

MICE Tracker Status



M.Ellis - NFMCC Meeting - LBNL - 25th January 2009

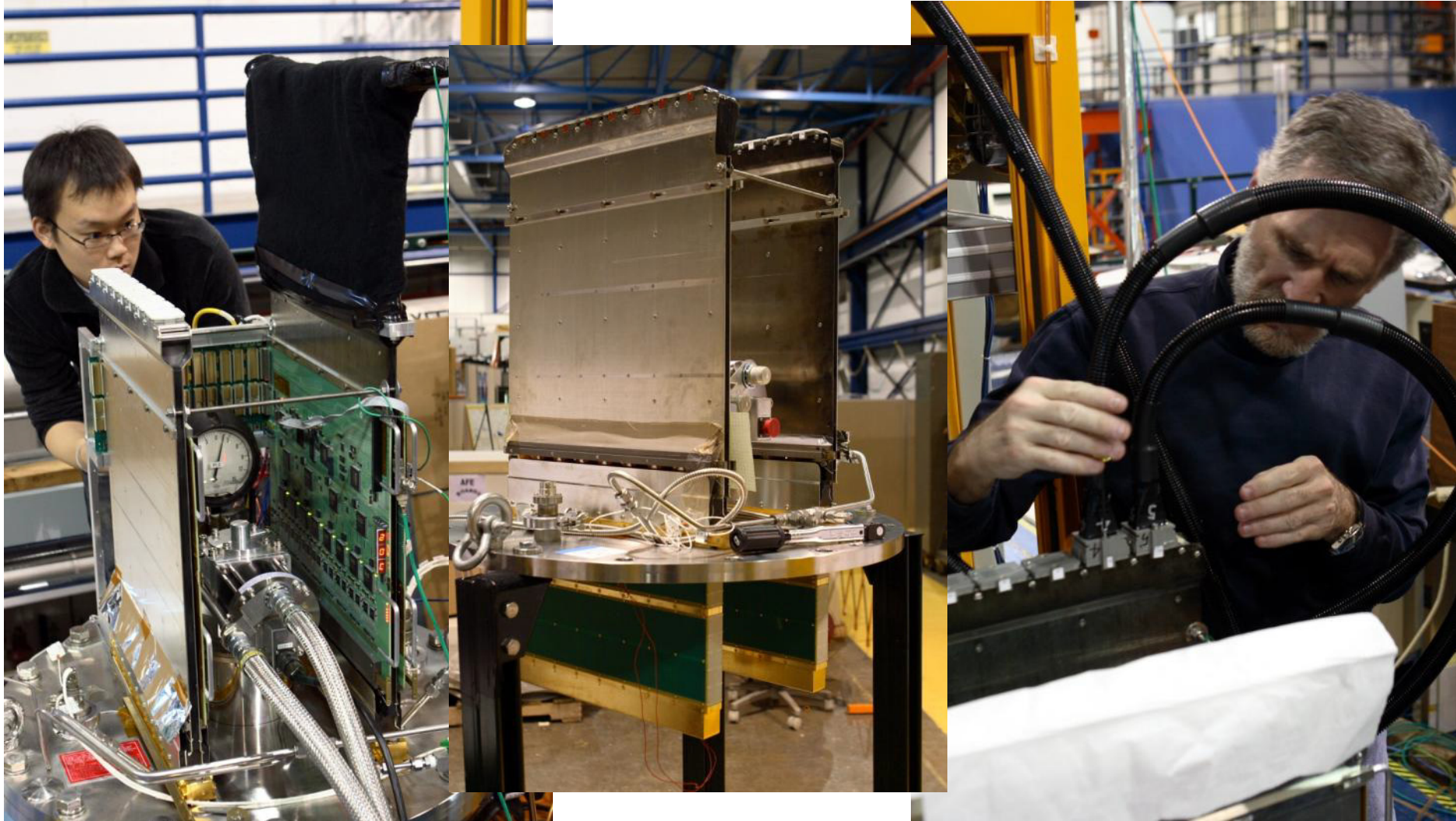


Progress since the last meeting

- Tracker 1 built.
- Tracker 1 readout commissioned at RAL (R8).
- Cosmic ray data taken.
- Two bugs in decoding of fibre map < - > electronic channel found and fixed.
- Light yield good.
- Hardware moved to a new lab at RAL.
- Tracker 2 built.



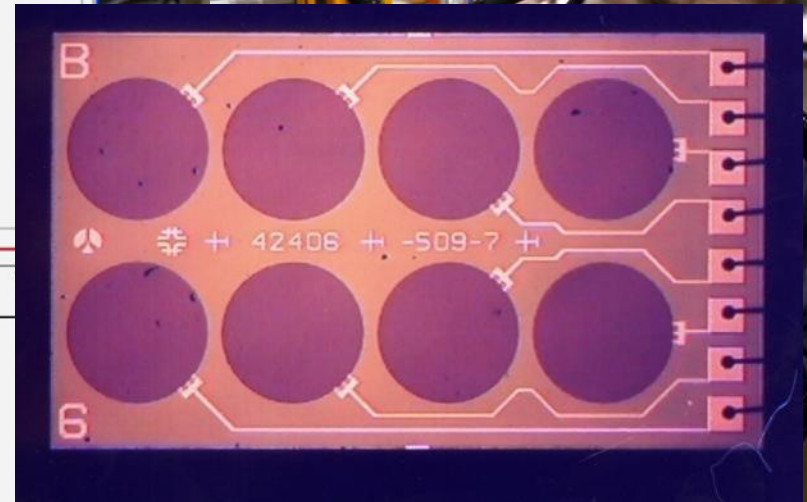
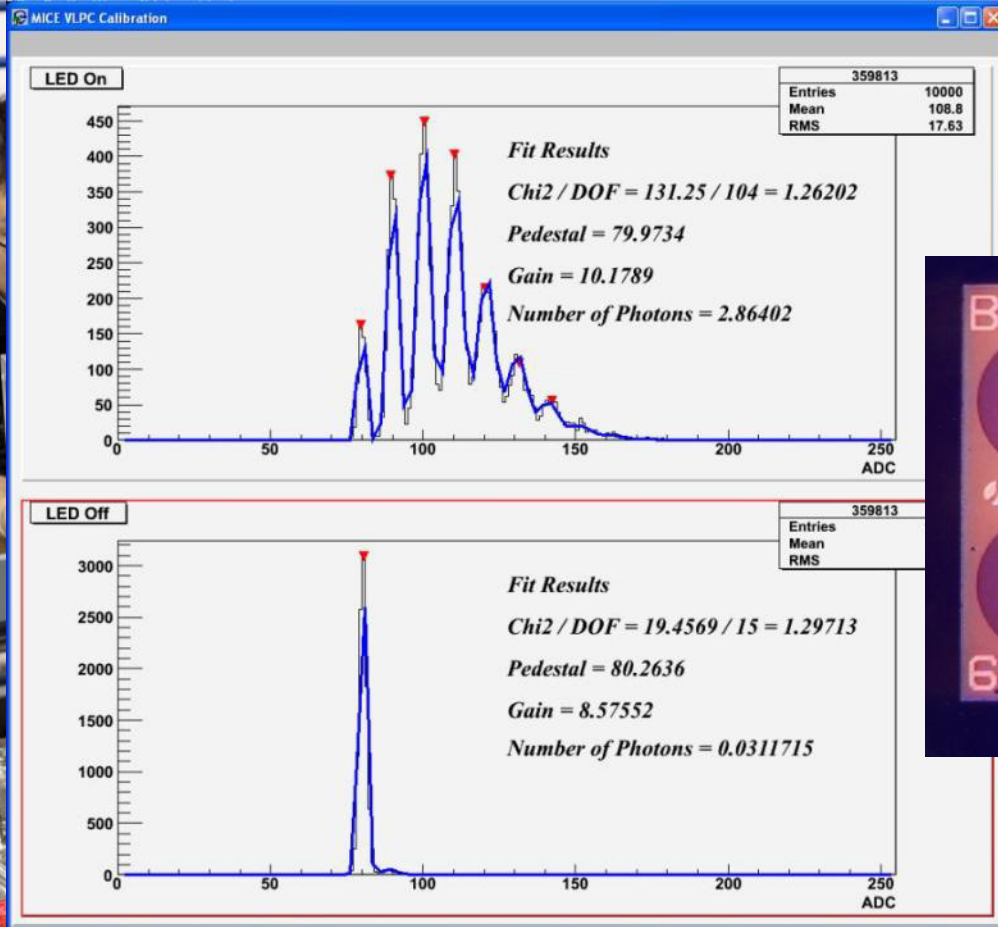
Tracker 1 Readout



