Abstract Submitted
for the APR11 Meeting of
The American Physical Society

The Mu2e Experiment at Fermilab[1] JAMES MILLER[2], Boston University — The Mu2e goal is to improve on the existing limit for the neutrinoless conversion of a muon to a monoenergetic electron by four orders of magnitude. This reaction is an example of Charged Lepton Flavor Violation, so far not observed in any reaction. The existence of neutrino oscillations leads to a Standard Model prediction of the rate for mu to e that is far smaller than foreseeable experimental limits, consequently observation of mu-e conversion is a clean indication of new physics. Moreover, some models of new physics outside the Standard Model (SM) predict a signal just beyond current limits. The proposed measurement will either see a signal or place dramatic limits on the flavor conservation properties of new physics models. We give a brief account of the theoretical motivation. The experiment is being developed at Fermilab. A pulsed negative muon beam is stopped in an aluminum target. Each stopped muon forms a muonic atom. The goal is to measure the the rate of conversion of a muon into an electron relative to the rate of ordinary nuclear muon capture, with a single event sensitivity of 2e-17. A new low energy, high-flux muon beam line using solenoids is being designed. The planned methods of detection of the conversion electron and of background suppression are described.

[1]Supported by US NSF, US DOE, INFN Italy
[2]on behalf of Mu2e

James Miller
Boston University

Date submitted: 11 Feb 2011 Electronic form version 1.4