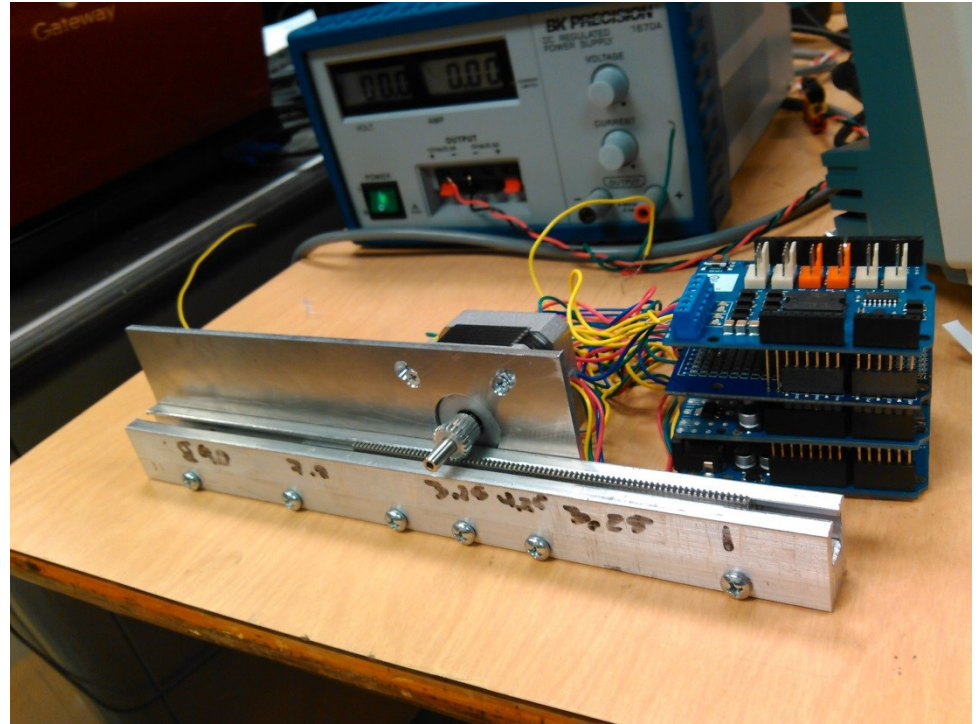


# Polarimeter update

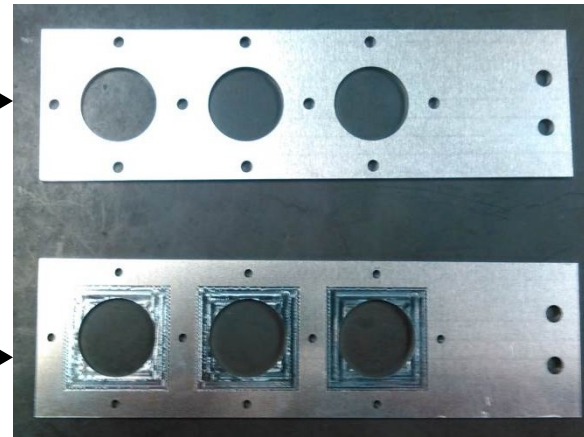
# Motor mount and guide rail

- Should be cleaned and have excess material removed from motor mount later this week
- Non-vacuum-rated motor attached for test purposes



# Convertor tray

Top of converter tray →



Bottom of converter tray →

- Should have converter tray attached to “flag pole” and flag pole attached to guide-rail by end of this week

# New distribution box

- Had to redesign the distribution box so that the signal and voltage cables would be contained in metal box (to comply with JLab fire code regulations)
- Box should be complete and attached to preamp enclosure by Thursday



