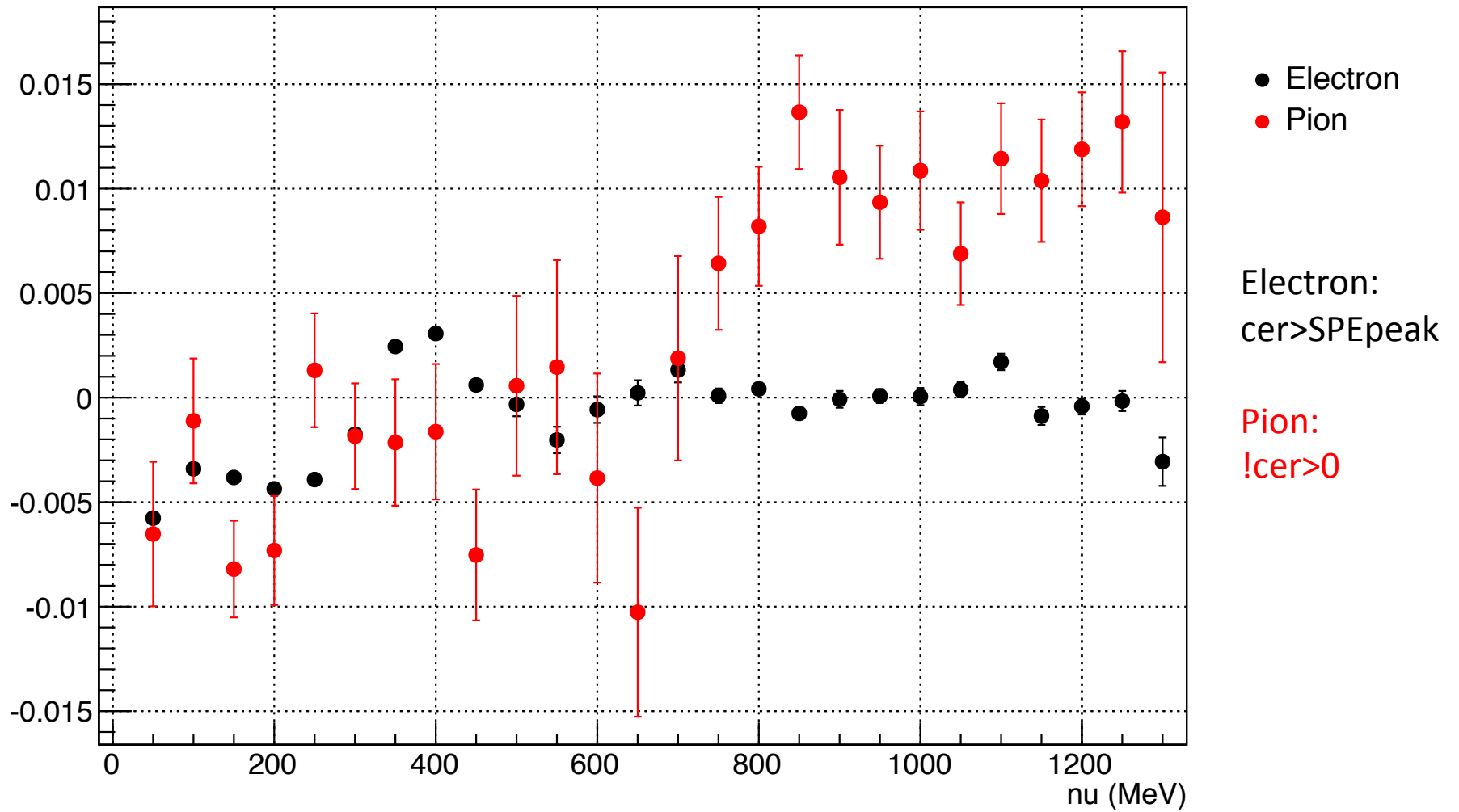# Pion Asymmetries

08/19/15

M. Cummings

Size of Pion Asymmetry

Physics Asymmetries: 2.2 GeV, 5T Longitudinal

Asymmetry Correction for Pion Contamination
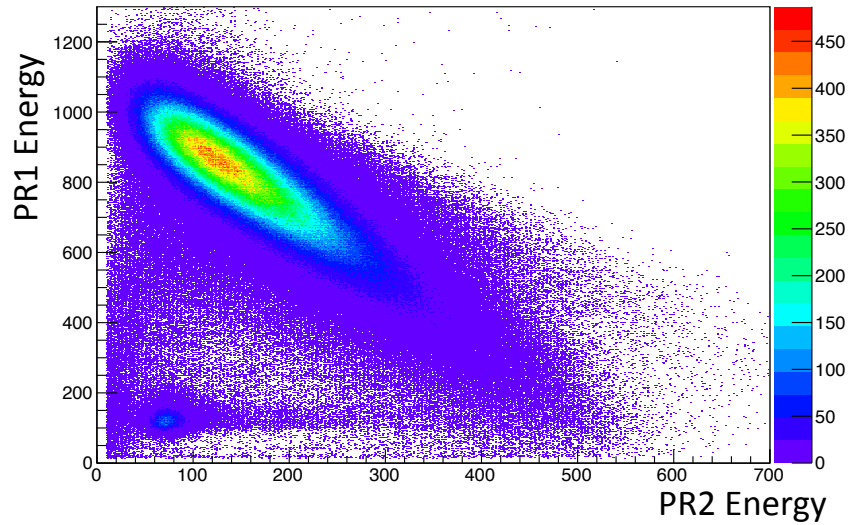
$$A_m = f_{e^-} A_{e^-} + f_\pi A_\pi$$
