A New Angle into the Proton: u-Channel Meson Electroproduction

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Due to the dramatic running of the QCD coupling constant α_S, hadronic structure varies drastically with measurement scale. Therefore, combining complementary measurements of many unique observables is key to completing our picture of the proton. The KaonLT experiment at Jefferson Laboratory probes hadron structure through measurements of Deep Exclusive Meson Production (DEMP) reactions. My research is to analyze a subset of these reactions known as the u-channel, in which the meson is produced at a backward angle. These reactions offer unique access to the $qqqq\bar{q}$ (valence quark plus meson) part of the nucleon wave function. Backward-angle DEMP is also anticipated to measure the distribution of baryon number within the proton. This talk will describe the u-channel analysis of the KaonLT data, focusing on event selection for cross-section measurements. Mostly unexplored, the u-channel offers unique physics opportunities, complementary to previous measurements, bringing us one step closer to a complete understanding of the nucleon.

Your current academic level

PhD student

Your email address

acp548@uregina.ca

Affiliation

University of Regina

Supervisor email

garth.huber@uregina.ca

Supervisor name

Garth Huber

Primary author: POSTUMA, Alicia

Presenter: POSTUMA, Alicia

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