

# Design and status of the Mu2e crystal calorimeter

*Tuesday, 11 June 2019 17:30 (15 minutes)*

The Mu2e experiment at Fermilab will search for the charged-lepton flavour violating neutrino-less conversion of a negative muon into an electron in the field of an aluminum nucleus.

The Mu2e detector is composed of a tracker and an electromagnetic calorimeter and an external veto for cosmic rays.

The calorimeter plays an important role in providing excellent particle identification capabilities, a fast online trigger filter while aiding the track reconstruction capabilities.

The calorimeter requirements are to provide a large acceptance for ~100 MeV electrons and reach:

- 1) a time resolution better than 0.5 ns @ 100 MeV;
- 2) an energy resolution  $O(10\%)$  @ 100 MeV;
- 3) a position resolution of 1 cm.

The calorimeter consists of two disks, each one made of 674 pure CsI crystals readout by two large area  $2 \times 3$  array of UV-extended SiPMs of  $6 \times 6$  mm<sup>2</sup> dimensions.

A large scale prototype has also been constructed and tested at the beam test facility in Frascati. It consists of 51 pre-production crystals readout by a Mu2e SiPM.

## Summary

All the test and progresses done to define the calorimeter design, the satisfying results obtained with the test beam of the prototype as well as the actual production phase will be presented.

**Primary authors:** Dr MORESCALCHI, Luca (University of Pisa); Dr DONGHIA, Raffaella (LNF-INFN)

**Presenter:** Dr DONGHIA, Raffaella (LNF-INFN)

**Session Classification:** Tuesday Afternoon II