KaonLT Meeting

January 15-16th, 2025

Richard L. Trotta

Constants:

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

$$t_{\rm av} = \left(0.05032 + 0.01345 \, \ln Q^2_{\rm set}\right) Q^2_{\rm set},$$

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

$$f_t = \frac{|t|}{\left(|t| + m^2_{K+}\right)^2},$$

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

$$\sigma_T = p_5 \exp\left(-|p_6 t|\right),$$

$$\sigma_{LT} = p_9 \exp\left(-|p_{10} t|\right) \sin^2\theta,$$

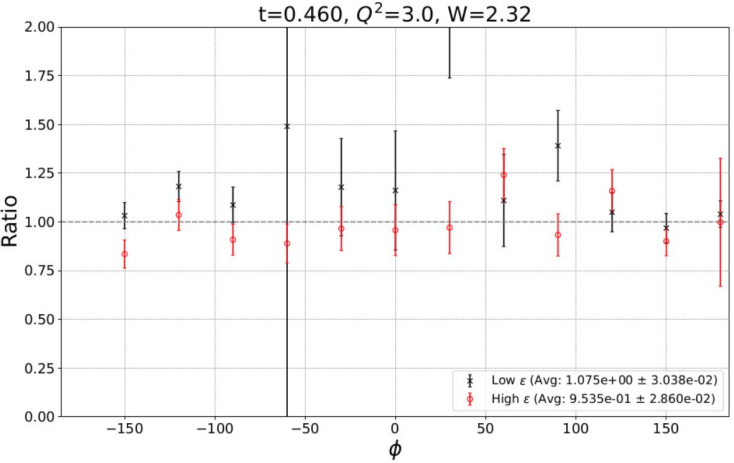
$$\sigma_{TT} = p_{13} \exp\left(-|p_{14} t|\right) \sin^2\theta,$$

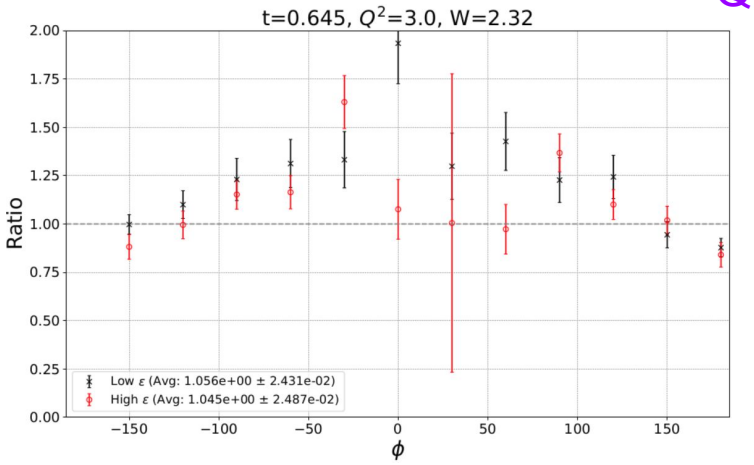
$$w_{\rm factor} = \frac{1}{\left(W^2_{\rm set} - M^2_{\rm tar}\right)^{(0.85 W^2_{\rm set} - 5.97 W_{\rm set} + 12.68)}},$$

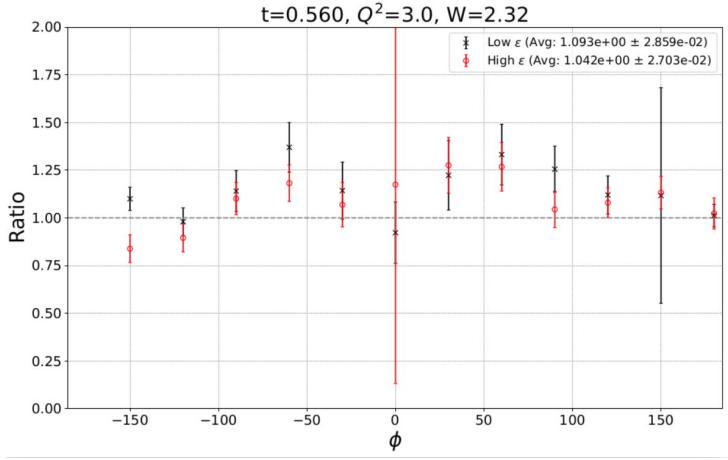
Same parameters as Q^2=4.4,W=2.74

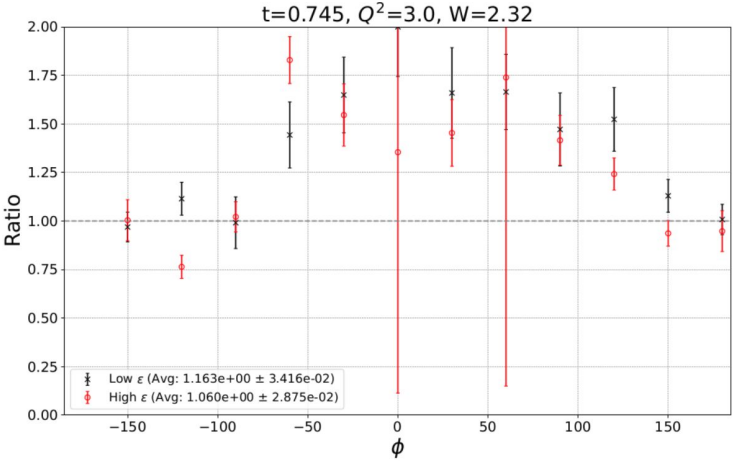
Q^2=3.0, W=2.32

Same parameters as Q^2=4.4,W=2.74









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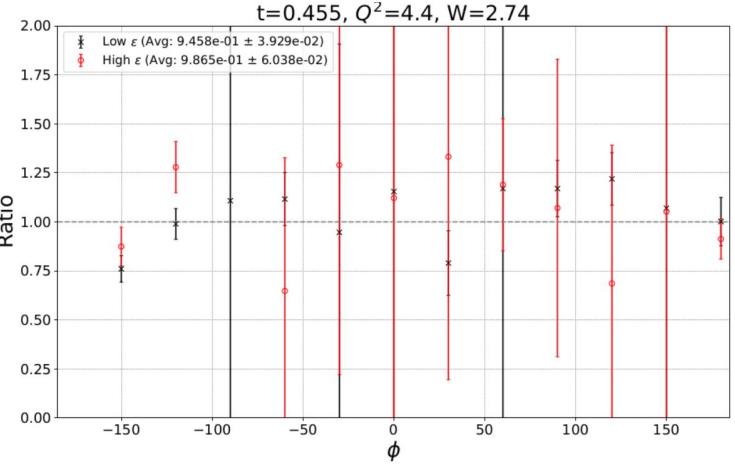

