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Selection rules for charged lepton flavour violating processes from residual flavour groups

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We present a systematic investigation of the possible phenomenological impact of residual, abelian flavour groups in the charged lepton sector. The allowed flavour structures of operators in the Standard Model Effective Field Theory (up to dimension six) lead to distinctive and observable patterns of charged lepton flavour violating processes. We illustrate the relevance of such selection rules displaying the current bounds on and the future sensitivities to the new physics scale. In particular, these results demonstrate the importance and discriminating power of searches for lepton flavour violating τ-lepton decays and muonium to antimuonium conversion in the hunt for signatures of physics beyond the standard model.

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