Strangeness Vector and Axial-Vector Form Factors of the Nucleon

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A revised global fit of electroweak ep and νp elastic scattering data has been performed, with the goal of determining the strange quark contribution to the vector and axial-vector form factors of the nucleon in the momentum-transfer range $0 < Q^2 < 1$ GeV^2. The two vector (electric and magnetic) form factors $G_E^s(Q^2)$ and $G_M^s(Q^2)$ are strongly constrained by ep elastic scattering data, while the major source of information on the axial-vector form factor $G_A^s(Q^2)$ is νp scattering data. Combining the two kinds of data into a single global fit makes possible additional precision in the determination of these form factors, and provides a unique way to determine the strange quark contribution to the nucleon spin, ΔS, independently of leptonic deep-inelastic scattering. The fit makes use of data from the BNL-E734, SAMPLE, HAPPEx, G0, and PVA4 experiments; we will also compare the result of the fit with recent data from MiniBooNE, and anticipate how this fit can be improved when new data from MicroBooNE become available.