Report on Working Group # 2
The MU2E detector

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LNF INFN Frascati

MUSE Scientific Board meeting

24-Feb-2017

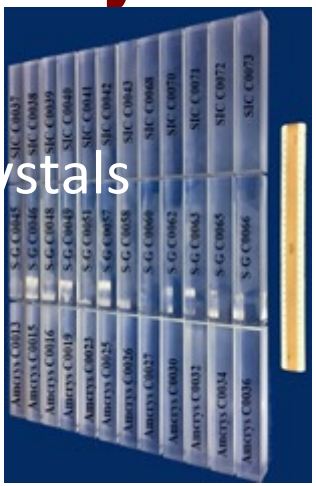
Calorimeter: Status (1)

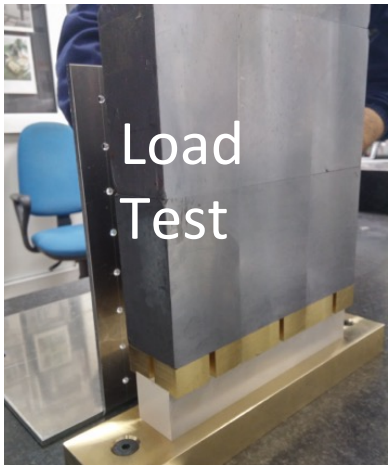
- **PRE-PROD Crystals received, 72 crystals from 3 producers**
  - ✓ Mechanical specifications controlled @ FNAL CMM
  - ✓ QA done for LY, LRU, Fast/Total component @ LNF & Caltech
  - ✓ Radiation Induced Noise done with PMTs and SiPMs
  - ✓ Irradiation with TID planned (2 crystals/producer)
  - ✓ Study of crystal compression with 40 kg weight and crystal stress done
  - ✓ Wrapping technique being tuned for final crystals
- **PRE-PROD MU2E custom SiPMs received, 150 pieces from 3 producers**
  - ✓ QA Test of SiPMs for I-V, G, PDE @ PISA completed
  - ✓ Test on MTTF @ LNF OK, @ Caltech starting
  - ✓ Irradiation with neutrons started @ LNF, starting with dose @ Caltech
  - ✓ **Cooling test being defined**
- **PRE-PROD of FEE underway (150 preamps+HV regulator) + 5 NIM MB**
  - ✓ 3 FEE chips prototype tested, 1 MB firmware tested
  - ✓ 5 NIM boards received
  - ✓ **Irradiation program with TID and neutrons being defined**

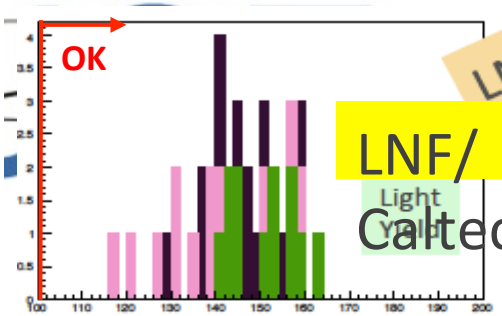
Calorimeter: Status (2)

- **PRE-PROD WFD 20 channels**
  - ✓ 2 boards v0 for April test beam
  - ✓ 2 boards v1 interfaced with final MB for the summer
  - ✓ **Irradiation program with TID and neutrons being defined**
- **Module-0**
  - ✓ Mechanical disk milled
  - ✓ FEE Cooling disk done in Pisa
  - ✓ SiPM holders ordered by LNF, Chiller OK
  - ✓ **Dewar for module-0 for outgassing, cooling & irradiation designed**
- **Full size Mockup**
  - ✓ Al support and feet, CF inner disk and front plates, fake crystals ready
  - ✓ Cables outgassing done, 3D-layout ready
  - ✓ Crystal supports and shims being 3D printed
  - ✓ Fake back disk in preparation
- **Assembly area and installation**
  - ✓ **Requirements for QA and assembly area at FNAL being defined.**
  - – **Needed for production.**
  - ✓ Procedures and requirements for installation in Mu2e being defined.
- Getting ready for Mechanical Design Review → End of March

