KaonLT Meeting

July 25th, 2024

Richard Trotta

Previous functional forms…

$$\sigma_L = p_1 \cdot Q_{F,L} \cdot t_{pole} \cdot e^{-p_6|-t|}$$

$$\sigma_T = p_5 \cdot Q_{F,T}^{p_6}$$

$$\sigma_{LT} = \frac{p_9}{1+Q^2} \cdot e^{-p_{10}|-t|} \cdot \sin\theta_K$$

$$\sigma_{TT} = \frac{p_{13}}{(1+Q^2)} \cdot e^{-p_{14}|-t|} \cdot \sin^2\theta_K$$

$$Q_{F,L} = \frac{Q^2}{1 + 1.77Q^2 + 0.12(Q^2)^2}$$

$$t_{pole} = \frac{|-t|}{(|-t| + m_K^2)^2}$$

$$Q_{F,T} = \frac{e^{-(Q^2)^2}}{Q^2}$$

Newer functional forms…

$$\sigma_L = p_1 \cdot Q_{F,L} \cdot t_{pole} \cdot e^{-p_6|-t|}$$

$$\sigma_T = p_5(p_6 + e^{-p_7 \cdot |-t|}) \cdot Q_{F,T}^{p_8}$$

$$\sigma_{LT} = \frac{p_9}{1+Q^2} \cdot e^{-p_{10}|-t|} \cdot \sin\theta_K$$

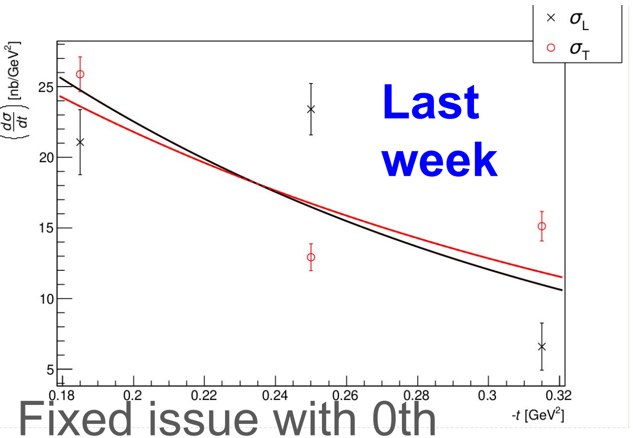
$$\sigma_{TT} = \frac{p_{13}}{(1+Q^2)} \cdot t_{pole} \cdot e^{-p_{14}Q^2} \cdot \sin^2\theta_K$$

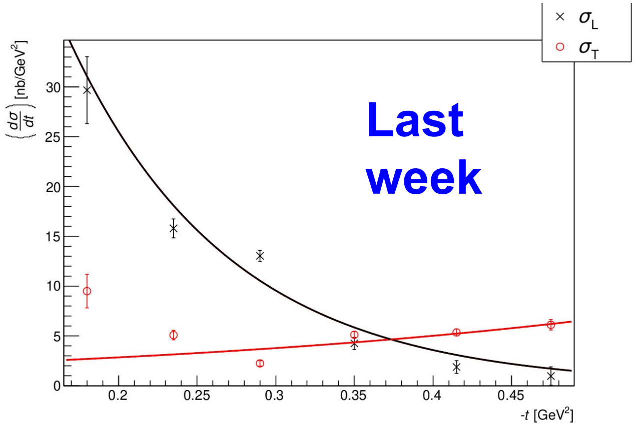
$$Q_{F,L} = \frac{Q^2}{1 + 1.77Q^2 + 0.12(Q^2)^2}$$

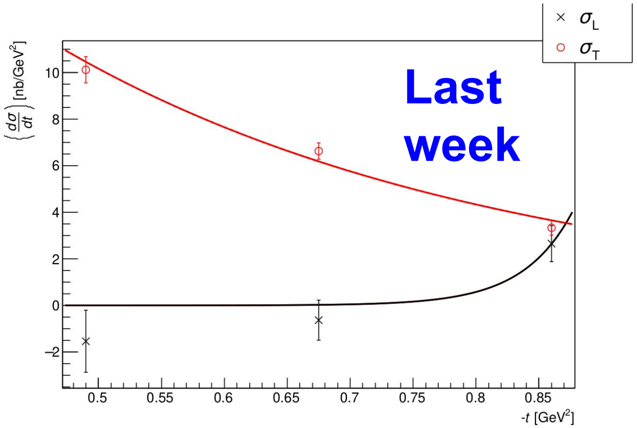
$$t_{pole} = \frac{|-t|}{(|-t| + m_K^2)^2}$$

