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Proton Magnetic Form Factor from Existing Elastic e-p Cross Section Data LONGWU OU, Massachusetts Institute of Technology, ERIC CHRISTY, Hampton University, SHALEV GILAD, Massachusetts Institute of Technology, CYNTHIA KEPPEL, Thomas Jefferson National Accelerator Facility, BARAK SCHMOOKLER, Massachusetts Institute of Technology, BOGDAN WOJTSEKHOWSKI, Thomas Jefferson National Accelerator Facility — The proton magnetic form factor GMp, in addition to being an important benchmark for all cross section measurements in hadron physics, provides critical information on proton structure. Extraction of GMp from e-p cross section data is complicated by two-photon exchange (TPE) effects, where available calculations still have large theoretical uncertainties. Studies of TPE contributions to e-p scattering have observed no nonlinear effects in Rosenbluth separations. Recent theoretical investigations show that the TPE correction goes to 0 when ε approaches 1, where ε is the virtual photon polarization parameter. In this talk, existing e-p elastic cross section data are reanalyzed by extrapolating the reduced cross section for ε approaching 1. Existing polarization transfer data, which is supposed to be relatively immune to TPE effects, are used to produce a ratio of electric and magnetic form factors. The extrapolated reduced cross section and polarization transfer ratio are then used to calculate GEp and GMp at different Q^2 values.

Longwu Ou
Massachusetts Institute of Technology

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