




# Kaon LT Status Update

March 16th, 2023

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# Summary

## From Carlos Yero Slides

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- Carlos has been working on the rate dependence issue for the luminosity scans that Casey and I have been seeing.
  - He came to a similar conclusion as me that there will need to be a correction factor that we all agree on that will need to be applied.
  - We are meeting on Monday to discuss things further.

Yield dependency on beam current (rates) mainly due to accidental hits blocking coincidences

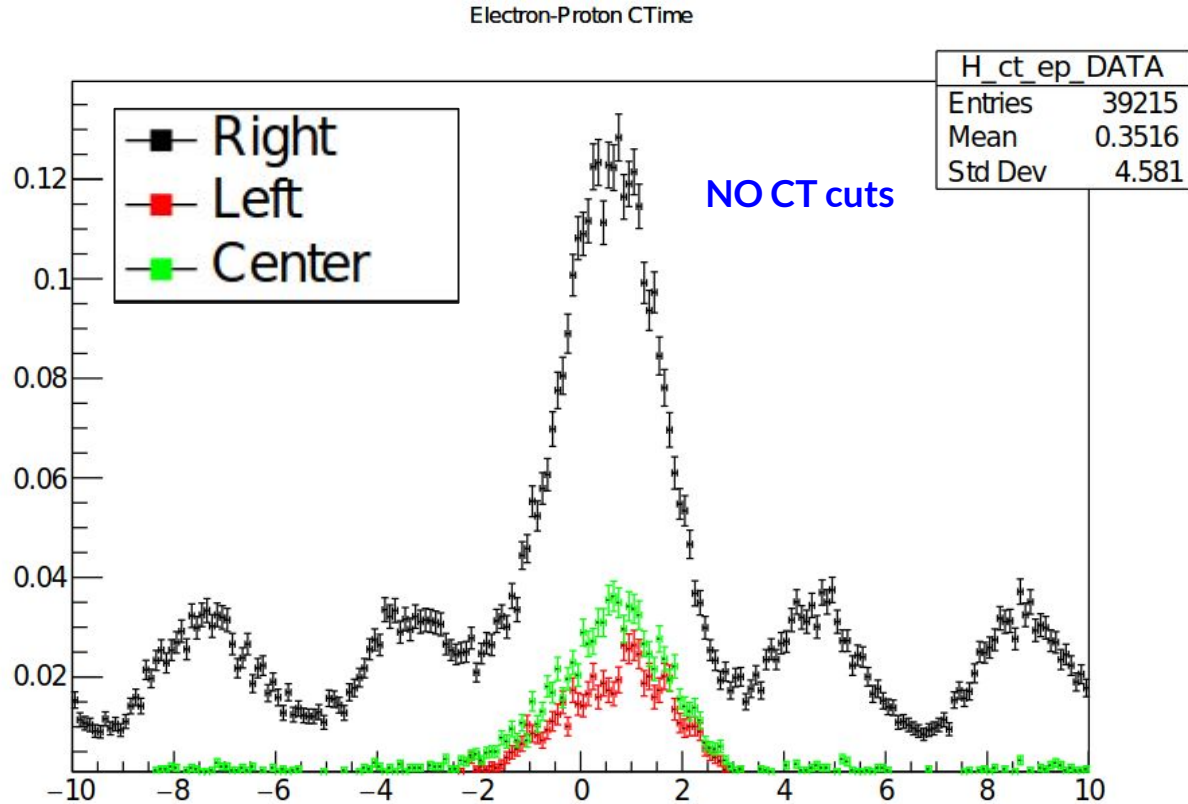
Still unclear about why Fe54 drops ~ 3% with only 30 uA  
- worth to investigate by applying tighter beam current cut around peaks

Investigate remaining small dependency (~2 %) in relative yield in some of the targets  
- maybe related to total live time (need to apply g.evtyp cut to count only EDTMs related to coincidences)

Will need to determine slope ( $\Delta y / \Delta x \sim \text{relative\_yield} / \text{T2\_scaler\_rate}$ ) for each target to determine a global correction factor to be applied to correct for remaining discrepancy (although may be negligible)

<https://hallcweb.jlab.org/doc-private/ShowDocument?docid=1206>

$Q^2=5.5, W=3.02$



- Right settings for  $Q^2=3.0, 2.1, 5.5$  are oddly large
- I think I have tracked down the odd issues
- I am not sure why, but it seems that something is going wrong at the replay level.
- I tried rerunning them, but the issue has persisted.
- My initial guess is that it may be an issue with the TDC cuts, since the coin time distributions were looking off previously.