$$Q_{F,T} = \frac{e^{-(Q^2)^2}}{Q^2}$$

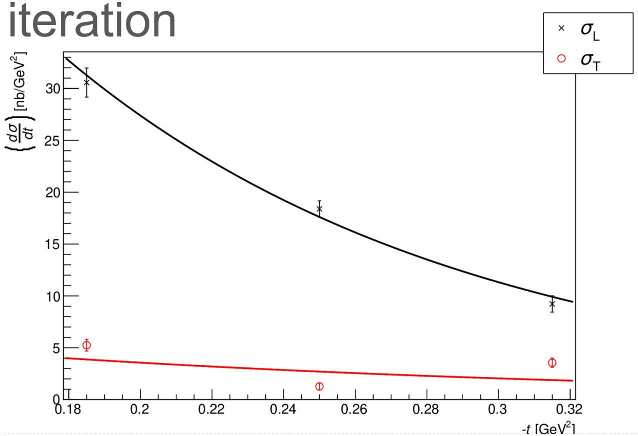
Q^2=2.115, W=2.95 | Q^2=3.0, W=3.14 | Q^2=5.5, W=3.02

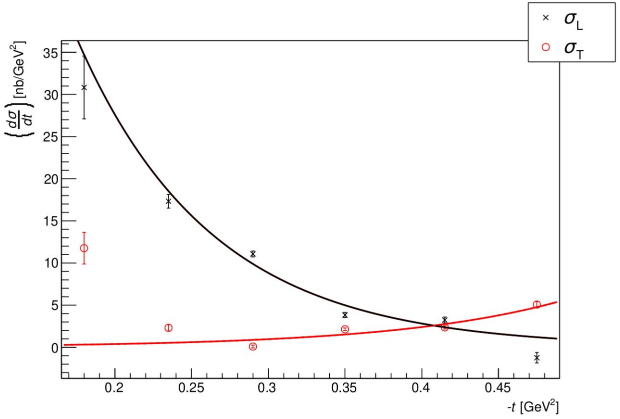


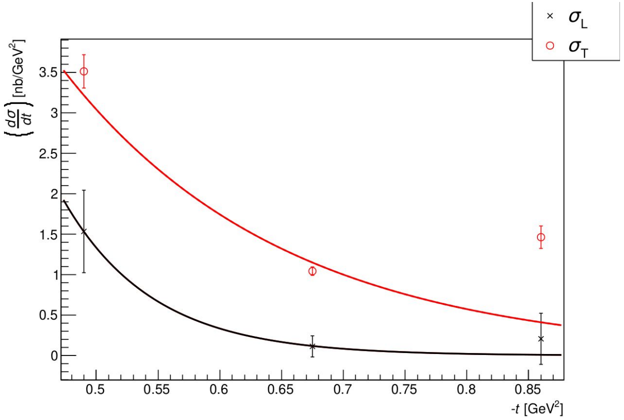




Fixed issue with 0th iteration