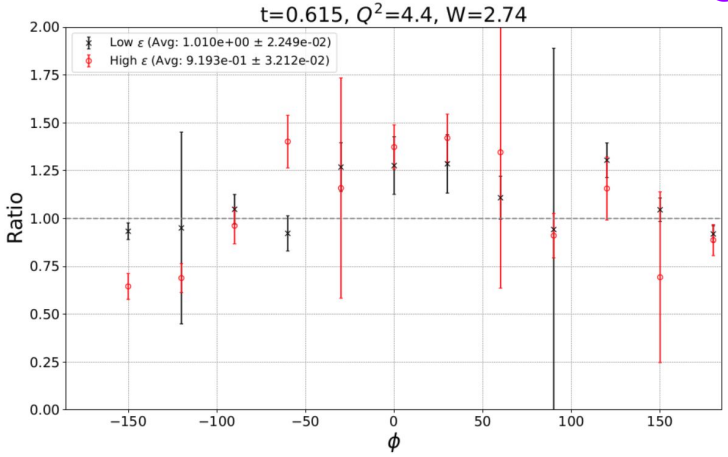

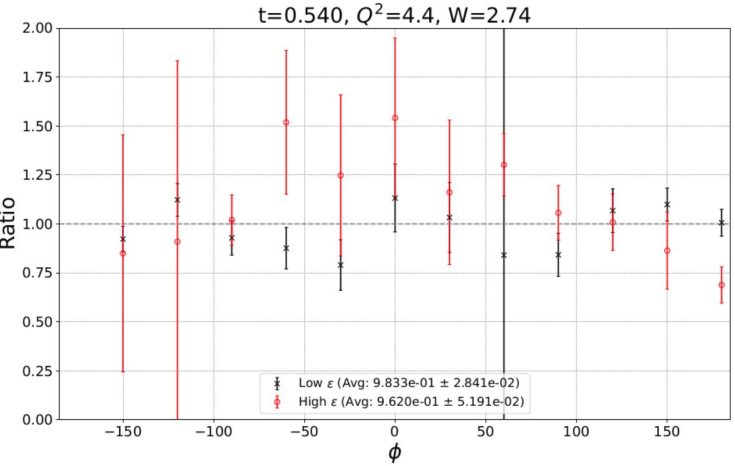

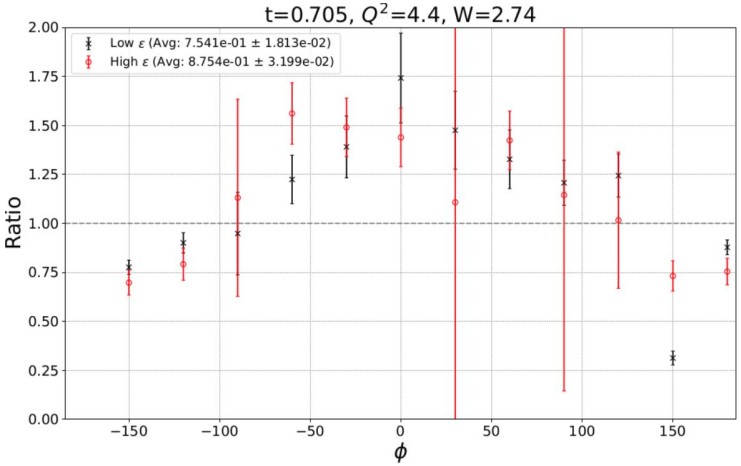

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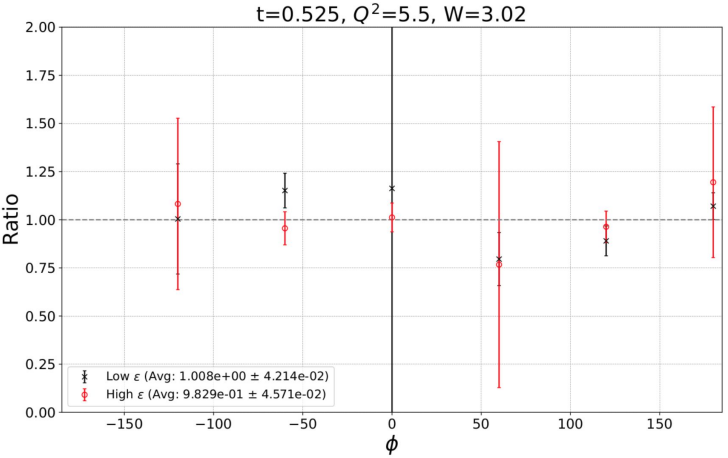

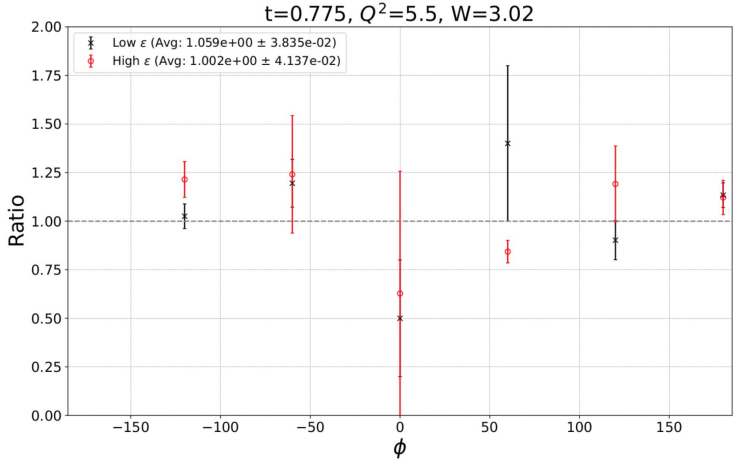

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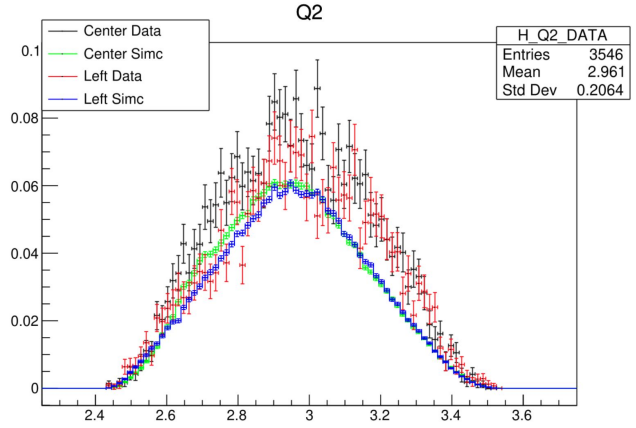

