

# KaonLT Meeting

July 3<sup>rd</sup>, 2025

Richard L. Trotta

Constants:

$$\pi, \quad m_{\text{tar}} = 0.93827231, \quad m_{\pi^+} = 0.139570, \quad m_{K^+} = 0.493677$$

$$t_{\text{av}} = (0.05032 + 0.01345 \ln Q_{\text{set}}^2) Q_{\text{set}}^2,$$

$$f_{t_{\text{av}}} = \frac{|t| - t_{\text{av}}}{t_{\text{av}}},$$

$$f_t = \frac{|t|}{(|t| + m_{K^+}^2)^2},$$

$$\sigma_L = (p_1 f_t) \exp(-|p_2 t|),$$

$$\sigma_T = \frac{p_5}{|t|^{p_6}} \exp(-|p_7 t|),$$

$$\sigma_{LT} = \frac{p_9}{|t|},$$

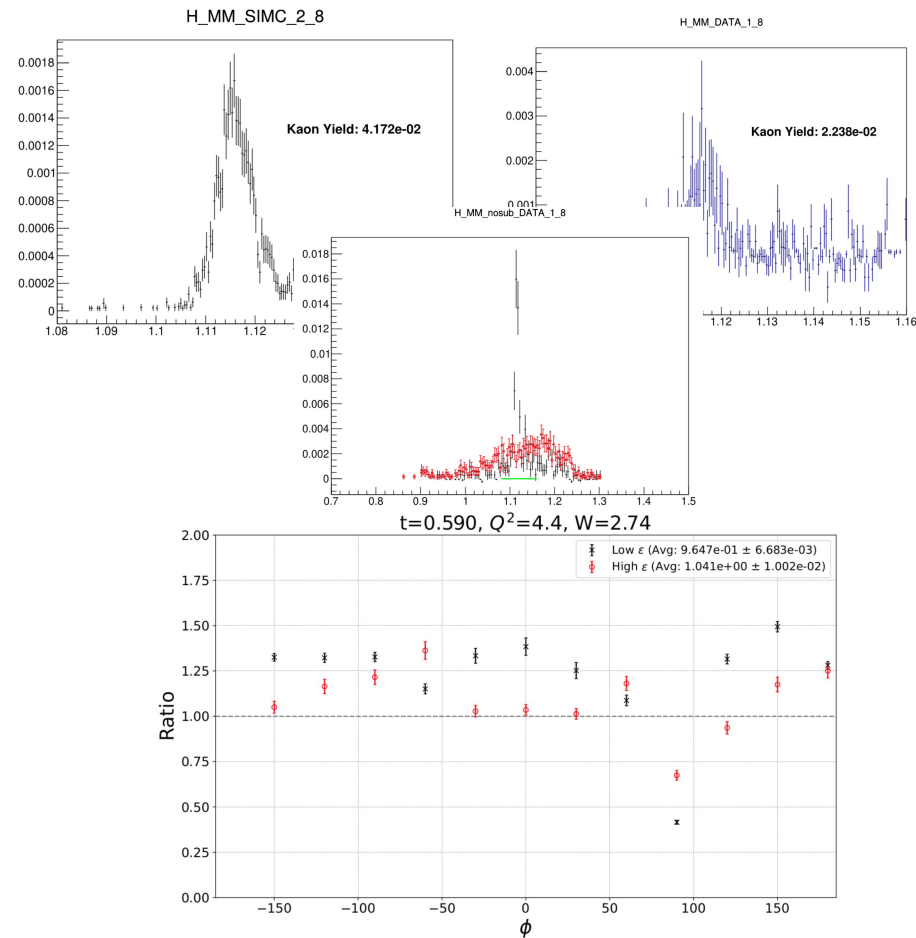
$$\sigma_{TT} = \frac{p_{13}}{|t|^{p_{14}}} \exp(-|p_{15} t|),$$

$$w_{\text{factor}} = \frac{1}{(W^2 - m_{\text{tar}}^2)^{0.85} W_{\text{set}}^2 - 5.97 W_{\text{set}} + 12.68}.$$

