

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 V34

LTsep Functions

- Started with functional forms (with SIMC W_factor):

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

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

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

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

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

Parameter	Initial Values	Parameter	Initial Values
p1	20.8	p9	39.9
p2	0.12	P10	-4.8
p3	-2.56	P11	1.1e-7
p4	-2689.2	P12	26.9
p5	11399.2	p13	2579.1
p6	-9.0	p14	0.0
p7	1.77	P15	-632.9
p8	0.05	P16	0.14

LTSep Analysis

- ❑ Working on physics setting: “ $Q^2 = 3.85$, $W = 2.62$, $t = 0.21$ (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.
 - ❖ Next plan is to write up on LTSeparation Analysis.
 - ❖ Next plan is to start working on the next Q^2 setting.