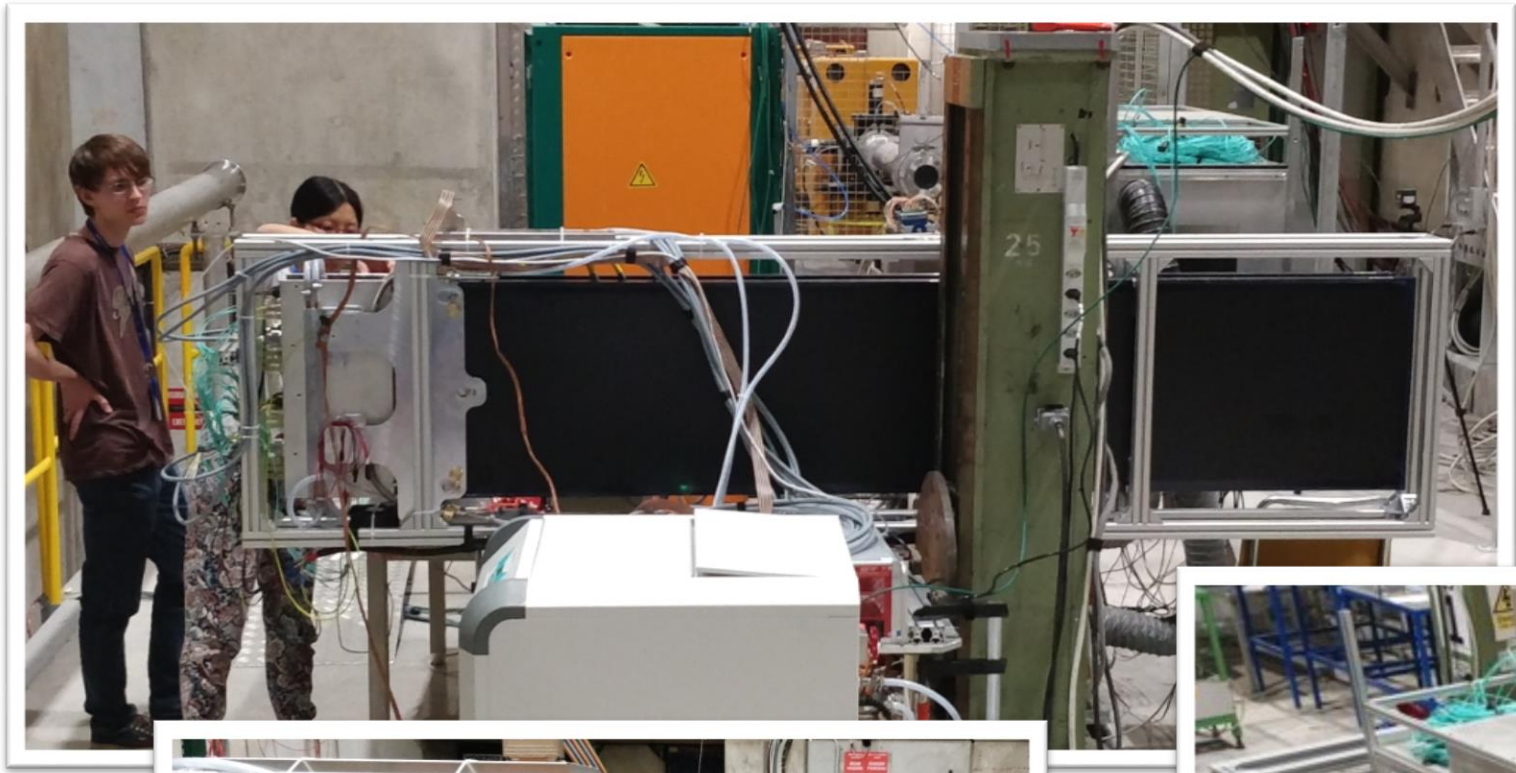
LHCb SciFi Tracker Test beam

Blake Leverington, on behalf of the SciFi Tracker group

Setup

- 2x 2.5m SciFi half-modules
  - 2x full-size front-end readout electronics boxes
    - PACIFIC 5q ASIC (TSMC)