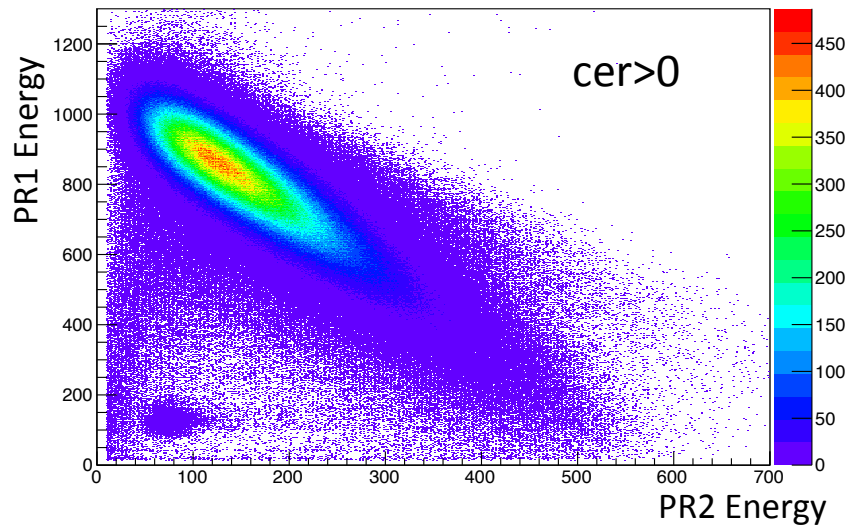
$f_x = \text{fraction of events of particle } x$

$$A_{e^-} = \frac{1}{f_{e^-}} A_m + \frac{f_\pi}{f_{e^-}} A_\pi$$
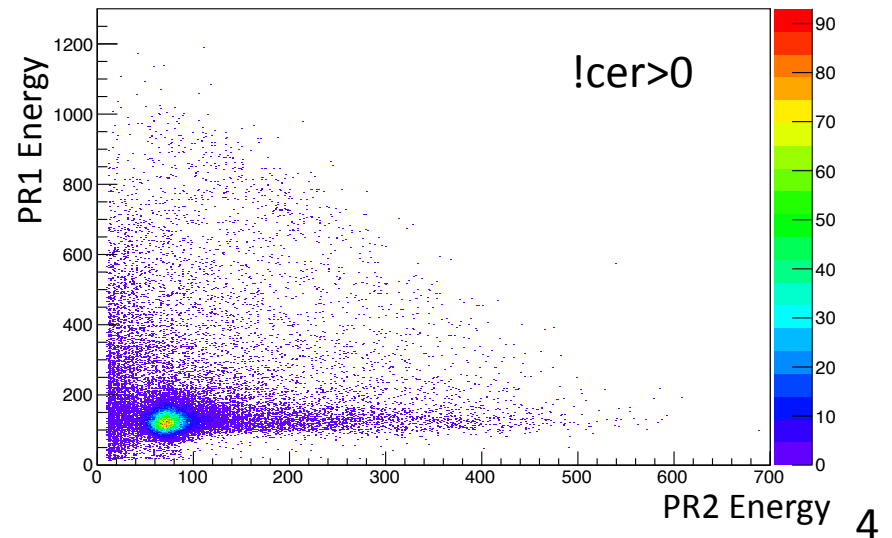
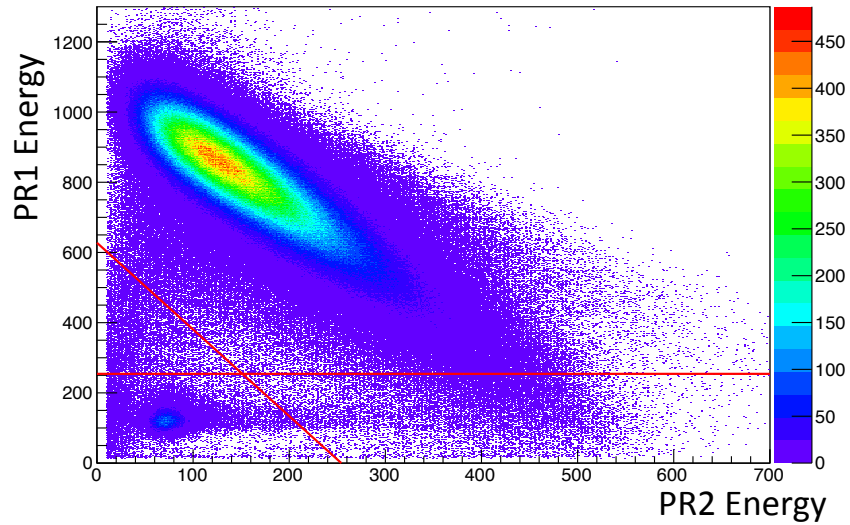# Electron and Pion Events