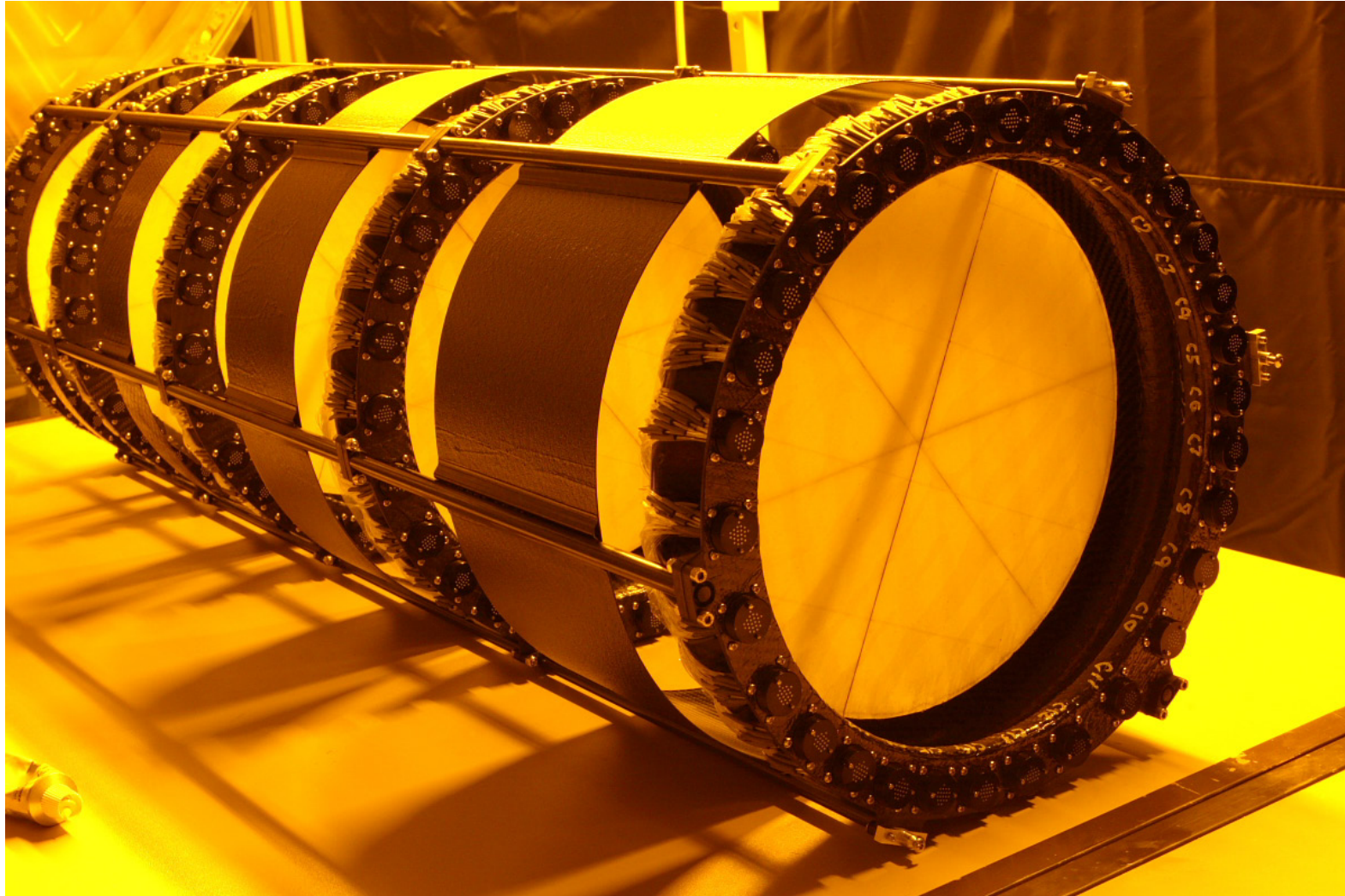
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Tracker 1 Readout

