

Searching for lepton flavor violating interactions at future electron-positron colliders

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Lepton flavor violating interactions are absent in the standard model but are expected in various beyond-standard models. In this work, the potential of the future circular electron-positron collider to probe the four-fermion lepton flavor couplings via the $e^+e^- \rightarrow e^+\tau^-\tau^+$ process is revisited by means of an effective field theory approach. We provide constraints at 95% C.L. on the dimension-six Wilson coefficients including major sources of background processes and considering realistic detector effects at four expected operation energies, 157.5, 162.5, 240, and 365 GeV, according to their corresponding integrated luminosities. We demonstrate that the statistical combination of the results from four center-of-mass energies improves the sensitivity to the lepton flavor violation couplings significantly. We compare the results with the prospects from the Belle II Collaboration with 50 /ab and other studies at electron-positron colliders.

What is your topic?

Lepton universality and flavour violation

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