All Events

Electron Events
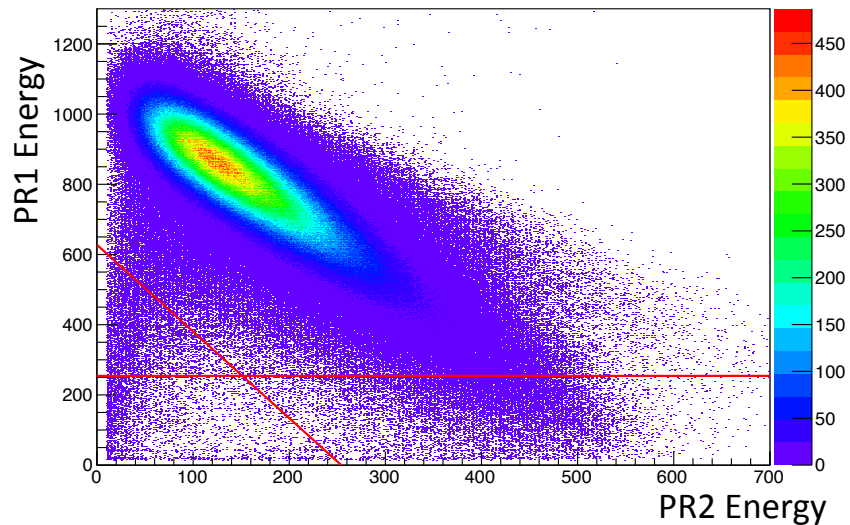
cer>0

Pion Events
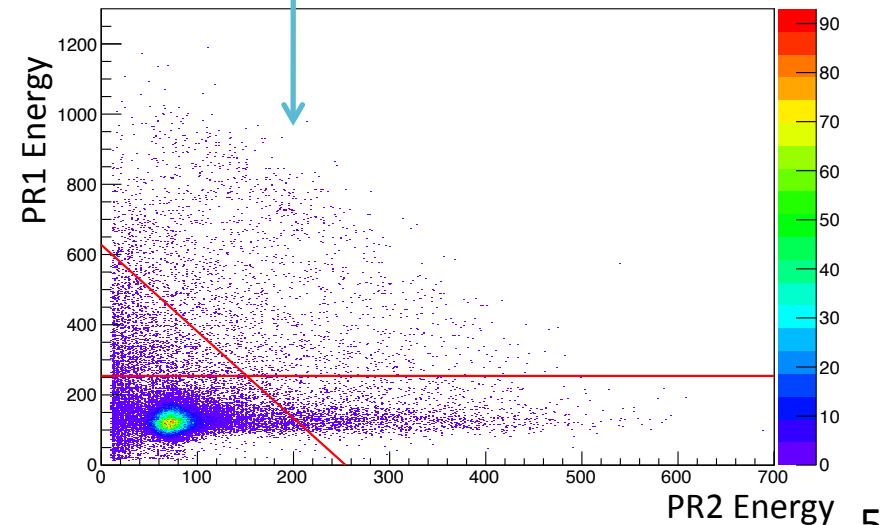
!cer>0

Electron and Pion Events

All Events

Electron Events (+ cut on Cherenkov)