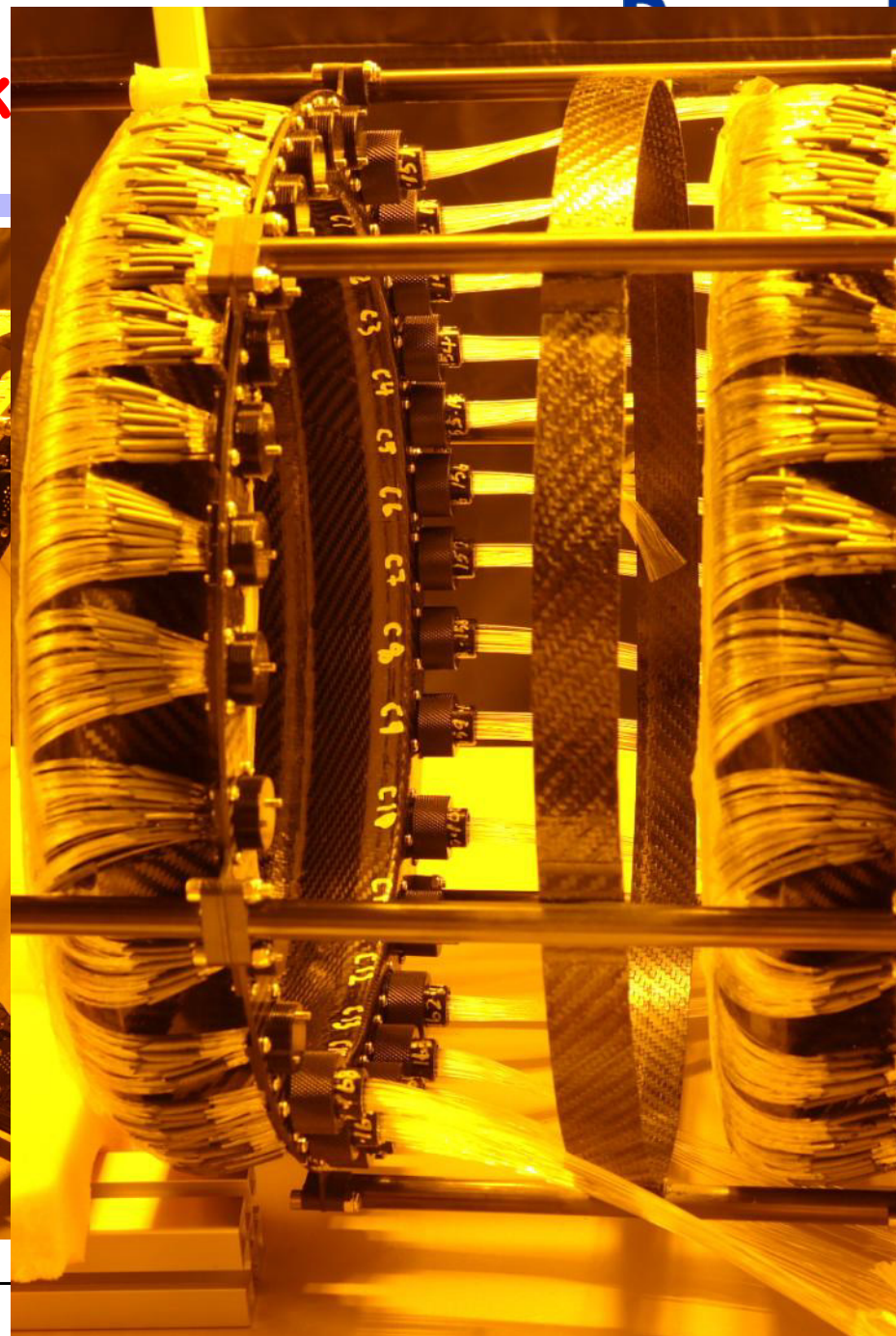
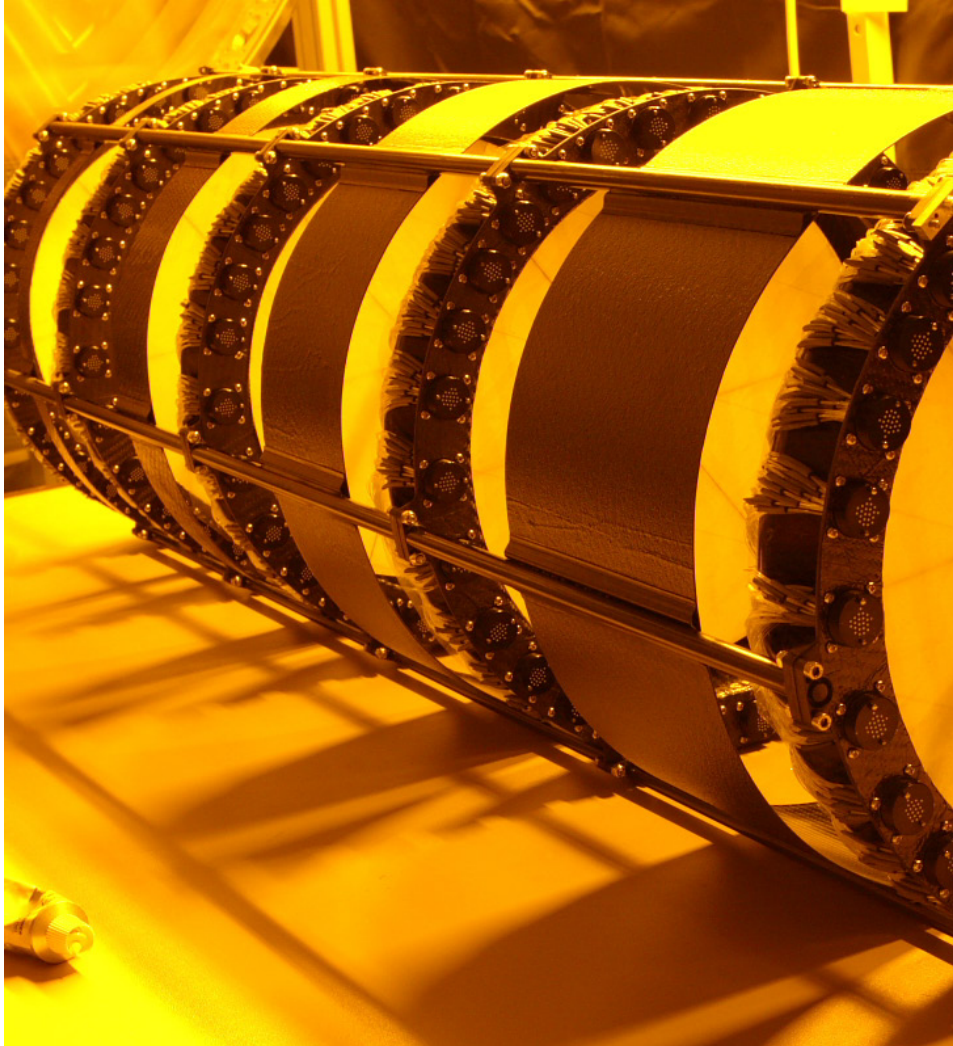


