KaonLT Meeting

May 8th, 2025

Richard L. Trotta

Weird Cross Section Dip at 180°

- **What was happening:**
  - The unseparated cross sections were going negative ~180°
- **What I found:**
  - Surprise, surprise…it was a ROOT issue.
  - I had put a cut on the NTuple to get rid of those bad points.
  - The TGraph respected the cut just fine, but the TF2 fit completely ignored it.
- **How I fixed it:**
  - Instead of relying on ROOT, I applied the cut directly in the Fortran script.
  - That way, the bad data never even makes it to ROOT.
  - Now the fit behaves, and no more negative cross sections.

i=10

Q^2=4.4, W=2.74, t=(0.40-0.75), 4t, 12φ

$$\sigma_L = (p_1 \cdot f_t) \cdot e^{-p_2|t|}$$

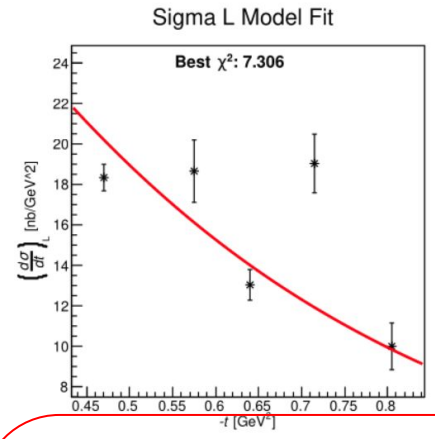
$$\sigma_T = \frac{p_5}{|t|^{p_6}}$$

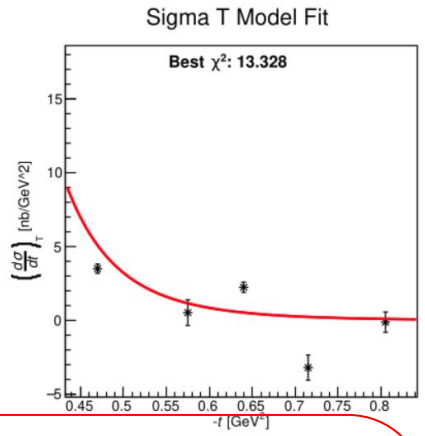
$$\sigma_{LT} = p_9 \cdot e^{-p_{10}|t|} \sin\theta$$

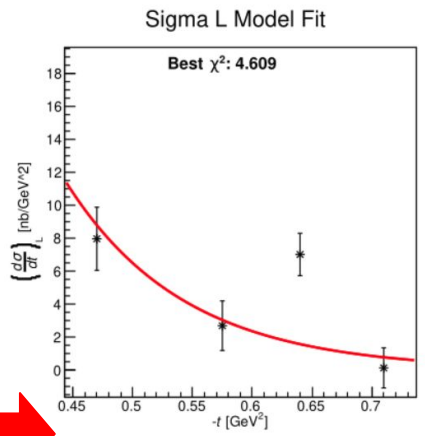
$$\sigma_{TT} = \frac{p_{13}}{|t|^{p_{14}}} \sin^2\theta$$