Pion Events

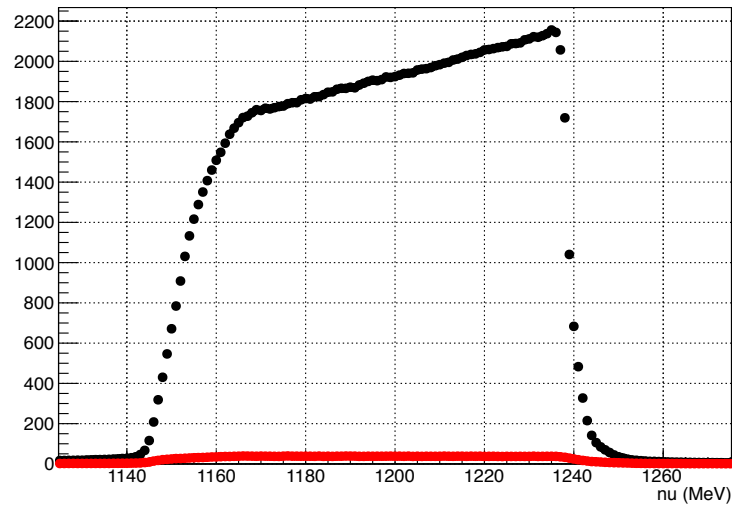Some pion events do survive lead glass cuts
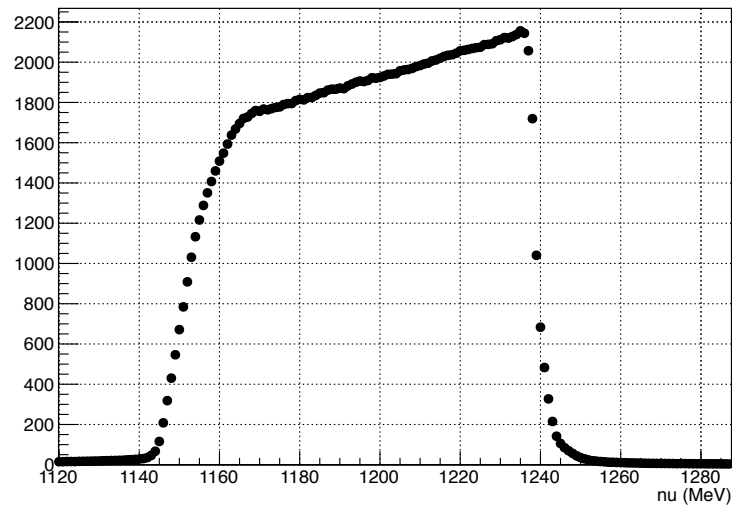
Electron & Pion Yields