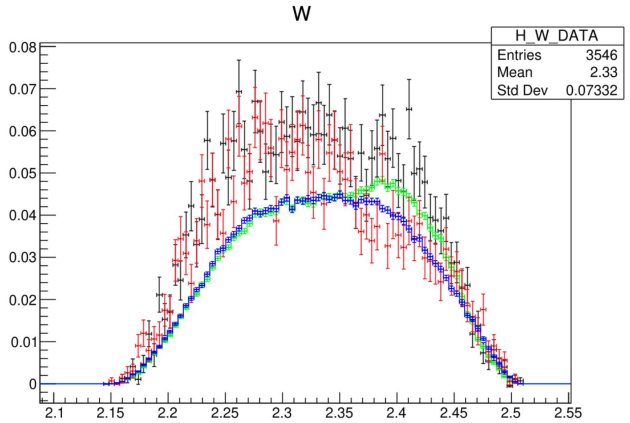

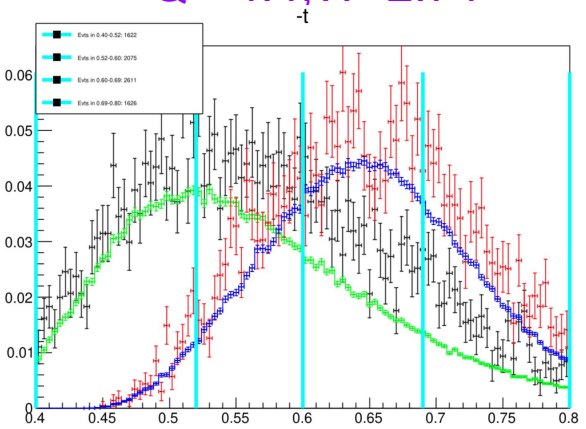

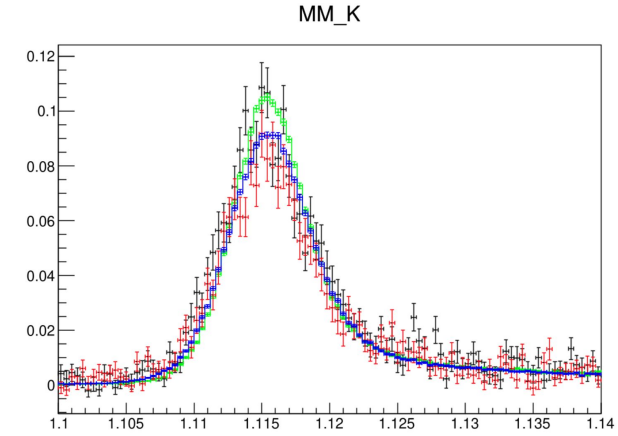

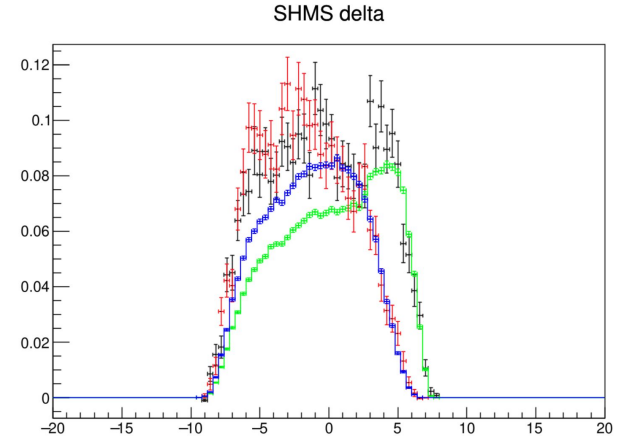

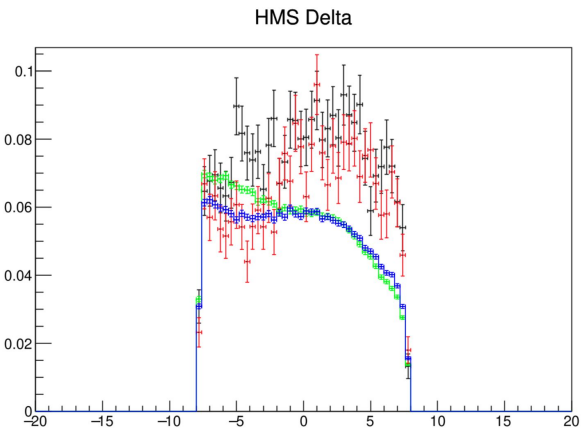

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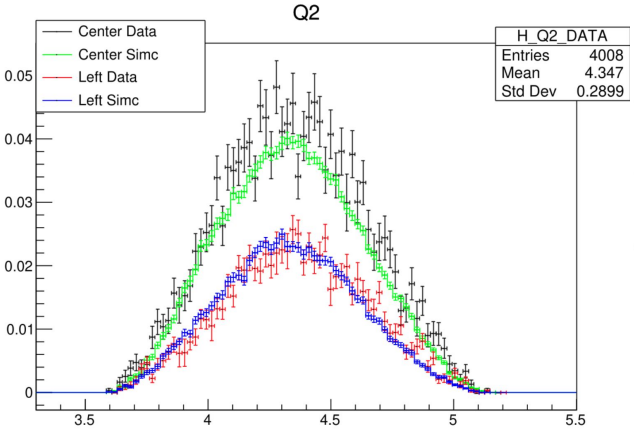

