



Report on Working Group # 2

The MU2E detector: calorimeter

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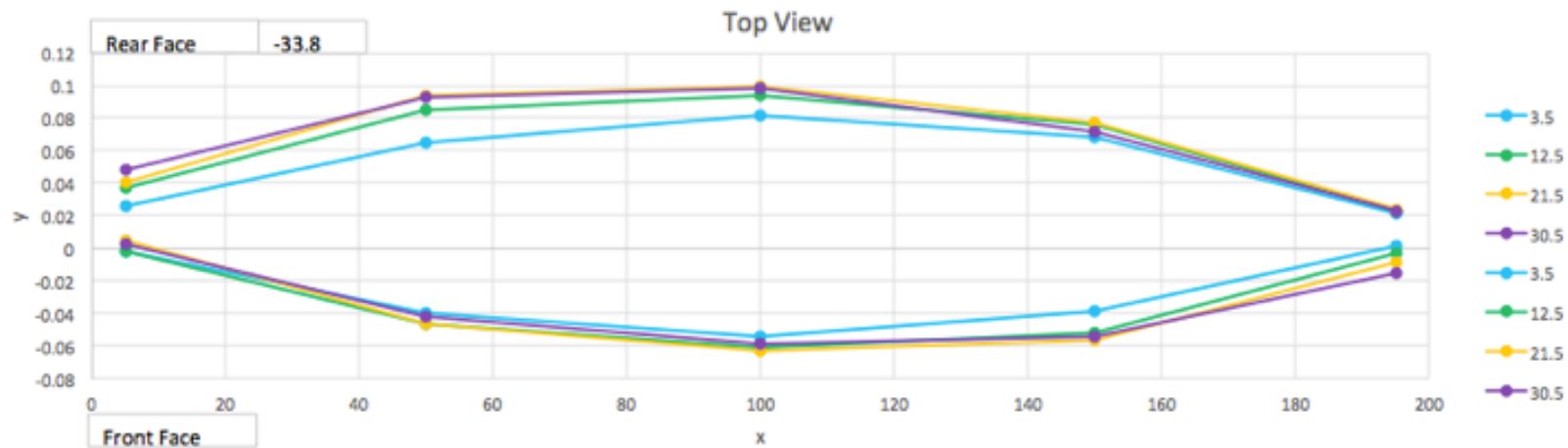
LNf INFN Frascati

