

Searching for Muon to electron conversion : The Mu2e experiment at Fermilab

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The Mu2e experiment will measure the charged-lepton flavor violating (CLFV) neutrino-less conversion of a negative muon into an electron in the field of a nucleus. The conversion process results in a monochromatic electron with an energy slightly below the muon rest mass. Mu2e will improve the previous measurement by four orders of magnitude using a new technique, reaching a SES (single event sensitivity) of 2.5×10^{-17} on the conversion rate. The experiment will reach mass scales of nearly 10^4 TeV, far beyond the direct reach of colliders. The experiment is sensitive to a wide range of new physics, complementing and extending other CLFV searches.

Mu2e is under design and construction at the Muon Campus of Fermilab; we expect to start taking physics data in 2022 with 4 years of running to achieve our target sensitivity.

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