

Probing τ lepton dipole moments at future Lepton Colliders

Friday 19 July 2024 20:40 (20 minutes)

The anomalous magnetic moments of leptons represent excellent probes of the Standard Model and therefore also of possible new physics effects.

In particular, the persisting hint of new physics in the muon $g-2$ motivates the investigation of similar effects also in the other leptonic dipoles.

In this work, we examine the new physics sensitivity of the tau $g-2$ at future high-energy lepton colliders such as the FCC-ee or a Muon Collider.

We show that these facilities can access a number of processes like the radiative Higgs decay $h \rightarrow \tau^+ \tau^- \gamma$, the Drell-Yan processes

$\ell^+ \ell^- \rightarrow \tau^+ \tau^- (h)$, or vector-boson-fusion processes such

as $\ell^+ \ell^- \rightarrow \ell^+ \ell^- \tau^+ \tau^-$ which can probe the tau $g-2$

at the level of $\mathcal{O}(10^{-5} - 10^{-4})$, a resolution that is orders of magnitude better than the current bounds.

Alternate track

I read the instructions above

Yes

Authors: BUTTAZZO, Dario; Prof. MALTONI, Fabio (Universite Catholique de Louvain (UCL) (BE) and Università di Bologna); LEVATI, Gabriele (Università degli studi di Padova and INFN Padova); Prof. PARADISI, Paride (University of Padova and INFN); WANG, Zeqiang

Presenter: WANG, Zeqiang

Session Classification: Poster Session 2

Track Classification: 03. Beyond the Standard Model