Detectors

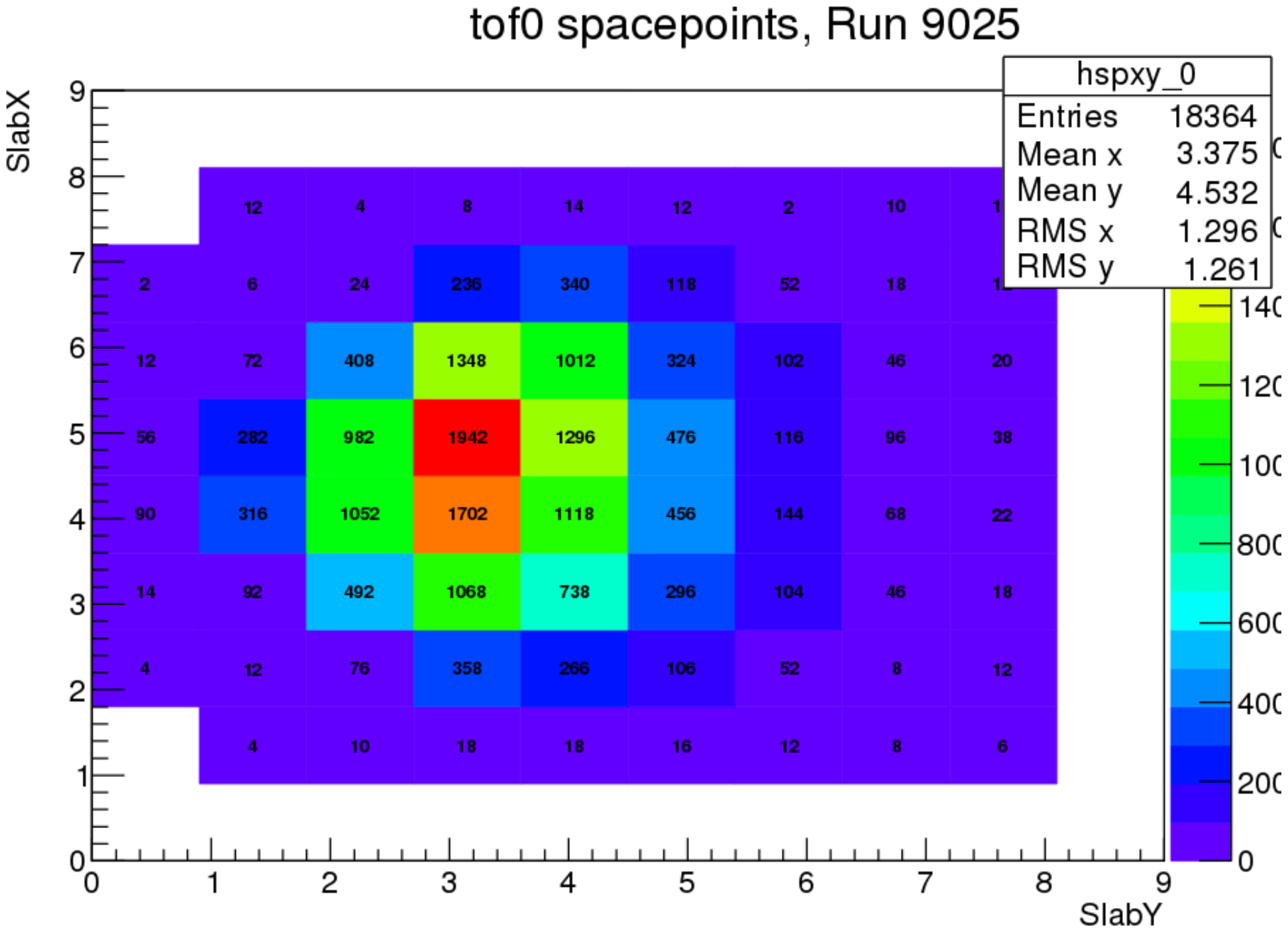
(DAQ and Trigger)

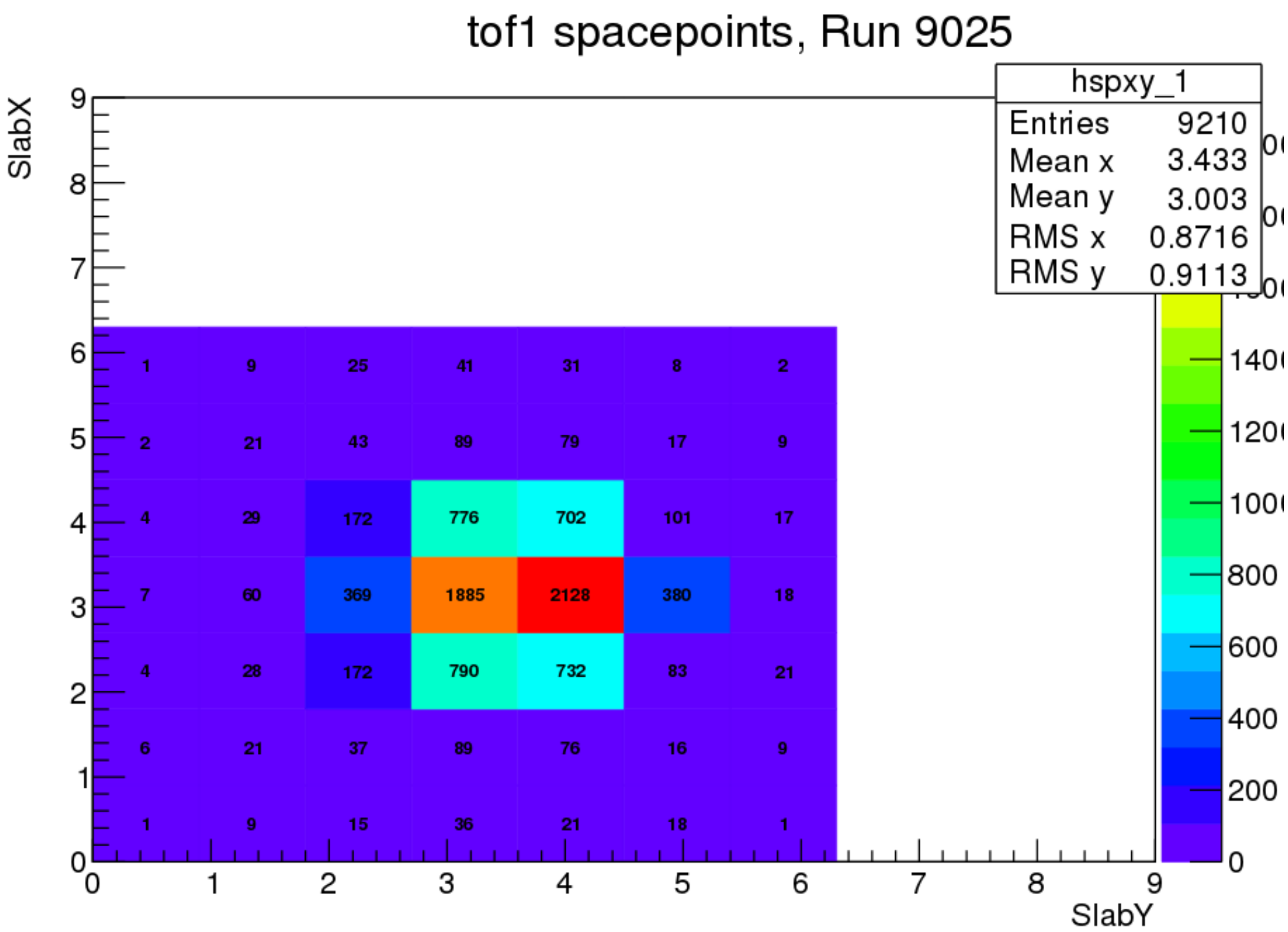
I'll present a quick summary and some reconstruction plots from each detector from the “expert” led run on Saturday.