(No Cuts on Lead Glass)
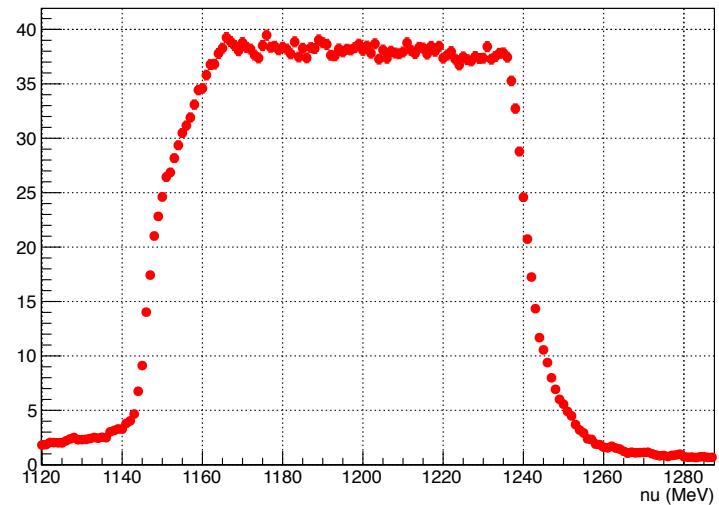

Yields: 2.2 GeV, 5T Longitudinal, 1.055 GeV/c

● Electron
● Pion

Electron & Pion Yields
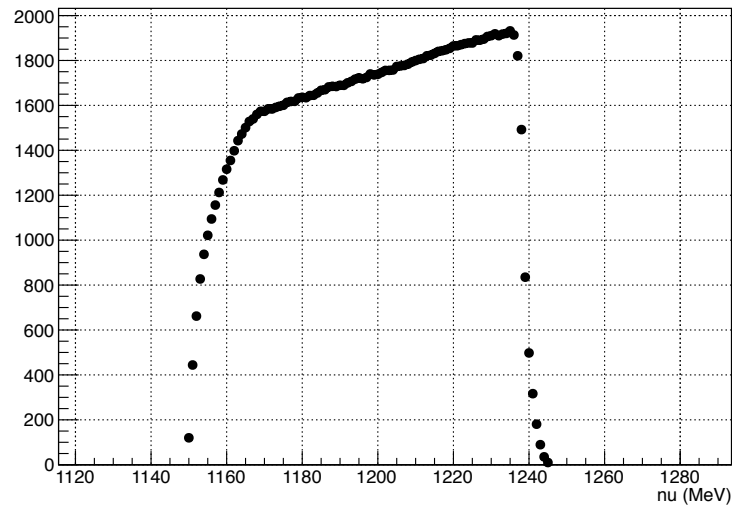## (with Lead Glass Cuts)
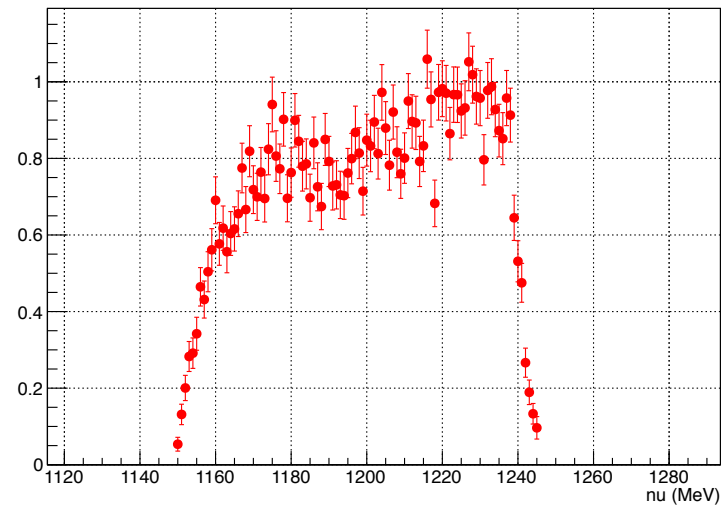
Yields: 2.2 GeV, 5T Longitudinal, 1.055 GeV/c
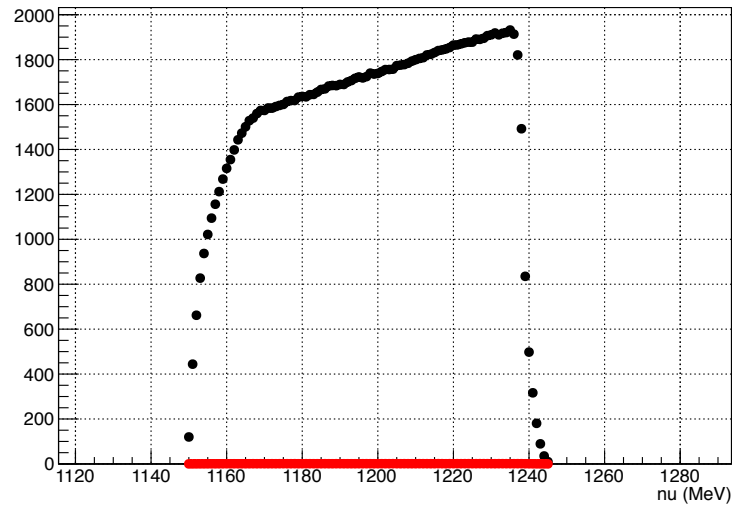
● Electron
● Pion

