

# Kaon-LT Analysis Update (High $Q^2$ HEEP COIN Analysis Efficiency/LiveTime Correction)

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# Recall

➤ HeeP Coin aNalysis in progress for high  $Q^2$  data.

➤ Richard – 10.6 GeV

➤  $P_{HMS} = 6.59, P_{SHMS} = 4.84, \theta_{HMS} = 18.84, \theta_{SHMS} = 26.14$

➤ Ali – 8.2 GeV

➤  $P_{HMS} = 4.37, P_{SHMS} = 4.67, \theta_{HMS} = 25.78, \theta_{SHMS} = 23.99$

➤ Ali – 6.2 GeV

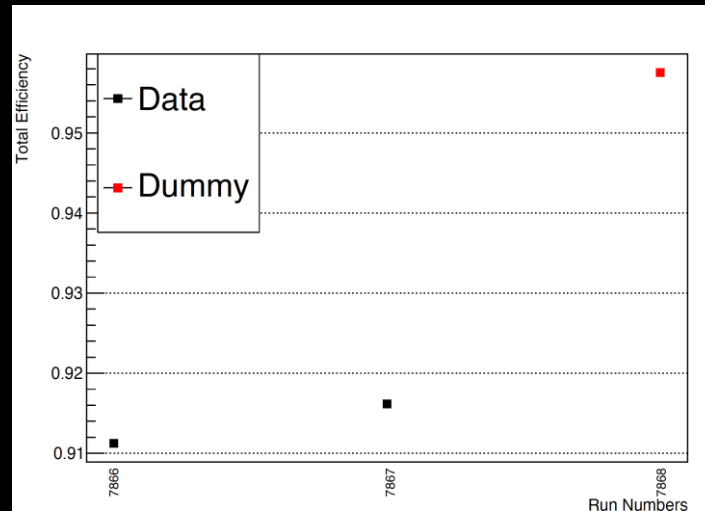
➤  $P_{HMS} = 3.57, P_{SHMS} = 3.48, \theta_{HMS} = 27.27, \theta_{SHMS} = 28.56$

# Total Efficiency

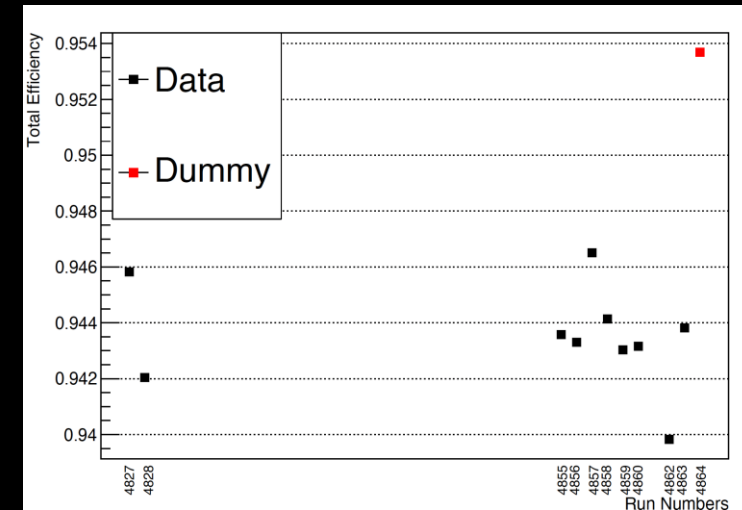
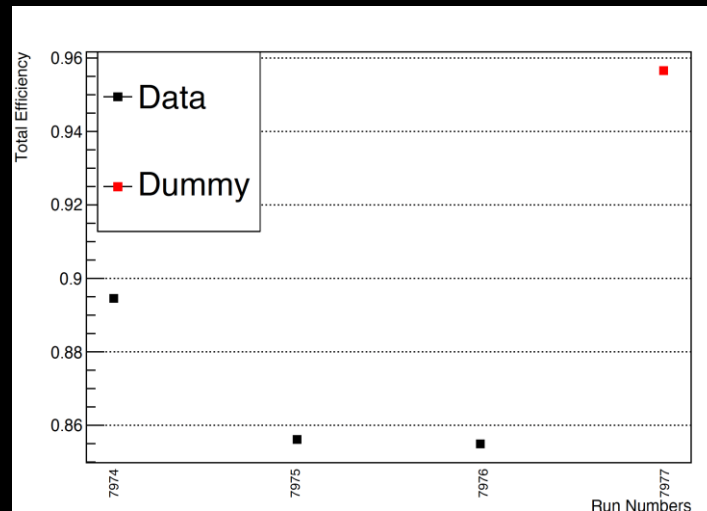
- Total efficiency (per run) is calculated by multiplying all individual efficiency and live times for each run.
- Here's the list of efficiencies/live times
  - HMS electron Tracking efficiency
  - SHMS Proton Tracking efficiency
  - Hodoscope  $\frac{3}{4}$  efficiency (both HMS and SHMS)
  - EDTM Live Time
  - HMS Cerenkov efficiency