Edward Overton
University of Sheffield

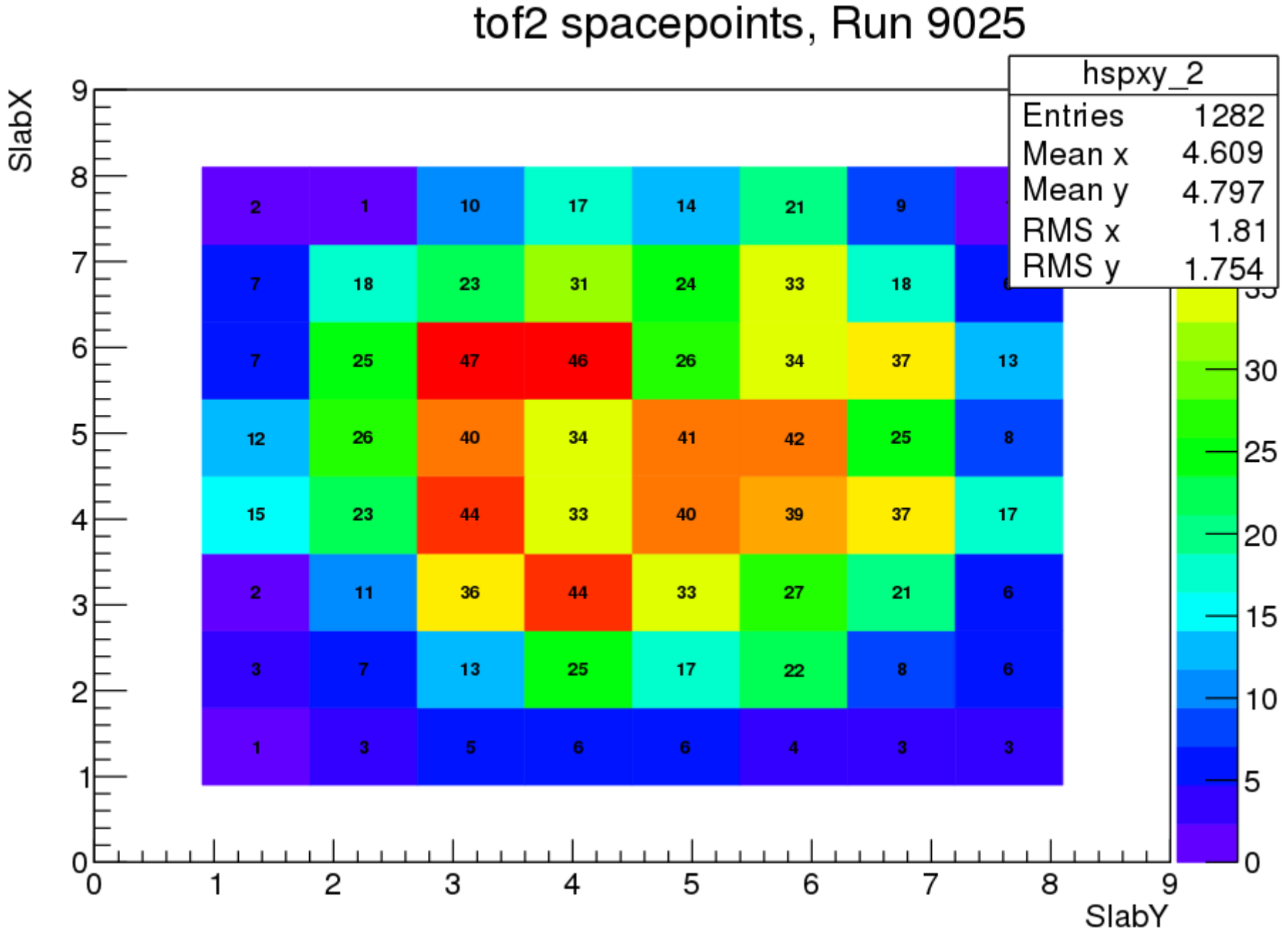
Time of Flight
(stable, excellent condition)

- Well tested detector
- Been operated since Step I
- Last year:
  - HV supply was moved to a new SY4527 crate.
  - TOF2 had a broken PMT, which was fixed by Mauritzio (et al).
- Read out using CAEN digitisers and TDCs
- No sign of dead pixels


tof0 spacepoints, Run 9025
hspxy_0
Entries 18364
Mean x 3.375
Mean y 4.532
RMS x 1.296
RMS y 1.261
SlabX
SlabY
12 4 8 14 12 2 10
2 6 24 236 340 118 52 18
12 72 408 1348 1012 324 102 46 20
56 282 982 1942 1296 476 116 96 38
90 316 1052 1702 1118 456 144 68 22
14 92 492 1068 738 296 104 46 18
4 12 76 358 266 106 52 8 12
4 10 18 18 16 12 8 6


tof1 spacepoints, Run 9025
hspxy_1
Entries 9210
Mean x 3.433
Mean y 3.003
RMS x 0.8716
RMS y 0.9113
SlabX
SlabY
1 9 25 41 31 8 2
2 21 43 89 79 17 9
4 29 172 776 702 101 17
7 60 369 1885 2128 380 18
4 28 172 790 732 83 21
6 21 37 89 76 16 9
1 9 15 36 21 18 1

Time of Flight



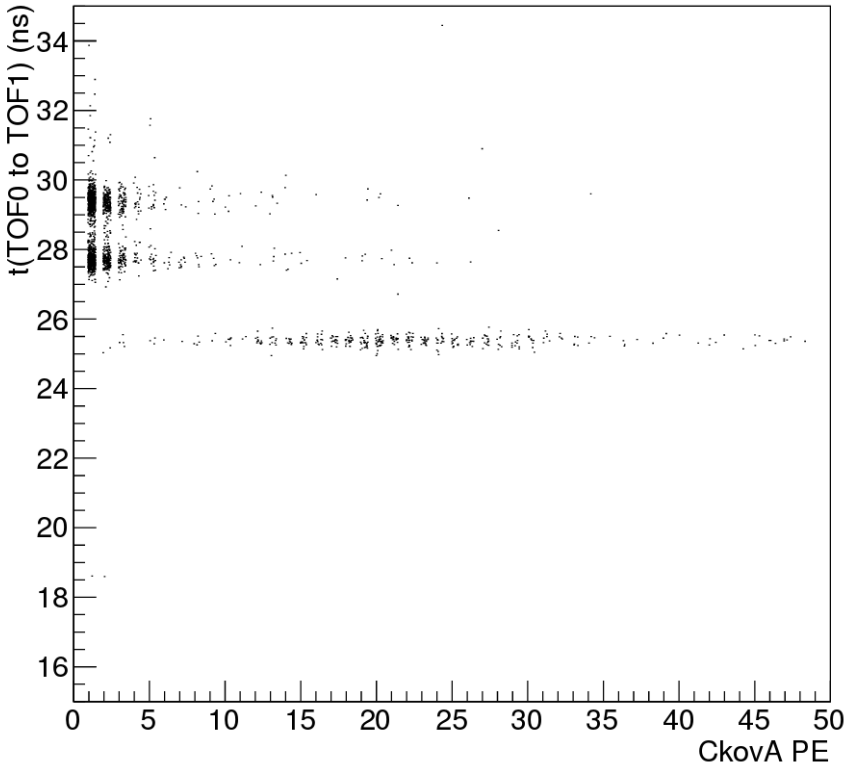
CKOV

(stable, excellent condition)

