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Precision Theory for Precision Measurements: Tests of Standard Model via Parity-Violating Electron-Proton and Møller Scattering

As the experimental techniques continue to be developed and improved, they will require more precise contributions from theory. The indirect tests of the Standard Model via high-precision measurements like Qweak and 12 GeV Møller scattering planned at JLab will demand a complete theoretical evaluation of the Next-to-the-Leading-Order and higher effects in electroweak interactions done at unprecedented precision. We show what kind of theoretical support our group can provide to above and other experiments with the new codes we have developed. Some of the key features of our approach, including our method for dealing with many-body effects in ep scattering and our treatment of the Hard Photon Bremsstrahlung, will be discussed.

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