# Total Efficiency

6.2 GeV



8.2 GeV



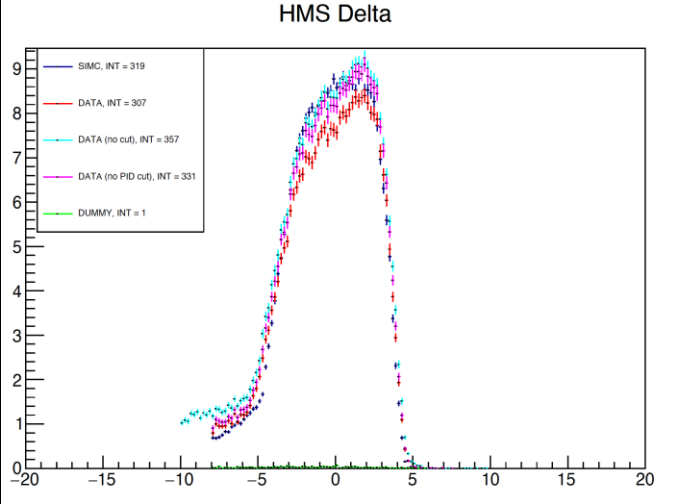
10.6 GeV

# Data Yeild (Normalized)

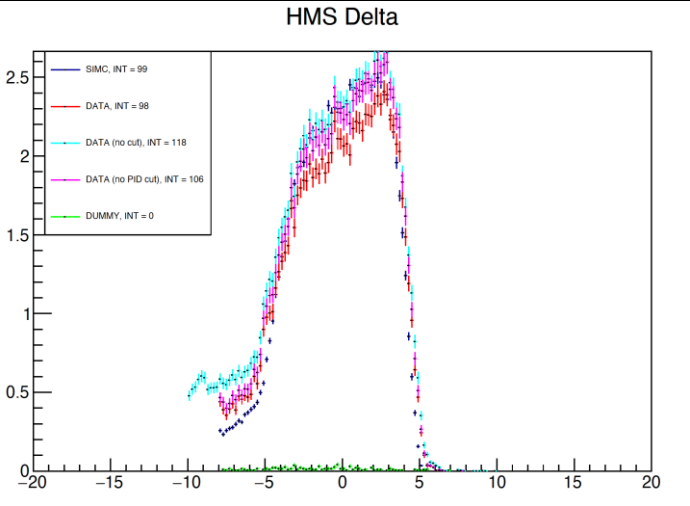
- Total efficiency for each run is used to calculate the effective charge.
- $Effective\ charge = Total\ Efficiency * acc.\ charge$
- Total effective charge is calculated by adding all individual effective charges (for each runs)
- $Data\ Yeild = \frac{Counts}{Total\ ef.\ charge}$