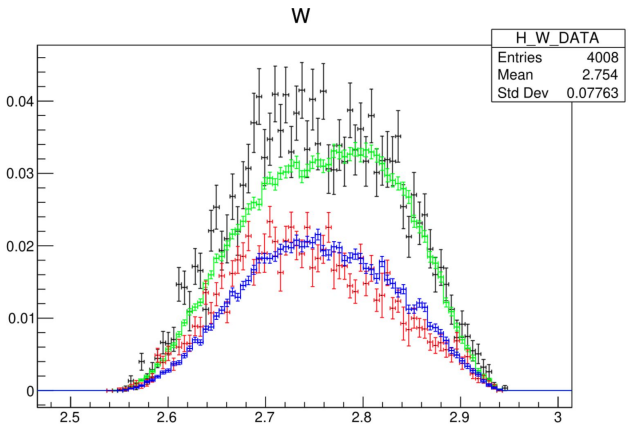

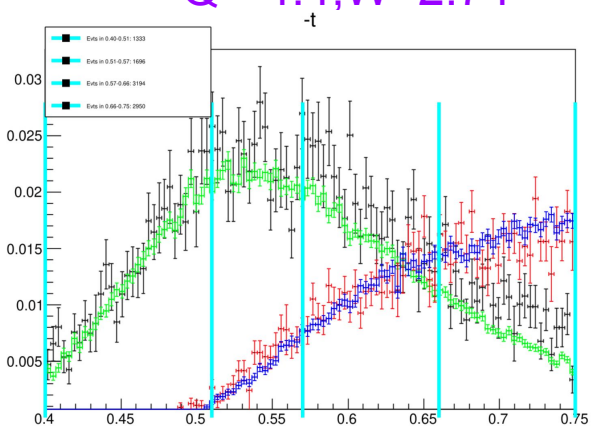

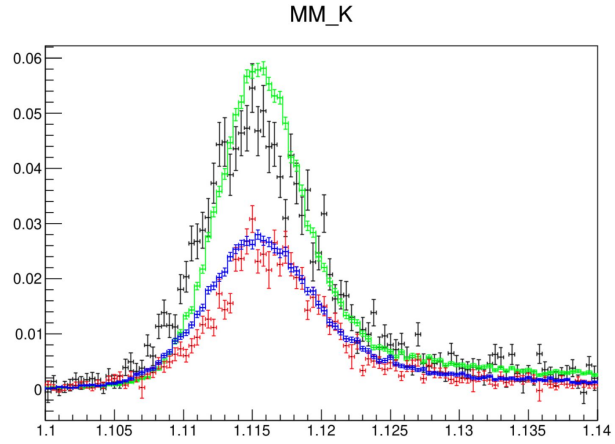

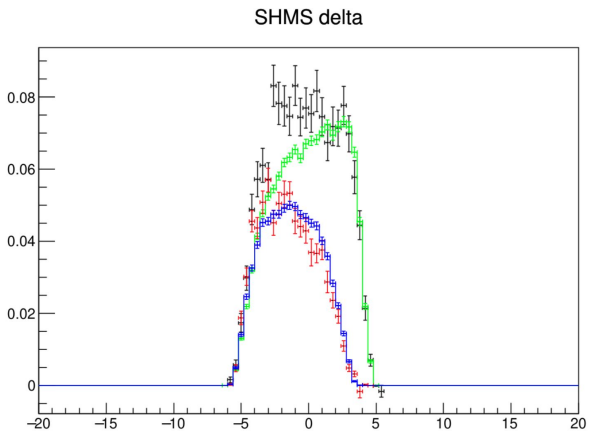

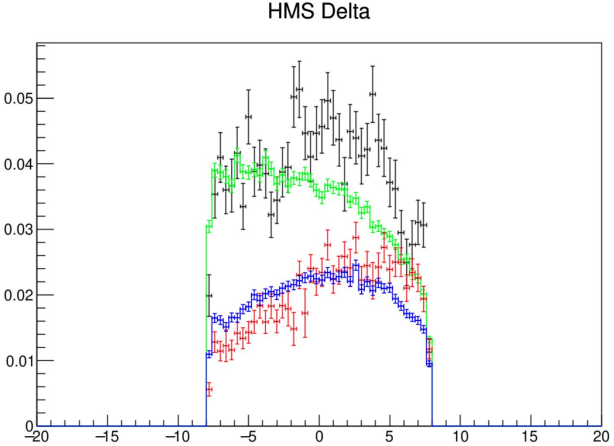

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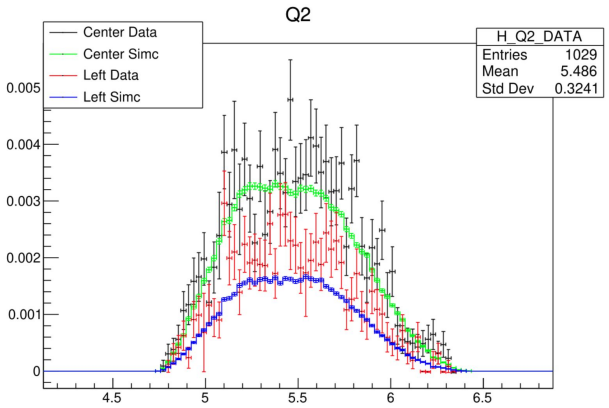

