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The LFV and LNV processes at the same-sign muon colliders

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The contributions from three types of NP to the leptonic di-flavor violation (LFV) processes $\mu^\pm\mu^\pm \rightarrow e^\pm e^\pm$, $\mu^\pm\mu^\pm \rightarrow \tau^\pm\tau^\pm$ and the leptonic di-number violation (LNV) processes $\mu^\pm\mu^\pm \rightarrow W_i^\pm W_j^\pm$ ($i, j = 1, 2$) at the same-sign muon colliders are present. The results lead to the conclusion that observing the NP factors through the LFV and LNV processes at TeV-energy $\mu^\pm\mu^\pm$ colliders has significant advantages that cannot be achieved elsewhere. Therefore, in developing the techniques of muon acceleration and collisions, the option of building the same-sign muon high-energy colliders should be considered seriously too.

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