    - Clustering on FPGA (Microsemi Igloo2)
  - 2x 2048 SiPM channels
- MiniDAQ2 (PCIE40) readout
  - 40 MHz over 32 (42 max.) data links to disk
  - 4 (6 max.) Control links
- TimePix3 telescope in H8
  - Provides the 40 MHz clock
  - Tracking resolution at SciFI about 20 micron
  - Shared trigger
- Mounted on DESY XY-table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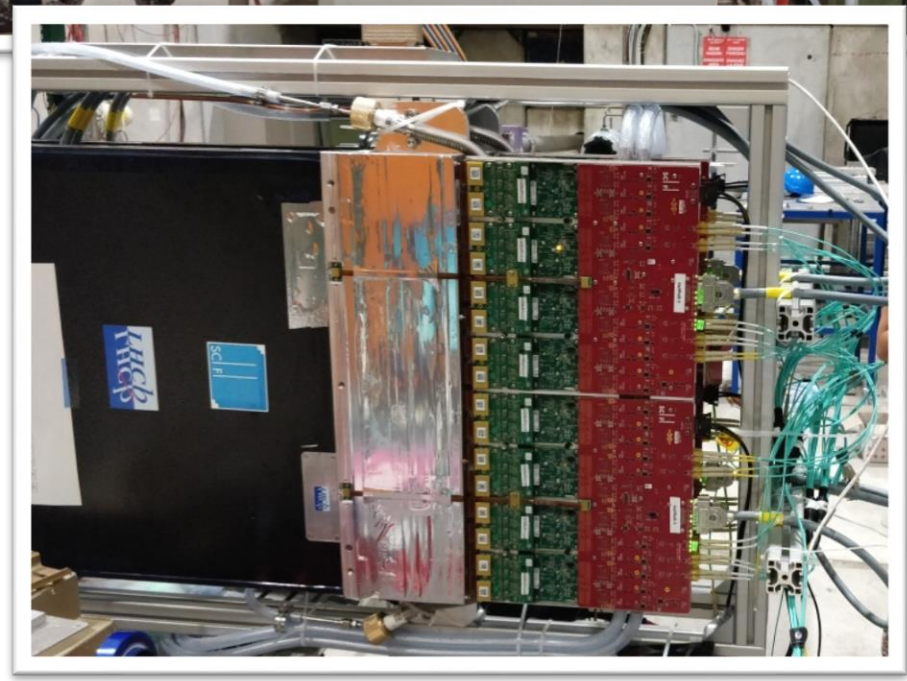
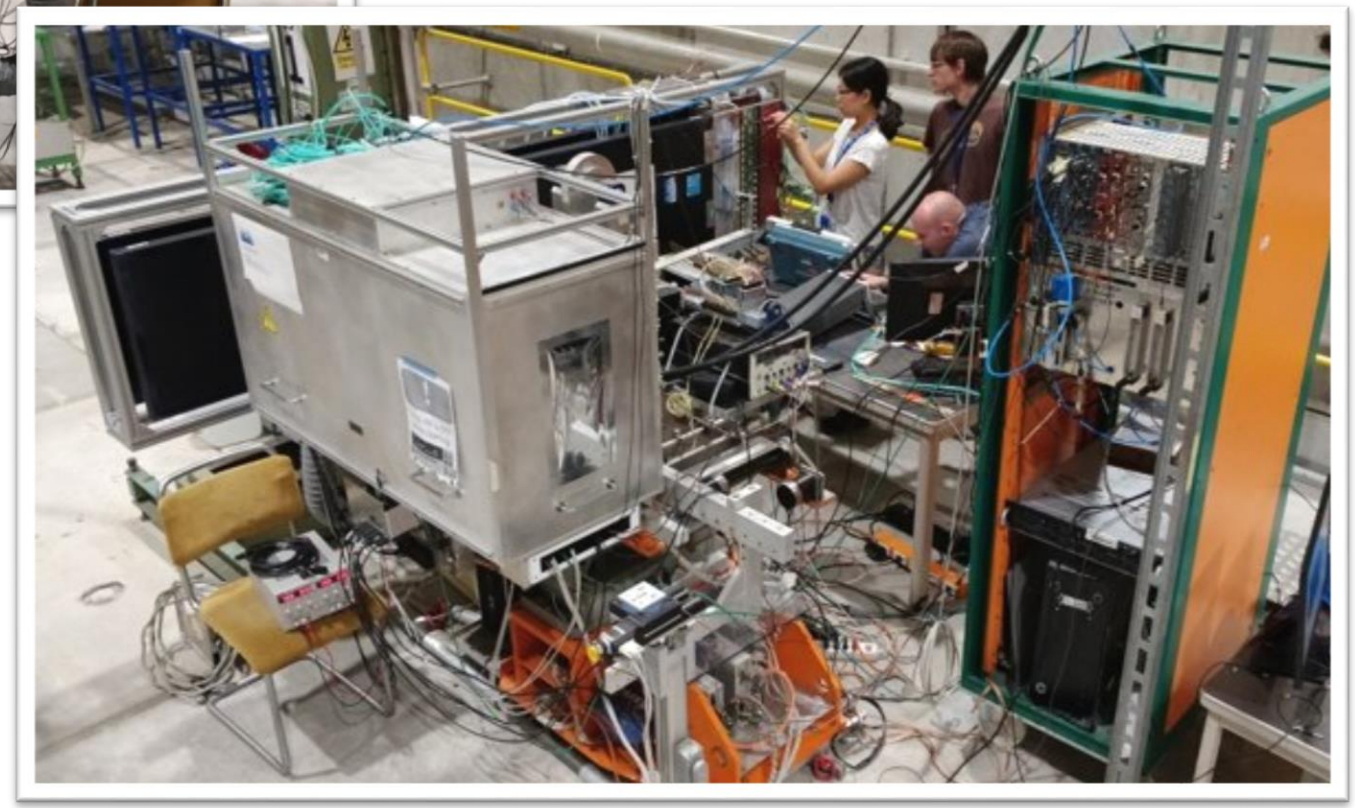
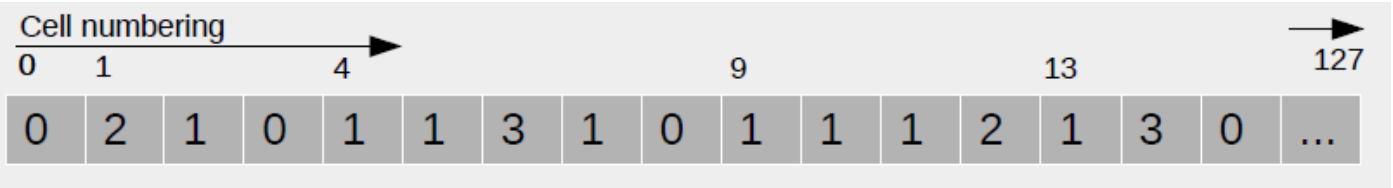