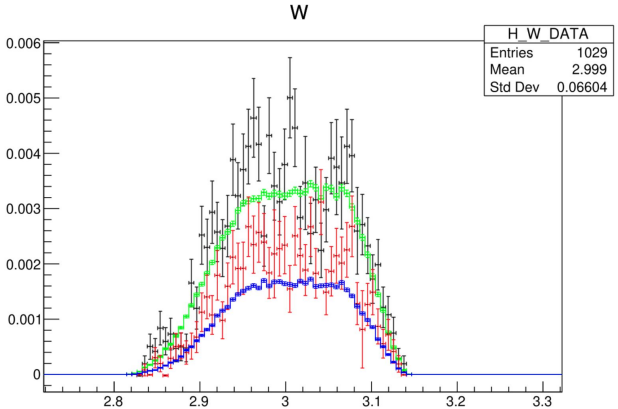

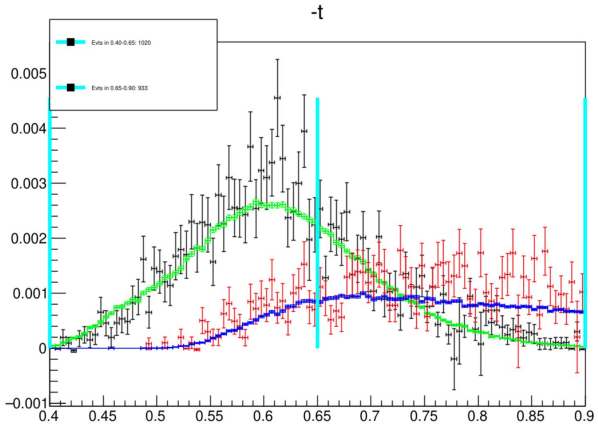

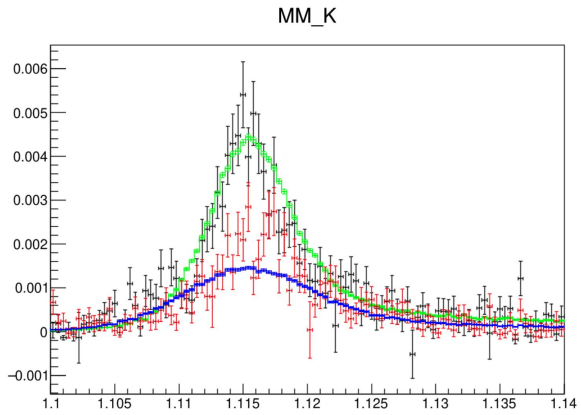

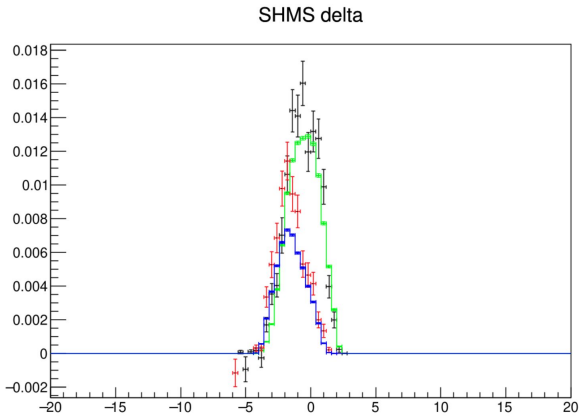

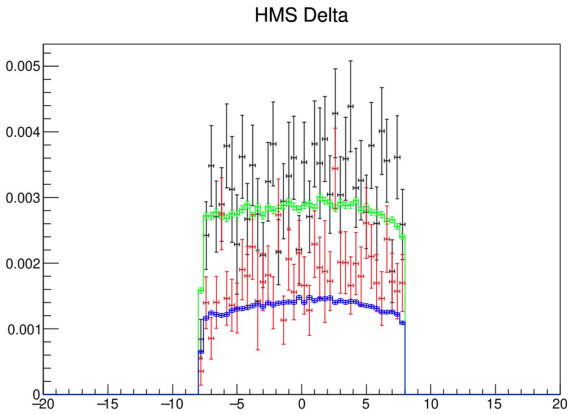

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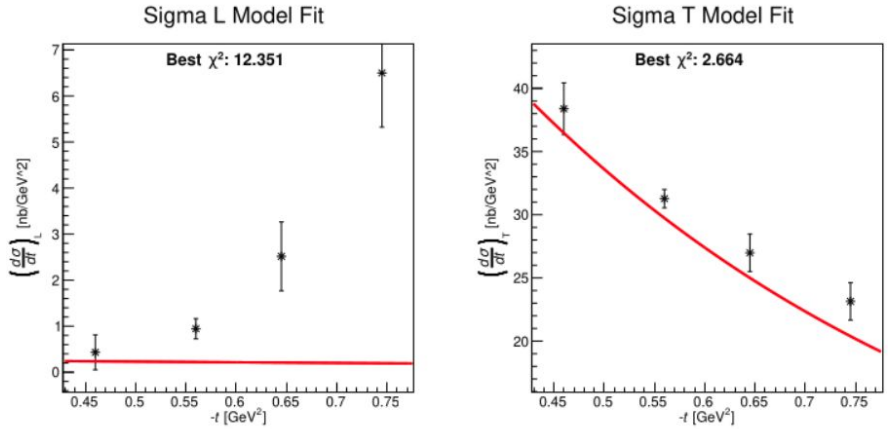

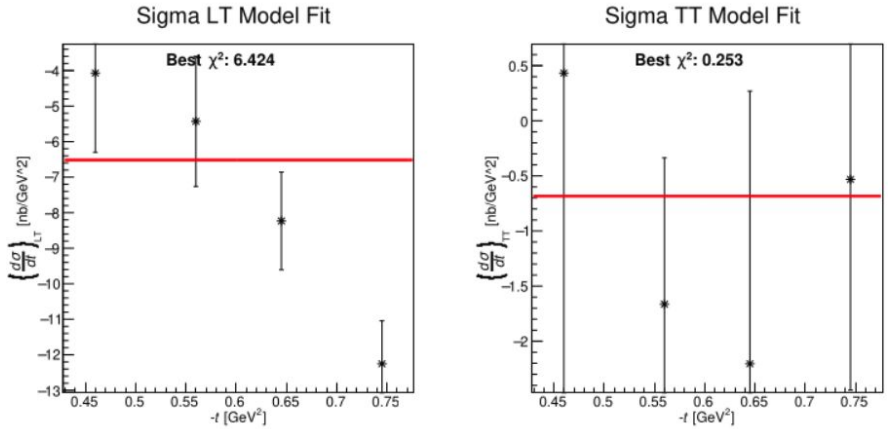

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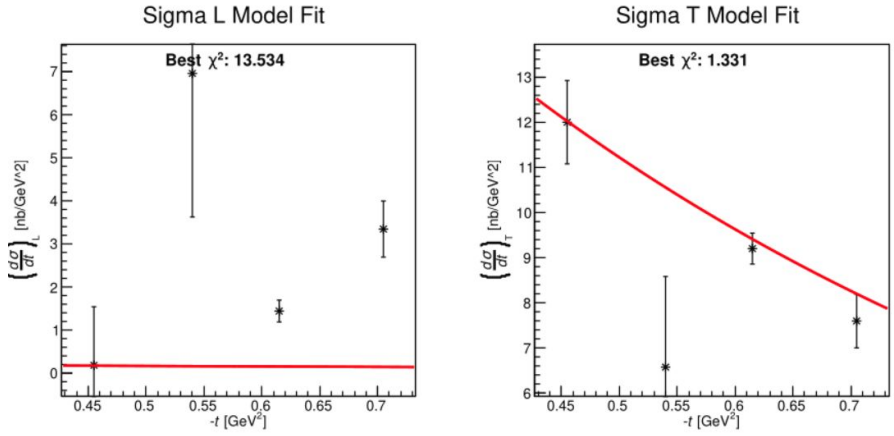