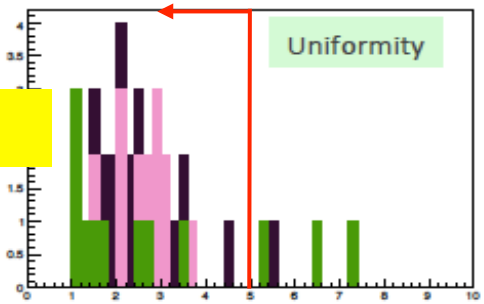
Crystals QA

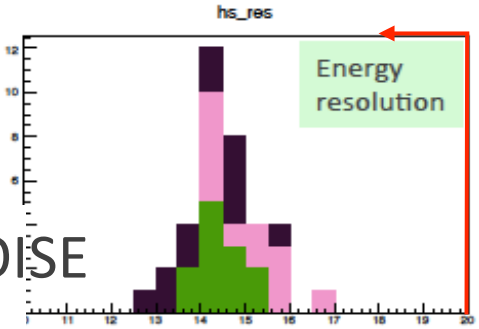


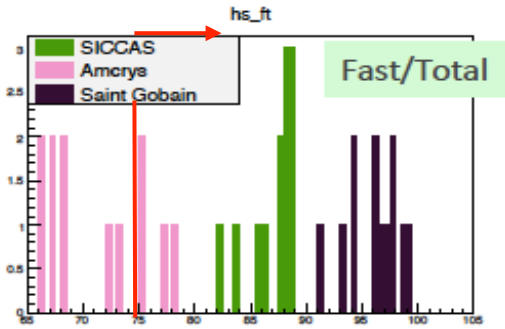




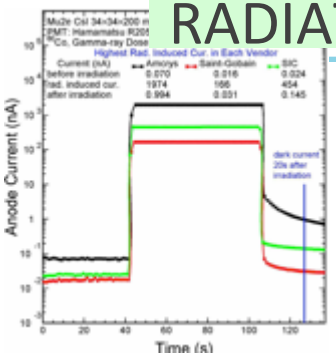
LNF/
Caltech

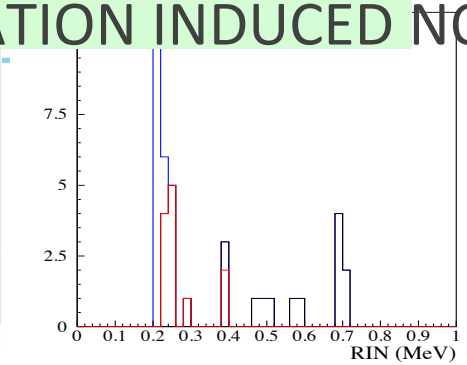




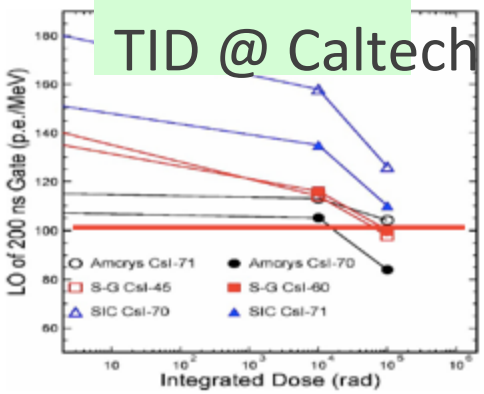


RADIATION INDUCED NOISE