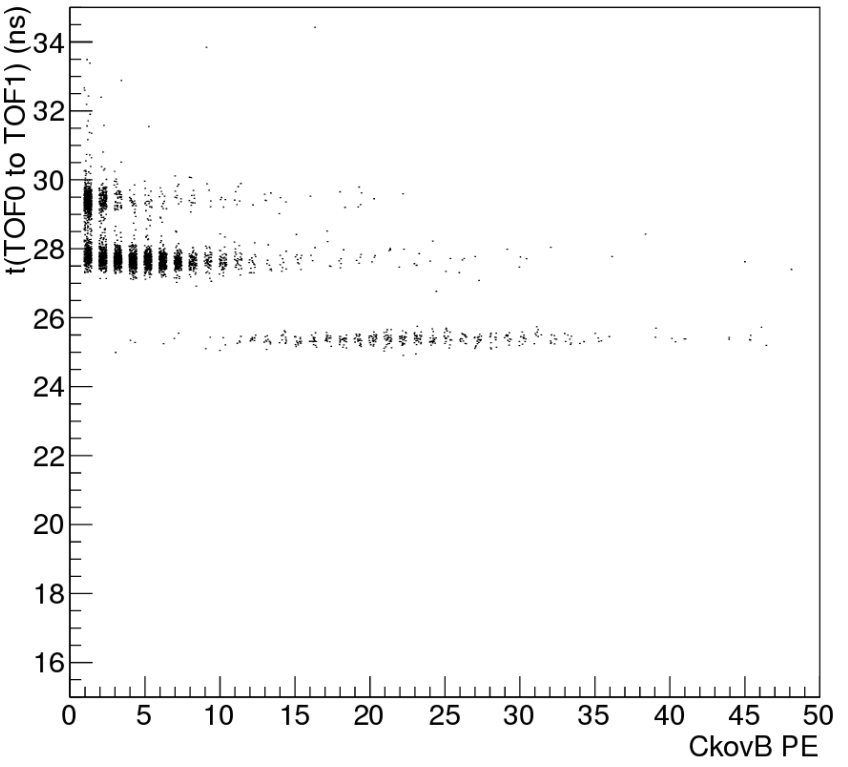
- Well tested detector
- Been operated since Step I

