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Strangeness Contributions to the Static Properties of the Proton
KENT PASCHKE, University of Virginia, HAPPEX COLLABORATION — Precision measurements of parity violation in electron-nucleus elastic scattering at low Q^2 are sensitive to the strange quark magnetic moment and the strange-charge radius of the proton, and thus provide a unique opportunity to cleanly isolate the role of the quark- antiquark sea in low-energy Quantum Chromodynamics. While recent results have placed a tight upper-bound on strange quark contributions to the electric form-factor at low Q^2, significant ($\sim$10%) contributions to the proton magnetic moment are still allowed by the existing data. Results from recently completed measurements of backward-angle scattering, by the G0 and A4 collaborations, will provide an improved sensitivity to the strange magnetic form-factor G_M^s of the proton as well as to axial radiative corrections which are otherwise poorly constrained by existing data. An important complement to those measurements is the HAPPEX-III experiment, which will measure forward-angle scattering at $Q^2 \sim 0.62$ GeV^2 with a much greater precision than has previously been achieved in that kinematic range, with a sensitivity to the linear combination of strange-quark vector form- factors $G_E^s + 0.48\, G_M^s$. In combination with the published results from low Q^2, this measurement will play a crucial role in determining the possible strange quark contribution to the magnetic moment of the proton.

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