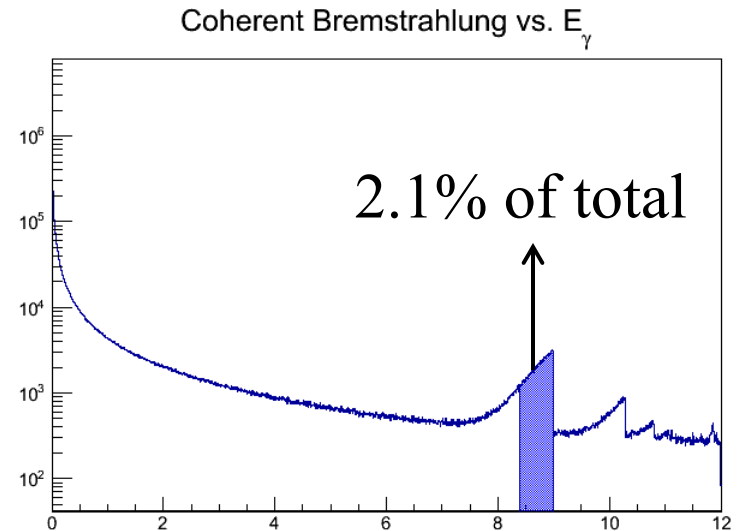
Front of box



Side of box

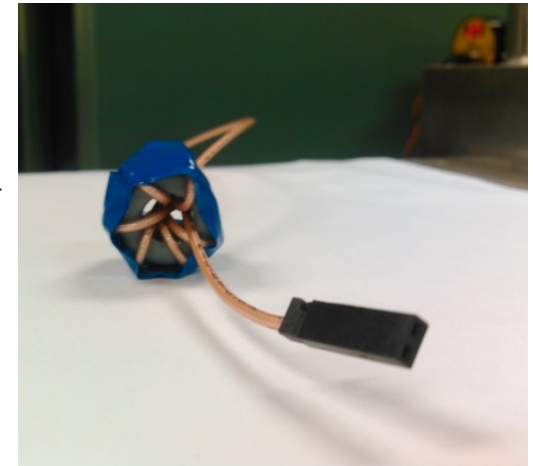
# Pile-up study

- Threw 10 million photon events
- Only 469 events seen on detector
- Assume
  - $10^8$  Hz in photon range between 8.4 and 9 GeV
  - Timing window of preamp pulse to be  $18 \mu\text{s}$
- For a single sector we expect 0.7% of events to have more than one signal in the timing window
- Pile-up should not be much of an issue



# Noise suppression

- Wrapping signal wire around toroidal core reduces noise



- Putting AC Power Entry Module (with inline filter and earth-line choke) into LV supply also helped with the noise



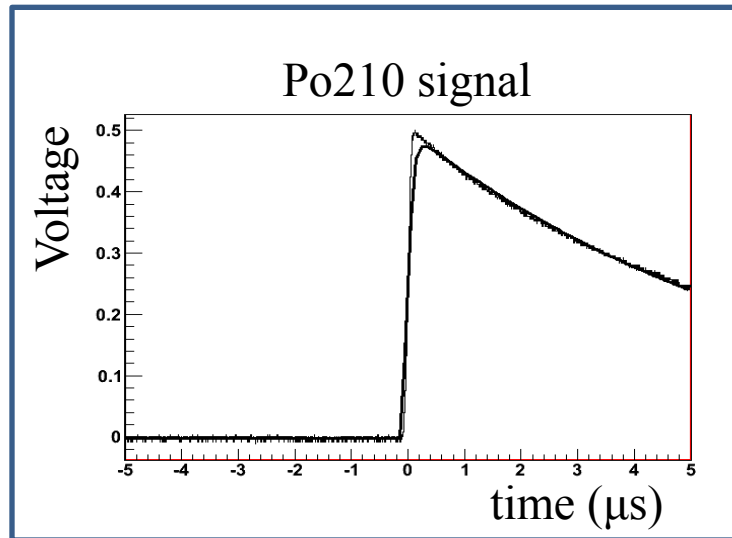
# Data

- Oscilloscope has been fixed and returned to ASU 😊
- Have resumed collecting data

# Fit to signal

- Assume voltage has same form

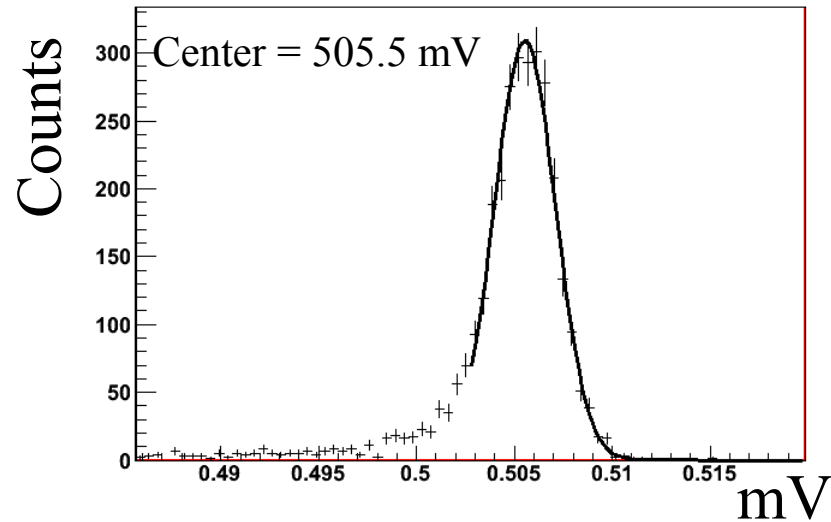
$$V = [\Gamma_r V_m / (\Gamma_r - \Gamma_f)] [\exp(\Gamma_r t) - \exp(\Gamma_f t)]$$



