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# A Comparative Study of Z′ mediated Charged Lepton Flavor Violation at future lepton colliders

Charged lepton flavor violation (CLFV) represents a transition between charged leptons of different generations that violates lepton flavor conservation, which is a clear signature of possible new physics beyond the standard model. By exploiting a typical example model of extra Z′ gauge boson, we perform a detailed comparative study on CLFV searches at several future lepton colliders, including a 240 GeV electron-positron collider and a TeV scale muon collider. Based on detailed signal and background Monte-Carlo studies with fast detector simulations, we derive the potentials in searching for Z′ mediated CLFV couplings with $e\mu$, $e\tau$ and $\mu\tau$ of different future colliders. The results are compared with the current and prospect limits set by either low-energy experiments or the high-energy LHC experiments. The sensitivity of the $\tau$ related CLFV coupling strength at future lepton colliders will be significantly improved in comparison to the current best constraints and the prospect constraints for the $\mu\tau$ channel.

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