MUSE Scientific Board meeting

24-Apr-2018

Csl production: status and open problems

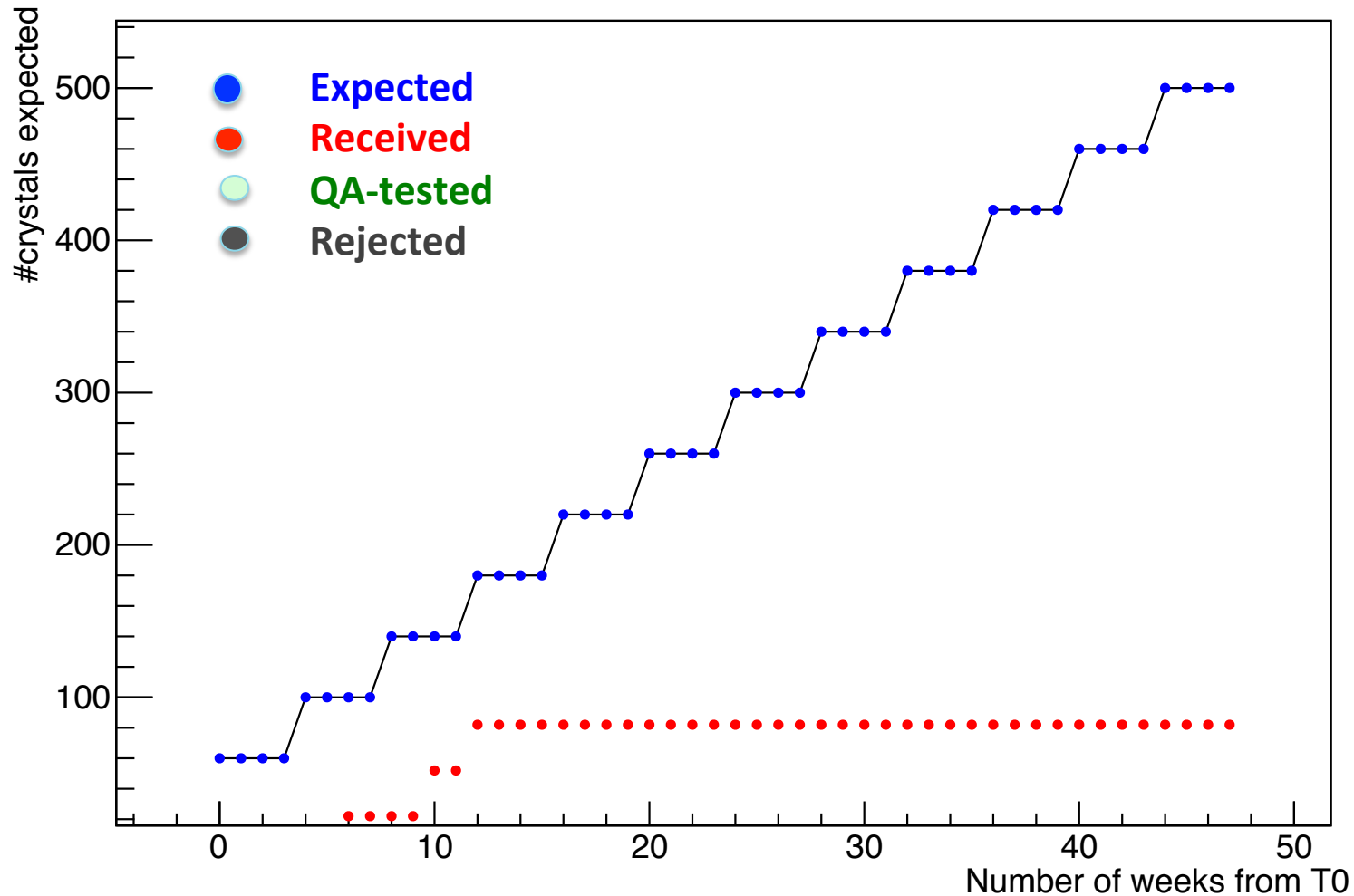
- 22 SICCAS pre-series crystals received and QA controlled in January
- 1st batch of 50 St. Gobain pre-series crystals received → wrapped and QA controlled → 18 rejected for mech. problems shipping them back to St.Gobain, now
- **Production with SICCAS started end of March (30 + 30 pieces)**
→ 30 pieces received, 20 wrapped and QA controlled, all OK, 10 shipped to Caltech
- **2nd batch of 50 St.Gobain pre-series crystals received on 9th of April**
→ **mechanical problem persists, OK for optical part**
→ **32 rejected. Discussion in progress with St.Gobain.**



