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Searches for light new physics at Mu3e with displaced vertices

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A new set of experiments will deliver in the next few years unprecedented sensitivity to Lepton Flavor Violating (LFV) muon decays. Mu3e, proposed at PSI (Switzerland), will focus on observing $\mu \to 3e$ decays, with a projected target of 10^{15} muons decaying at rest, and excellent electron/positron track reconstruction. In this talk I will review the current and future statues of these probes, and I will delve in the potential of Mu3e to search for New Physics. In particular, I will show that Mu3e has unique sensitivity for new light particles decaying displaced and produced in two-body, three-body and four-body decays of the muon, providing a complimentary opportunity to probe large portions of unexplored parameter space.

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