CALICE
Calorimeter for LC

TCMT Status

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Goals for the TC/Muon System

- Provide a reasonable snapshot of the tail-end of the shower for simulation validation
- Prototype detector with high-fidelity to what is imagined for a generic LCD

  correcting for leakage

  understanding the impact of coil

  muon reconstruction + eflow

  fake rate

Basic Specs

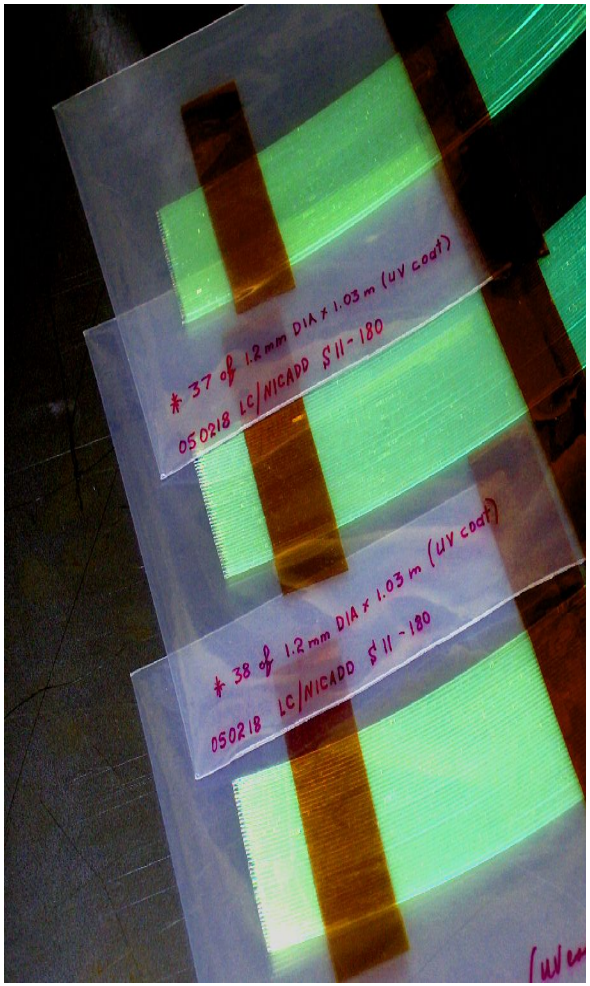
- **Mechanical Structure/Absorber**
  - "Fine" section (8 layers)
    - 2 cm thick steel
  - "Coarse" section (8 layers)
    - 10 cm thick steel
- **16 Cassettes:**
  - Scintillator Strips
    - 5mm thick
    - 5cm wide strips
    - Tyvek/VM2000 wrapping
    - Alternating x-y orientation
  - Readout
    - WLS Fiber
    - SiPM photo detection
    - Common readout with HCAL
- **Dimensions:**
  - Length (along beam) - 142 cm
  - Height - 109 cm
- **Weight ~10 tons**

