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Moller Scattering and Running of Weak Mixing Angle Using MSBar Renormalization Scheme

Moller experiment was designed to obtain ultra-precise measurement of weak mixing angle through Moller scattering. Moller Parity Violating Asymmetry (A_{PV}) measures the electroweak charge which at one loop level is modified and it becomes scale dependent at which the measurement is carried out. We calculated the tree level and one loop level Moller Parity Violating Asymmetry (A_{PV}) by considering left and right polarized electron striking the unpolarized electron target. We used MSBar renormalization scheme to perform the complete one-loop level calculations for Moller A_{PV}. By determining the running of electroweak charge as a function of energy scale at z-pole, we try to get a precise value of weak mixing angle and compare it with the most updated experimentally measured value. The consistency of these results could enable to search for the signals of physics beyond the Standard Model.

email address

mghaffar@mun.ca

Please select: Experiment or Theory

Theory

Primary author(s) : Ms GHAFFAR, Mahumm (Memorial University of Newfoundland)

Presenter(s) : Ms GHAFFAR, Mahumm (Memorial University of Newfoundland)