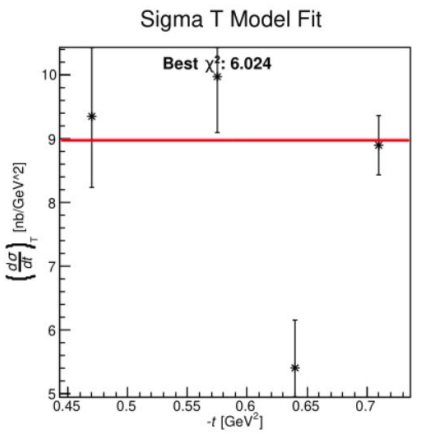
Q^2=4.4, W=2.74, t=(0.40-0.75), 4t, 12φ

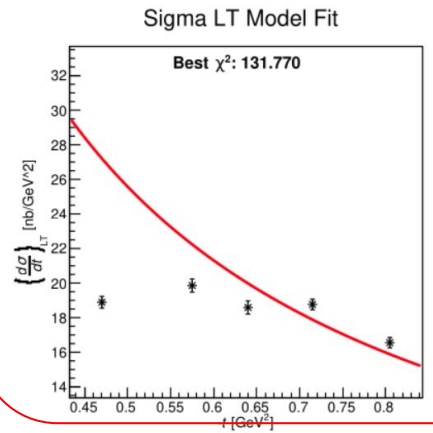
i=10

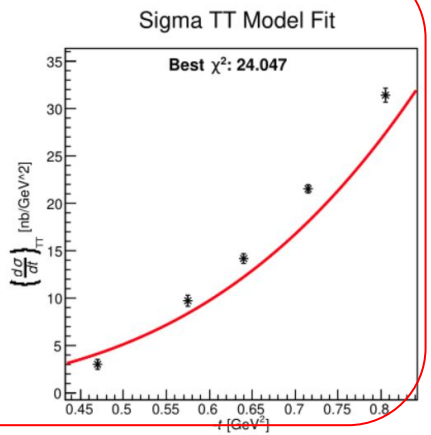


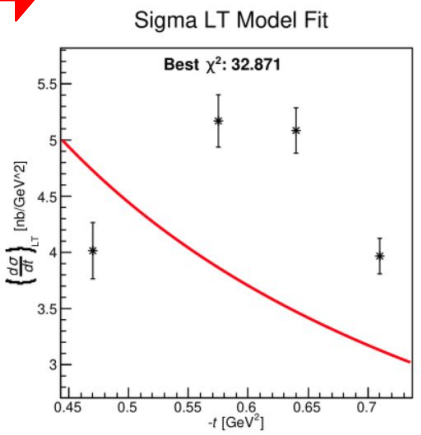


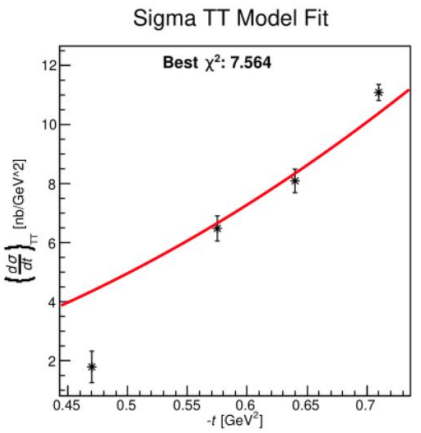








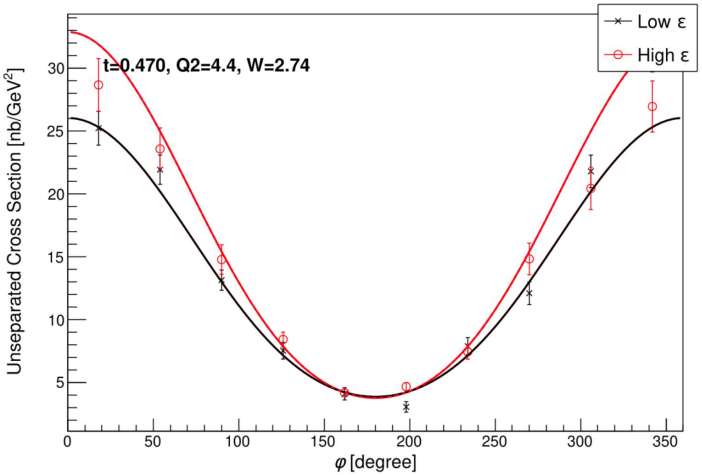


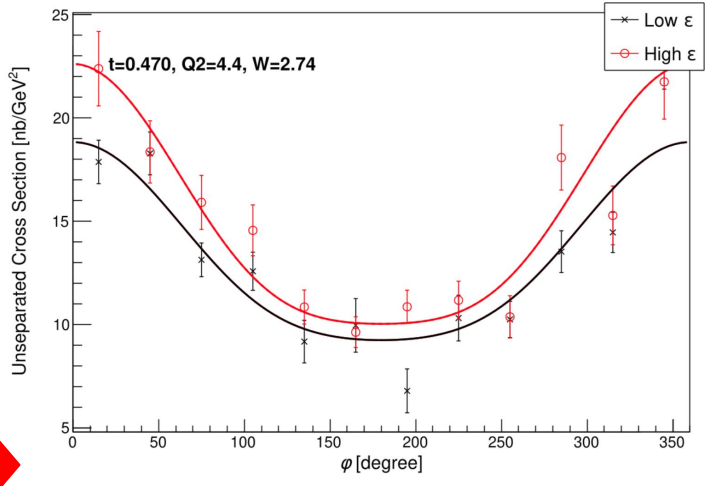