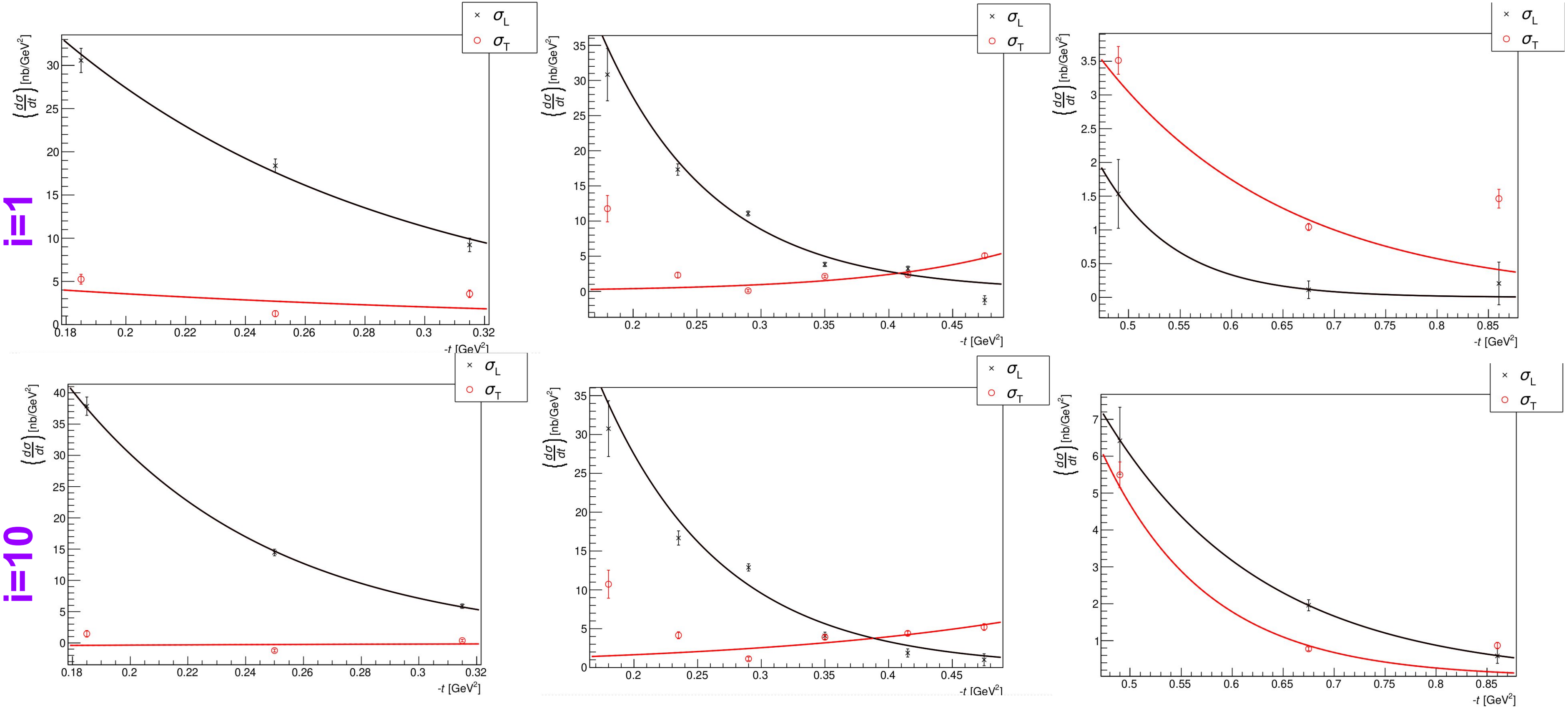


****i=1

Q^2=2.115, W=2.95 Q^2=3.0, W=3.14 Q^2=5.5, W=3.02

i=1

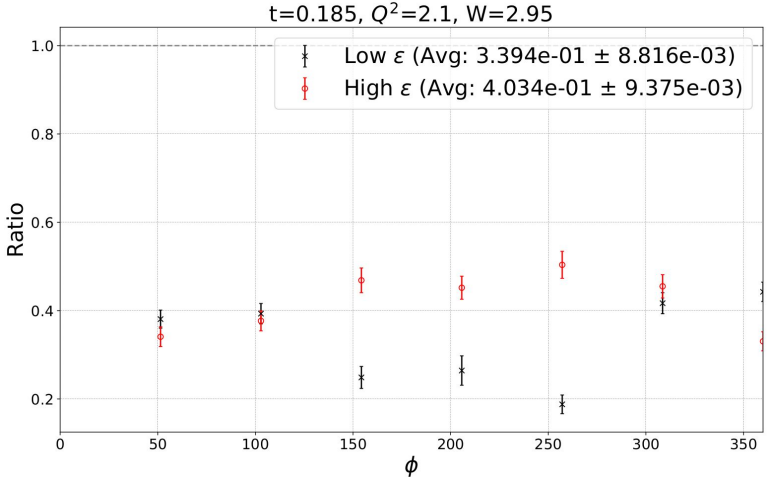
i=10

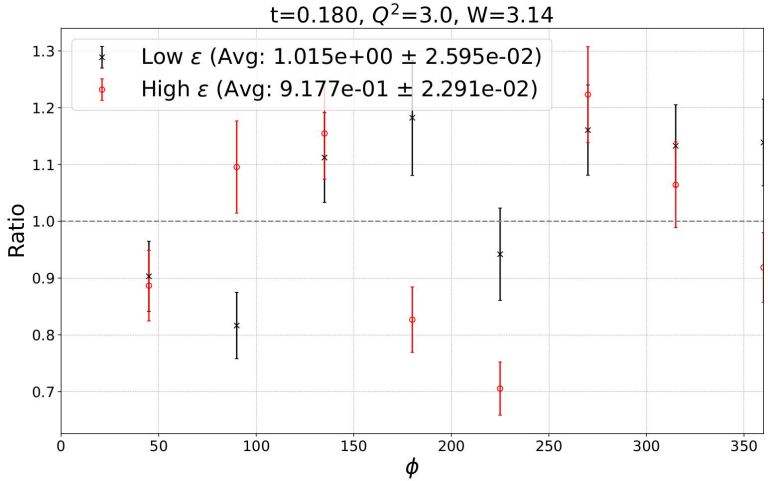


Q^2=2.115, W=2.95, t=0.185

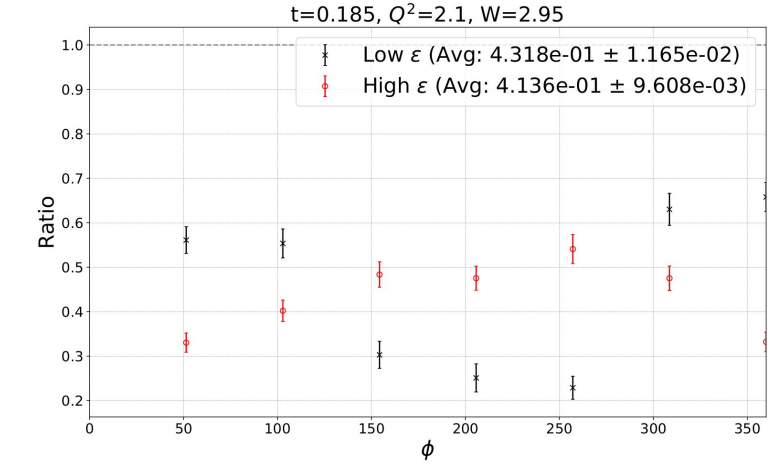
Q^2=3.0, W=3.14, t=0.180