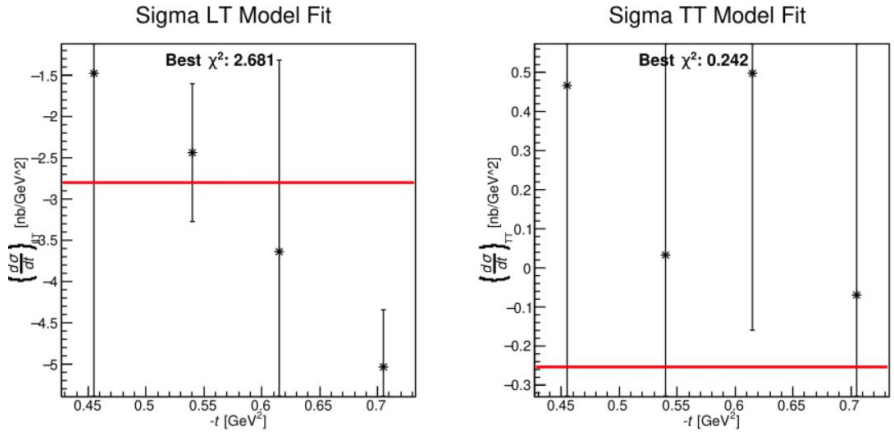

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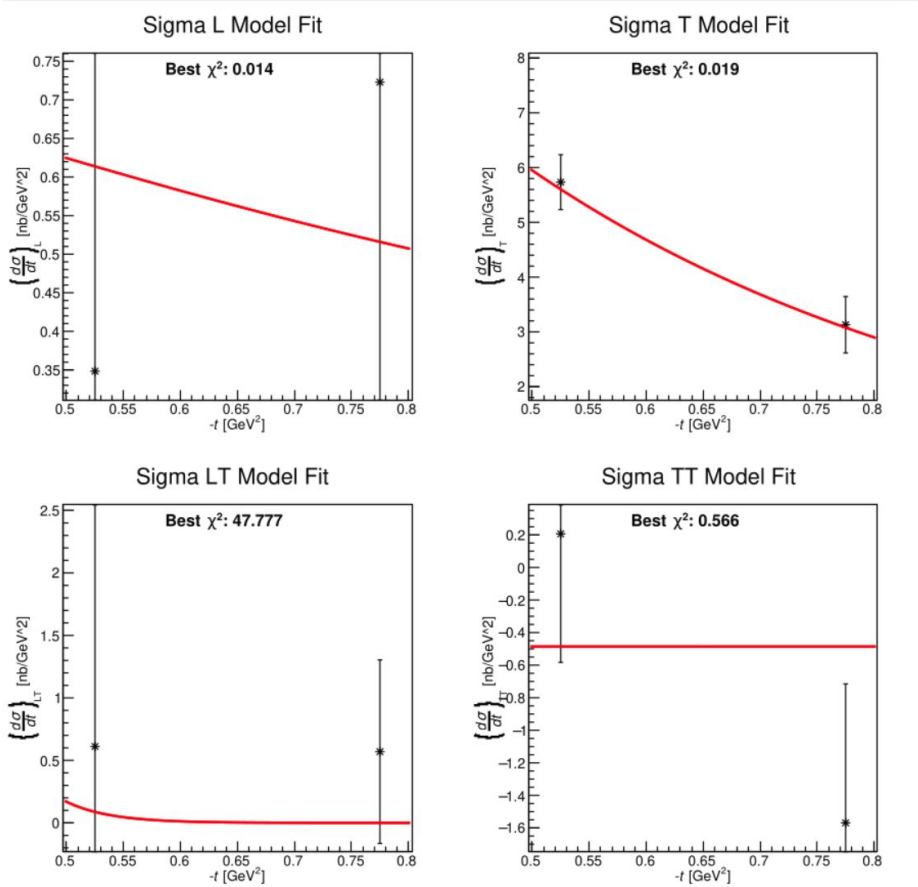
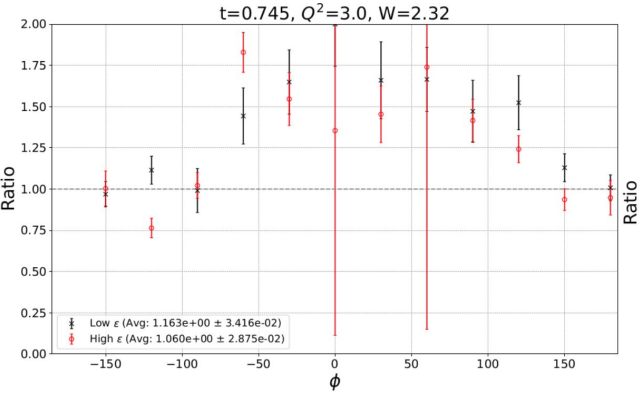


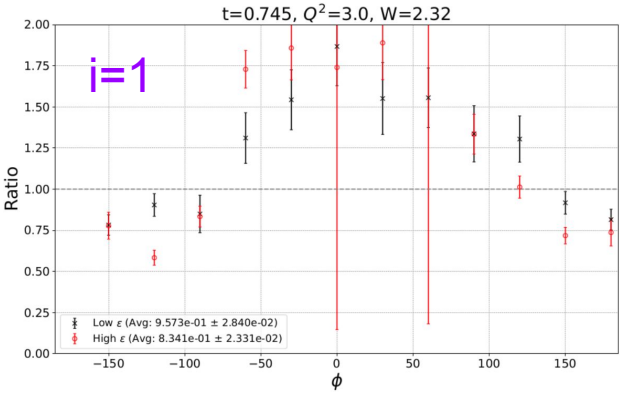
Number of Parameters > data points

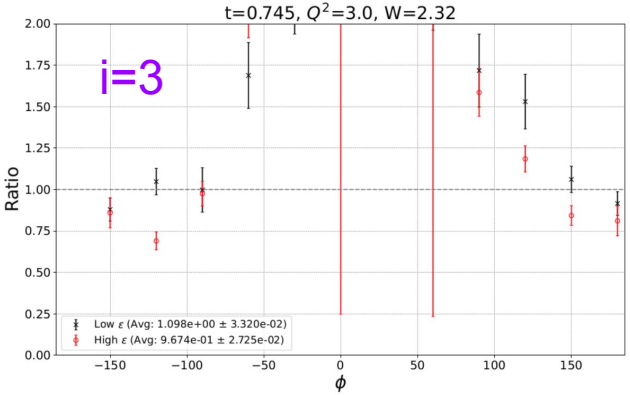
- Chi2 is an approximation using adaptive regularization

Overall things look good, so why not iterate?

- Iterations fail







- See Chi Kin's talk
  - Diamond mismatch
  - Possible something else, inconsistencies between Kin and I
-

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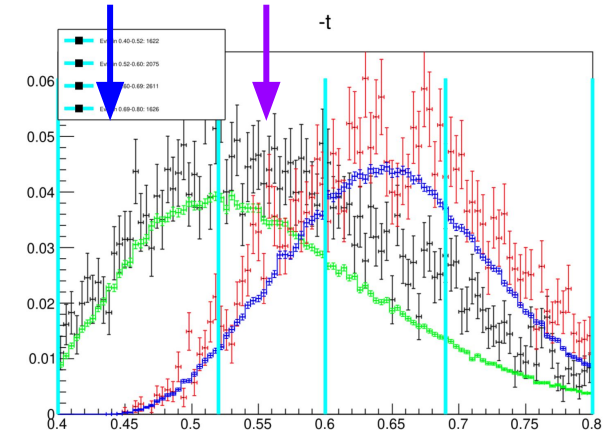

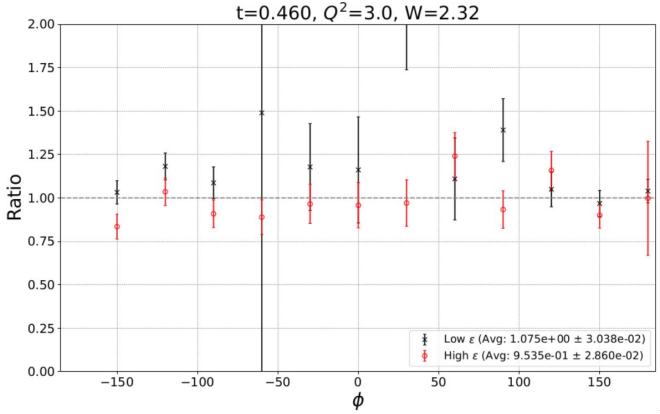

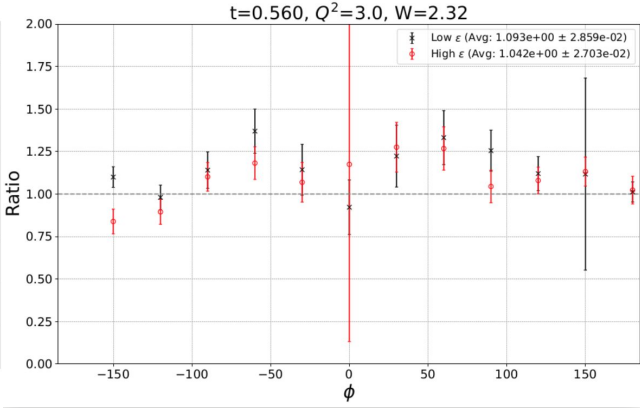

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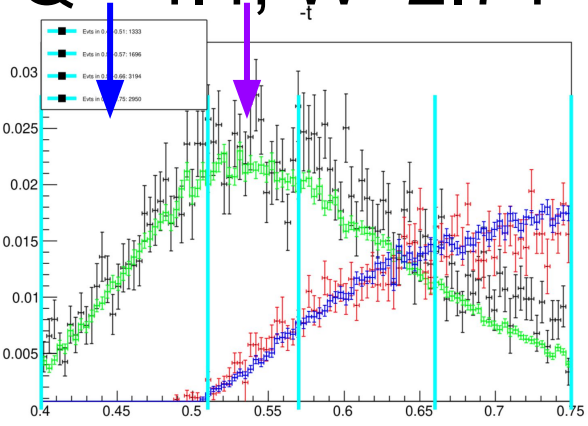

