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The Mu2e experiment

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The Mu2e experiment, currently under construction at Fermilab, will search for neutrinoless mu->e conversion in the field of an aluminum atom. A clear signature of this charged lepton flavor violating two-body process is given by the monoenergetic conversion electron of 104.97 MeV produced in the final state.

An 8 GeV/c pulsed proton beam interacting on a tungsten target will produce the pions decaying in muons; a set of superconducting magnets will drive the negative muon beam to a segmented aluminum target where the stopped muons will eventually convert to electrons; a set of detectors will be used to both identify conversion electrons and reject beam and cosmic backgrounds.

The experiment will need 3-5 years of data-taking to achieve a factor of 10^4 improvement on the current best limit on the conversion rate.

After an introduction to the physics of Mu2e, we will report on the status of the different components of the experimental apparatus. We conclude with our current estimate of the experiment's sensitivity and discovery potential.

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