

Low- Q^2 parametrizations of the $\gamma^* N \rightarrow N^*$ transition amplitudes

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The electromagnetic structure of the nucleon resonances N^* are usually parametrized by $\gamma^* N \rightarrow N^*$ helicity amplitudes, at the resonance rest frame. Those amplitudes are, however, constrained by kinematic conditions in the limit where the photon three-momentum vanishes (pseudothreshold limit). Although the pseudothreshold limit is below the photon point ($Q^2 = 0$) it has an impact on the structure of the helicity amplitudes at low- Q^2 . Most of the empirical parametrizations of the data ignore those constraints. In our work we study the effect of the pseudothreshold constraints on some analytic parametrizations of the data, by performing analytic continuations of these parametrizations to the $Q^2 < 0$ region. We conclude that the pseudothreshold constraints are fundamental for some resonances.

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