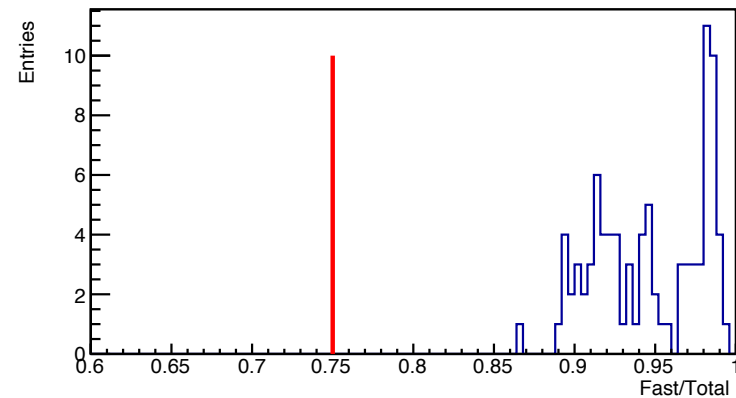
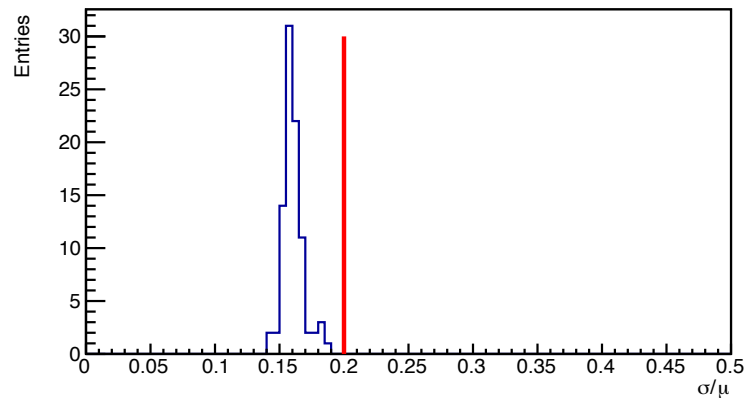
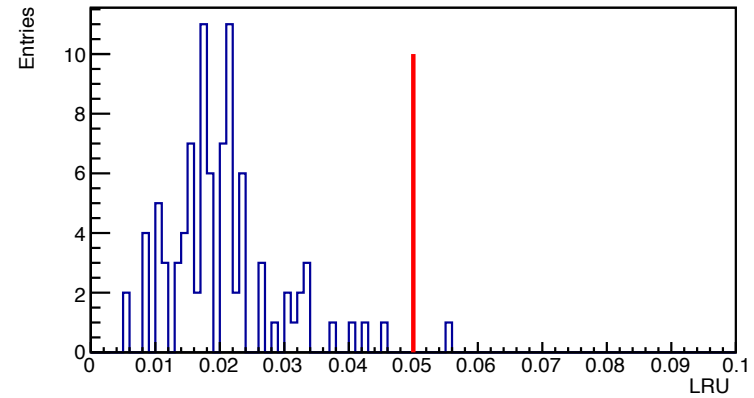
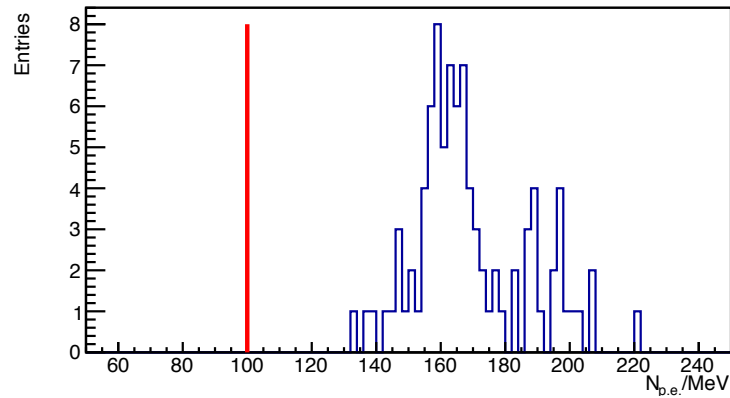
- Irradiation with dose 2 pieces/batch/producer OK
- Preparing shipping of few pieces for additional dose tests

CsI production/QA charts in preparation

A production chart is in preparation ... both for crystals and SiPMs
SICCAS production