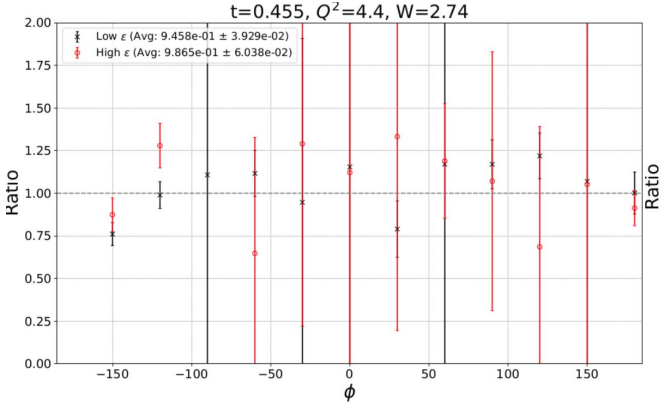

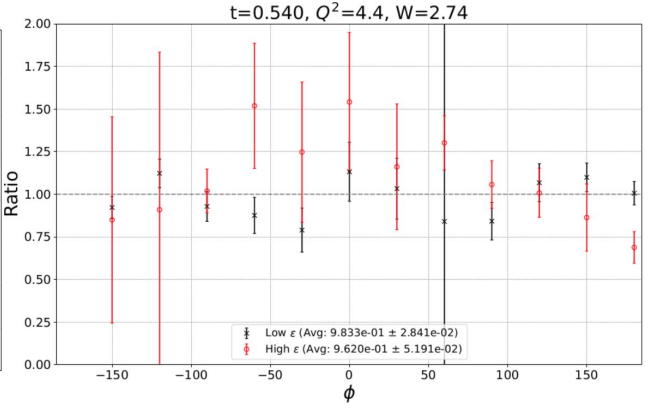

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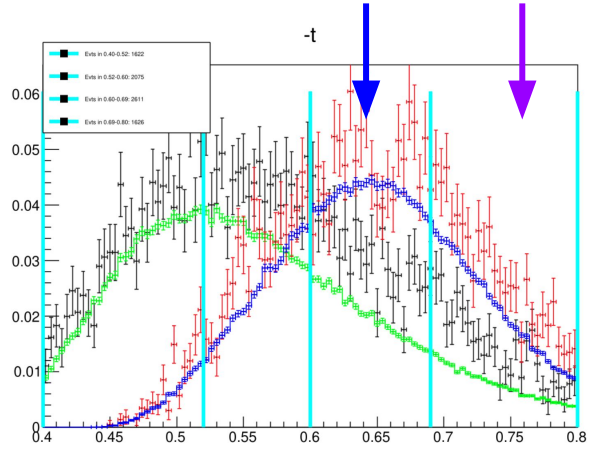

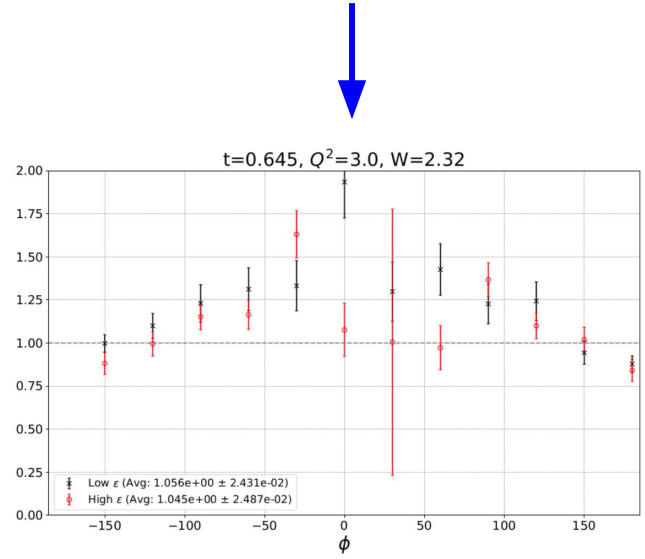

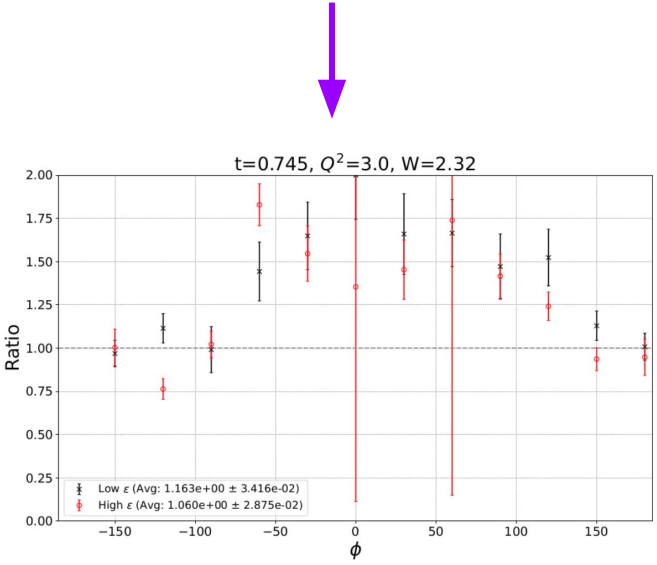

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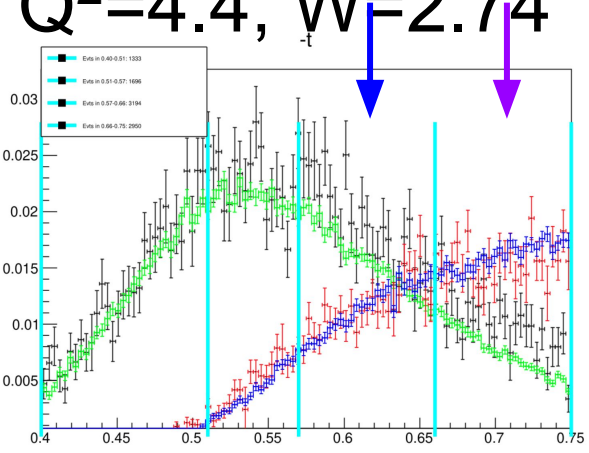