# HMS Delta

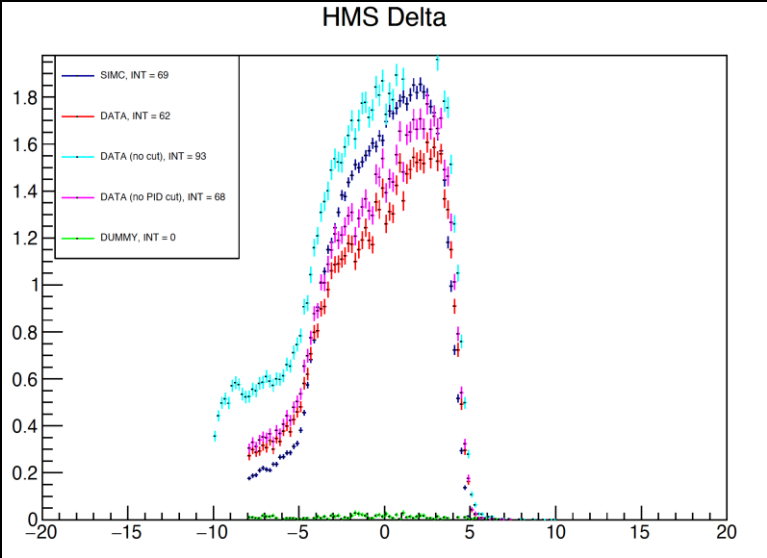
6.2 GeV



8.2 GeV

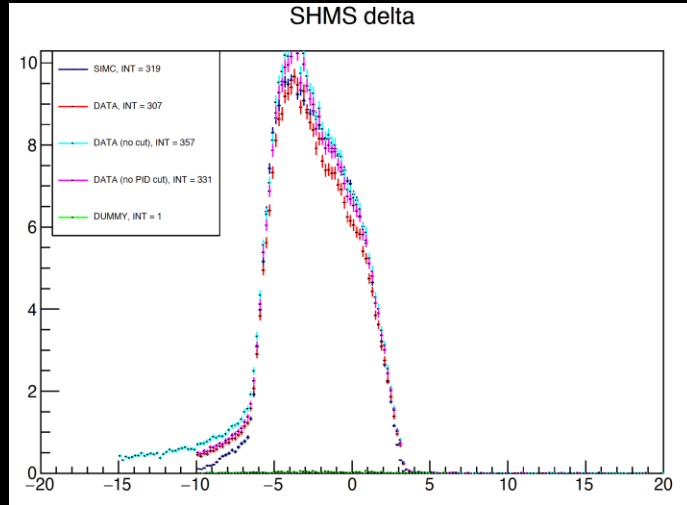


10.6 GeV

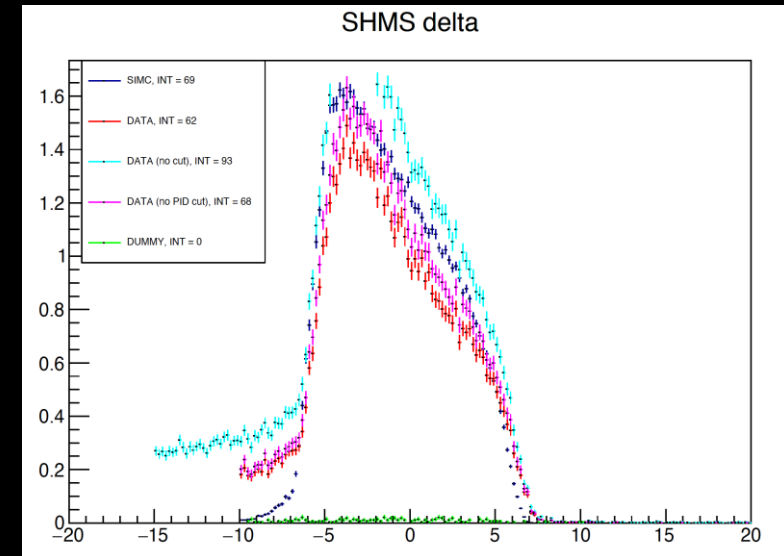
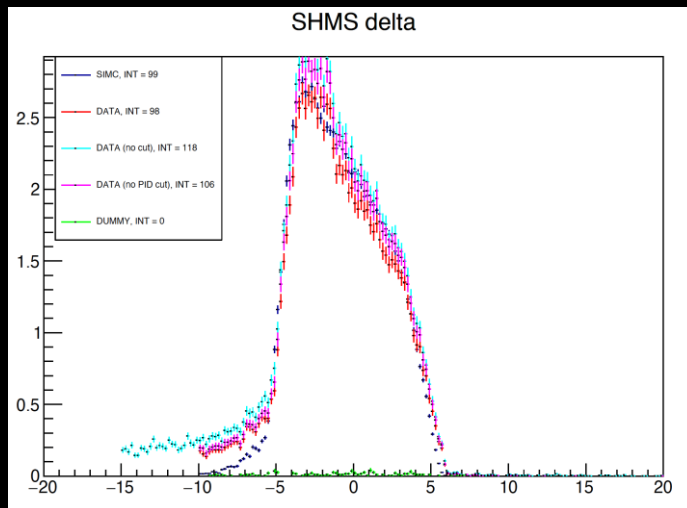