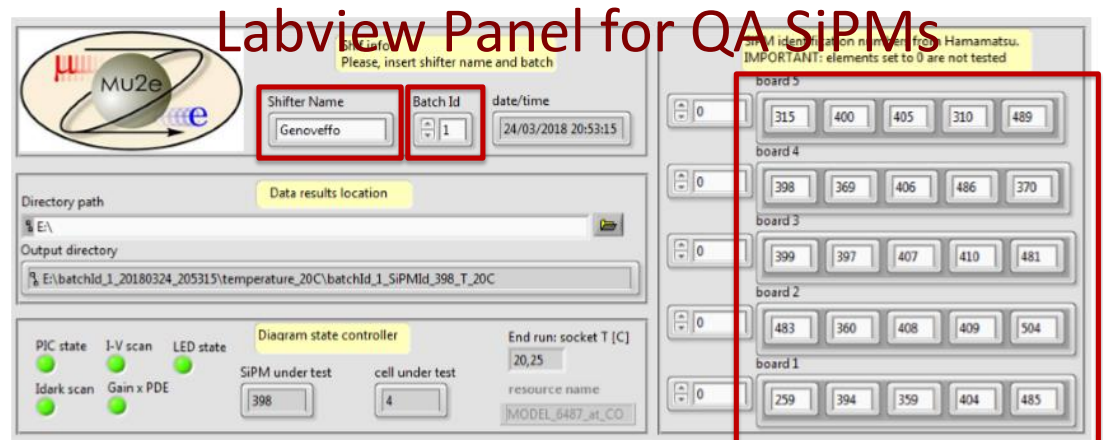
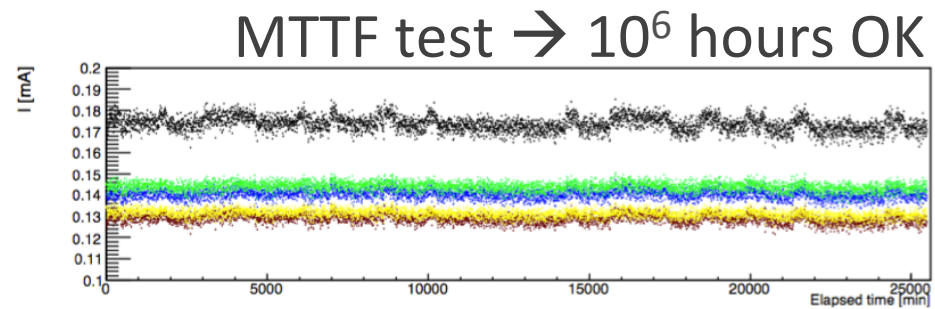
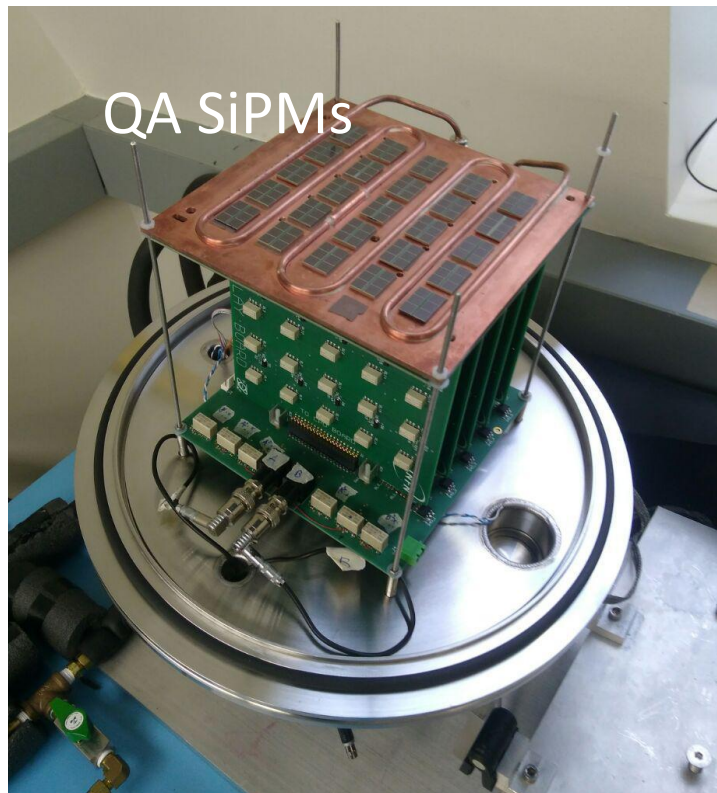
CsI optical parameters



