

Abstract Submitted
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One-loop Electroweak Radiative Corrections for Polarized Møller Scattering SVETLANA BARKANOVA, Acadia University, Wolfville, Canada, ALEKSANDRS ALEKSEJEVS, Memorial University, Corner Brook, Canada, ALEXANDER ILYICHEV, National Center of Particle and High Energy Physics, Minsk, Belarus, YURY KOLOMENSKY, University of California, Berkeley, USA, VLADIMIR ZYKUNOV, Belarussian State University of Transport, Gomel, Belarus — Møller scattering measurements are a clean, powerful probe of new physics effects. However, before physics of interest can be extracted from the experimental data, radiative corrections must be taken into account very carefully. Using two different approaches, we perform updated and detailed calculations of the complete one-loop set of electroweak radiative corrections to parity violating electron-electron scattering asymmetry at low energies relevant for the ultra-precise 11 GeV MOLLER experiment planned at JLab. Although contributions from some of the self-energies and vertex diagrams calculated in the two approaches can differ significantly, our full gauge-invariant set still guarantees that the total relative weak corrections are in excellent agreement for the two methods of calculation. Our numerical results are presented for a range of experimental cuts and the relative importance of various contributions is analyzed. We also provide very compact expressions analytically free from non-physical parameters and show them to be valid for fast yet accurate estimations.

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