# SHMS Delta

6.2 GeV



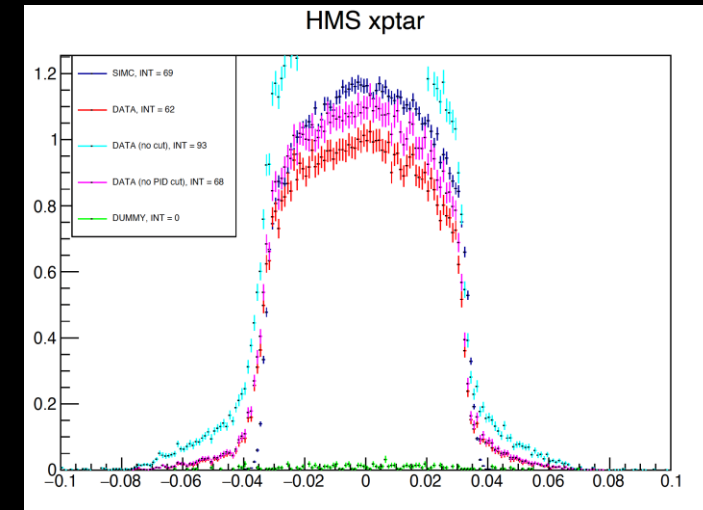
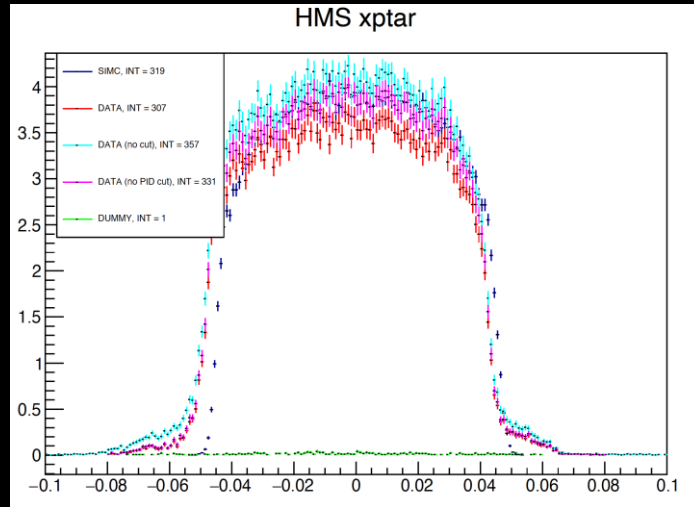
8.2 GeV