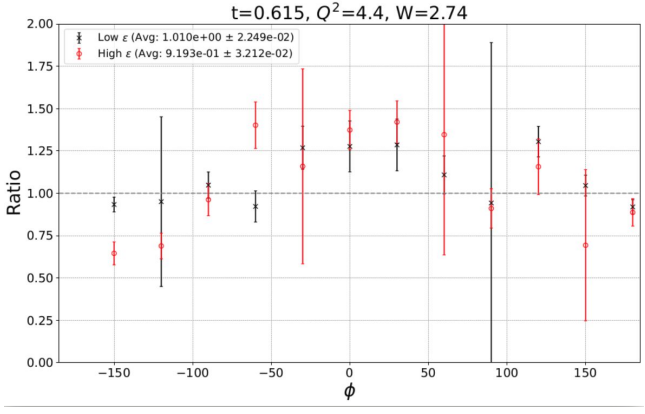

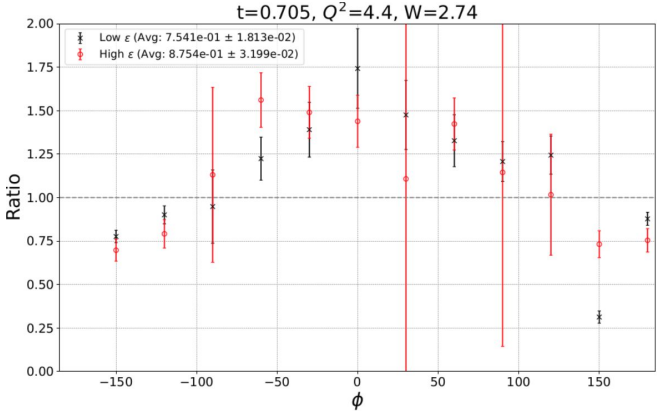

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$$f_t = \frac{|t|}{\left(|t| + m^2_{K+}\right)^2},$$

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

$$\sigma_T = p_5 \exp\left(-|p_6 t|\right),$$

$$\sigma_{LT} = p_9 \exp\left(-|p_{10} t|\right) \sin^2\theta,$$

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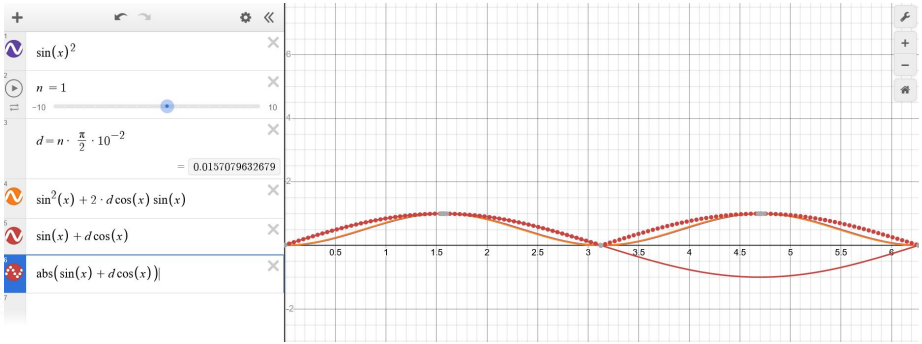
$$w_{\text{factor}} = \frac{1}{\left(W^2_{\text{set}} - M^2_{\text{tar}}\right)^{\left(0.85 W^2_{\text{set}} - 5.97 W_{\text{set}} + 12.68\right)}},$$

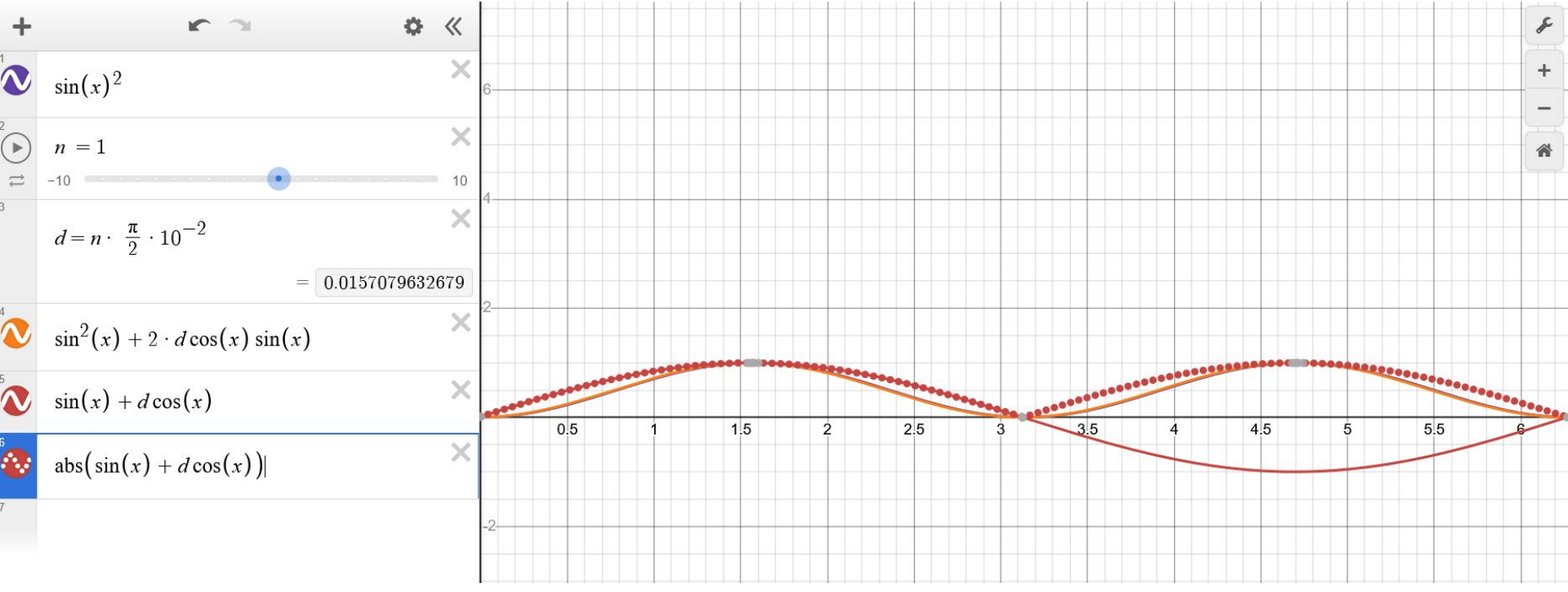
The sine squared term is out of place, but I believe it is connected to coupled terms in LT and TT (since azimuthal coverage is only approximate)

- Replace θ+β, where β is a small interference term
- Plug in and solve to get…
  - sinθ+βcosθ
  - $\sin^2\theta + 2\beta\cos\theta\sin\theta$



Returns similar results as $\sin^2\theta$

- LT~sinθ+βcosθ
- TT~$\sin^2\theta$+2βcosθsinθ



EXTRA