

High Energy Physics - Phenomenology

Valence quark contributions for the gamma N -> P11(1440) form factors

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Using a covariant spectator quark model we estimate valence quark contributions to the $F_1^*(Q^2)$ and $F_2^*(Q^2)$ transition form factors for the gamma N -> P11(1440) reaction. The Roper resonance, P11(1440), is assumed to be the first radial excitation of the nucleon. The present model requires no extra parameters except for those already fixed by the previous studies for the nucleon. Our results are consistent with the experimental data in the high Q^2 region, and those from lattice QCD. We also estimate the meson cloud contributions, focusing on the low Q^2 region, where they are expected to be dominant.

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