$$A_{e^-} = \frac{1}{f_{e^-}} A_m + \frac{f_\pi}{f_{e^-}} A_\pi$$

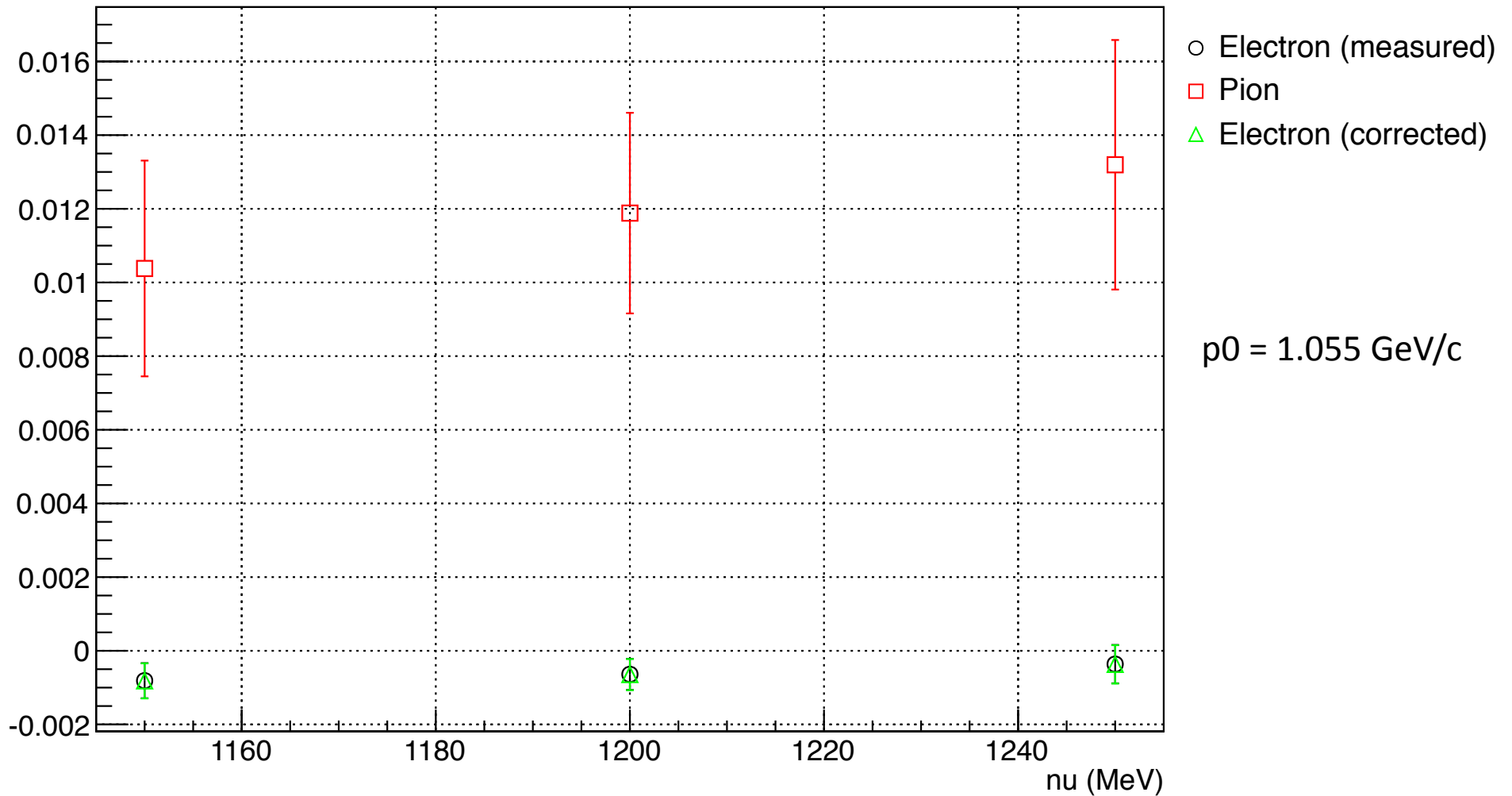Yields: 2.2 GeV, 5T Longitudinal, 1.055 GeV/c

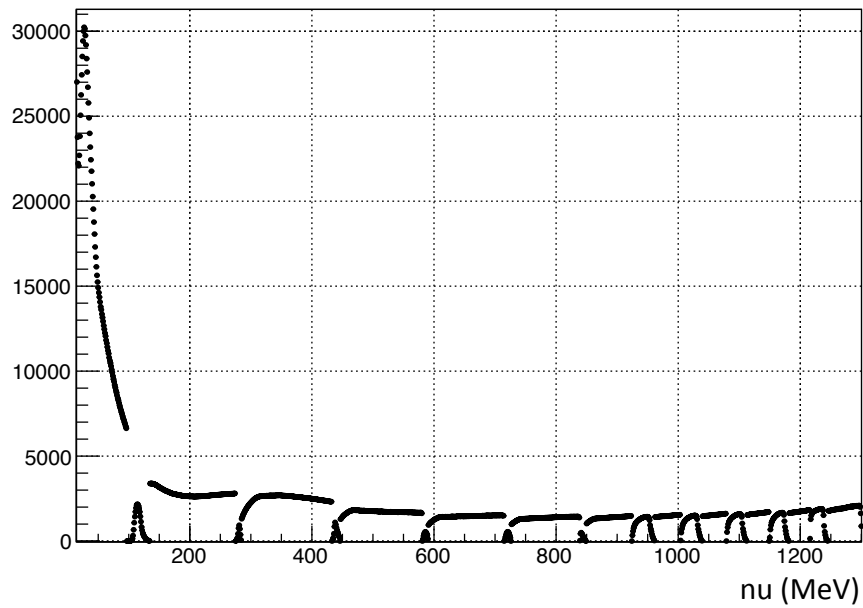Yields: 2.2 GeV, 5T Longitudinal, 1.055 GeV/c

