

## A new approach for limiting the Lorentz violation coefficients ( $c_{\mu\nu}$ )

**Mohammad Haghghi Sis**

Department of physics, Isfahan university of Technology, Isfahan 84156-83111, Iran

Author E-mail: [muhammadhaghghisis@gmail.com](mailto:muhammadhaghghisis@gmail.com)

we explore into an innovative approach for establishing a new limit on the Lorentz violation parameter  $c_{\mu\nu}$  specifically in the muon sector. By analyzing the scattering cross-section of electron-positron into muon-antimuon under the influence of a strong magnetic field and taking into account the anomalous magnetic moment, this achievement is made. Through the standard model extension, the observed difference between the predicted and measured values of the anomalous magnetic moment can be ascribed to Lorentz violation. By analyzing the magnitude of the theoretical scattering cross section at a specific energy, new bounds can be obtained for the Lorentz-violating coefficients  $c_{\mu\nu}$ . This analysis considers both theoretical and experimental muon anomalous magnetic momentum values. The newly determined limits for the muon in the sun-centered frame are approximately  $c_{TT} + 0.029c_{XX} + 0.07c_{YY} + 0.039c_{ZZ} < 5.76 \times 10^{-7}$ .

**Keywords:** Standard Model Extension; Lorentz Violation coefficients; Strong magnetic field.