

Pion-LT/Kaon-LT Collaboration Meeting

Muhammad Junaid
Ph.D. Student
Department of Physics
University of Regina, Canada

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 V23

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

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

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

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	1.0
p5	8.6	p13	217
p6	0.7	p14	-5.0
p7	1.77	P15	0.1
p8	0.05	P16	1.0

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.
 - ❖ Working on σ_{TT} functional form