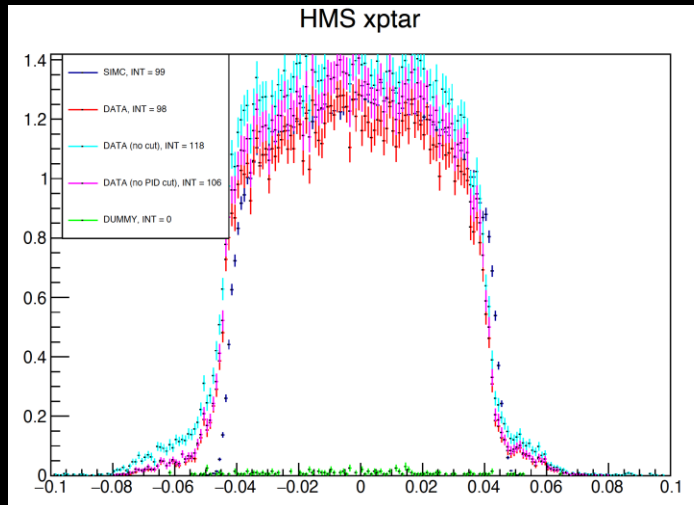
10.6 GeV

# HMS Xptar

6.2 GeV



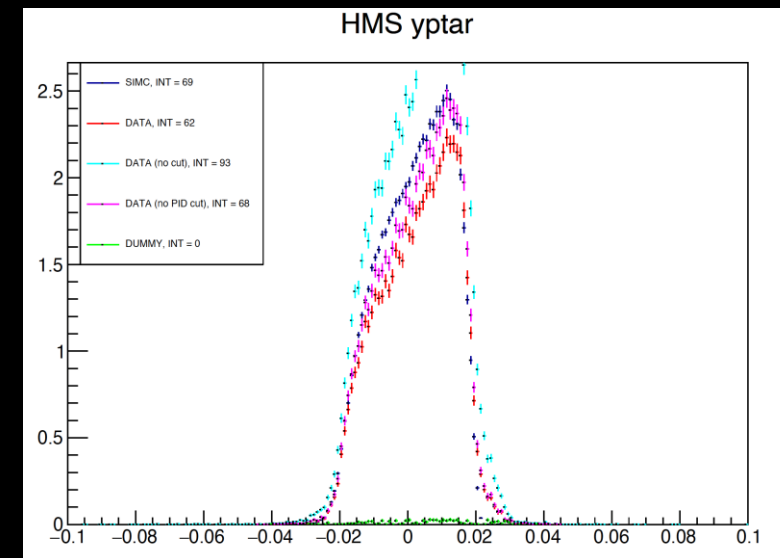
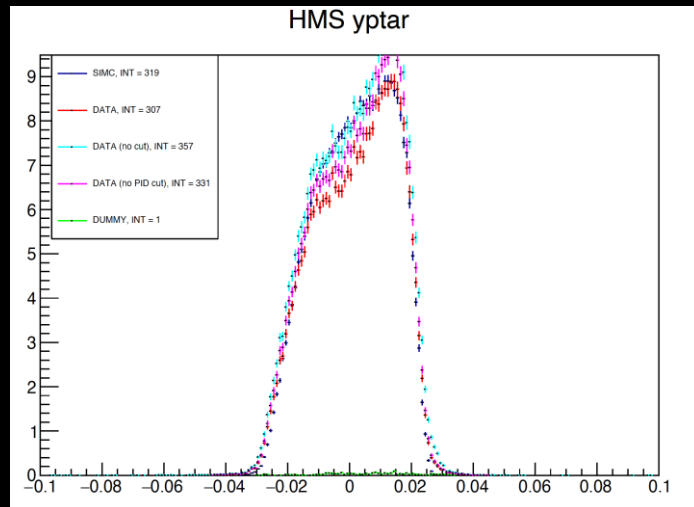
8.2 GeV