- HV now supplied from EMR SY5427 crate
- Read out using CAEN digitisers

tof_A

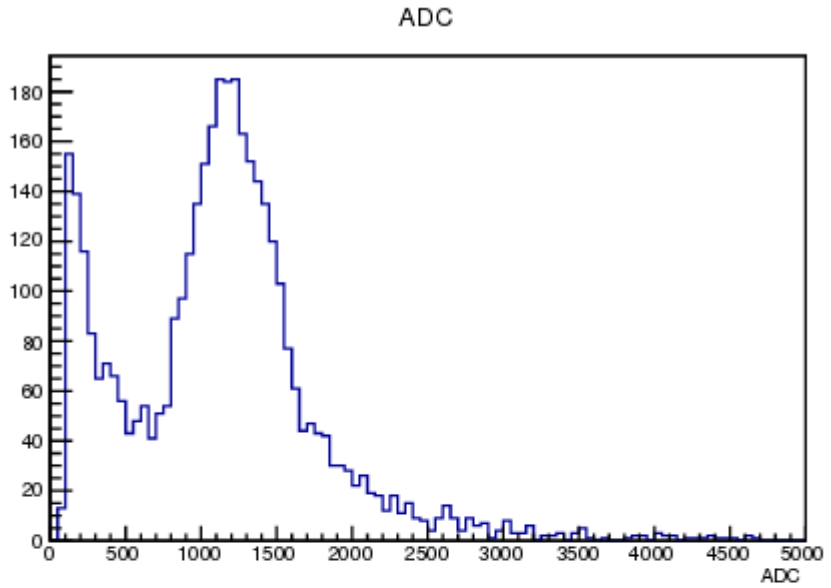


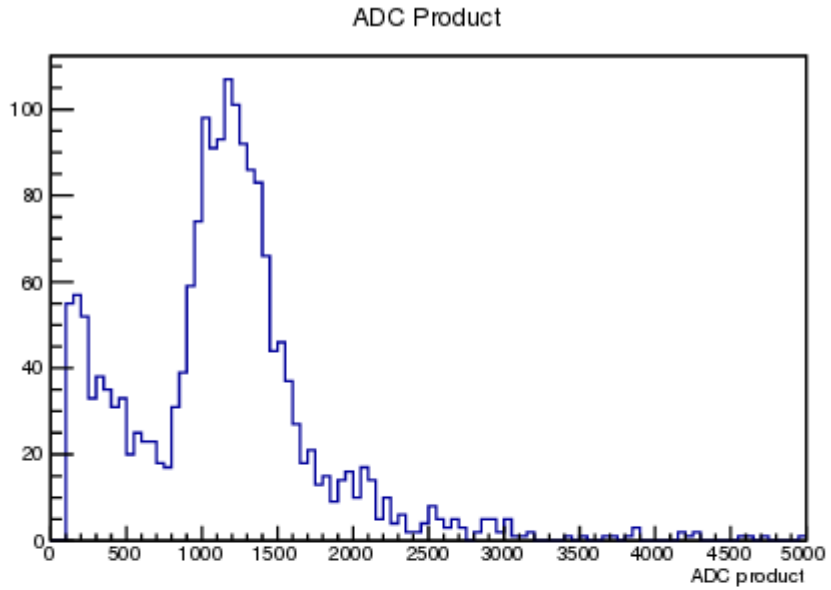
tof_B

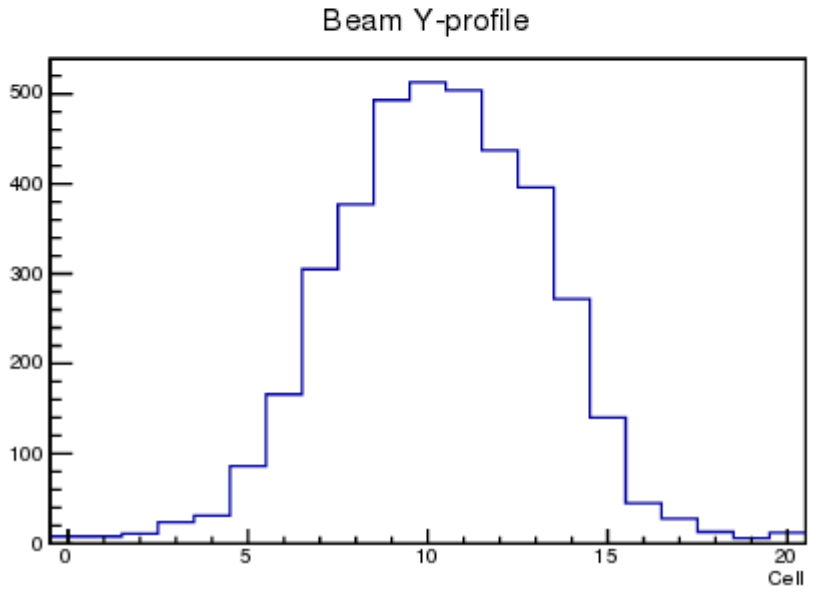


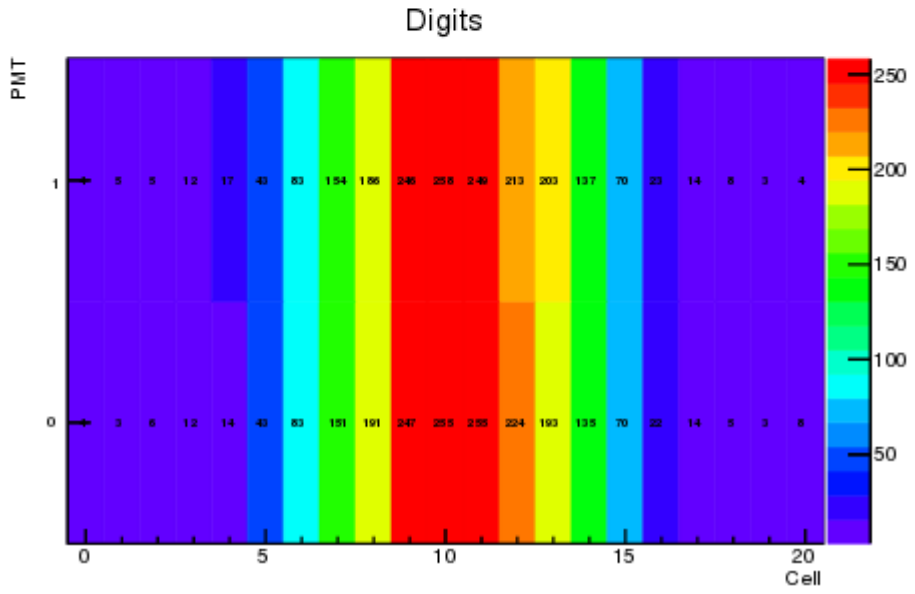
Kloe Light

(stable, excellent condition)









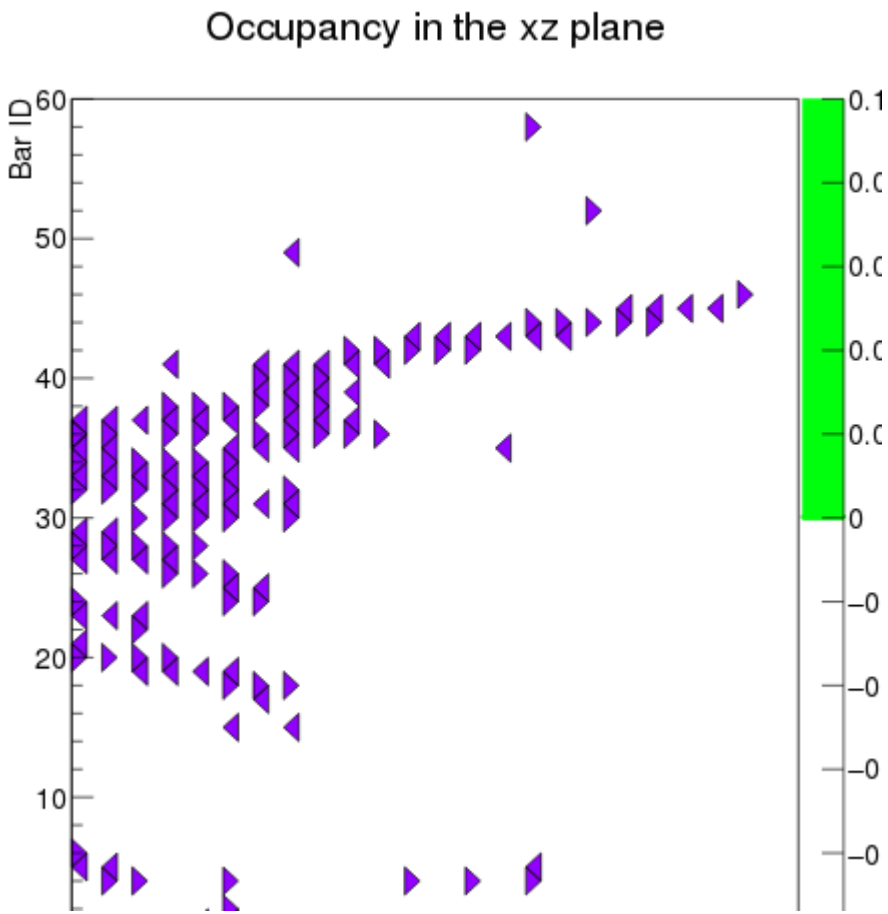
Electron Muon Ranger

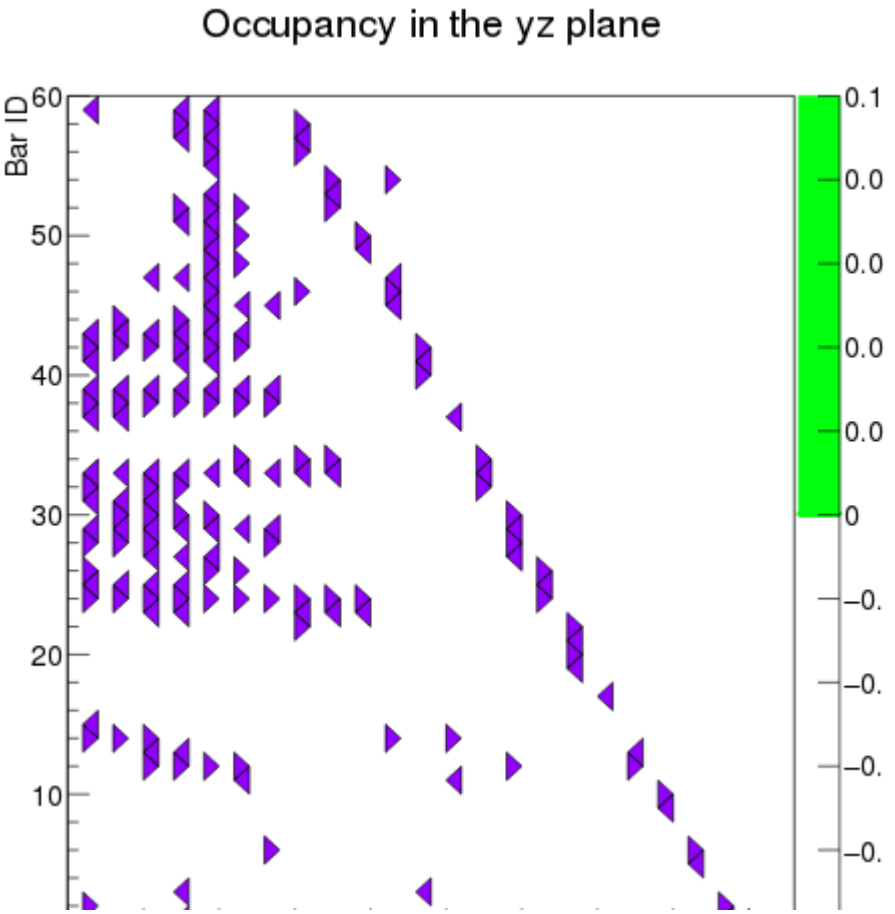
(at-risk, excellent condition)

- Well tested detector
- Had some DAQ related issues during expert led run
  - 1/500 spills see internal trigger mismatches/inconsistencies on boards connected to the detector.
  - Reconstruction plot yields less hits than expected.
  - Currently under investigation with François.