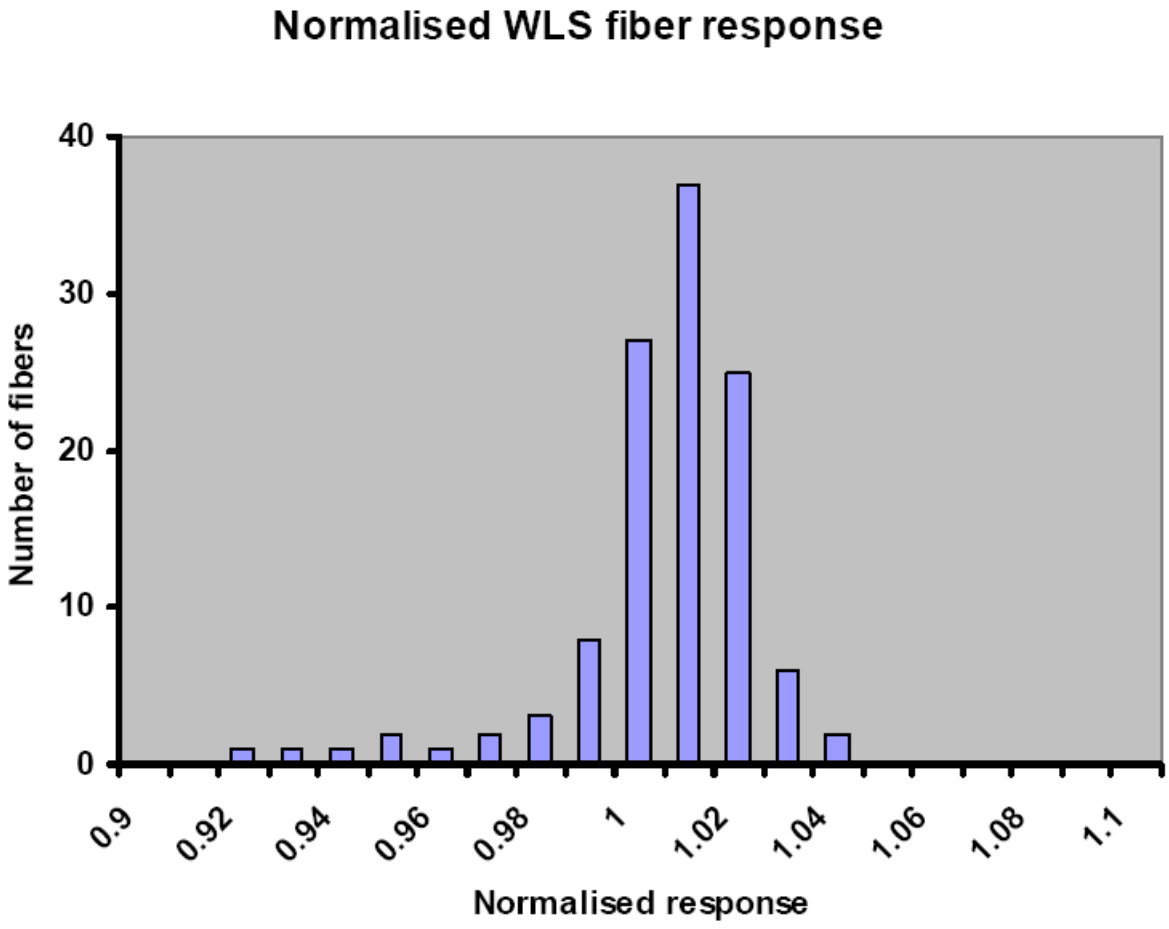
Scintillator and Fiber

Strips

All strips fabricated and QC'ed

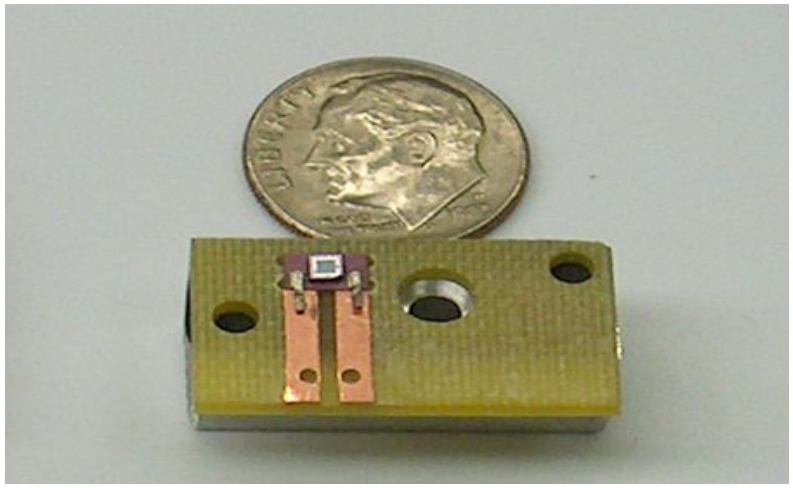
Fibers

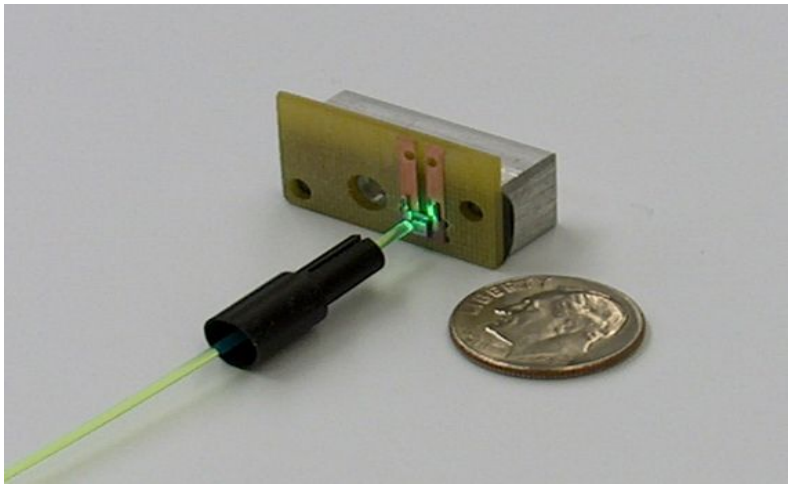

* 37 of 1.2 mm DIA x 1.03 m (UV coat)
050218 LC/NICADD $11-180
* 38 of 1.2 mm DIA x 1.03 m (UV coat)