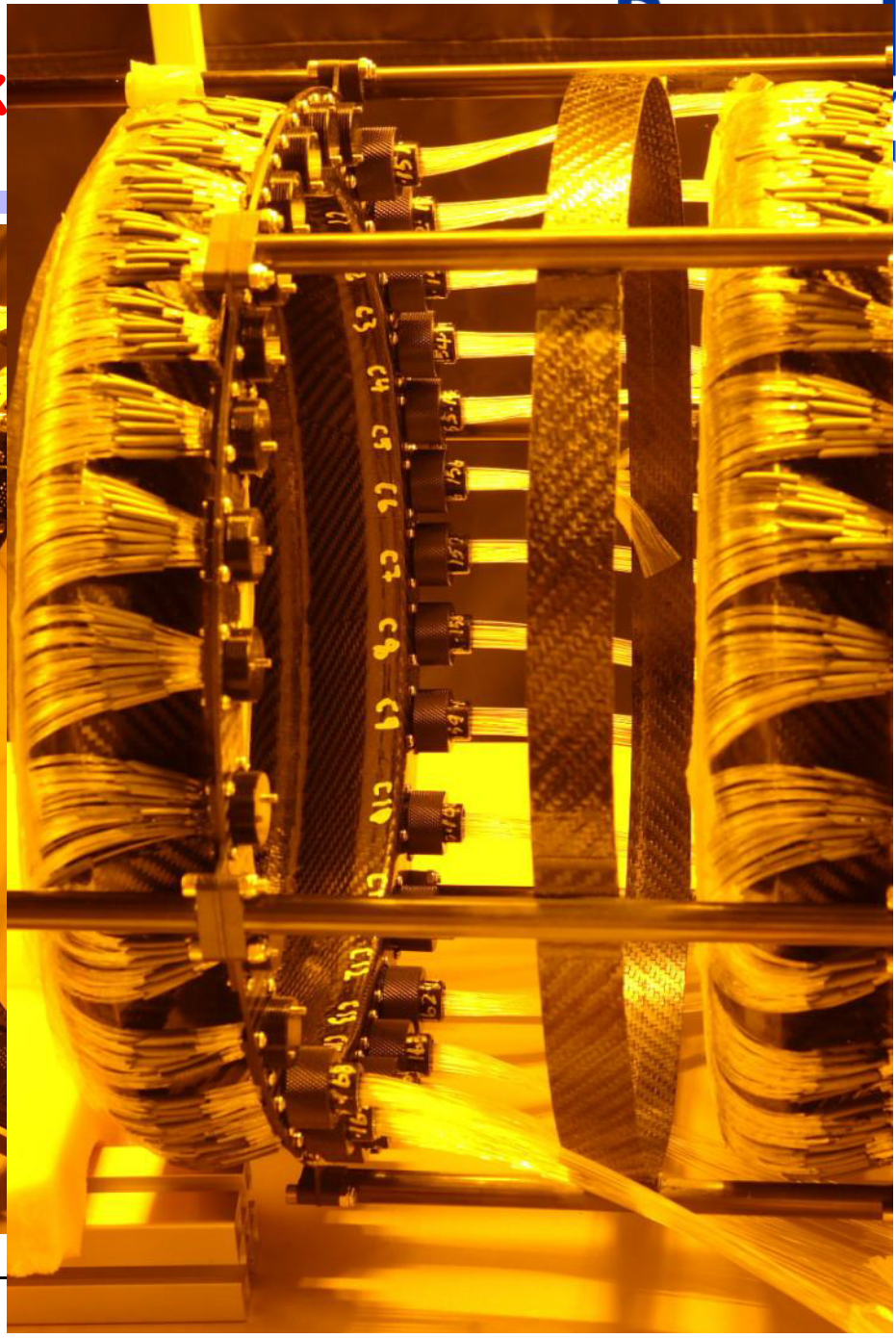
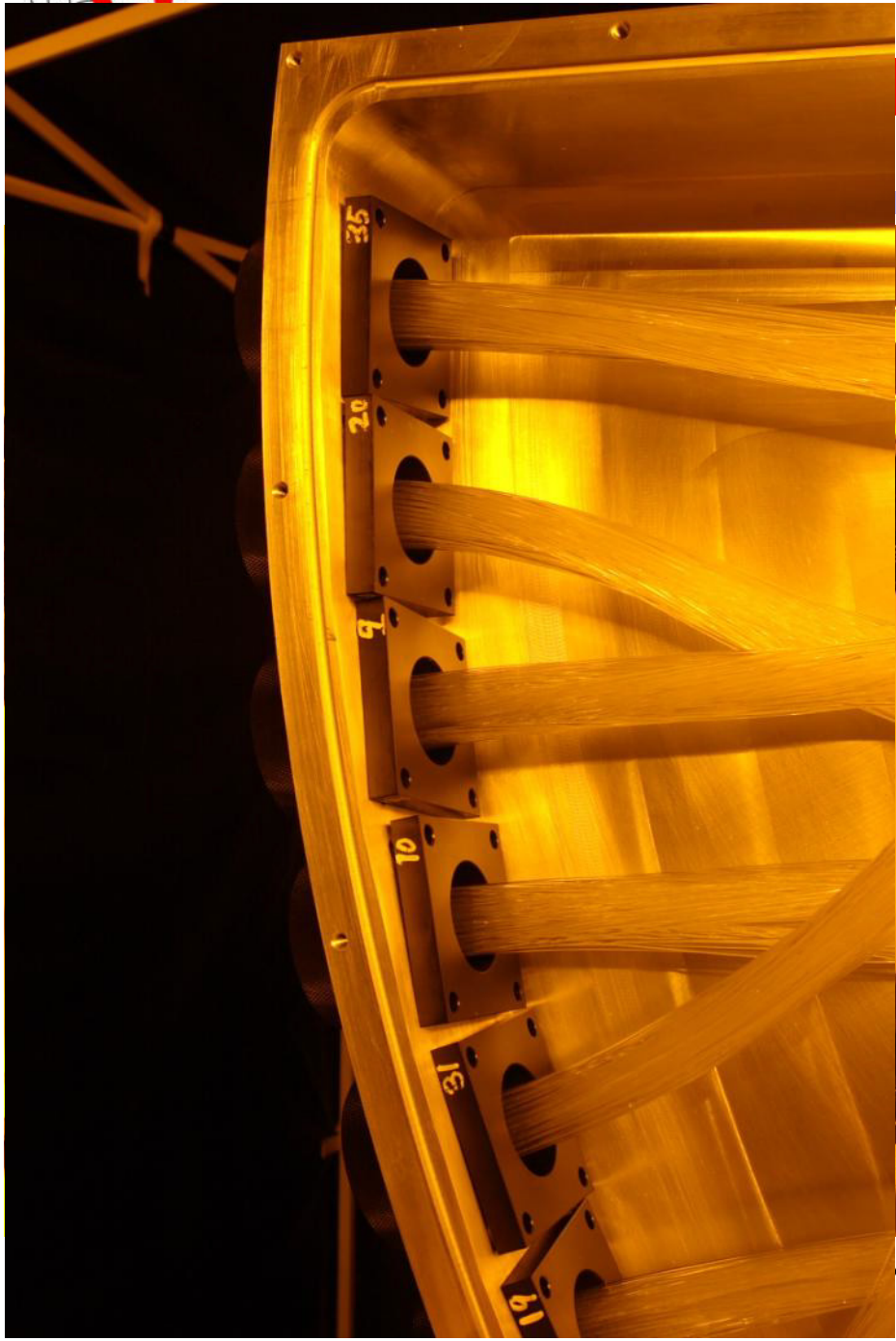
Tracker 1

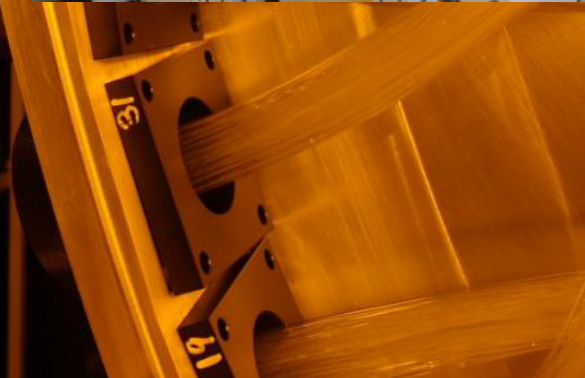
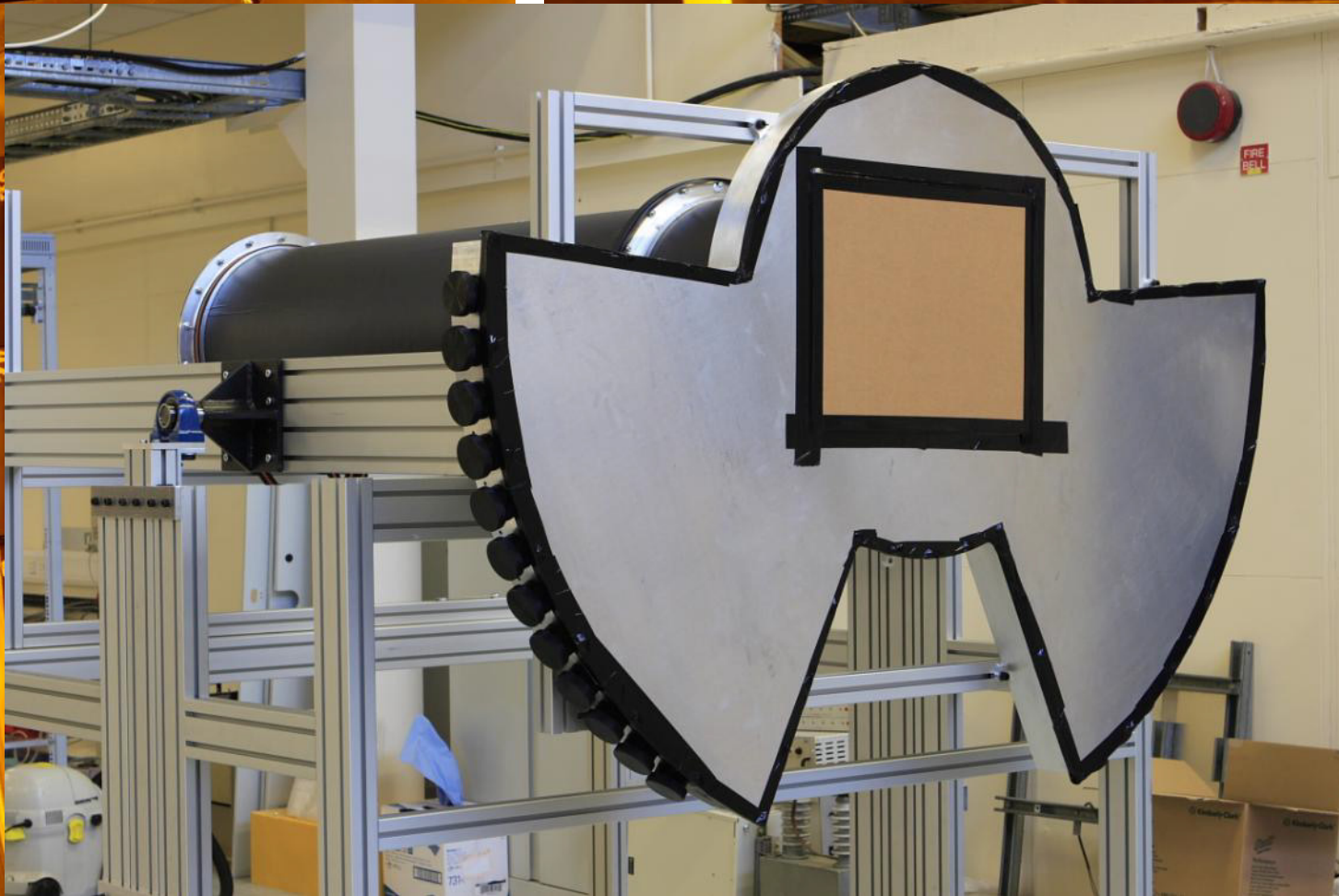




