

LYSO Crystal Calorimeter in the Mu2e Experiment

Friday, 16 August 2013 16:10 (20 minutes)

Mu2e is a new experiment planned at Fermilab to study charged lepton flavor violation in muon to electron conversion in presence of a nucleus. Muons produced by 8-GeV protons on target are captured by an aluminum target and, if converting to an electron, generate a signal of a 105 MeV monoenergetic electron. Mu2e is designed to reach a sensitivity of a few times 10^{-17} in the ratio of mu-e conversion to conventional muon capture rate in Al. Electrons are detected by a straw tube tracker and a calorimeter placed inside a detector solenoid covered by a cosmic ray veto system. The calorimeter consists of arrays of approximately 2000 crystals. LYSO is chosen for its short decay time, high light yield, and radiation hardness. The calorimeter provides the confirmation of the electron energy, timing, and position, a strong muon background rejection, as well as an independent trigger. The proposed design, efficiency and resolution studies, and beam test results are presented.

APS member ID

60051172

Primary author: CHENG, Chih-Hsiang (Caltech)

Presenter: CHENG, Chih-Hsiang (Caltech)

Session Classification: Quark and Lepton Flavor Physics

Track Classification: Quark and Lepton Flavor Physics