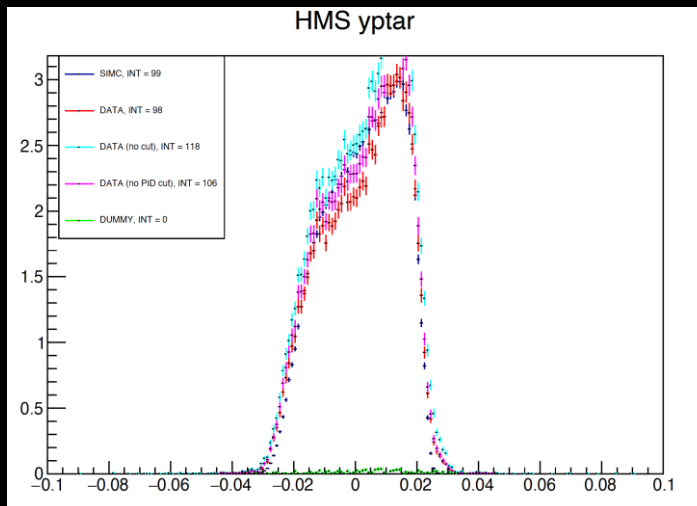
10.6 GeV

# HMS Yptar

6.2 GeV



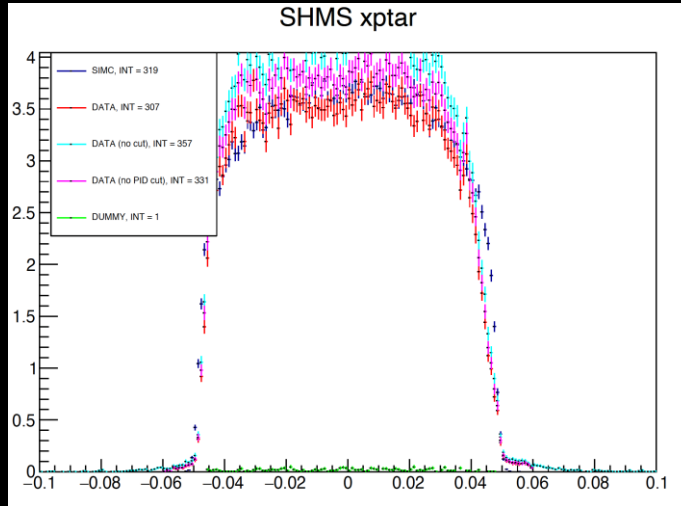
8.2 GeV



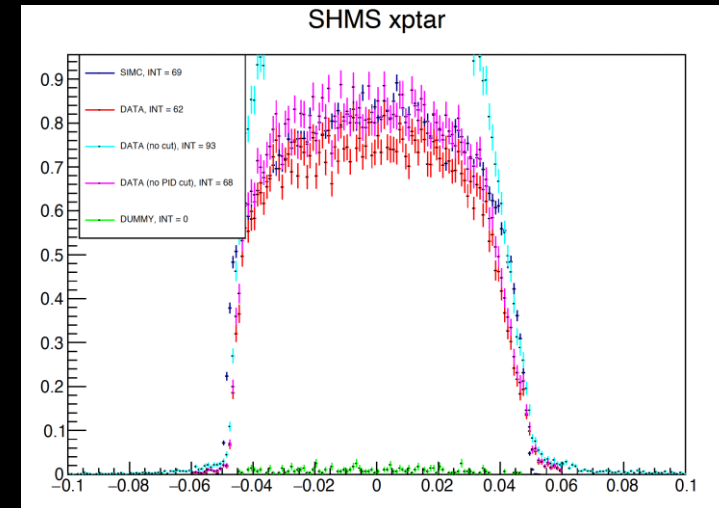
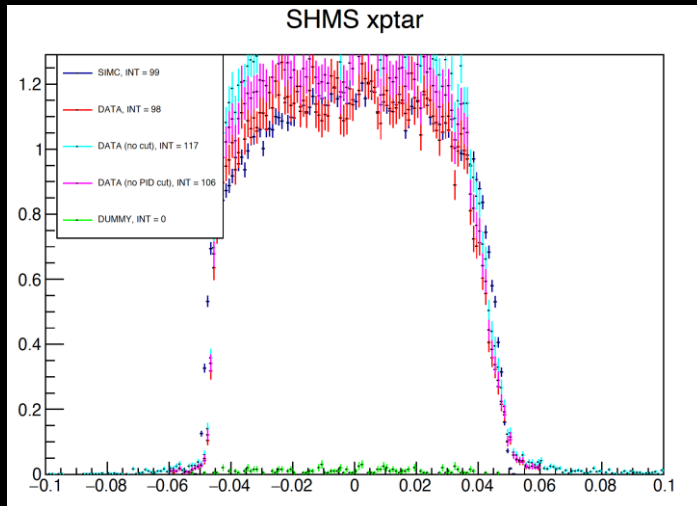
10.6 GeV