Electron Muon Ranger

(at-risk, excellent condition)





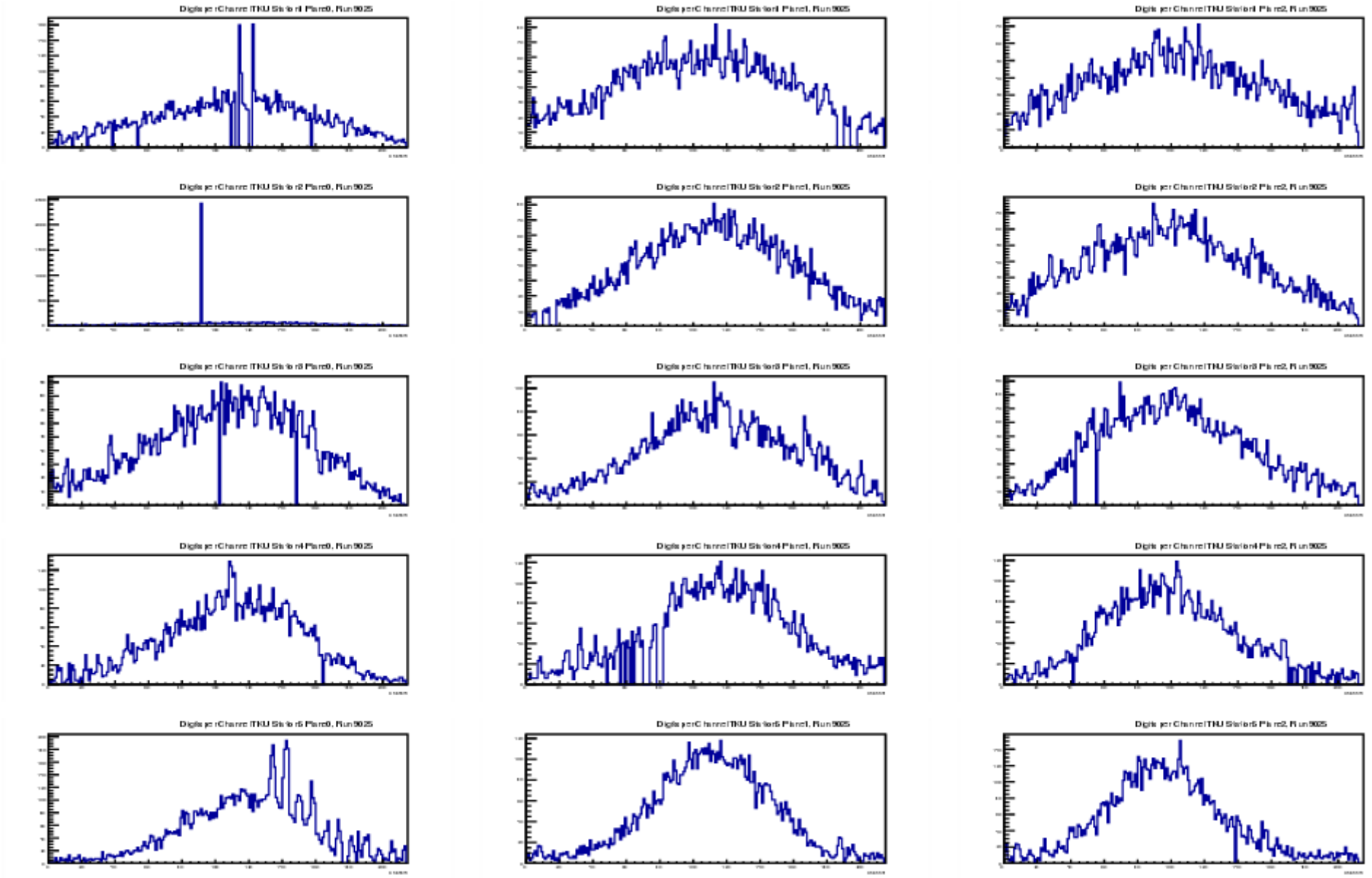
Tracker

(at-risk, degraded condition)

- Cold in hall since October 2014.
- Cold head performance is degrading:
  - Will run VLPC's (nominal 9K) hotter to maintain temperature regulation.
  - Current settings are 9.5K, in some cases and 10K is planned in the next 6 months.
- Last year had unplanned warm ups:
  - Moisture degraded performance of Cryostat 3. This has introduced dead regions in TKD.
  - Warm up of Cryostat 4 changed internal thermal links.
- Occasional (15%) Trigger mismatch with DAQ was observed on Saturday, but has 'fixed itself' this week. Will be vigilant for recurrences.

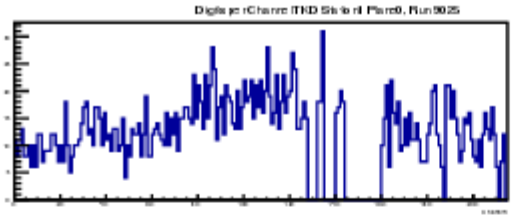
Tracker Digits (US)

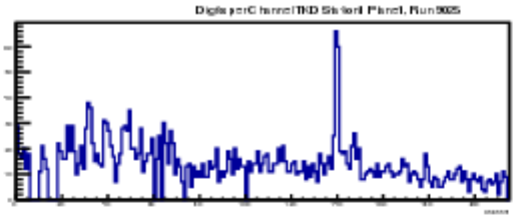
(at-risk, degraded condition)

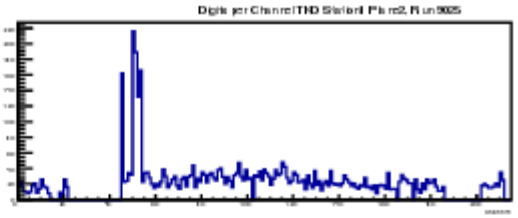


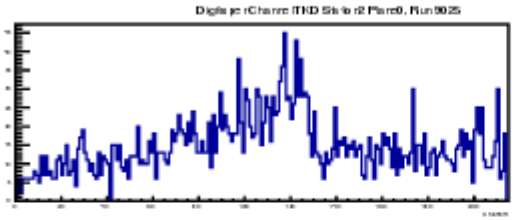
Tracker Digits (DS)

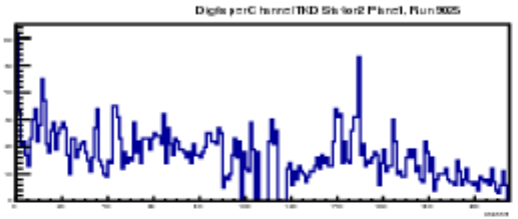
(at-risk, degraded condition)