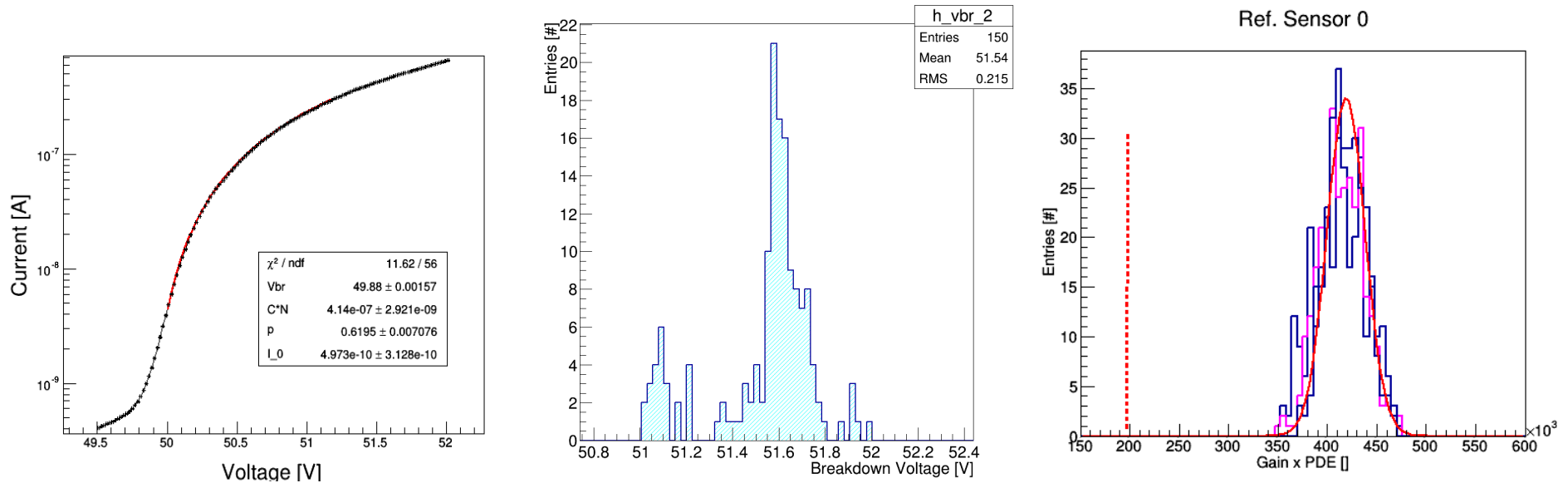
- On the positive side: forgetting mechanical specs the optical parameters of these crystals is excellent \rightarrow exceeding technical requirements.
- Also the radiation induced noise (phosphorescence) is below our limit even with SiPM readout (< 250 keV with PMT , < 550 keV with SiPMs)

All QA stations at SiDET are functional now

- ORC reviews completed for all 5 station stations (QA + RIN crystals), Dimensional + MTTF + QA (I-V, Gain*PDE) SiPMs

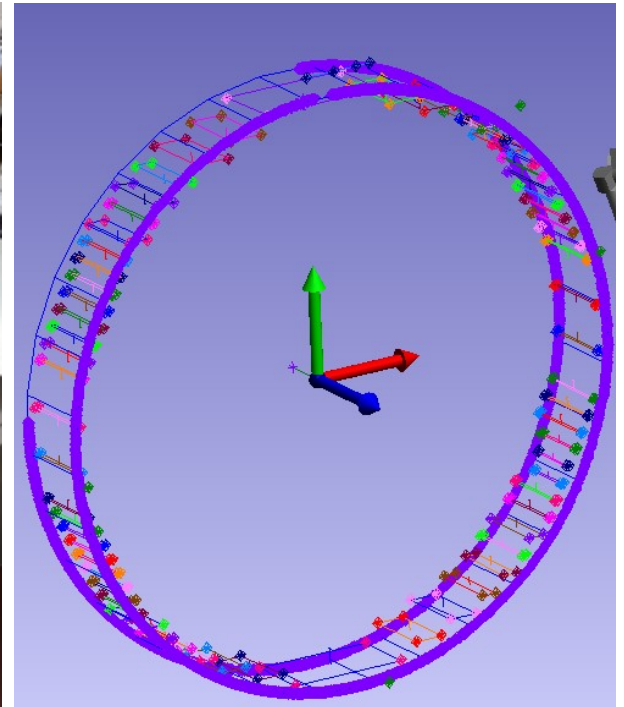


SiPMs production: QA plots



- First 3 production batches received from Hamamatsu (the last one on the 20th of April)
- Each monthly batch is around 290 SiPMs (12 batches / tot = 3500)
- Few % rejected (3-4) due to tails on the Idark RMS distribution
- Dimensional and MTF tests satisfactory (···so far)
- Irradiation tests (5 pieces/batch) will be carried out with neutron at HZDR (Dresden)

Improving with Full Size Mockup



- Stepped inserts realized and mounted on full size Mockup disk
- Survey of shapes and positioning of inserts done
- First test of piling up dummy crystals started
60 crystals wrapped so far
- Realistic 3D routing of cables started