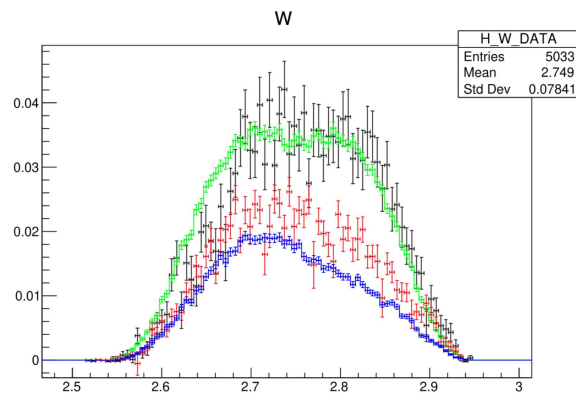
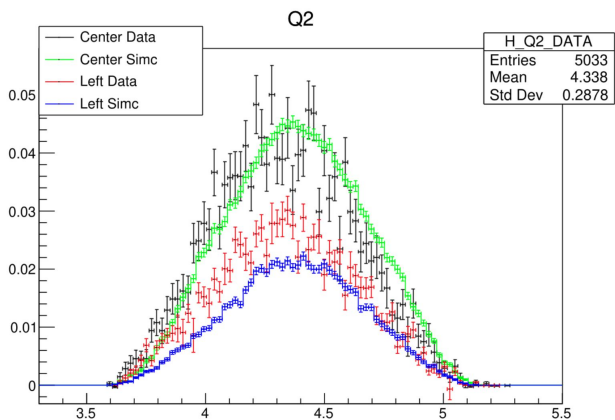
# Further Improvements

- The main issues across all settings are...
  - **Adjust pion background subtraction scaling for bad  $t$ - $\phi$  bins**
  - Adjust model
    - LT/TT
    - Theta terms

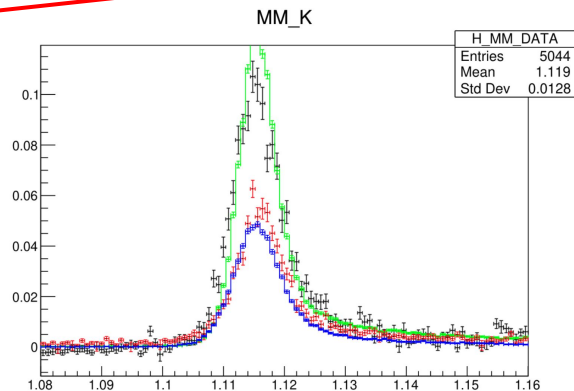
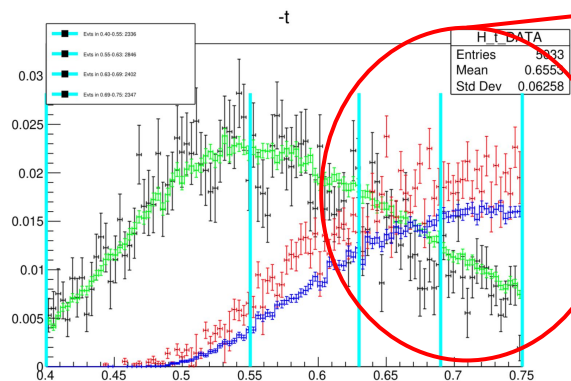
Center Low