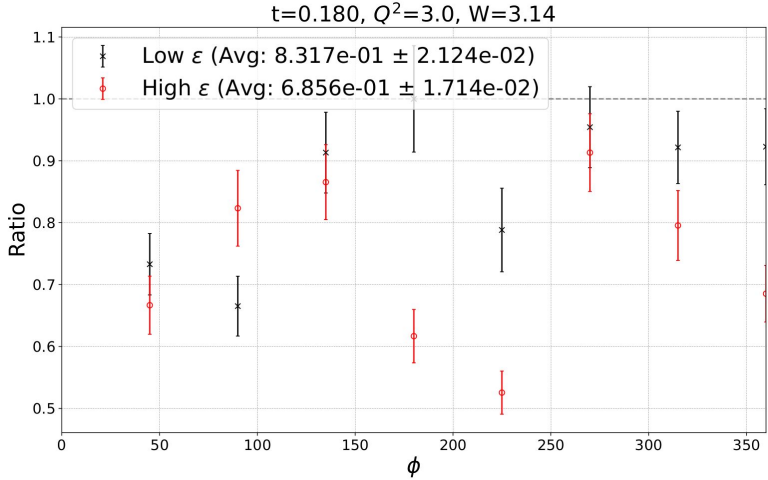
i=1





i=10

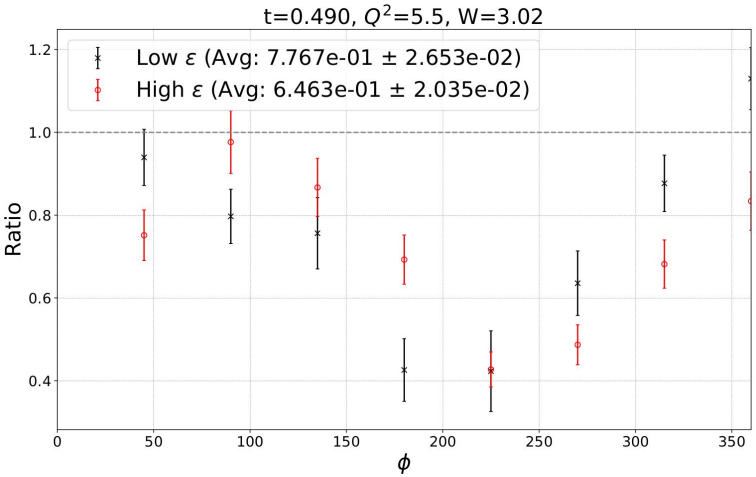


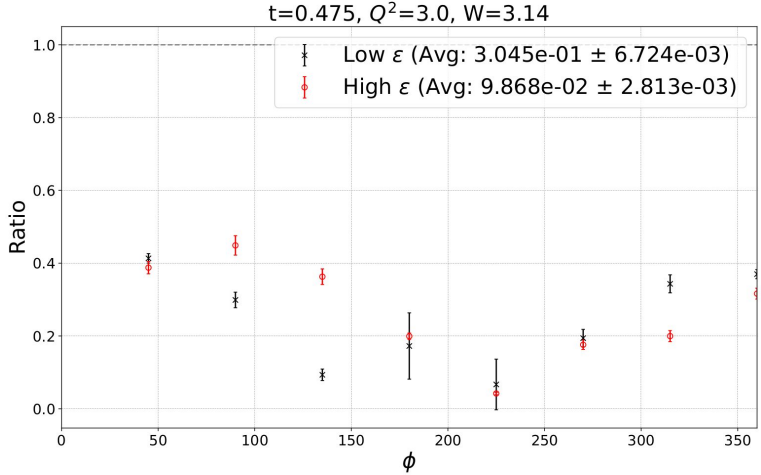


Q^2=5.5, W=3.02, t=0.490

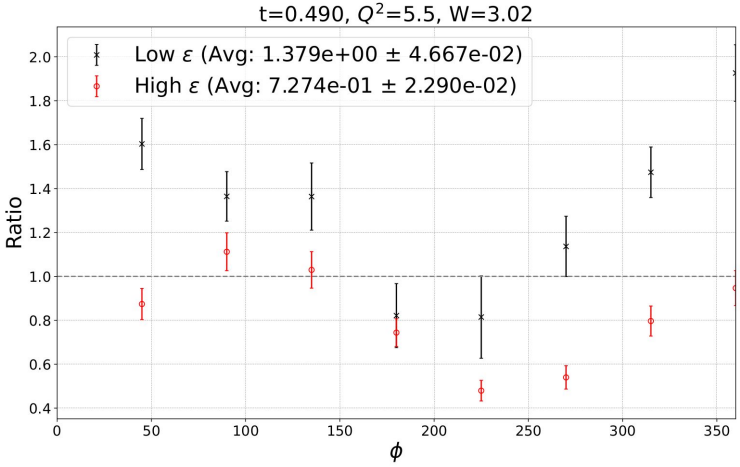
Q^2=3.0, W=3.14, t=0.475

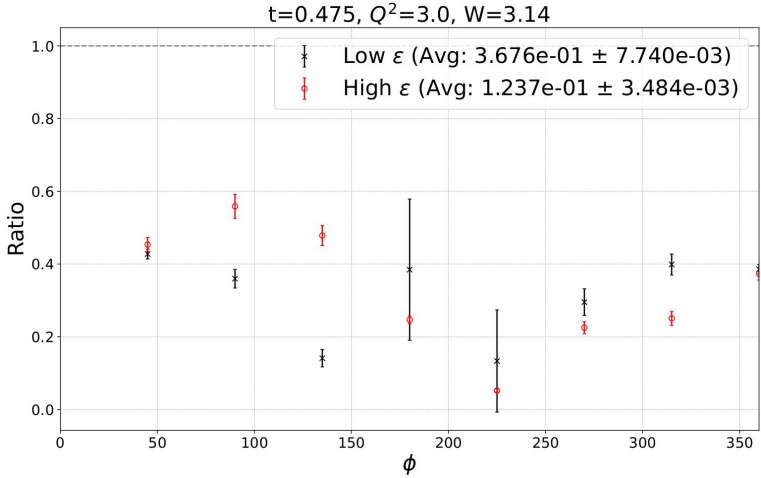
i=1