Correction to Asymmetry
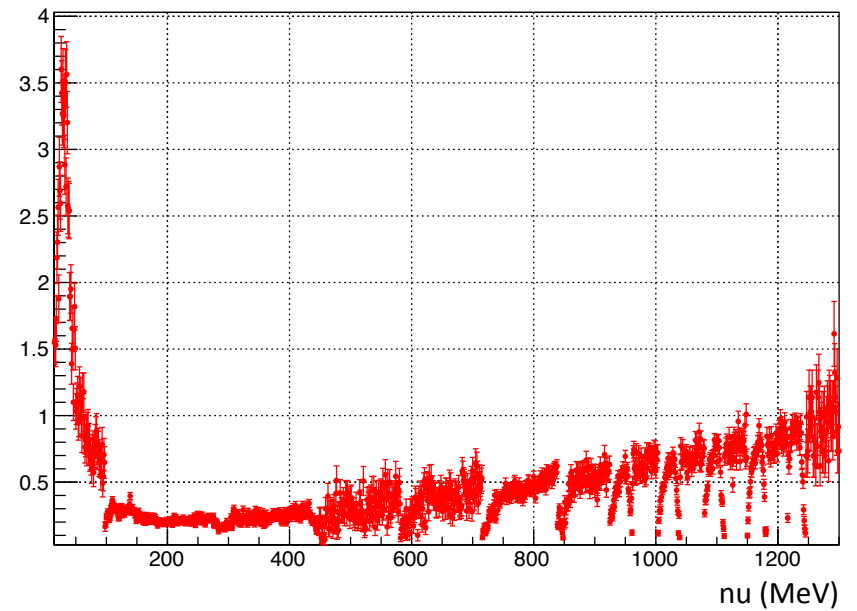
Physics Asymmetries: 2.2 GeV, 5T Longitudinal