# SHMS Xptar

6.2 GeV



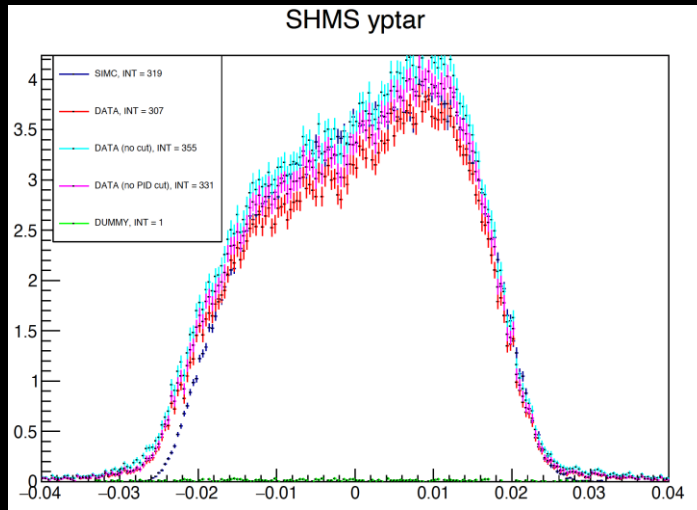
8.2 GeV



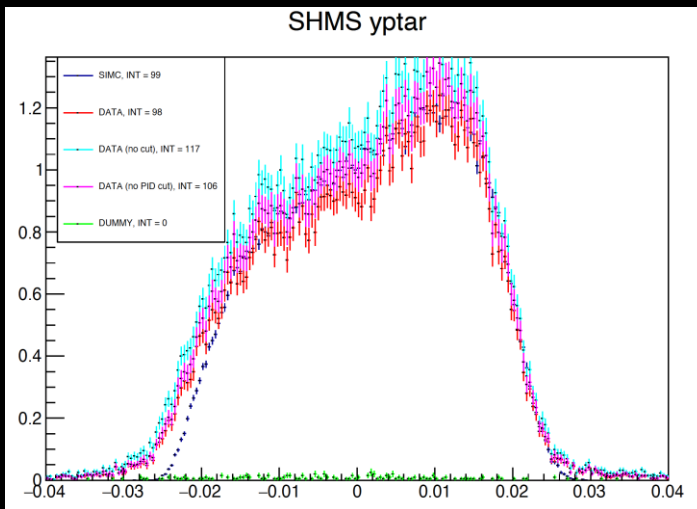
10.6 GeV

# SHMS Yptar

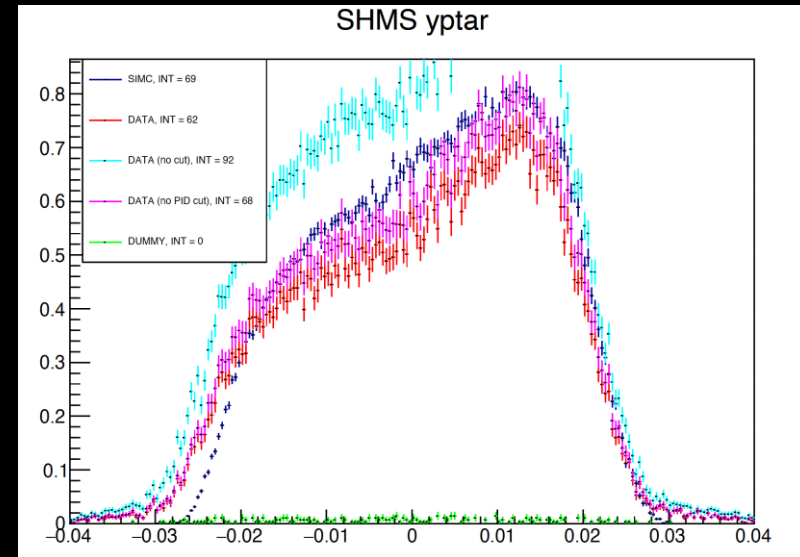
6.2 GeV



8.2 GeV



10.6 GeV



# Summary & Outlook

- The Heep Coin for high Q2 is looking very good.
- Effective charge is calculated using efficiency and live times.
- Data is normalized using effective charge
- Next step is finalize offsets for all KaonLT data (Vijay and Ali will work on this together)
- Proton absorption correction and target boiling correction will be final correction.