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Electroweak radiative corrections to neutrino scattering at NuTeV[1] KWANGWOO PARK, ULRICH BAUR, DOREEN WACKEROTH, SUNY at Buffalo — The W boson mass extracted by the NuTeV collaboration from the ratios of neutral and charged-current neutrino and anti-neutrino cross sections differs from direct measurements performed at LEP2 and the Fermilab Tevatron by about 3σ. Several possible sources for the observed difference have been discussed in the literature, including new physics beyond the Standard Model (SM). However, in order to be able to pin down the cause of this discrepancy and to interpret this result as a deviation to the SM, it is important to include the complete electroweak one-loop corrections when extracting the W boson mass from neutrino scattering cross sections. We will present results of a Monte Carlo program for νN ($\bar{\nu}N$) scattering including the complete electroweak $\mathcal{O}(\alpha)$ corrections, which will be used to study the effects of these corrections on the extracted values for the electroweak parameters. We will briefly introduce some of the newly developed computational tools for generating Feynman diagrams and corresponding analytic expressions for one-loop matrix elements.

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