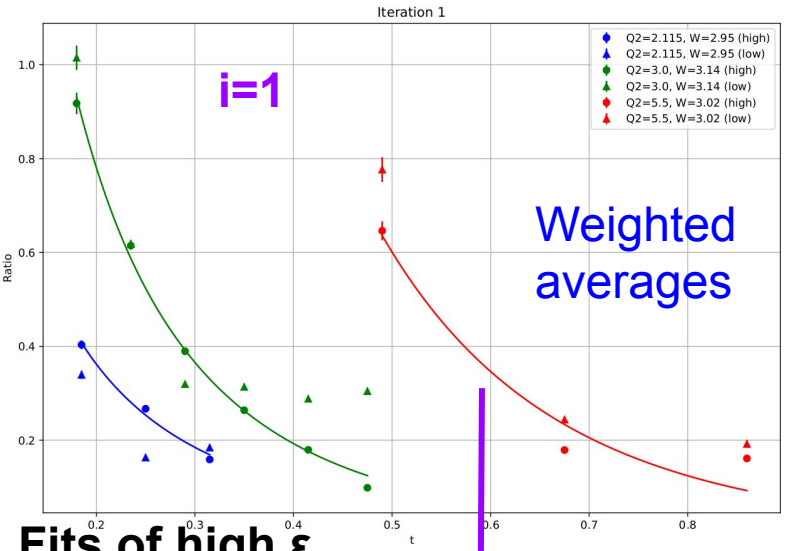




i=10







Weighted averages

$$\sigma_L = p_1 \cdot Q_{F,L} \cdot t_{pole} \cdot e^{-p_6|-t|}$$

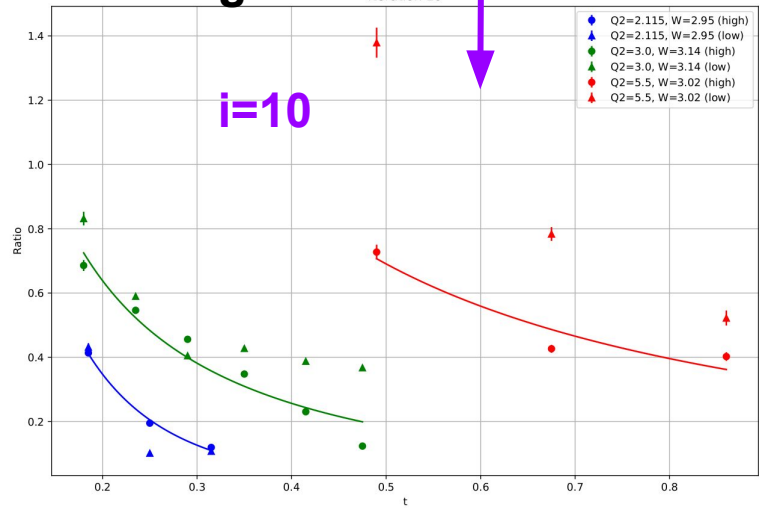
$$\sigma_T = p_5(p_6 + e^{-p_7 \cdot |-t|}) \cdot Q_{F,T}^{p_8}$$

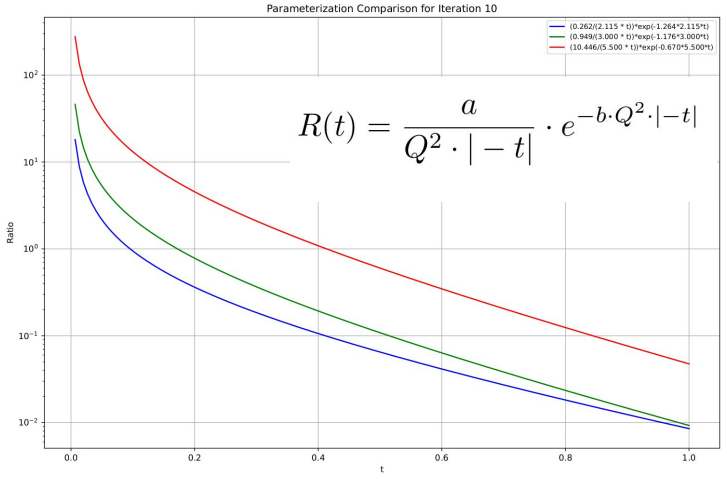
$$\sigma_{LT} = \frac{p_9}{1+Q^2} \cdot e^{-p_{10}|-t|} \cdot \sin\theta_K$$

$$\sigma_{TT} = \frac{p_{13}}{(1+Q^2)} \cdot t_{pole} \cdot e^{-p_{14}Q^2} \cdot \sin^2\theta_K$$

Ratios begin to flatten out, better at higher Q^2 → Need to adjust Q^2 dependence to fix