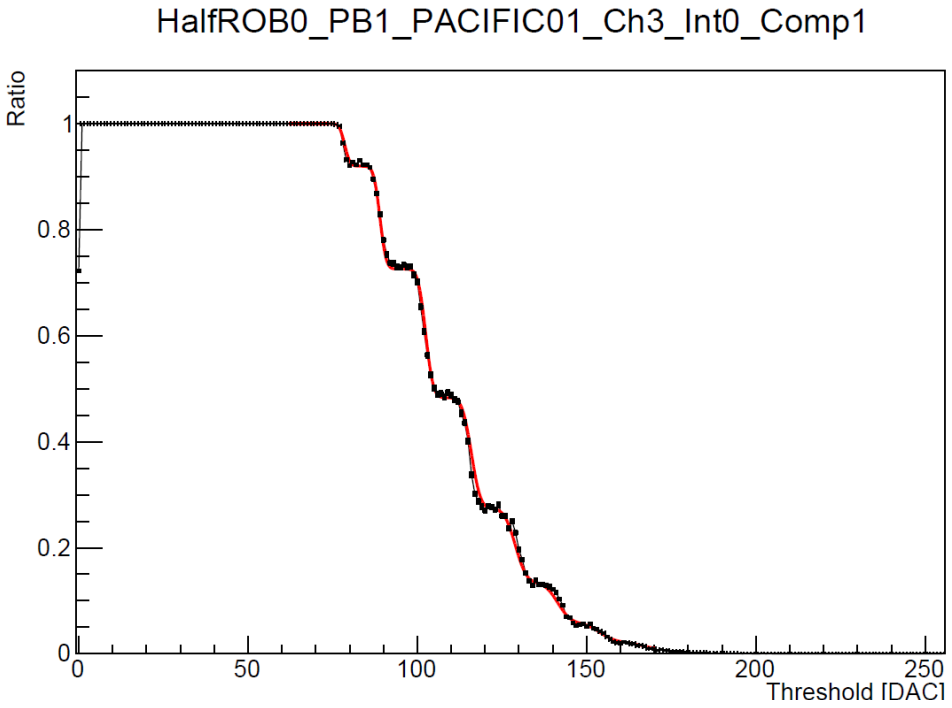


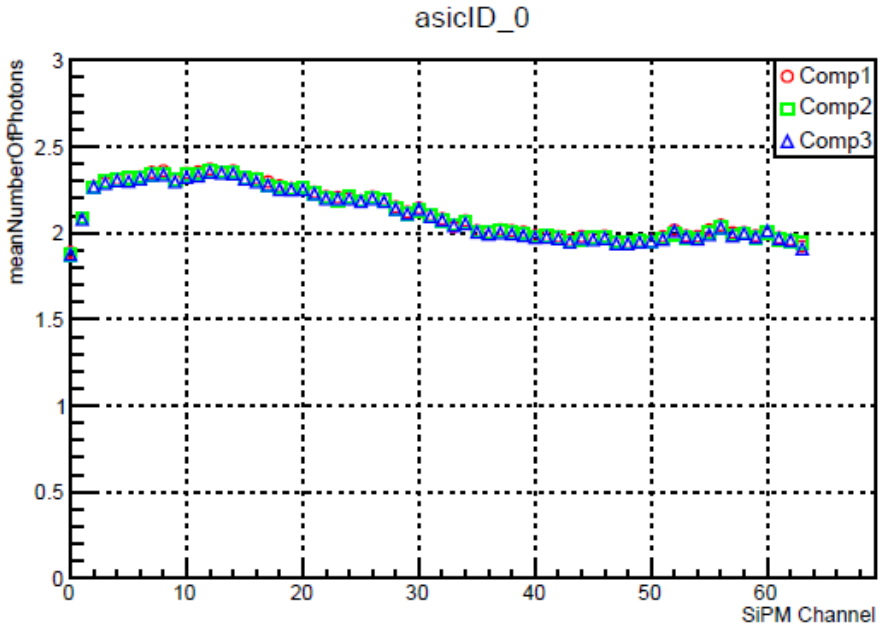
- 3-comparitors per channel in PACIFIC to form clusters



