

SDMEs in exclusive ρ^0 electroproduction

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Spin Density Matrix Elements (SDMEs) describing the angular distribution of exclusive ρ^0 electroproduction and decay are determined in the HERMES experiment with 27.6 GeV beam energy on unpolarized hydrogen and deuterium targets, and on transversely polarized hydrogen target. Those are extracted in the kinematic region $1 < Q^2 < 7 \text{ GeV}^2$, $3 < W < 6.3 \text{ GeV}$, and $-t < 0.4 \text{ GeV}^2$. Within the given experimental uncertainties, a hierarchy of relative sizes of helicity amplitudes is observed. A small but statistically significant deviation from the hypothesis of s-channel helicity conservation is observed. An indication is seen of a contribution of unnatural-parity-exchange amplitudes; these amplitudes are naturally generated with a quark-exchange mechanism.

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