Pion-LT/Kaon-LT Collaboration Meeting

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LTSep Analysis

- **Next steps are listed as follows:**
  - **Unseparated cross-section calculations**
  - **Model iterations**
  - **Rosenbluth equation fitting**
  - **L/T separated cross-section calculations**
  - **Pion Form Factor measurements**

New Model Functions V17

LTSep Functions

- Started with functional forms (with SIMC W_factor):

$$\frac{d\sigma_T}{dt} = \left(\frac{p1}{Q^2}\right) \cdot e^{(p2\, Q^2)} \cdot e^{(p3\, |t|)}$$

$$\frac{d\sigma_L}{dt} = (p4 + p5/Q^2) \cdot \frac{|t|}{(|t| + m_\pi^2)^2} \cdot Q^2 e^{(p6|t|)} F_\pi^2$$

Where, $F_\pi = \frac{1}{(1+p7 \cdot Q^2 + p8 \cdot Q^4)}$

$$\frac{d\sigma_{LT}}{dt} = \left(\frac{p9}{Q^2} + e^{(-p10|t|)} \cdot \frac{p11}{p12 + |t|}\right) \cdot \sin(\theta^*)$$

$$\frac{d\sigma_{TT}}{dt} = \left(\frac{p13}{Q^2} + e^{(p14|t|)} \cdot \frac{p15}{(p16 + |t|)^3}\right) \cdot \sin(\theta^*)^2$$

Parameter	Initial Values	Parameter	Initial Values
p1	23.3	p9	0.87
p2	0.0098	P10	5.0
p3	-1.5	P11	1.1
p4	214	P12	0.0
p5	8.6	p13	217
p6	0.7	p14	-5.0
p7	1.77	P15	0.1
p8	0.05	P16	0.0

New Model Functions V18

LTSep Functions

- **Started with functional forms (with SIMC W_factor):**

$$\frac{d\sigma_T}{dt} = \left(\frac{\mathrm{p1}}{Q^2}\right) \cdot \mathrm{e}^{(\mathrm{p2}\, Q^2)} \cdot \mathrm{e}^{(\mathrm{p3}\, |t|)}$$

$$\frac{d\sigma_L}{dt} = (\mathrm{p4} + \mathrm{p5}/\mathrm{Q}^2) \cdot \frac{|t|}{(|t| + m_\pi^2)^2} \cdot Q^2 \mathrm{e}^{(\mathrm{p6}|t|)} F_\pi^2$$

Where, $F_\pi = \frac{1}{(1+\mathrm{p7}\cdot Q^2+\mathrm{p8}\cdot Q^4)}$

$$\frac{d\sigma_{LT}}{dt} = \left(\frac{\mathrm{p9}}{Q^2} + \mathrm{e}^{(-\mathrm{p10}|t|)\cdot} \mathrm{p11}(|t|)^{\mathrm{p12}}\right) \cdot \sin(\theta^*)$$

$$\frac{d\sigma_{TT}}{dt} = \left(\frac{\mathrm{p13}}{Q^2} + \mathrm{e}^{(\mathrm{p14}|t|)\cdot} \frac{\mathrm{p15}}{(\mathrm{p16} + |t|)^3}\right) \cdot \sin(\theta^*)^2$$

Parameter	Initial Values	Parameter	Initial Values
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LTSep Analysis

- **Working on physics setting: "Q2 = 3.85, W = 2.62, t = 0.21 (2 epsilons)"**

- **The following studies have been finalized for Pion Form Factor measurement:**
  - **Unseparated cross-section calculations**
  - **Model iterations**
  - **Rosenbluth equation fitting**
  - **L/T separated cross-section calculations**

- **In progress:**
  - Working on model iterations.
  - Working on sigma LT and sigma TT terms in iterations.