- Threshold scans to determine SiPM gain and set cluster thresholds

- Calibration light yields look good

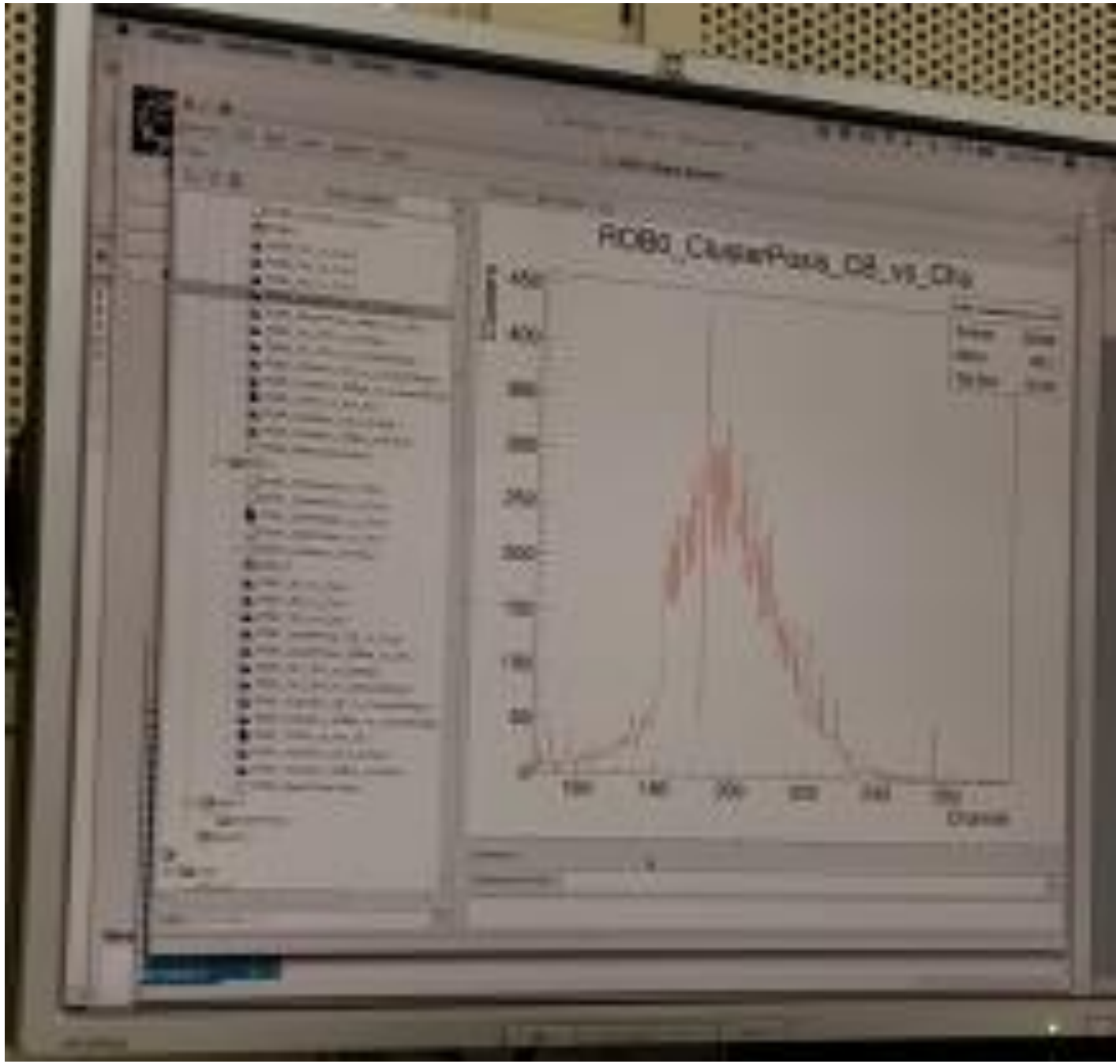




Many firmware updates for the miniDAQ2 by experts needed

But...

Saw first clusters in the system on Tuesday night!

- BX-ID aligned tracks with telescope last night

- We collect about 500k tracks per spill