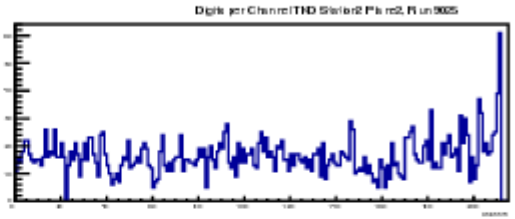


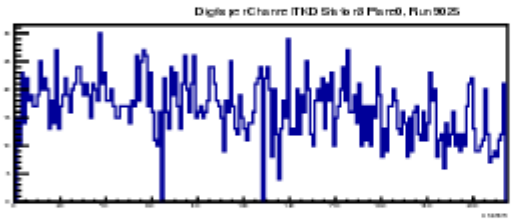


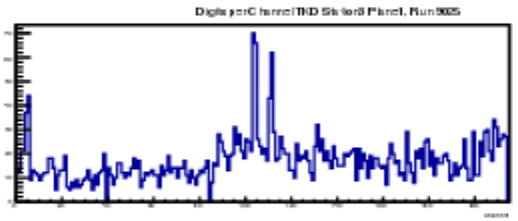


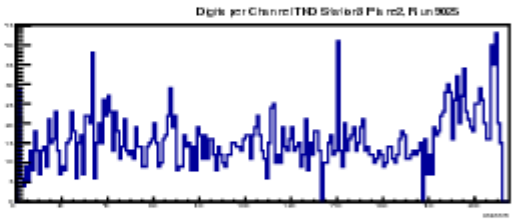


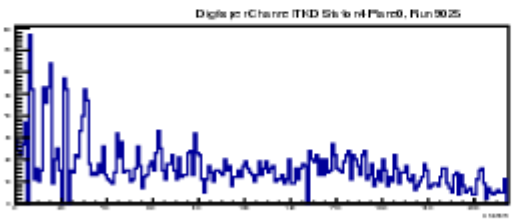


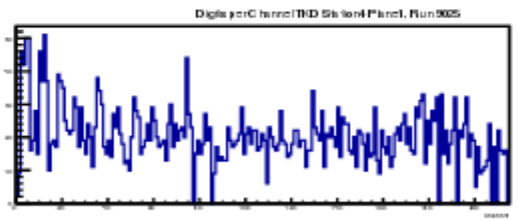


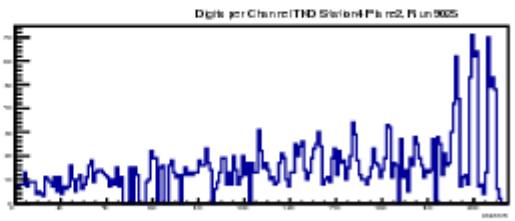


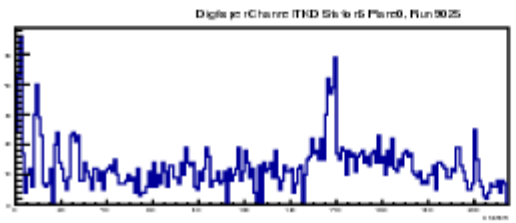


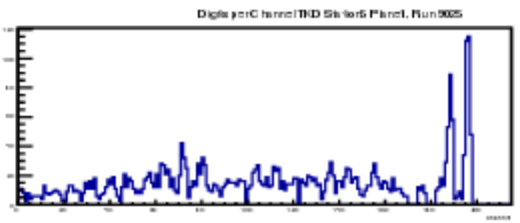


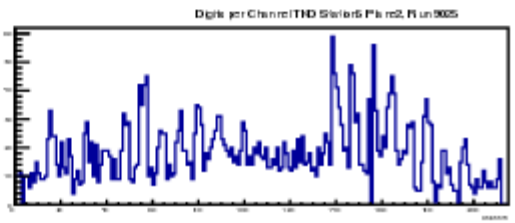












DAQ

(good, excellent condition)

- DAQ system has been used continuously through MICE
- Stable code
- Minor modifications to integrate with EPICS:
  - Hall probes
  - Run information
- Rollback is available through git repository
- Spare computers for the Local Data Concentrators & Global Data Concentrators exist.
- In good shape

Trigger
(good, excellent condition)

- New FPGA-based programmable trigger was installed before step IV.
- Stable code
- Development version to add prescaled triggers
  - Not properly tested, Yordan hoped to get beam before leaving to debug some final features.
- In good shape

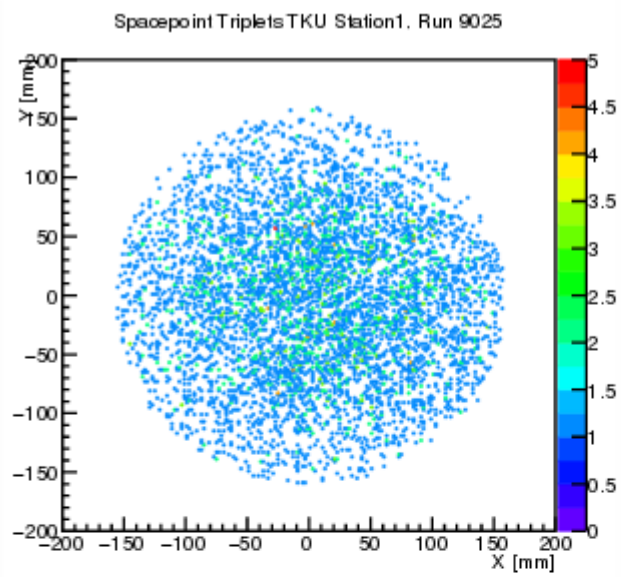
Thanks for listening

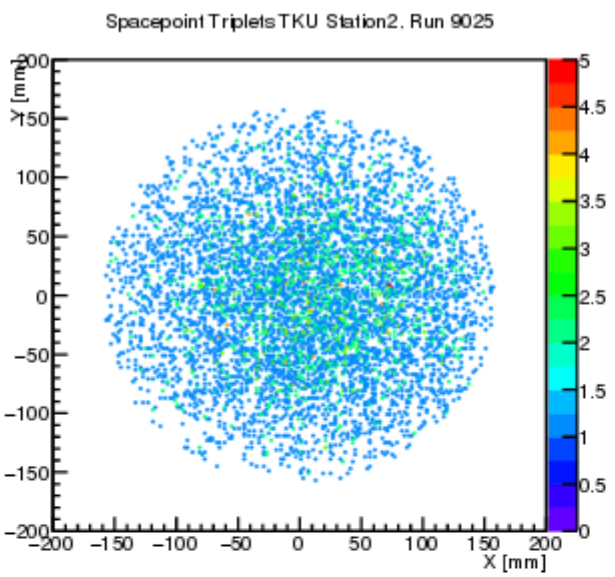
Any (extra) Questions?

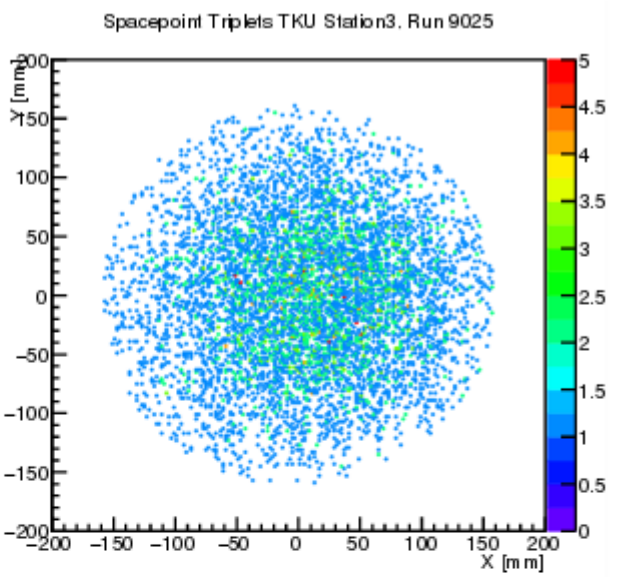
If you need me, I'll be in the counting room
polishing the DAQ racks.