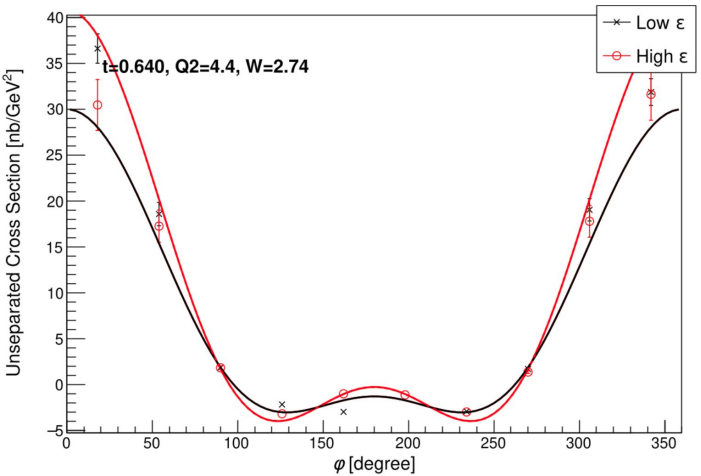
Simultaneous unseparated fit procedure

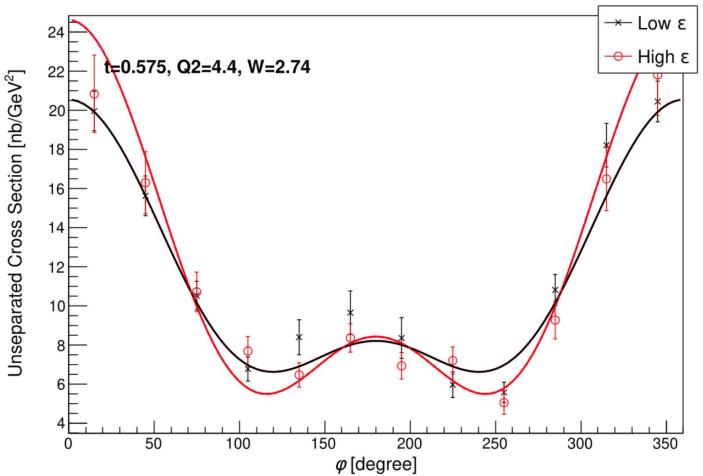
1. Fit L and T, while Fix LT and TT
2. Fit LT, while Fix L, T, and TT
3. Fit L and T, while Fix LT and TT
4. Fit TT, while Fix T, L, and LT
5. Fit T and L, while Fix LT and TT
6. Fit LT and TT, while Fix L and T
7. Fit All

