

# Studying the production mechanisms of light meson resonances in two-pion photoproduction: A Regge Approach

*Wednesday, June 7, 2023 4:50 PM (20 minutes)*

Hadron photoproduction is an essential experimental tool that gives important information on the spectroscopic and structural nature of hadrons. At large photon energies and low invariant mass of the  $\pi\pi$  subsystem, the differential cross section is dominated by the prominent  $\rho(770)$  resonance. At forward angles, the production of the  $\rho$  is mostly diffractive, and exhibits a hierarchy of partial waves which may be interpreted as the result of approximate  $s$ -channel helicity conservation (SCHC). Regge formalism captures these reaction properties in terms of the Pomeron exchange. In this talk, we present a theoretical model of two-pion photoproduction which encodes the prominent  $\rho$  resonance and the expected leading background contribution coming from the so-called “Deck” or “Drell-Soding” mechanism. After fitting this model to a subset of moments, we compare our predictions for the angular moments with the CLAS data. We observe the apparent breakdown of SCHC at larger four momentum transfers, and extract the  $t$ -dependence of the Regge amplitude residue function for subdominant exchanges.

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