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**Two-Boson Exchange in Electron-Nucleon Scattering**[1] JESSE ASHWORTH, University of Washington, Seattle, WALLY MELNITCHOUK, Thomas Jefferson National Accelerator Facility, PETER BLUNDEN, University of Manitoba — Researchers are working to determine in-depth information about the protons substructure. This includes the charge and current distributions of the proton, described by electromagnetic form factors. These quantities can be determined by computing electron-proton scattering cross sections, which have been calculated to first-order expansion in the fine structure constant, $\alpha$. Experimental discrepancies in the proton's electric-to-magnetic form factor ratio have prompted a need to compute cross sections to second-order expansion in $\alpha$, involving two-boson exchange (TBE) interactions. Two methods exist for computing TBE contributions: one based on hadronic degrees of freedom (suitable at low $Q^2$) and the other on partonic degrees of freedom (applicable at high $Q^2$). Both methods have been claimed to help account for the form factor discrepancy, but ambiguities exist in the separation of the soft and hard parts of the partonic cross sections. This work aims to resolve such ambiguities and pave the way toward a unified description of TBE effects at all $Q^2$ values. Achieving this goal will further pin down the nature of the protons interior, and the results in turn can be used to better understand the substructure of the neutron and other hadrons.

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