050218 LC/NICADD $11-180

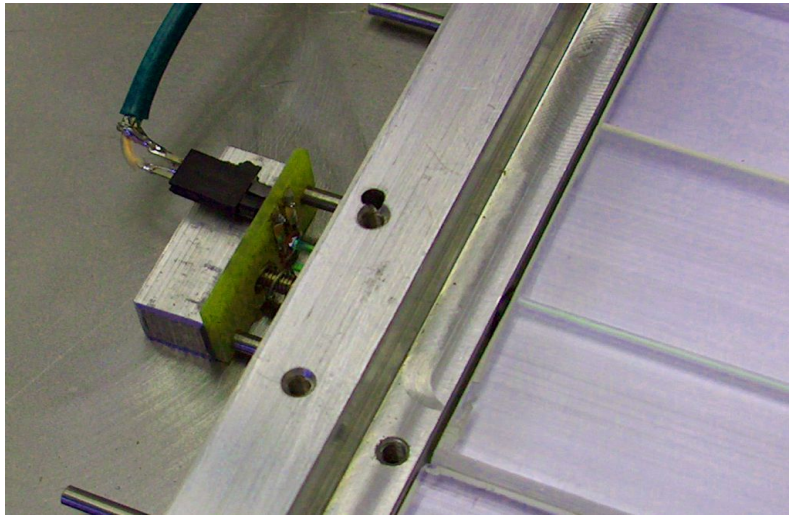

Normalised WLS fiber response
Number of fibers
0
10
20
30
40
0.9
0.92
0.94
0.96
0.98
1
1.02
1.04
1.06
1.08
1.1
Normalised response

Photosensors

SiPM's







D.O.A. → 2
No sensor → 2
We broke wires → 3
High current draw→ 3
Don't understand → 5

