

Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Development of the Mu2e electromagnetic calorimeter mechanical structures DANIELE PASCIUTO, INFN-Pisa, MU2E CALORIMETER GROUP TEAM — Mu2e is the Fermilab Muon Campus experiment dedicated to the search for the charged-lepton flavour violating neutrino-less coherent conversion of a muon into an electron in the field of an aluminum nucleus. The Mu2e goal is to improve the search sensitivity reached by previous experiments by four orders of magnitude. To achieve this challenging goal, Mu2e exploits a complex detector system made of a straw-tracker and an electromagnetic crystal calorimeter located inside an evacuated superconducting solenoid, and a cosmic ray veto. The main calorimeter function is providing an excellent electron identification in the conversion electron energy range (≈ 100 MeV). The calorimeter is made of 2 matrices of 674 un-doped CsI crystals coupled to SiPMs arranged in 2 disks positioned downstream the aluminum target to maximize the signal detection efficiency. The harsh experimental conditions in terms of radiation dose, magnetic field and vacuum level has posed several challenges, in terms of materials and components choice and design. In this presentation we will review the design of the mechanical structures, that required the use of magnetic field and vacuum compatible materials, including composite materials, and the development of a dedicated cooling system for the electronics.

Daniele Pasciuto
INFN-Pisa

Date submitted: 22 Feb 2021

Electronic form version 1.4