



Kaon LT Status Update

March 23rd, 2022

Richard Trotta

Analysis Phases

1. Calibrations ✓

- Calorimeter, aerogel, HG cer, HMS cer, DC, Quartz plan of hodo
- Assure we are replaying to optimize our physics settings

2. [~2 months] Efficiencies and offsets ← Current step

- Luminosity, elastics, Heeps, etc.

3. [3-4 months] First iteration of cross section ← On-deck

- Extract the kaon electroproduction cross section

4. [~1 months] Fine tune

- Fine tune values to minimize systematics

5. [~3+ months] Repeat previous two steps

- Repeat until acceptable cross sections are reached
- This will highlight any potential complications

6. [~1 month] Possible attempt at form factor extraction

- The **Rosenbluth separation technique**** is used to isolate the longitudinal term and thus the form factor can be extracted

2. Efficiencies and offsets

- 10.6 GeV -> Richard
- 8.2 GeV -> Ali
- 6.2 GeV -> Ali/Richard
- 3.8/4.9 GeV -> Vijay
- Goal: Finish these up by the summer time (more iterations will be needed in the future)

3. First iteration of cross section

- Goal: By the start of summer, start looking at Bill's code and getting cross-sections (even if previous step is not quite finished)

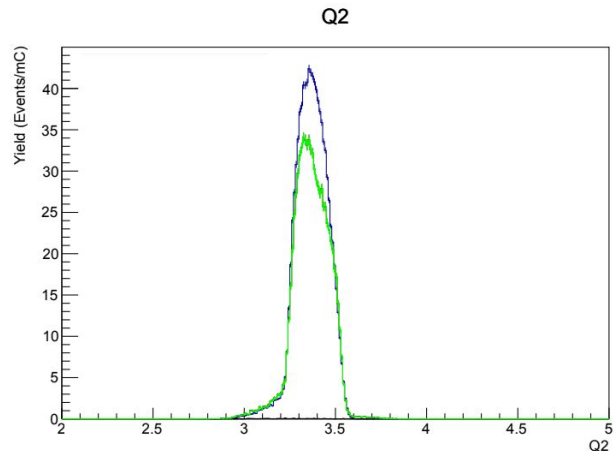
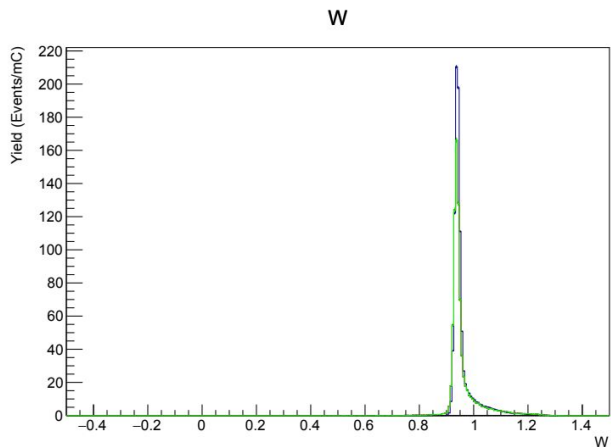
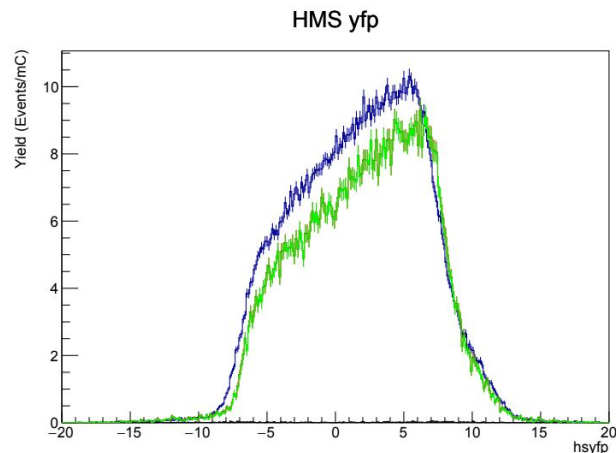
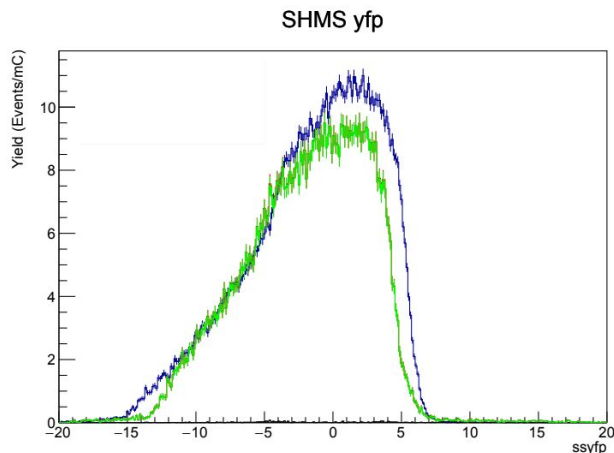
3.8 GeV

HEEP COIN (correction=1)



$P_{HMS} = -2.026$
 $\theta_{HMS} = 38.60$
 $P_{SHMS} = +2.583$
 $\theta_{SHMS} = 29.305$
 $I = 50 \text{ } \mu\text{A}$
 $PS1=3$
 $PS3=PS5=0$

$$Y_{scaler} = \frac{N_{scaler}}{Q_{tot}}$$



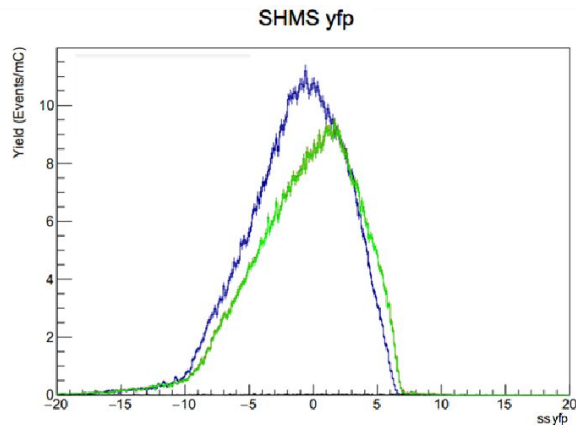
10.6 GeV

HEEP COIN (correction=1)

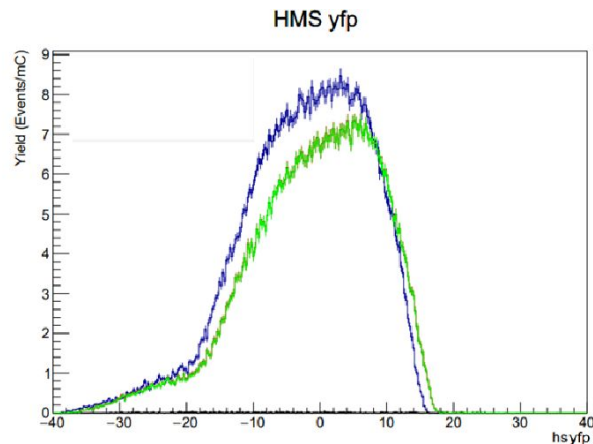


$P_{HMS} = -6.590$
 $\theta_{HMS} = 18.845$
 $P_{SHMS} = +4.840$
 $\theta_{SHMS} = 26.147$
 $I = 70 \text{ uA}$
 $PS1=PS3=PS5=0$

$$Y_{scaler} = \frac{N_{scaler}}{Q_{tot}}$$



W



Q2