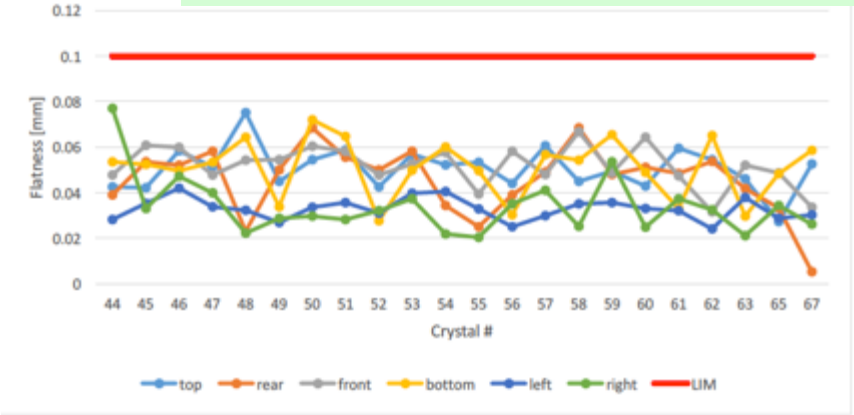




TID @ Caltech

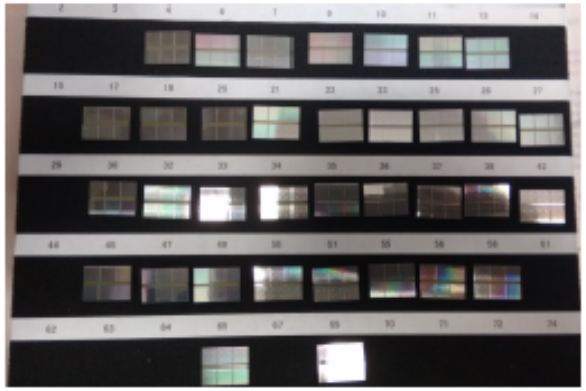


Mech: Flatness distribution



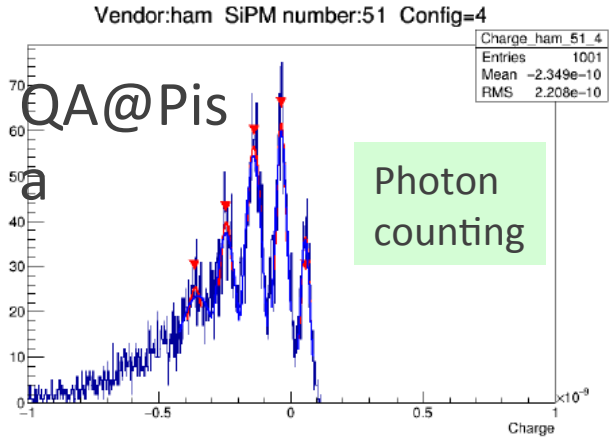
SiPM QA

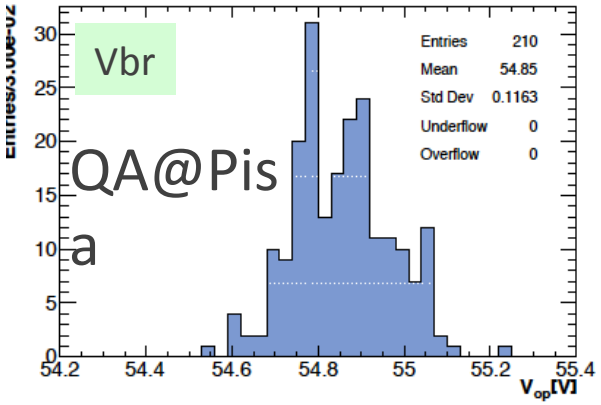
Hamamatsu

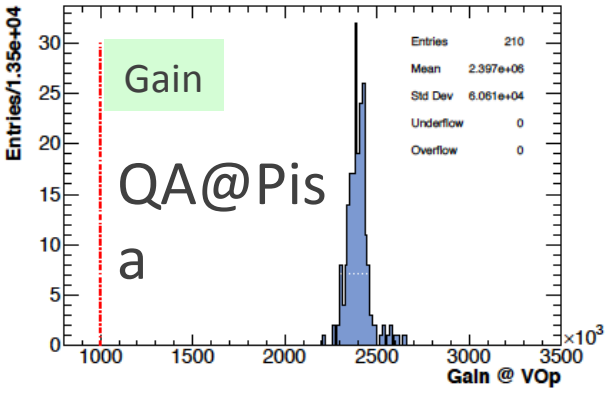


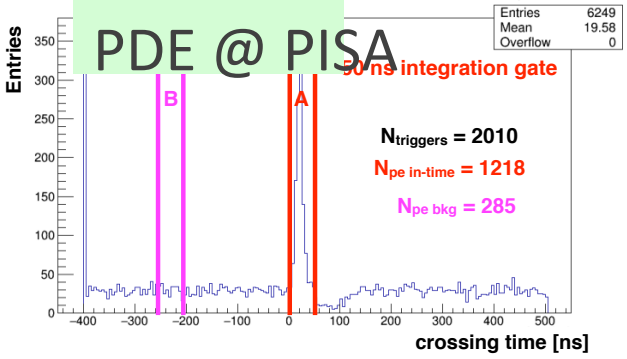
SENSL

