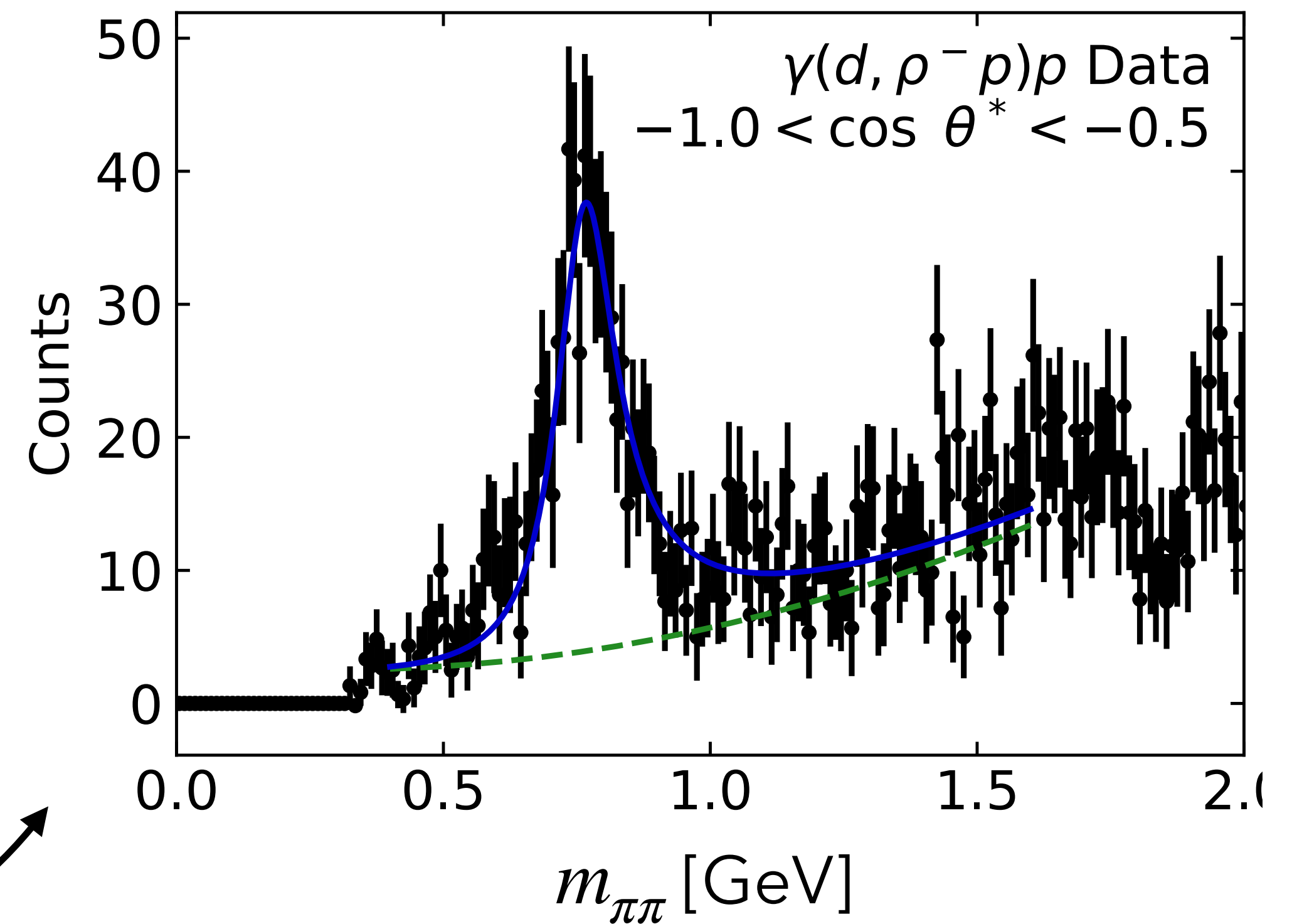
Outstanding issues in photoproduction simulation

- Phase space simulation with fixed
  $$\frac{d\sigma}{dt} = 1 \text{ nb/GeV}^2 \text{ run through GEANT and}$$
  event selection

- Apparent selection issues cutting off backward-angle simulation, but not data

- Also changing generator to adjust ρ meson mass spectrum for phase-space weighting

$\cos\theta*$

Working on discussion of backgrounds in ALP paper

$$m_{meas} < m_\eta$$

$$m_{true} = m_\eta$$

Assumed Vertex

Interaction Vertex