Polarized electron-muon neutrino scattering to electron and neutrino in noncommutative space

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Abstract
For neutrino scattering from polarized electron, the weak interaction term in the cross section is significantly suppressed by the polarized term. The magnetic moment term does not receive any correction from the electron polarization. Hence, the study of the magnetic moment of neutrinos through scattering from the polarized electron leads to a stronger bound on the neutrino magnetic moment compared with the unpolarized case. On the other hand, neutrinos which are electrically neutral can couple directly with photons in Noncommutative (NC) QED. In this paper, we calculate the NC QED corrections on this scattering are calculated. The phase difference between the NC term and the polarized weak interaction term is $\frac{\pi}{2}$. Therefore, the NC term does not destroy the above suppression.

Keywords: electron-muon neutrino scattering, noncommutative space-time, polarized electron, neutrino magnetic moment

For full article, refer to the Persian section.