

Abstract Submitted
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Electroexcitation of the Roper Resonance at $Q^2 < 4.2 GeV^2$. INNA AZNAURYAN, Yerevan Physics Institute and Jefferson Lab, VOLKER BURKERT, VICTOR MOKEEV, Jefferson Lab — The helicity amplitudes of the electroexcitation of the Roper resonance on proton are extracted at $1.7 < Q^2 < 4.2 GeV^2$ from recent high precision CLAS data on the cross sections and longitudinally polarized beam asymmetry for π^+ electroproduction on protons. The phenomenological analysis of the data was made using two approaches: dispersion relations and unitary isobar model. It is found that the transverse helicity amplitude for the $\gamma^*p \rightarrow P_{11}^+(1440)$ transition, which is large and negative at $Q^2 = 0$, becomes large and positive at $Q^2 \simeq 2 GeV^2$, and then decreases smoothly. Longitudinal helicity amplitude, which previously was found from CLAS data as large and positive at $Q^2 = 0.4, 0.65 GeV^2$, with increasing Q^2 drops rapidly. These results definitely rule out interpretation of the $P_{11}(1440)$ as a q^3G hybrid state, and provide strong evidence in favour of the interpretation of this state as a radial excitation of the nucleon.

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