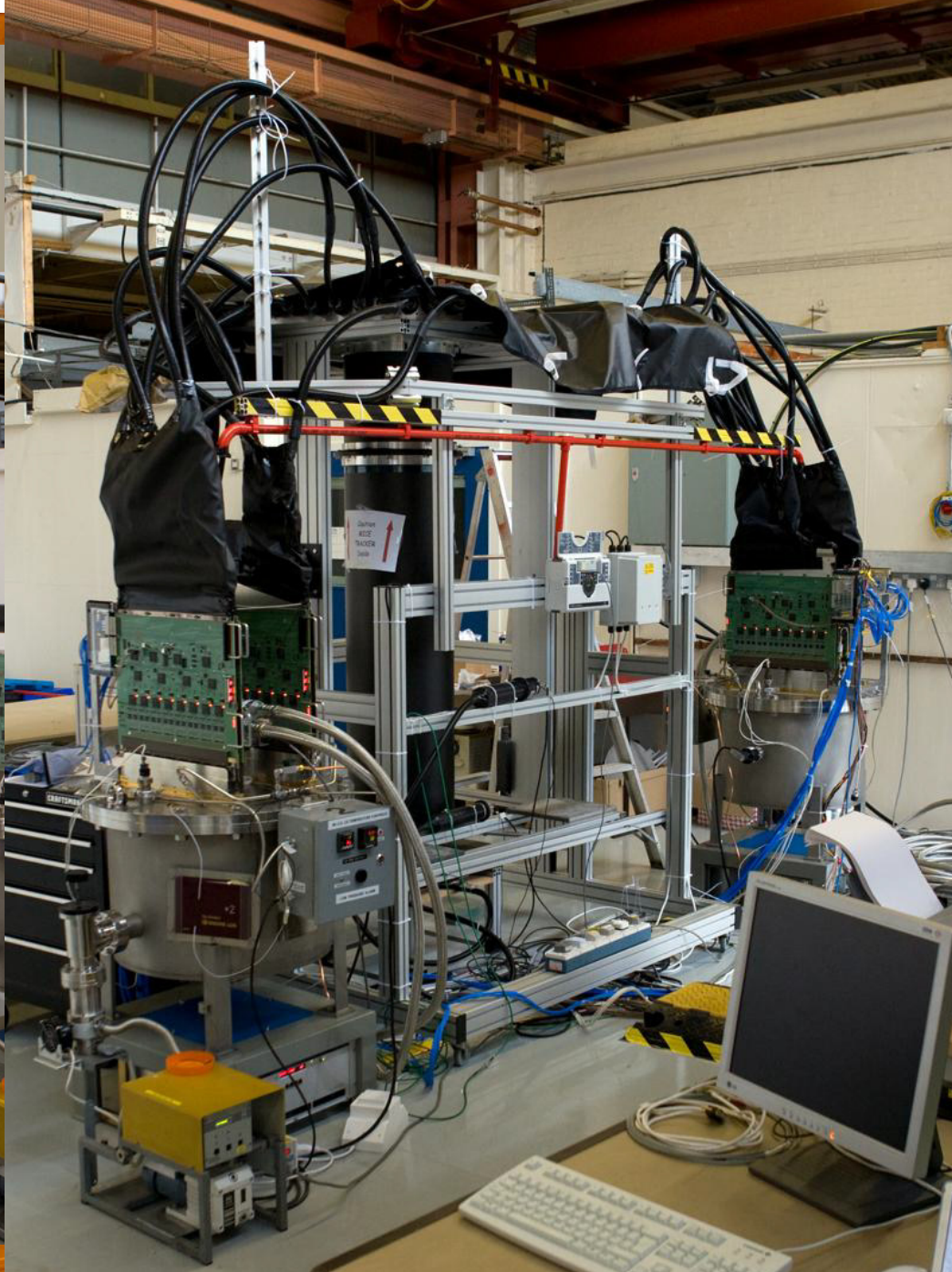
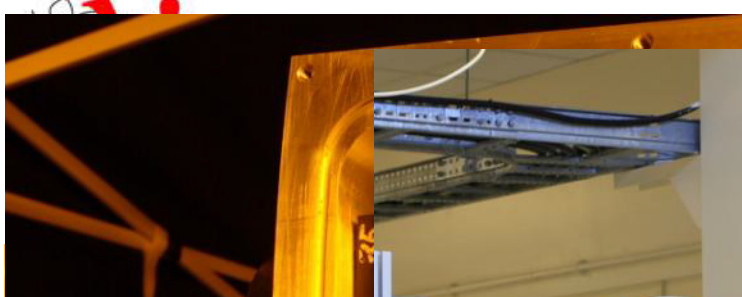
Track













Cosmic Ray Setup

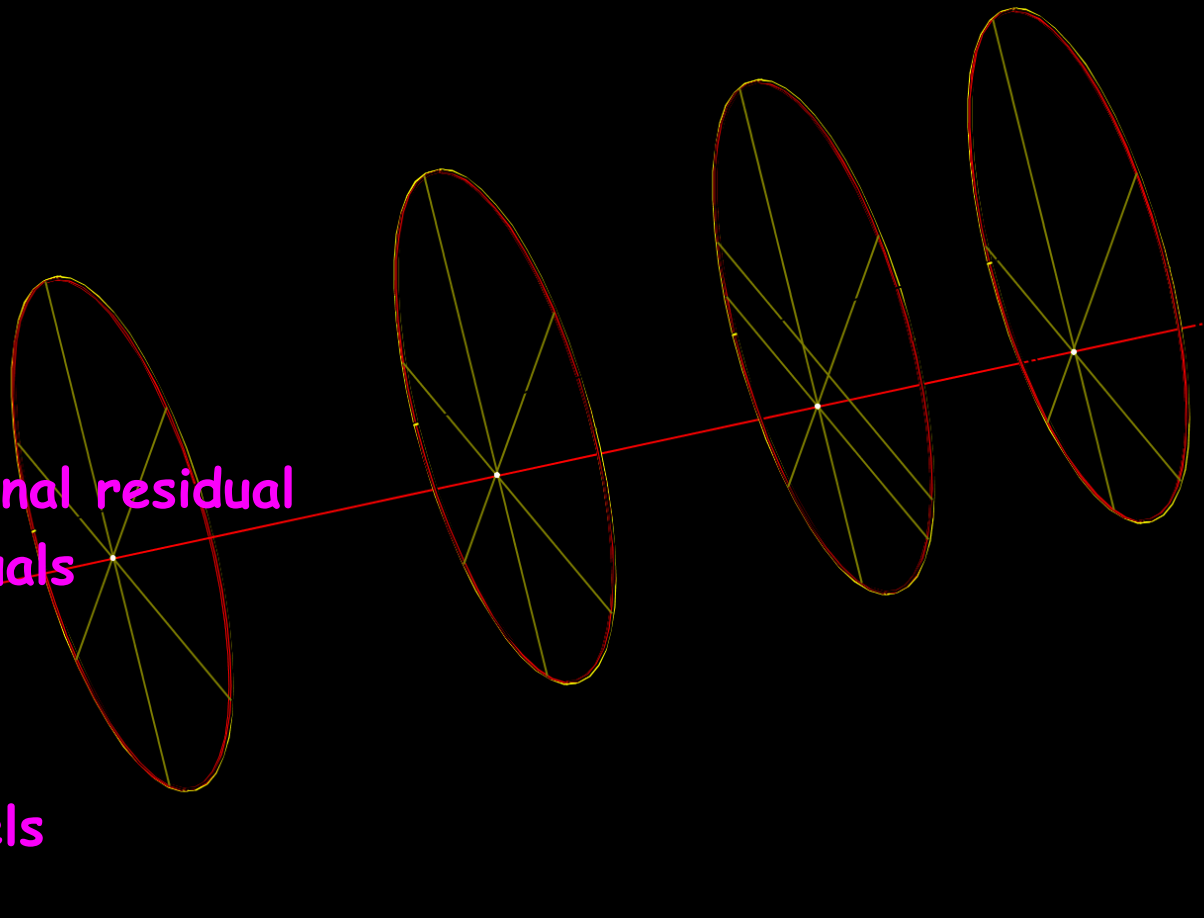
- Tracker facing vertically.
- Two trigger scintillators recycled from the test at KEK in 2005 (later replaced with new scintillators from Fermilab).
- One inch of lead beneath the tracker to select higher energy cosmics.
- Data taking initially performed using Excel/VB setup developed at Fermilab and used for debugging and testing.
- Later moved to EPICS for slow control (AFE control, temperature monitoring, etc).
- Moved to DATE system (MICE DAQ) in stand alone mode.



