Contribution ID: **84** Type: **not specified**

Selection rules for cLFV processes from residual flavour groups

Friday, 4 July 2025 11:30 (30 minutes)

We systematically investigate the possible phenomenological impact of residual flavour groups in the charged lepton sector. We consider all possible flavour charge assignments for abelian residual symmetries up to Z8. The allowed flavour structures of operators in Standard Model Effective Field Theory (up to dimension six) lead to distinctive and observable patterns of cLFV processes. We illustrate the relevance of such selection rules displaying the current bounds on and the future sensitivities to the new physics scale. These results demonstrate, in particular, the importance and discriminating power of searches for cLFV tau lepton decays and muonium to antimuonium conversion.

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Session Classification: Morning session