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A Search for the Neutrinoless Conversion of Muons to Electrons with the Mu2e Experiment

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The primary physics goal of the Mu2e Experiment is to search for Charged Lepton Flavor Violation (CLFV) in the process of a coherent neutrinoless $\mu^- N \rightarrow e^- N$ transition. This process is allowed under the Standard Model however at unobservable rates. Observation of this process would therefore be an unambiguous indication of new physics. The Mu2e goal is to improve on the existing experimental sensitivity by four orders of magnitude. Mu2e is in the construction phase at Fermilab. We discuss briefly the experimental approach, status of the Project, and future prospects of this search.

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