Tracker 1 Cosmic Ray Results

ADGIF UNREGISTERED - www.gif-animator.com

- **Light Yield:**
 - ◆ Overall
 - ◆ Per Plane
 - ◆ Uniformity
- **Resolution:**
 - ◆ Triplet internal residual
 - ◆ Track residuals
- **Efficiency:**
 - ◆ Dead channels

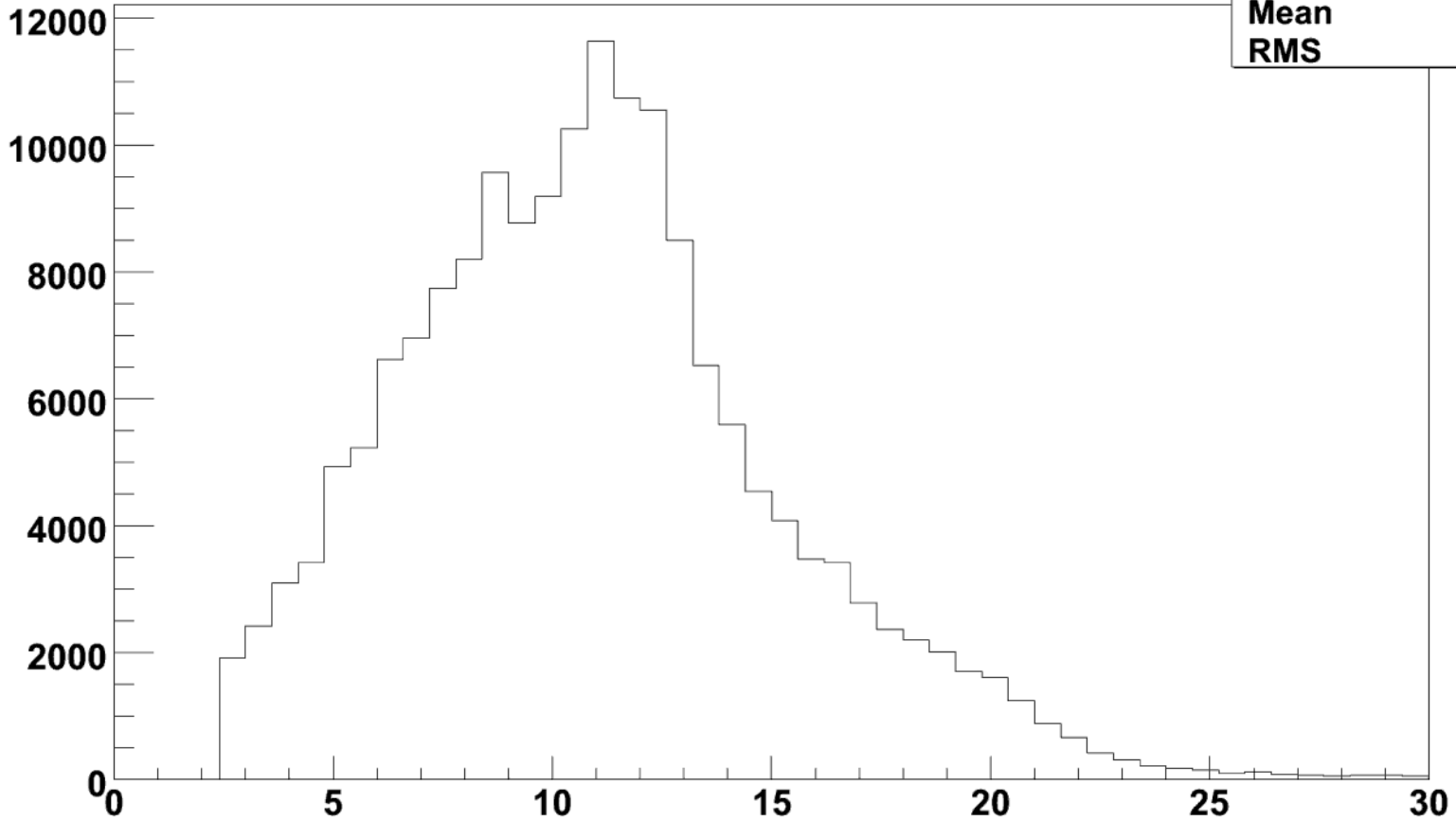




Tracker 1 Light Yield

