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Global Fit to the Nucleon Strange Electromagnetic Form Factors
JIANGLAI LIU, MICHAEL J. RAMSEY-MUSOLF, ROBERT D. MCKEOWN, California Institute of Technology — The strange electric and magnetic form factors of the nucleon, G_E^s and G_M^s, give the contributions of strange quarks to the charge and magnetization distributions of the nucleon, which solely arise from the sea of $s\bar{s}$. G_E^s and G_M^s can be determined by combining the well-known electromagnetic form factors of the proton and the neutron, $G_{E,M}^{\gamma,p}$ and $G_{E,M}^{\gamma,n}$, with the neutral weak form factors of the proton, $G_{E,M}^{Z,p}$, which can be measured via parity-violating (PV) elastic electron scattering. In the past 10 years, a series of definitive PV electron scattering experiments along with several theoretical studies now provide a basis for extracting precision information on these strange quark contributions. In this talk, we report the results of a global analysis of all these experiments, including both the latest data obtained in experiments performed at the Jefferson Laboratory and appropriate theoretical input on radiative corrections, and obtain values for the strange electric and magnetic form factors of the nucleon at a four-momentum transfer $Q^2 = 0.1$ GeV/c^2.

Jianglai Liu
California Institute of Technology

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