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

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We study charged lepton flavor violating processes $\mu^+\mu^+ \to \ell^+\ell'^+$ 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.

Primary authors: FRIDELL, Kare; TAKAI, Ryoto; KITANO, Ryuichiro

Presenter: FRIDELL, Kare

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