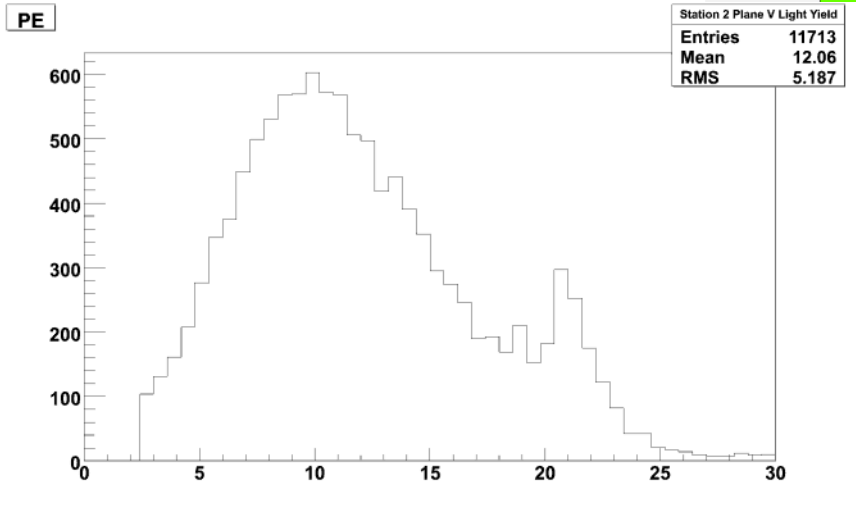
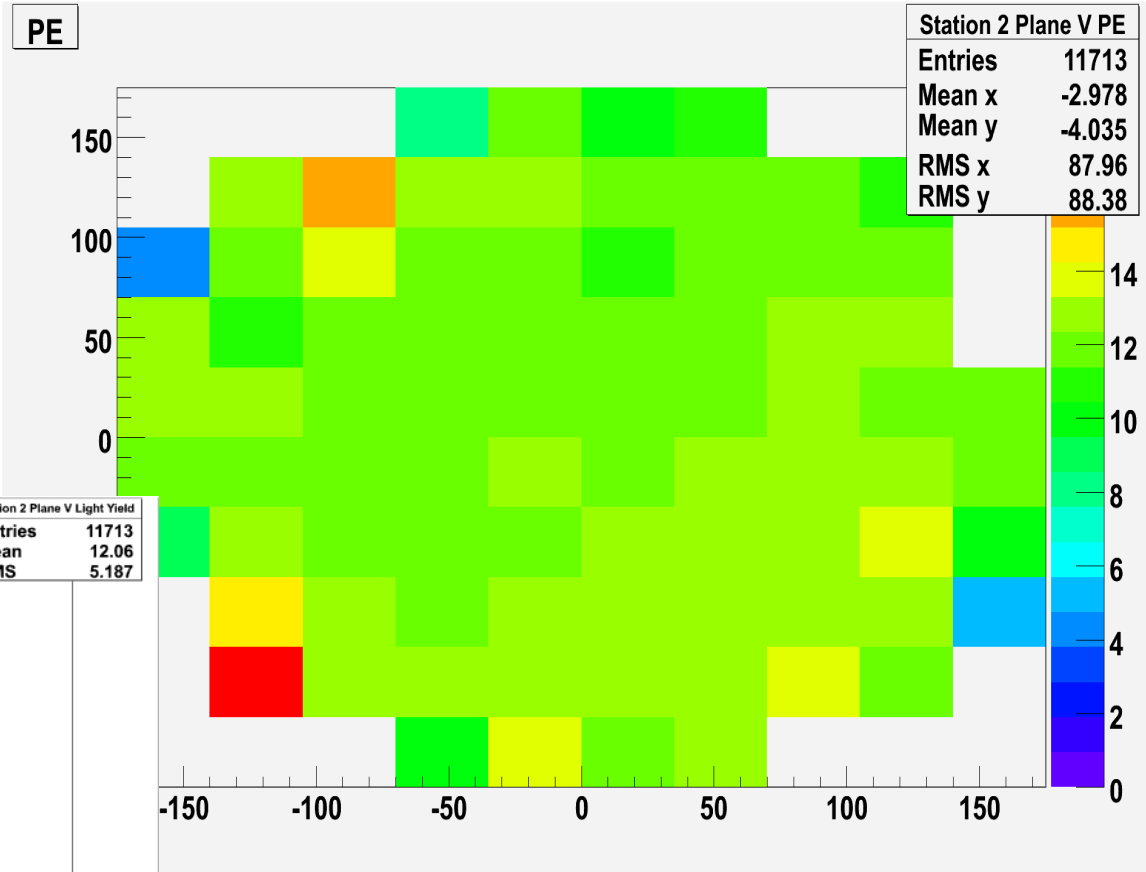
PE

Light Yield	
Entries	175428
Mean	10.96
RMS	4.314





Tracker 1 Station 2 Plane V

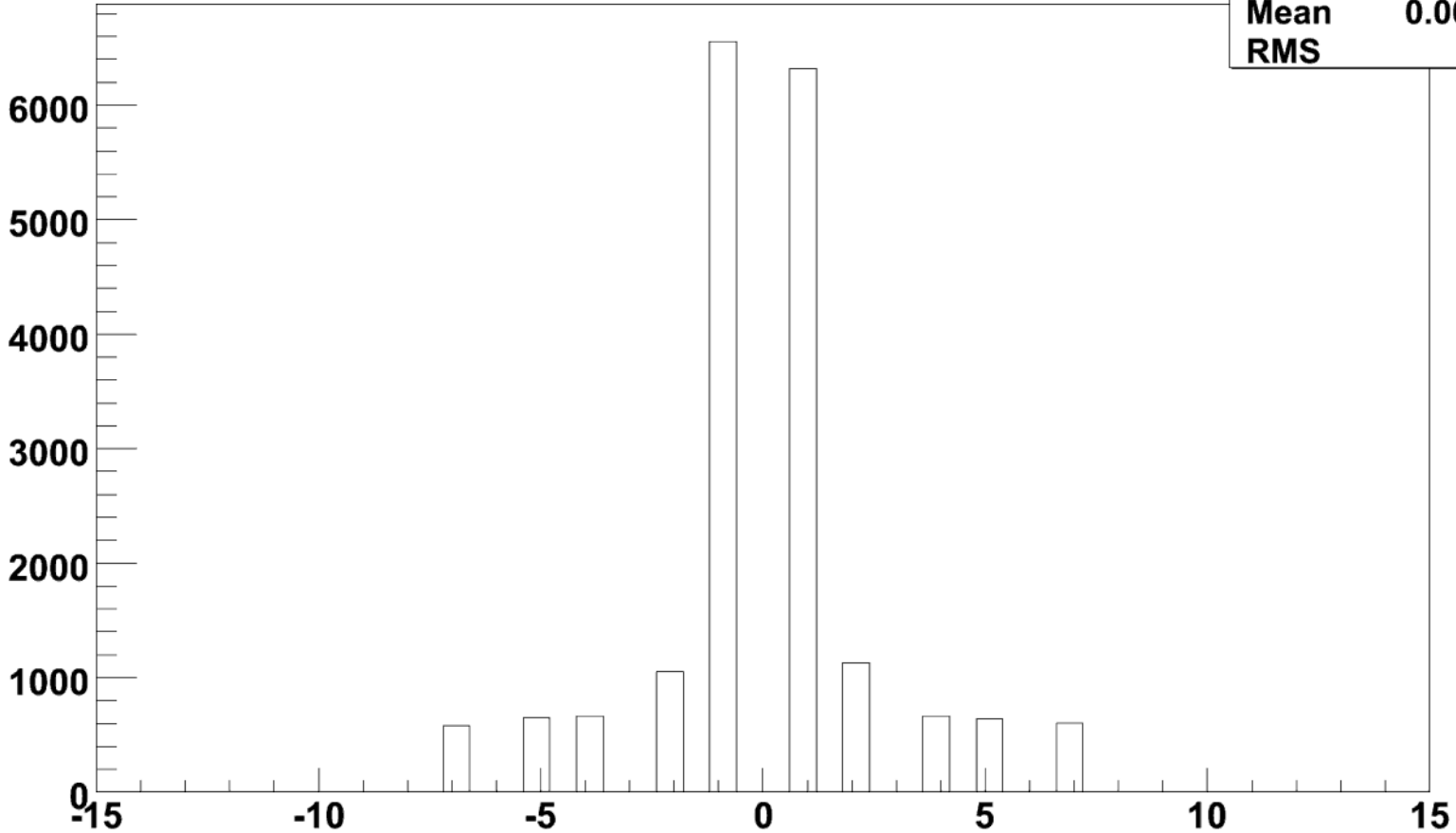




Triplet Internal Residual

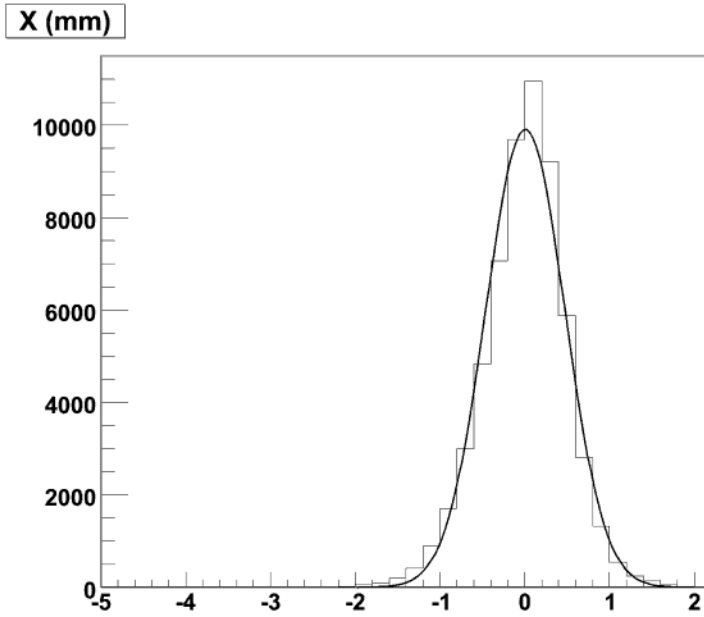
R (mm)

