



Contribution ID: 48

Type: **Parallel talks**

Lepton flavor violation at $\mu^+\mu^+$ colliders

Wednesday 19 July 2023 18:40 (20 minutes)

We study charged lepton flavor violating processes $\mu^+\mu^+ \rightarrow \ell^+\ell'^+$ at a future same-sign muon collider. Working in an effective field theory framework, we compare the potential discovery reach with existing limits from rare μ and τ decays, finding that muon colliders are the most sensitive probe of charged lepton flavor violation for a range of parameters. As a model example, we then consider the type-II seesaw model, and show how a muon collider could be used to constrain the CP-violating phases of the corresponding PMNS matrix.

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Session Classification: Flavour physics: Theory and Experiment

Track Classification: Flavour physics: Theory and Experiment