Q^2=4.4, W=2.74, t=(0.40-0.75), 4t, 12φ









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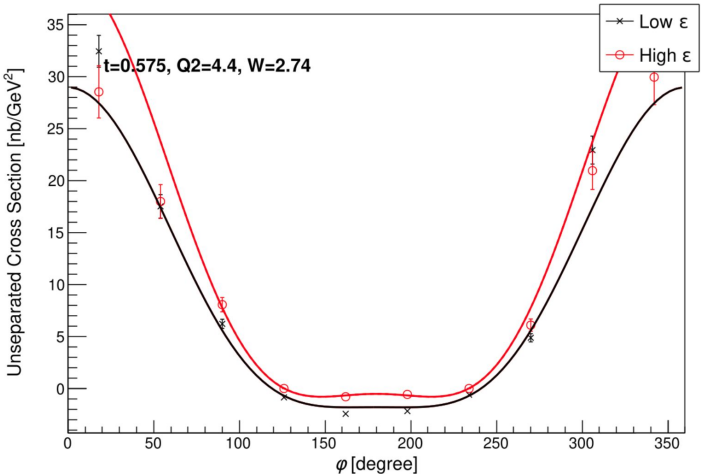
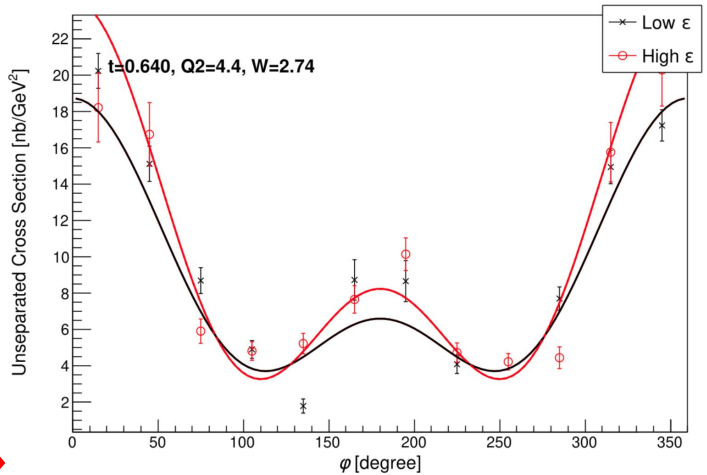
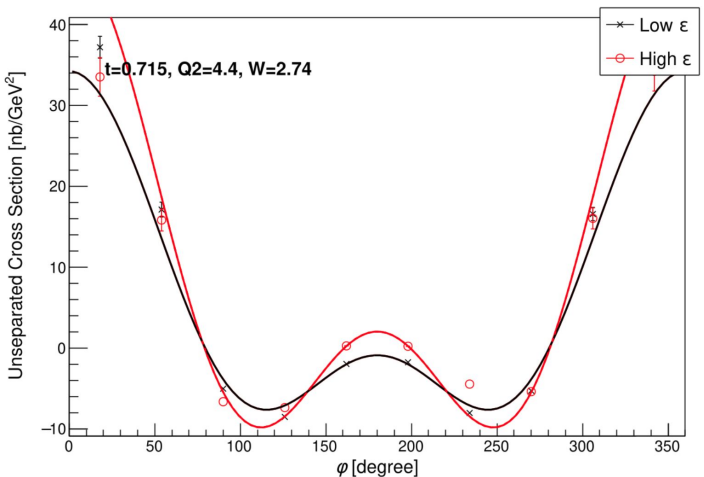
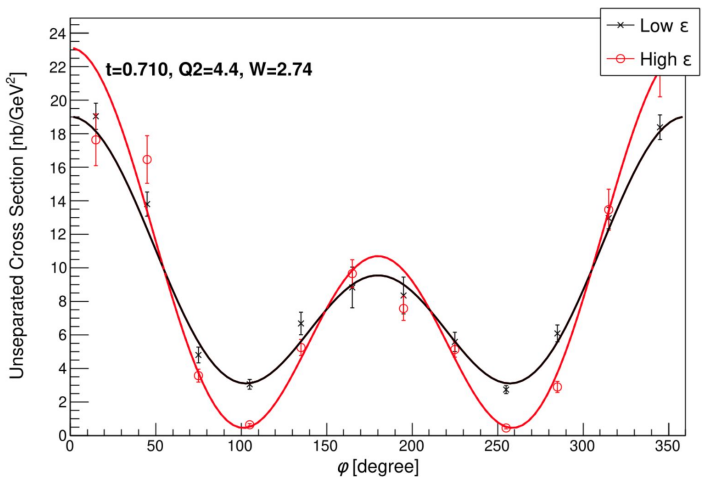
Q^2=4.4, W=2.74, t=(0.40-0.75), 4t, 12φ









i=10

To Do

1. Reanalyze…
   - Q^2=3.0/W=2.32
   - Q^2=4.4/W=2.74
   - Q^2=5.5/W=3.02
2. Re-parameterize…
   - Q^2=2.115/W=2.95
   - Q^2=3.0/W=3.14

MAY 2025

SUN	MON	TUE	WED	THU	FRI	SAT
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

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JUNE 2025

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

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3. Full SIMC runs with new functions and parameters for all settings
4. Full Replay for all settings
5. Finalize systematics study **(detailed plan to be outlined next week)**

Finish up by Hall A/C meeting