Triplet Internal Residual Station 1	
Entries	18873
Mean	0.006044
RMS	2.576

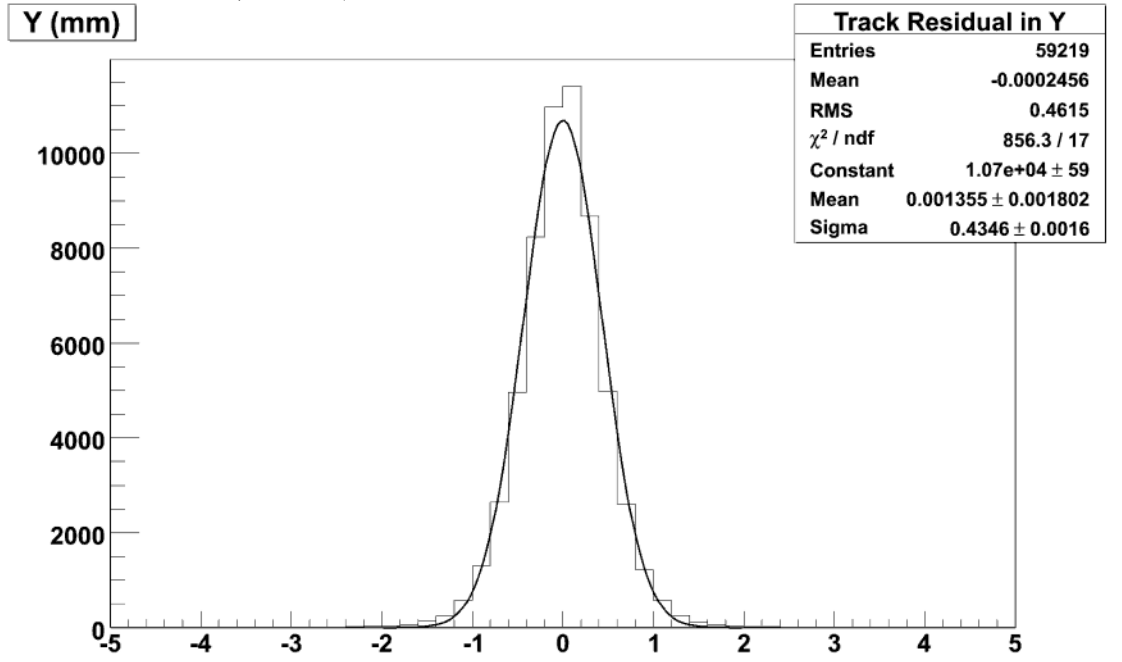




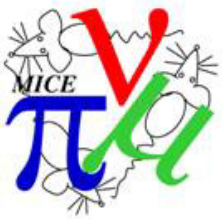
Track Residuals



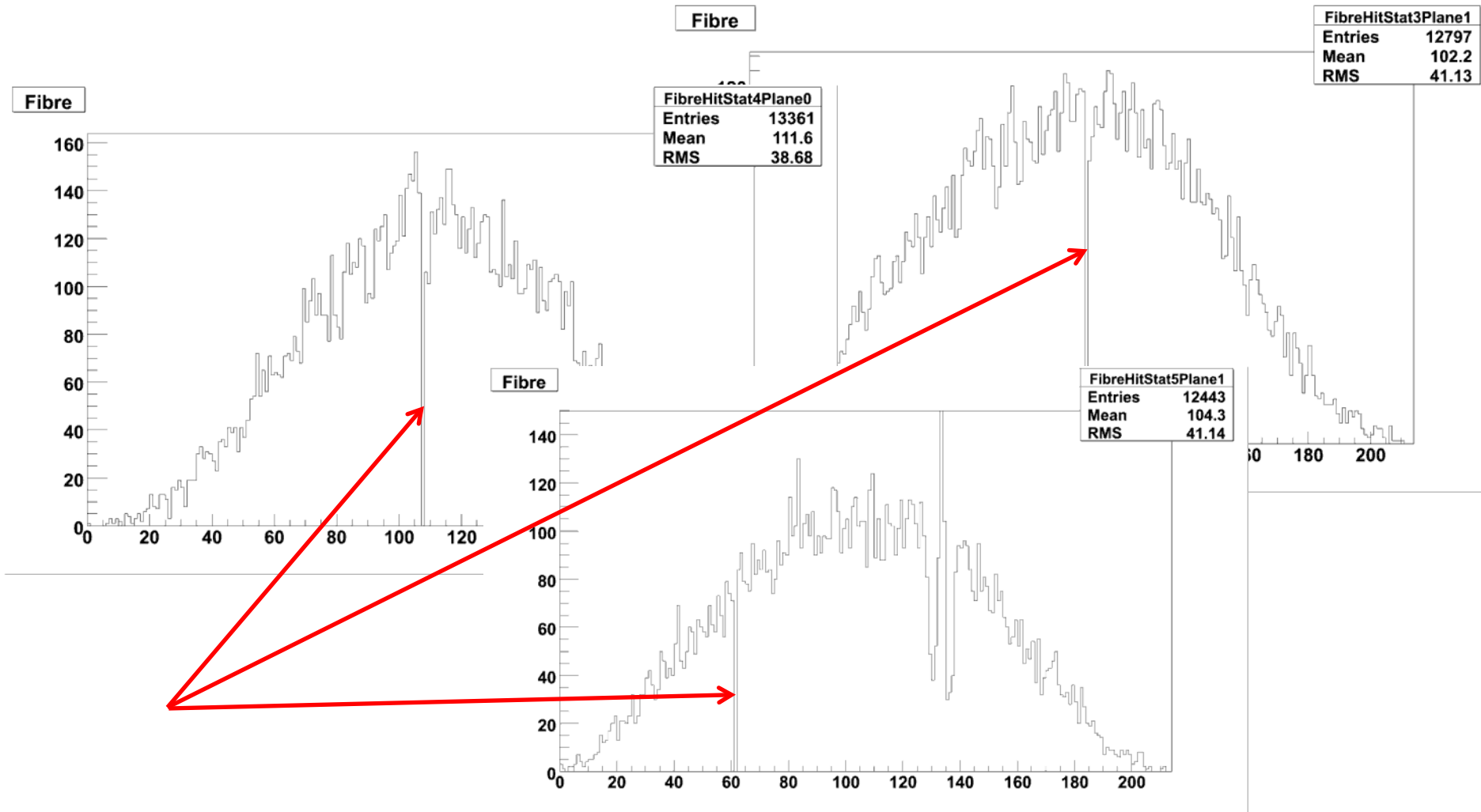
Track Residual in X	
Entries	59219
Mean	-6.734e-05
RMS	0.491
χ^2 / ndf	1206 / 17
Constant	9919 \pm 55.1
Mean	0.006868 \pm 0.002010
Sigma	0.4659 \pm 0.0017



Track Residual in Y	
Entries	59219
Mean	-0.0002456
RMS	0.4615
χ^2 / ndf	856.3 / 17
Constant	1.07e+04 \pm 59
Mean	0.001355 \pm 0.001802
Sigma	0.4346 \pm 0.0016



3 Dead Channels (<0.1%)





Next Steps

- Tracker 1 hardware has been moved to lab 7 in R1 for continuing tests.
- Tracker 2 has been assembled.
- Tracker 2 readout being finalised at Fermilab, to be shipped to RAL in the next few weeks.
- Tracker 2 will be commissioned and cosmic rays recorded as for tracker 1.
- Readout for both trackers using the DATE DAQ software will be tested and integrated into the main MICE DAQ prior to the trackers and readout systems being moved to the MICE hall (when the spectrometer solenoid arrives).