Electron & Pion Yields

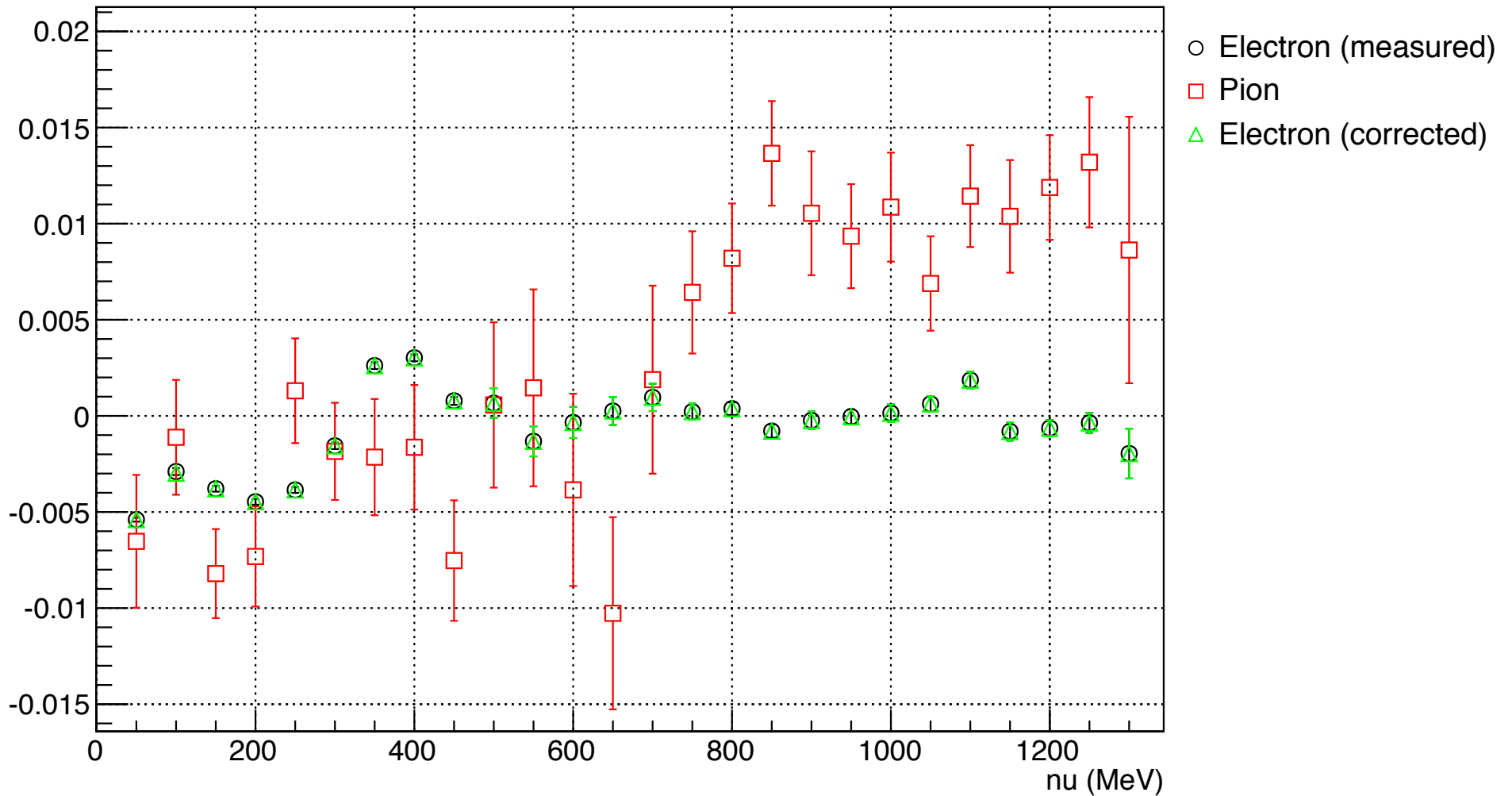## 2.2 GeV, 5T Longitudinal

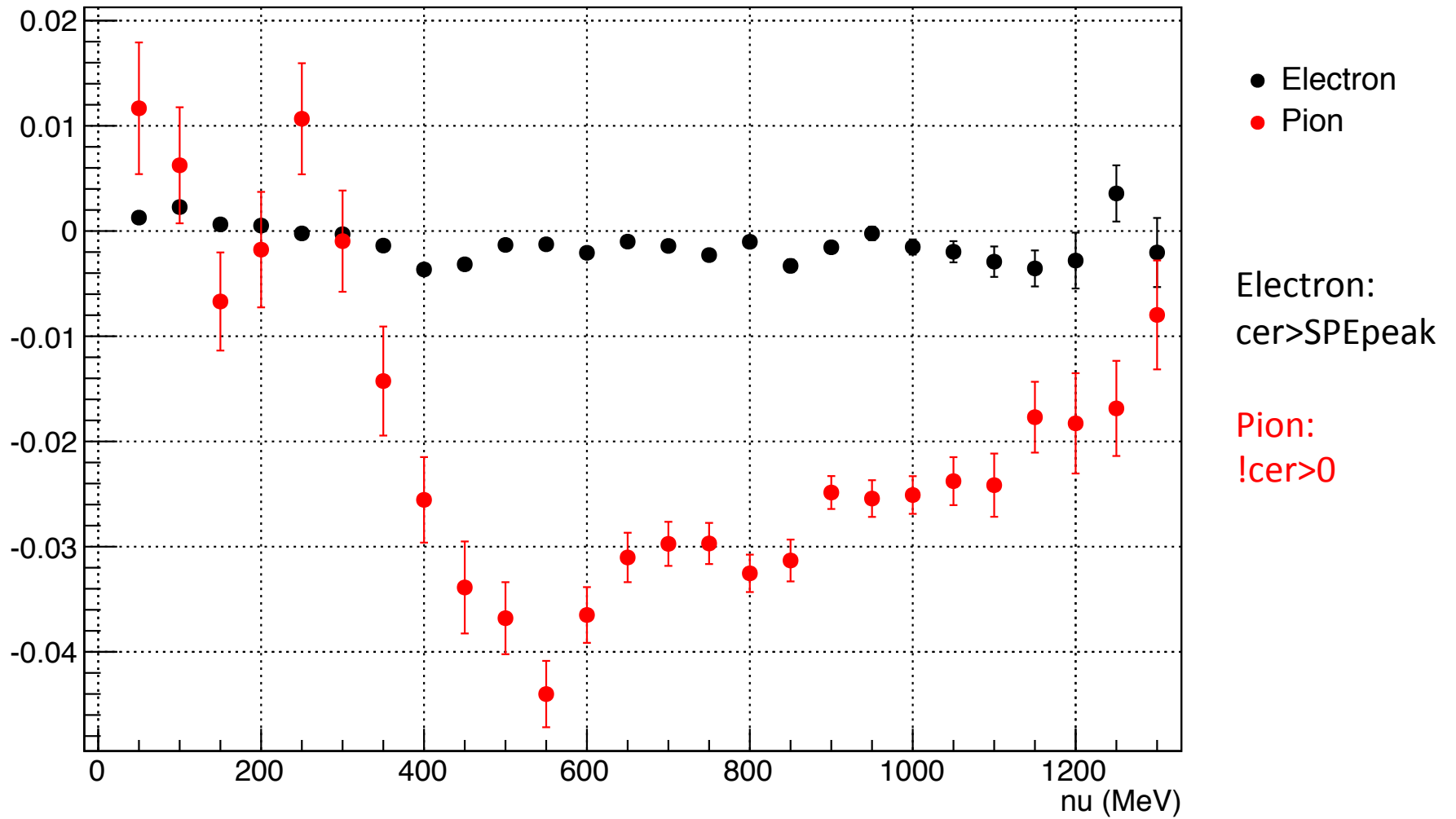Electron Yield

Residual Pion Yield

nu (MeV)

nu (MeV)

Correction to Asymmetry

Physics Asymmetries: 2.2 GeV, 5T Longitudinal

Size of Pion Asymmetry

Physics Asymmetries: 2.2 GeV, 5T Transverse

- Electron
- Pion

Electron:
cer>SPEpeak

Pion:
!cer>0

Summary

- This method gives "upper limit" on the correction

- For 2.2 GeV 5T longitudinal, correction is small
    - Might be larger for 5T transverse settings (will do this next)