

Mu2e: A Search for Charged Lepton Flavor Violation in Muon-Electron Conversion with a Sensitivity $< 10^{-16}$

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Mu2e will search for coherent, neutrino-less conversion of muons into electrons in the field of a nucleus with a sensitivity improvement of a factor of 10,000 over existing limits. Such a charged lepton flavor-violating reaction probes new physics at a scale unavailable with direct searches at either present or planned high energy colliders. The experiment both complements and extends the current studies at MEG and at the LHC. We present the physics motivation for Mu2e, as well as the design of the muon beamline, tracking spectrometer, and calorimeter. The Mu2e experiment is under design and construction at the Muon Campus of Fermilab. The experiment will begin near the end of 2020 with 3 years of running from 2021 to 2024.

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