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A Comprehensive Study of Double pion Photoproduction: A Regge Approach

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Presented here is a theoretical model designed to investigate double pion photoproduction, within the photon energy range of 3.0 to 3.8 GeV and momentum transfer range of $0.4 < -t < 1.0$ GeV^2. This model integrates contributions from resonances such as the $\rho(770)$, as well as the primary background from the Deck mechanism.
Utilizing the Regge formalism and incorporating the established Deck mechanism, the model emphasizes the significance of the $\rho(770)$ resonance, highlighting its role in representing P-wave contributions arising from pomeron alongside other exchanges. However, at high momentum transfers, indications of s-channel helicity non-conservation emerge, suggesting the involvement of additional partial waves, notably the S and D waves. The model is further extended to include scalar mesons such as $f_0(500)$, $f_0(980)$, and $f_0(1370)$, along with the tensor meson $f_2(1270)$, influencing S- and D-wave effects, respectively. Predictions of angular moments are compared with CLAS data, and the analysis further explores the t-dependence of the Regge amplitude residue function for subdominant exchanges.

session

B. Hadron Spectroscopy

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