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Low energy probes of Minimal Flavor Deconstruction in the Lepton Sector

In this talk, I will present the low-energy phenomenology of the so-called Minimal Flavor Deconstruction scenario in the lepton sector, with a special focus on the interplay between flavor and CP violation. Starting from the ultraviolet completion of the model, I will show how the effective Yukawa structure can be derived through a systematic spurion expansion beyond leading order. In particular, I will show how next-to-leading order contributions generically induce physical CP-violating phases and flavor misalignment, leading to potentially observable low-energy signals. Through the systematic use of effective field theory techniques, I will show the phenomenological implications for charged lepton flavor violating observables, lepton flavor universality tests, and electric dipole moments (EDMs). In particular, our studies reveal that future searches for μ -e conversion and the electron EDM can probe scales in the multi-10 TeV range under natural assumptions on the flavor structure and CP phases. Overall, the results presented highlight the complementarity between flavor-violating and CP-violating observables and demonstrate that precision measurements in the lepton sector provide a powerful probe of flavor-deconstructed scenarios beyond the direct reach of collider experiments.

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