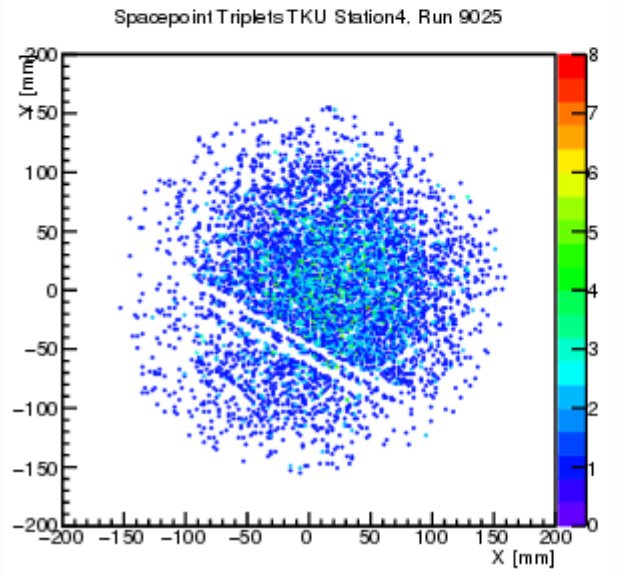
Tracker SP Triplets (US)

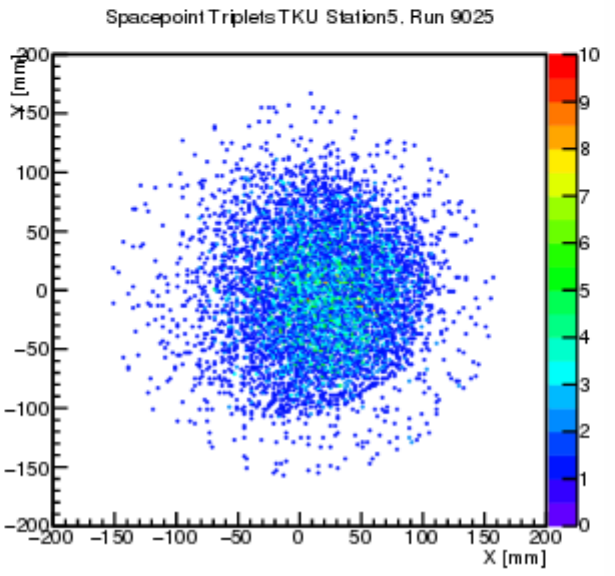
(at-risk, degraded condition)





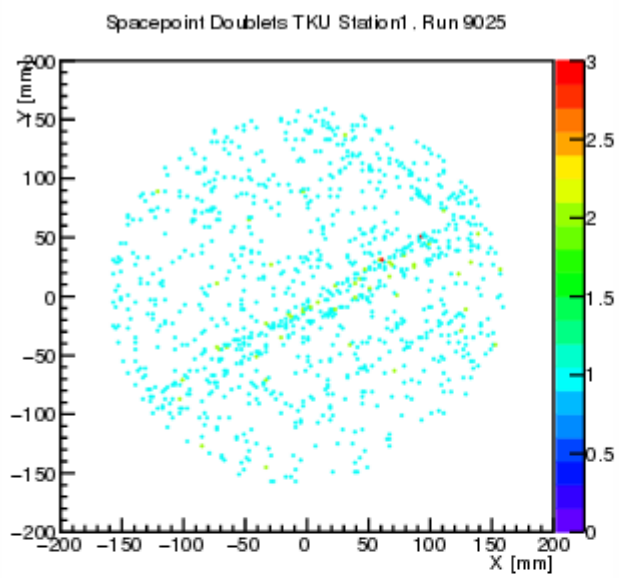


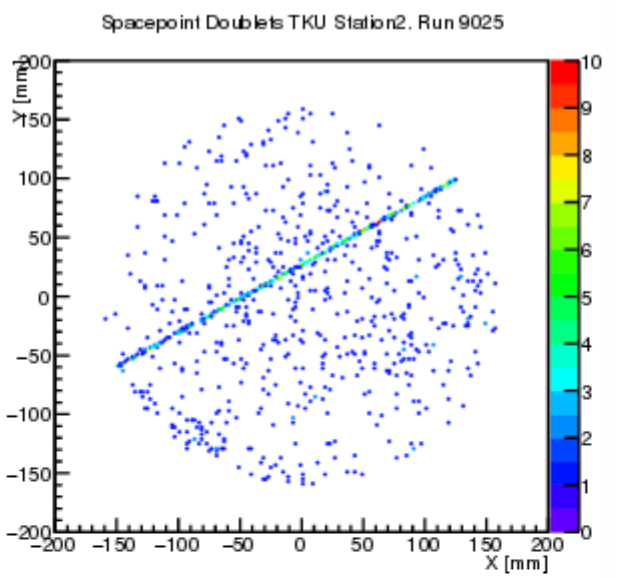


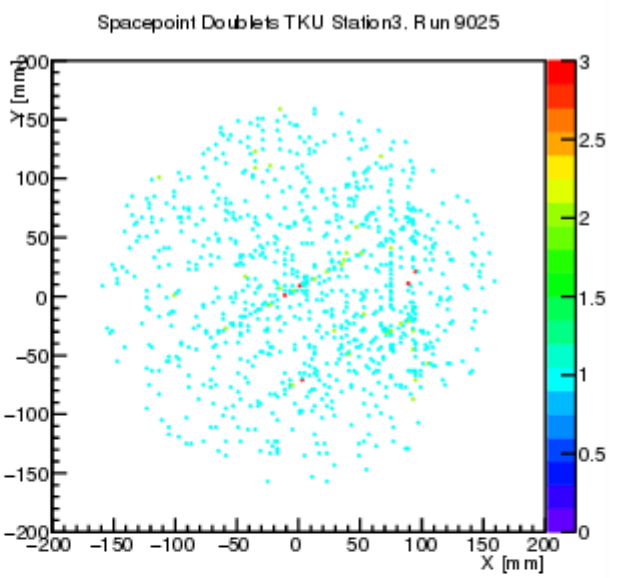


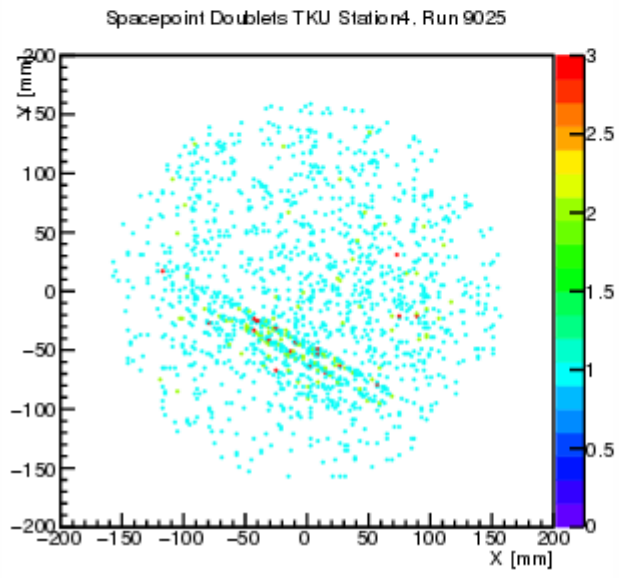
Tracker SP Duplets (US)