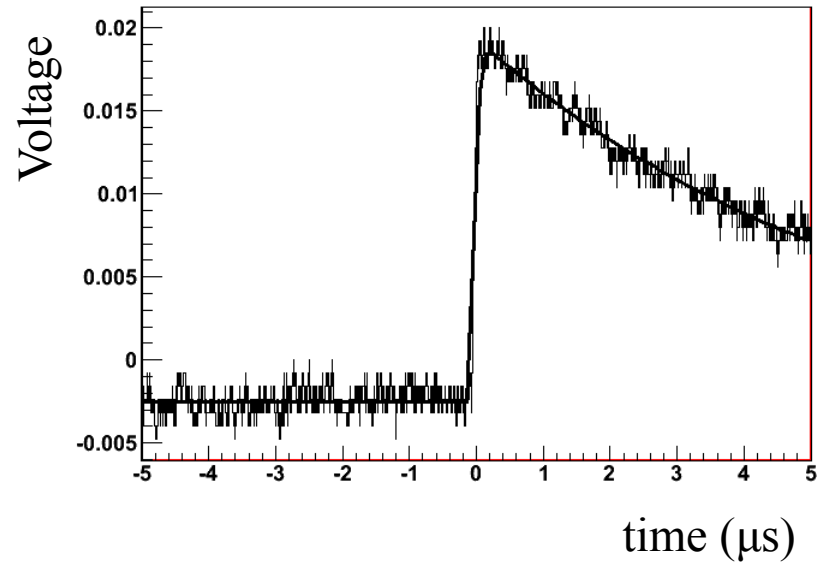


# Calibration (sector 23)

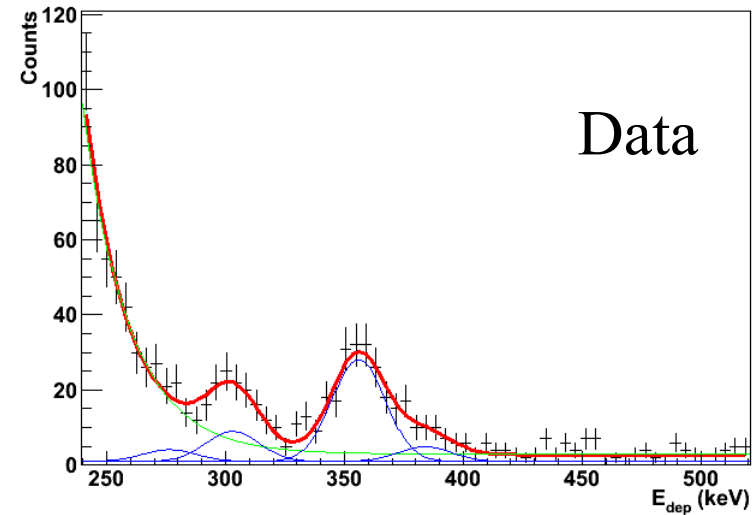
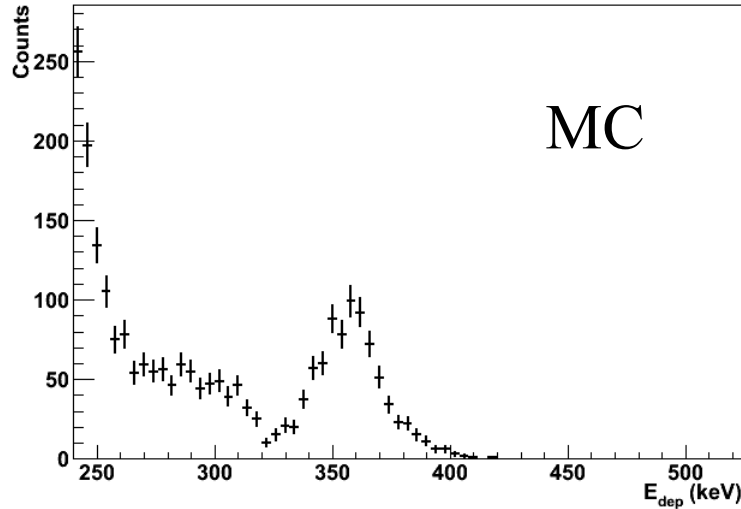
- Po210 alpha source
- $E_k = 5304.33 \text{ keV}$
- One hour of data
- Calculated sensitivity = 95mV/MeV



# Typical fit to signal for Ba133 source



# Ba133 MC compared to data (sector 23)



## MC

- Generated photon energies: 223, 276, 302, 356, 383 keV
- Smeared energy deposited by standard deviation of 12 keV

## Fit:

- Centers locked to same photon energies that were generated in MC
- Standard deviation was the same for each Gaussian and allowed to vary
- Standard deviation from fit found to be 11 $\pm$ 1 keV

Therefore, resolution of detector plus electronics is about 12 keV for this sector

## 5.2 Gamma Emissions

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{4,3}$ (Cs)	53,1622 (6)	2,14 (3)
$\gamma_{2,1}$ (Cs)	79,6142 (12)	2,65 (5)
$\gamma_{1,0}$ (Cs)	80,9979 (11)	32,9 (3)
$\gamma_{2,0}$ (Cs)	160,6121 (16)	0,638 (4)
$\gamma_{3,2}$ (Cs)	223,2368 (13)	0,453 (3)
$\gamma_{4,2}$ (Cs)	276,3989 (12)	7,16 (5)
$\gamma_{3,1}$ (Cs)	302,8508 (5)	18,34 (13)
$\gamma_{4,1}$ (Cs)	356,0129 (7)	62,05 (19)
$\gamma_{3,0}$ (Cs)	383,8485 (12)	8,94 (6)



# Title