Fits of high ε

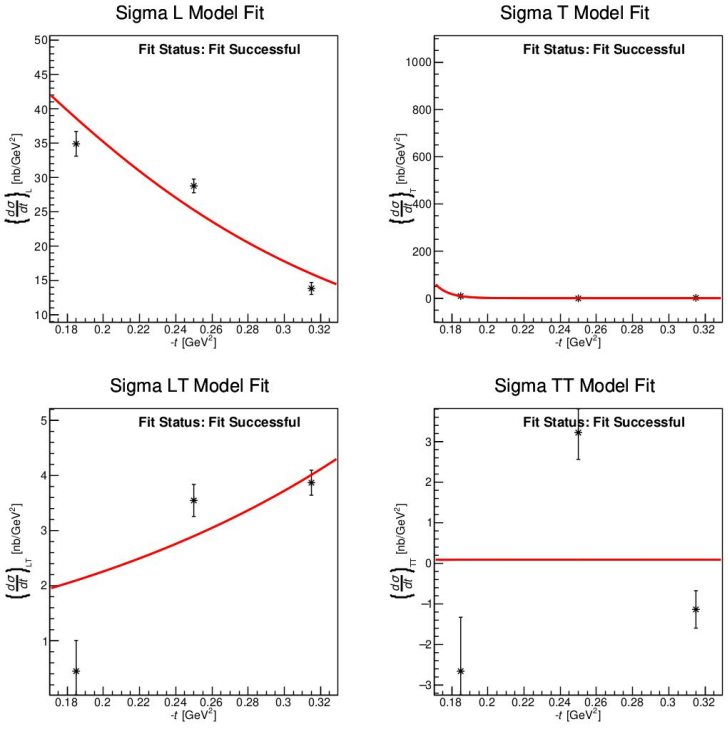




$$R(t) = \frac{a}{Q^2 \cdot |-t|} \cdot e^{-b \cdot Q^2 \cdot |-t|}$$

Need to adjust Q^2 dependence to fix

Q^2=2.115, W=2.95



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$$\sigma_L = p_1 \cdot Q_{F,L} \cdot t_{pole} \cdot e^{-p_6|-t|}$$

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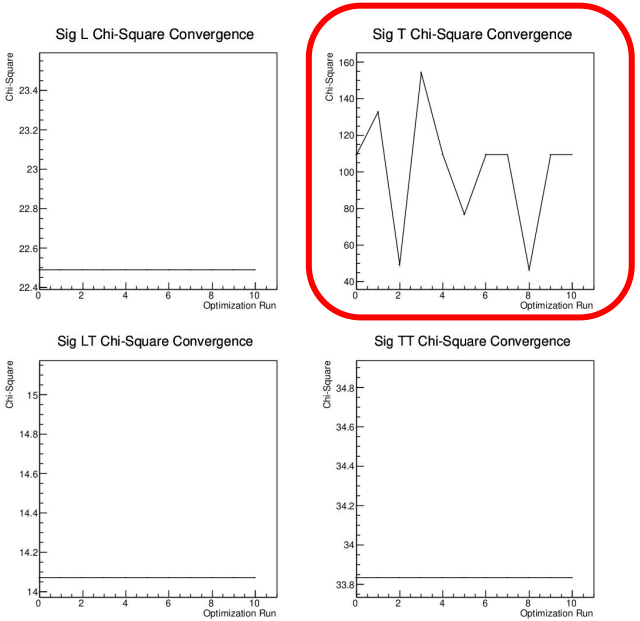
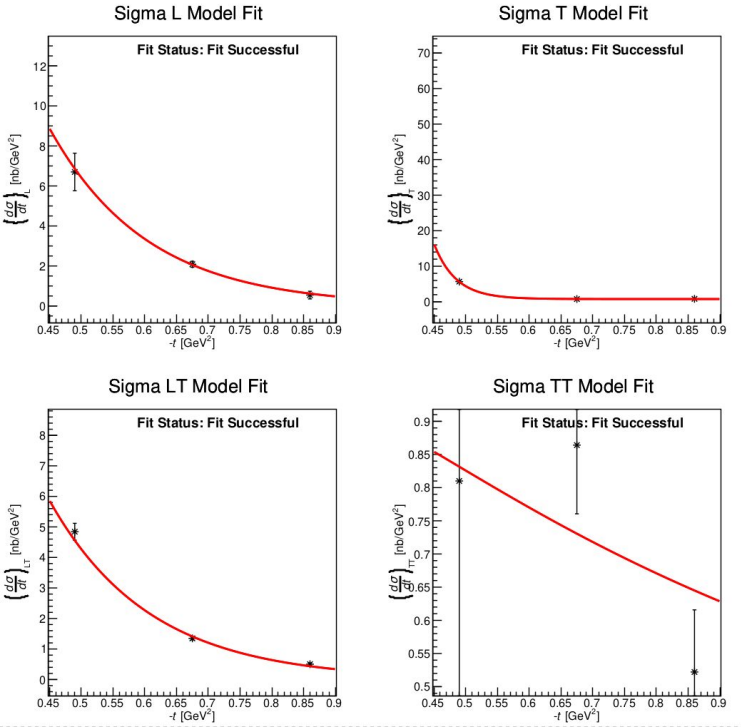