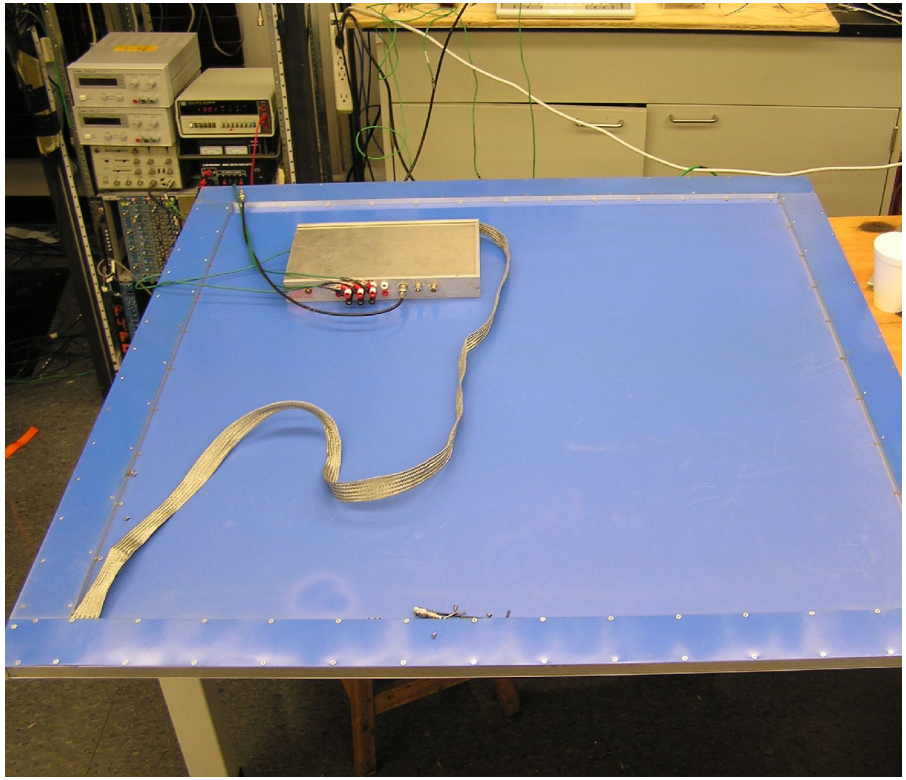
Need ~350 more

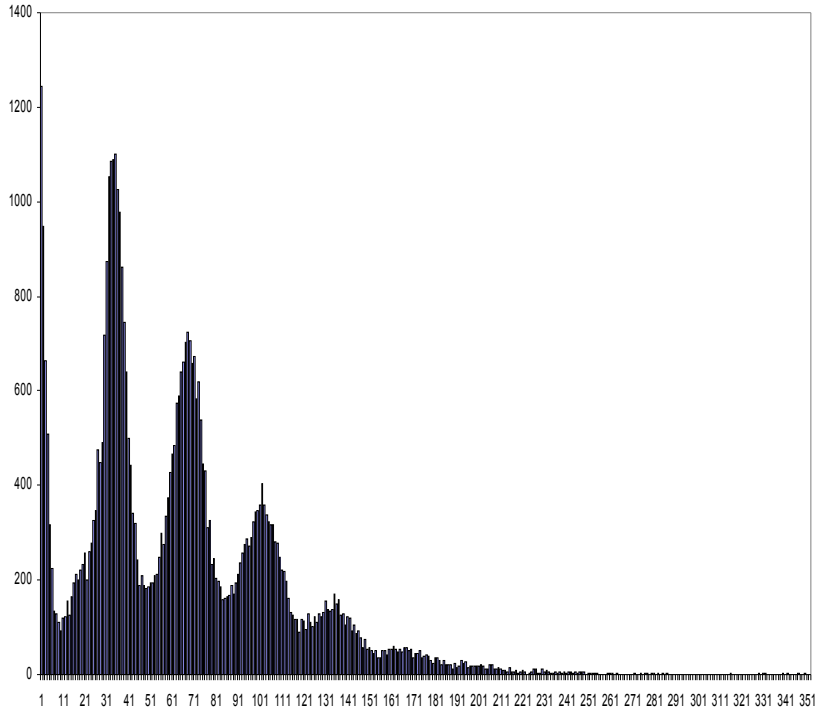
Cassette assembly & commissioning

Assembly

19 cassettes assembled
(w/o SiPM and LED driver)

Commissioning





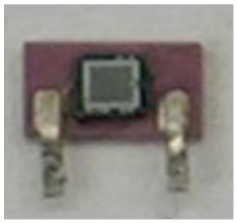
12-14 pe/mip obtained from cosmics

Readout chain

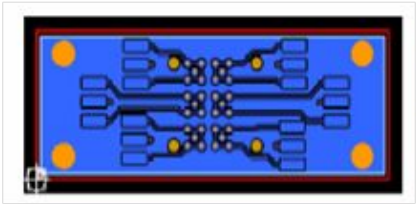
Needs to be tested asap

Readout

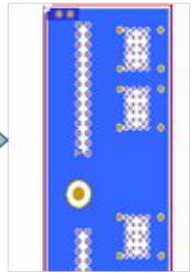
320 SiPM



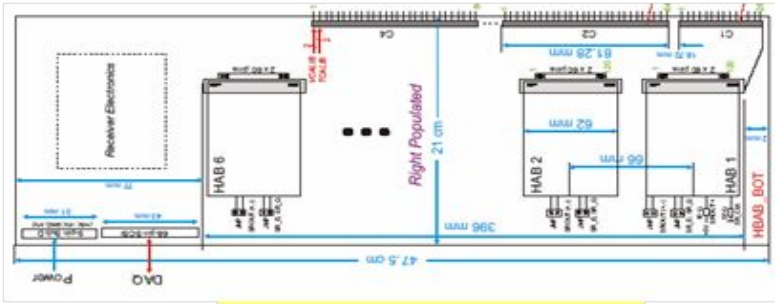
64 Connectors
6 channels/conn.
4/cassette



