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NLO prediction for $\mu \rightarrow e\nu\nu$ and $\mu \rightarrow eee\nu\nu$ decays in the SM

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We present the differential decay rates and the branching ratios of the $\mu \rightarrow e\nu\nu$ and $\mu \rightarrow eee\nu\nu$ decays in the SM at next-to-leading order. These two rare decay modes of the muon are among the source of background in the experiments searching for charge lepton flavour violating (CLFV) decays $\mu \rightarrow e\gamma$ and $\mu \rightarrow eee$. Indeed, the SM decays are indistinguishable from the CLFV ones except for the energy carried away by neutrinos. I will discuss the importance of radiative corrections for CLFV searches.

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