

STRANGE QUARK FROM PARITY-VIOLATING ELECTRON SCATTERING WITH CONSTRAINTS FROM CHARGE SYMMETRY VIOLATION

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The experimental precision of the contribution from the strange form factors to the nucleon's properties is limited by knowledge of the charge symmetry violation (CSV). Determination of CSV, as a consequence, will improve our understanding of the strange form factors as measured in parity violating electron scattering (PVES) experiments, in which longitudinally polarized electrons are scattered from unpolarized targets.

Charge symmetry violation is arguably small, however it's precise influence has not been thoroughly quantified. Understanding CSV contributions to the nucleon's neutral weak form factor $G^{Z,N}$ is very important for the motivation of potential new measurements of parity violating electron-proton scattering to be definitively interpreted as evidence of proton strangeness.

Until recently, the size of CSV in the nucleon form factors was unknown. We use a recent lattice determination of the CSV form factors and reanalyse PV asymmetries to determine the influence on the strange quark electric and magnetic form factors of the proton.