4 Adapters
108 channels/adapter



1 DAQ Board



4 HCAL Base Board

Calibration and Monitoring

Calib and Slow Control

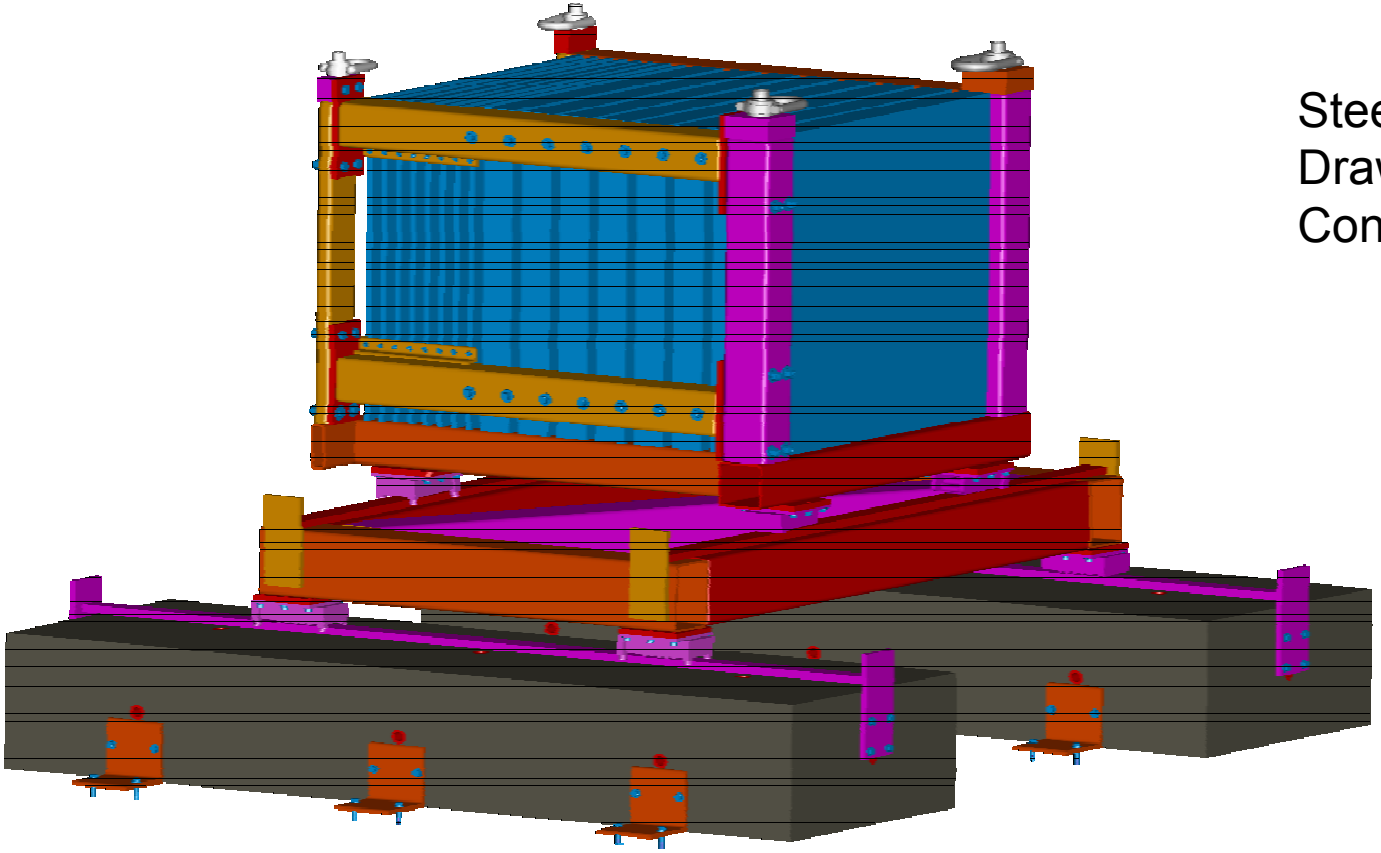
- Temperature and voltage monitoring
- LED (gain and saturation)
- Absolute calibration from mips

High priority for the next 2-3 months

- 4-channel prototype LED driver board available
- Being tested
- Discussions with Ivo and Sven have just begun to try and move towards an integrated system

Absorber Stack

Stack and Table



Steel in hand
Drawing ready
Construction soon

Near-term priorities

- Integration of TCMT cassette in the full electronics and DAQ chain (cassette should be here early next week)
- Integration of calibration and slow control systems
- Construction of stack
- Replication of the readout