# Q2=4.4, W=2.74 Cauchy-Schwarz fit results

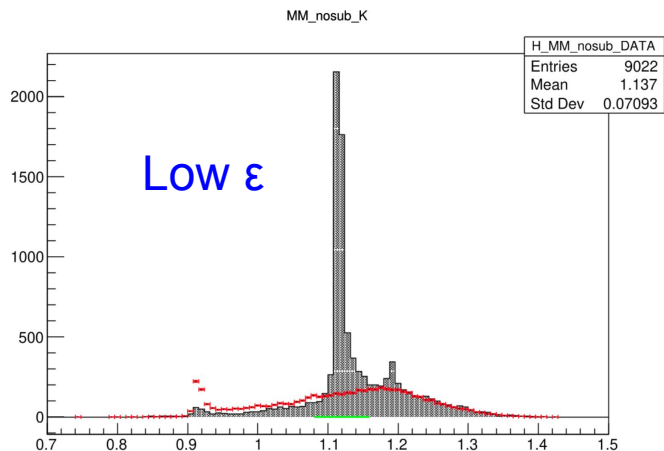


Most **left** setting events  
are at high  $|-t|$

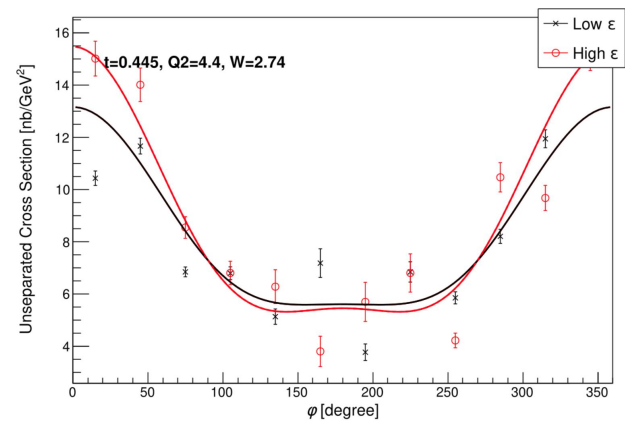
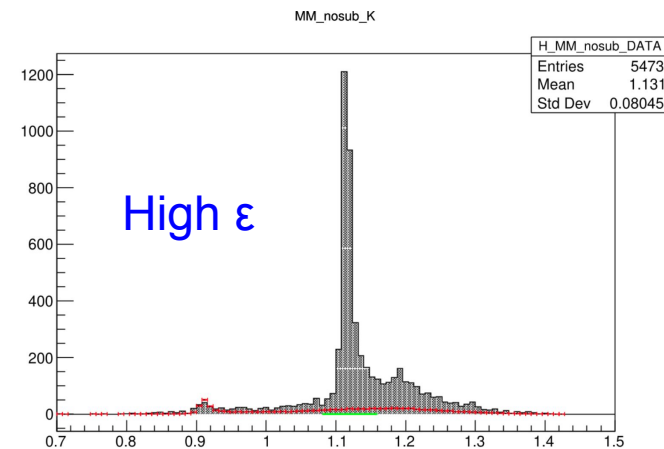
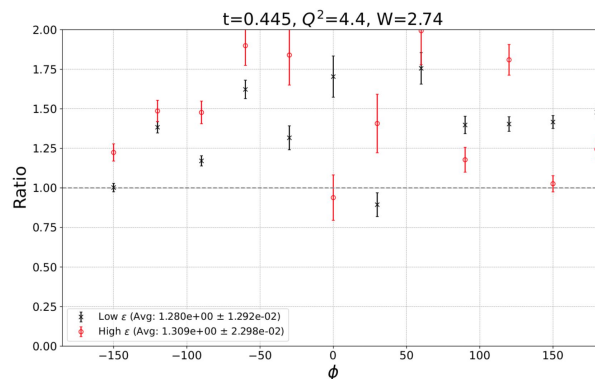


# $Q^2=4.4$ , $W=2.74$ Center only

Same parameterization as last week

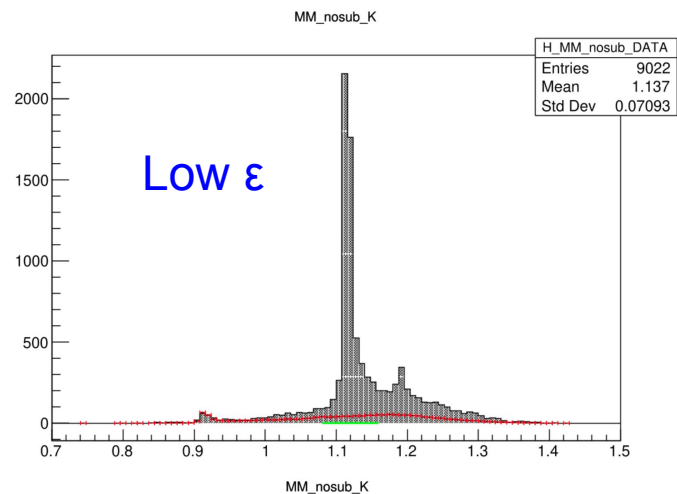


Integrate peak  
 $0.88 < M_{\pi} < 0.92$   
 and apply scale  
 factor **(0.85)**



# $Q^2=4.4$ , $W=2.74$ Center only

Same parameterization  
as last week



Integrate peak  
 $0.88 < M_{\pi} < 0.92$   
and apply scale  
factor **(0.25)**

