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Future perspectives for $\mu \to e\gamma$ searches

Searches for charged lepton flavor violation in the muon sector stand out among the most sensitive and clean probes for physics beyond the Standard Model. Currently, $\mu^+ \to e^+\gamma$ experiments provide the best constraints in this field and, in the coming years, new experiments investigating the processes of $\mu^+ \to e^+e^+e^-$ and $\mu \to e$ conversion in the nuclear field are anticipated to surpass them. However, it is essential to maintain comparable sensitivities across all these processes to fully leverage their potential and differentiate between various new physics models if a discovery occurs. In this document, we present ongoing efforts to develop a future experimental program aimed at improving the sensitivity of $\mu^+ \to e^+\gamma$ searches by one order of magnitude within the next decade.

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