$$Q_{F,T} = \frac{e^{-(Q^2)^2}}{Q^2}$$

Need to introduce Q^2 dependence to fix

Q^2=5.5, W=3.02



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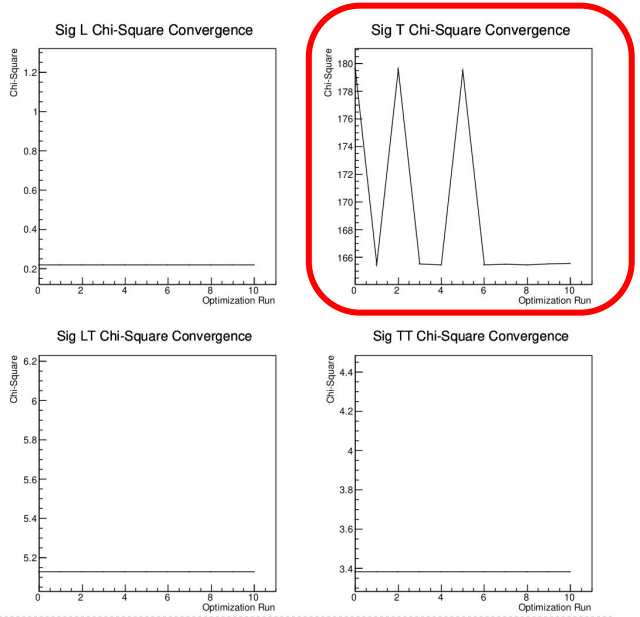
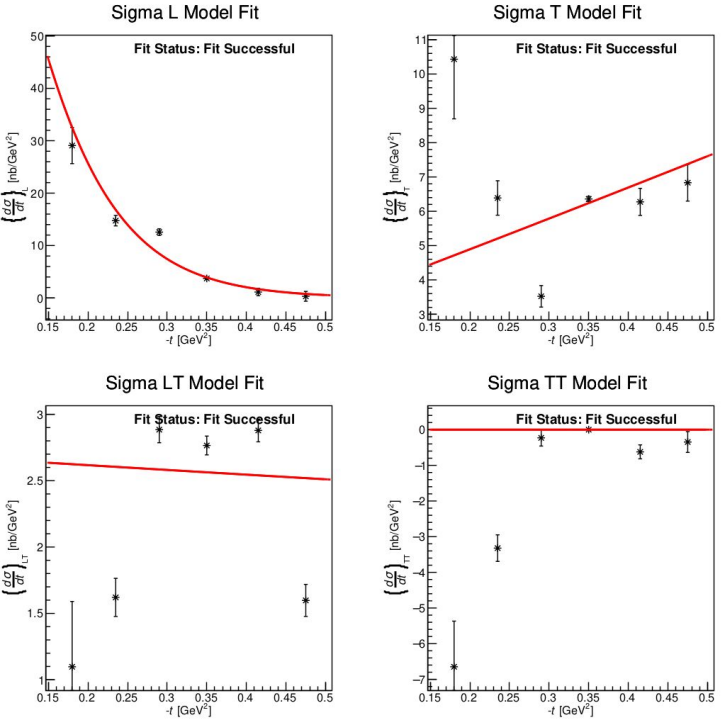


$$Q_{F,T} = \frac{e^{-(Q^2)^2}}{Q^2}$$

Need to introduce Q^2 dependence to fix

Q^2=3.0, W=3.14



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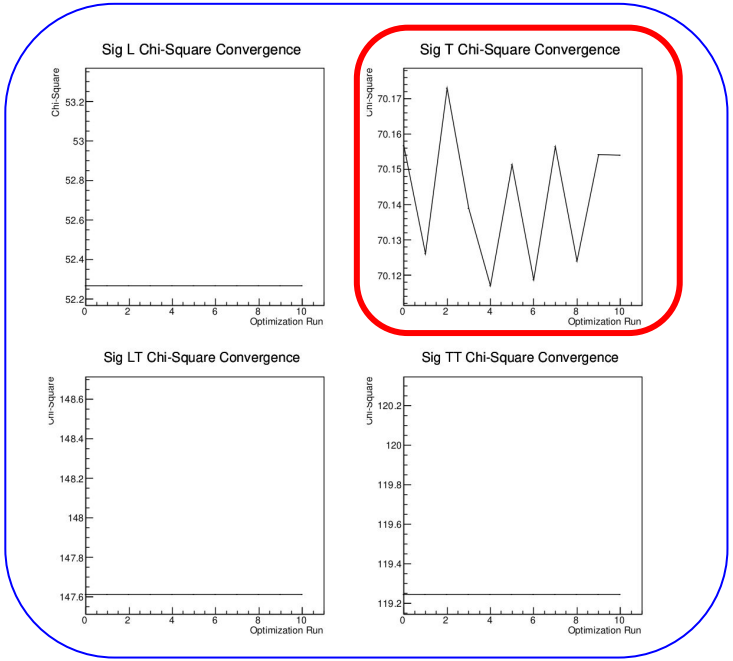

Order of magnitude better stats

$$Q_{F,T} = \frac{e^{-(Q^2)^2}}{Q^2}$$

Really bad χ^2