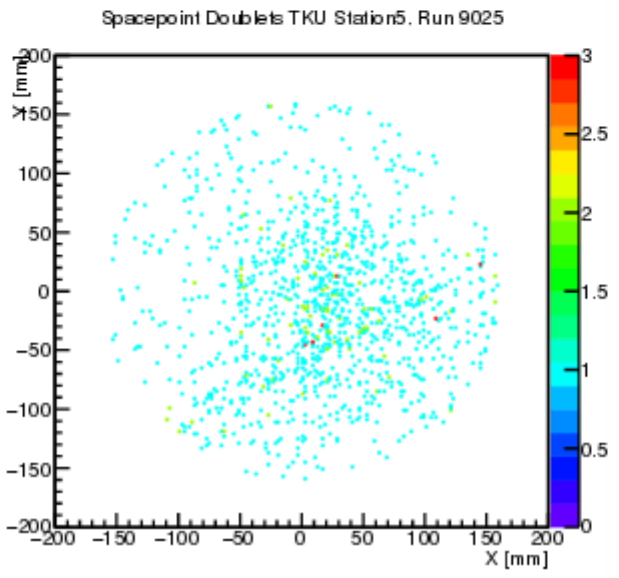
(at-risk, degraded condition)





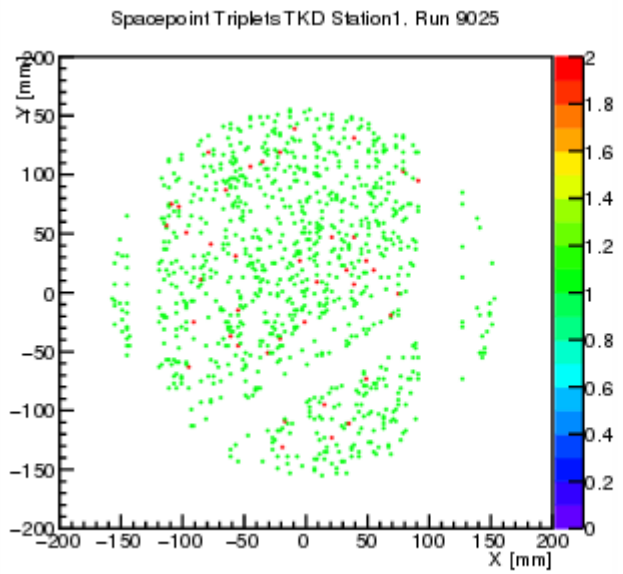


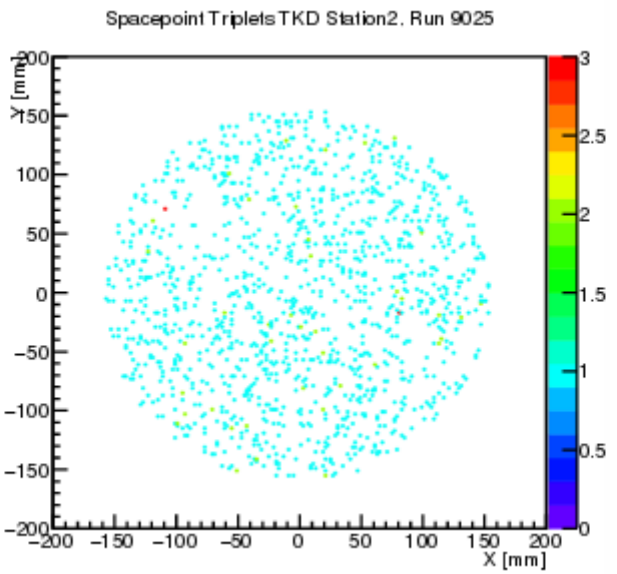


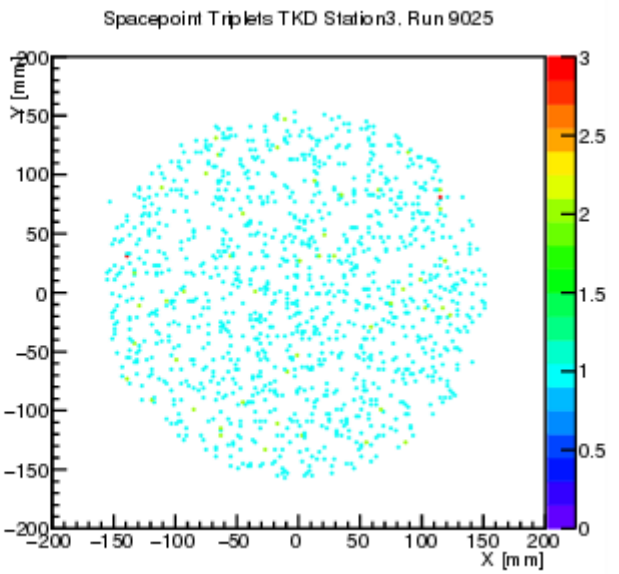


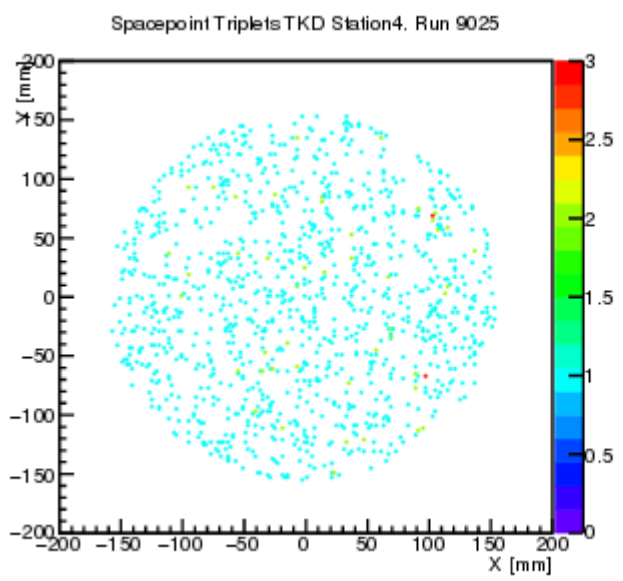
Tracker SP Triplets (DS)

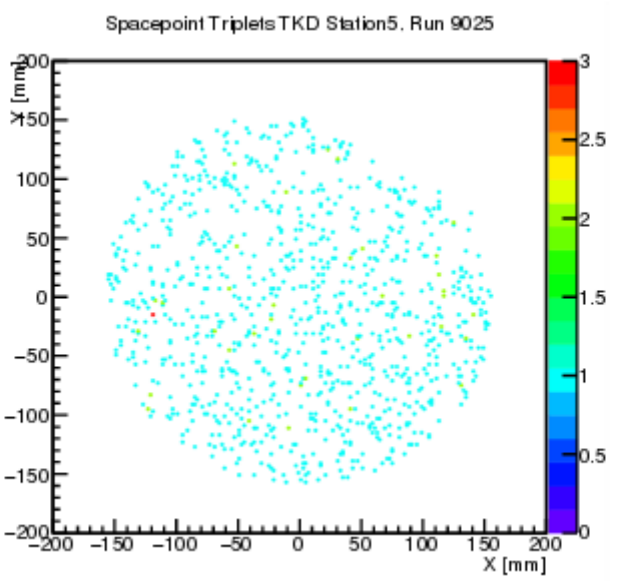
(at-risk, degraded condition)











Tracker SP Duplets (DS)

(at-risk, degraded condition)