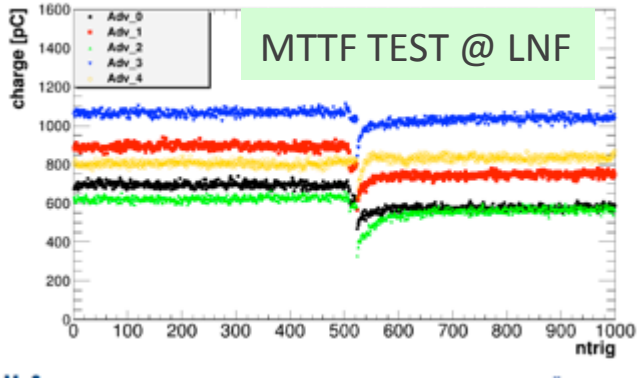
Advansid

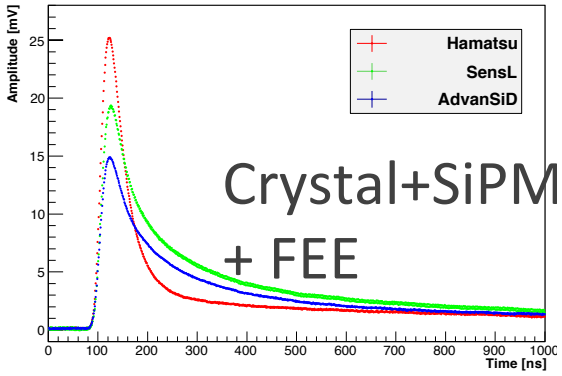






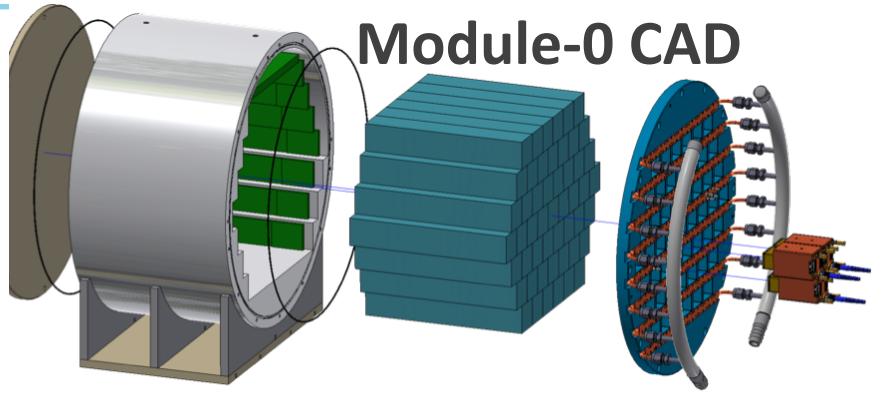


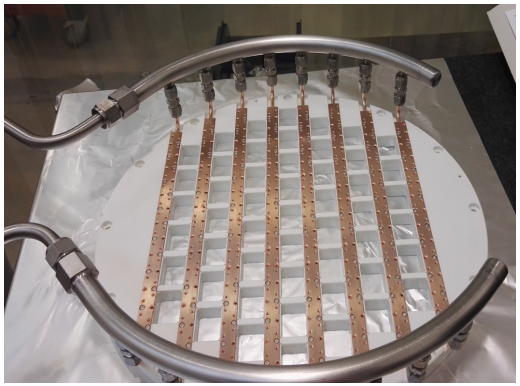


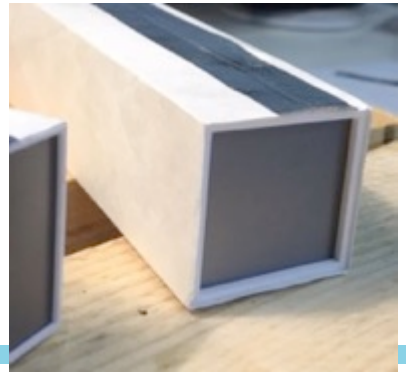


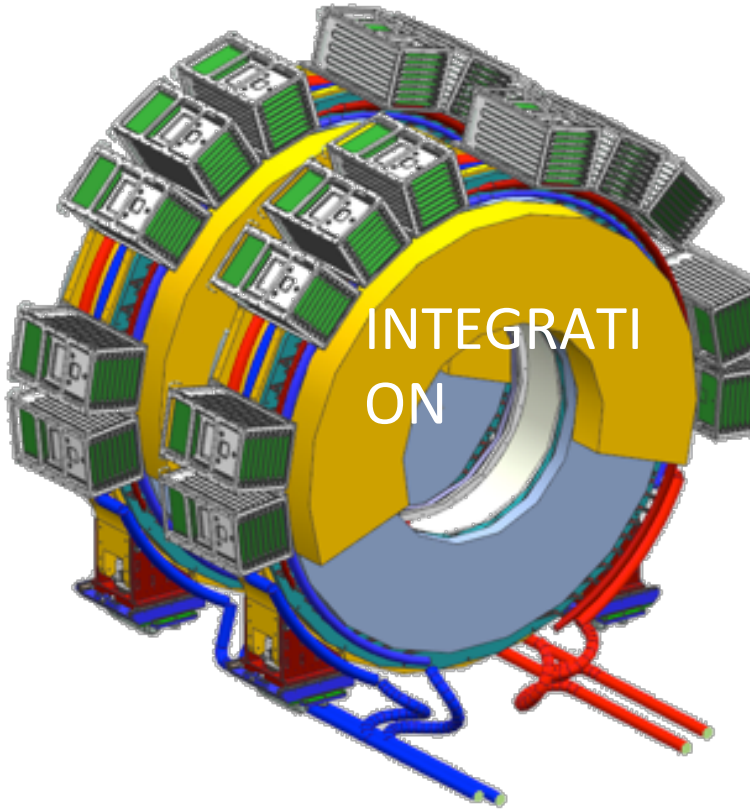
Mechanical integration

MUSE









Fermilab