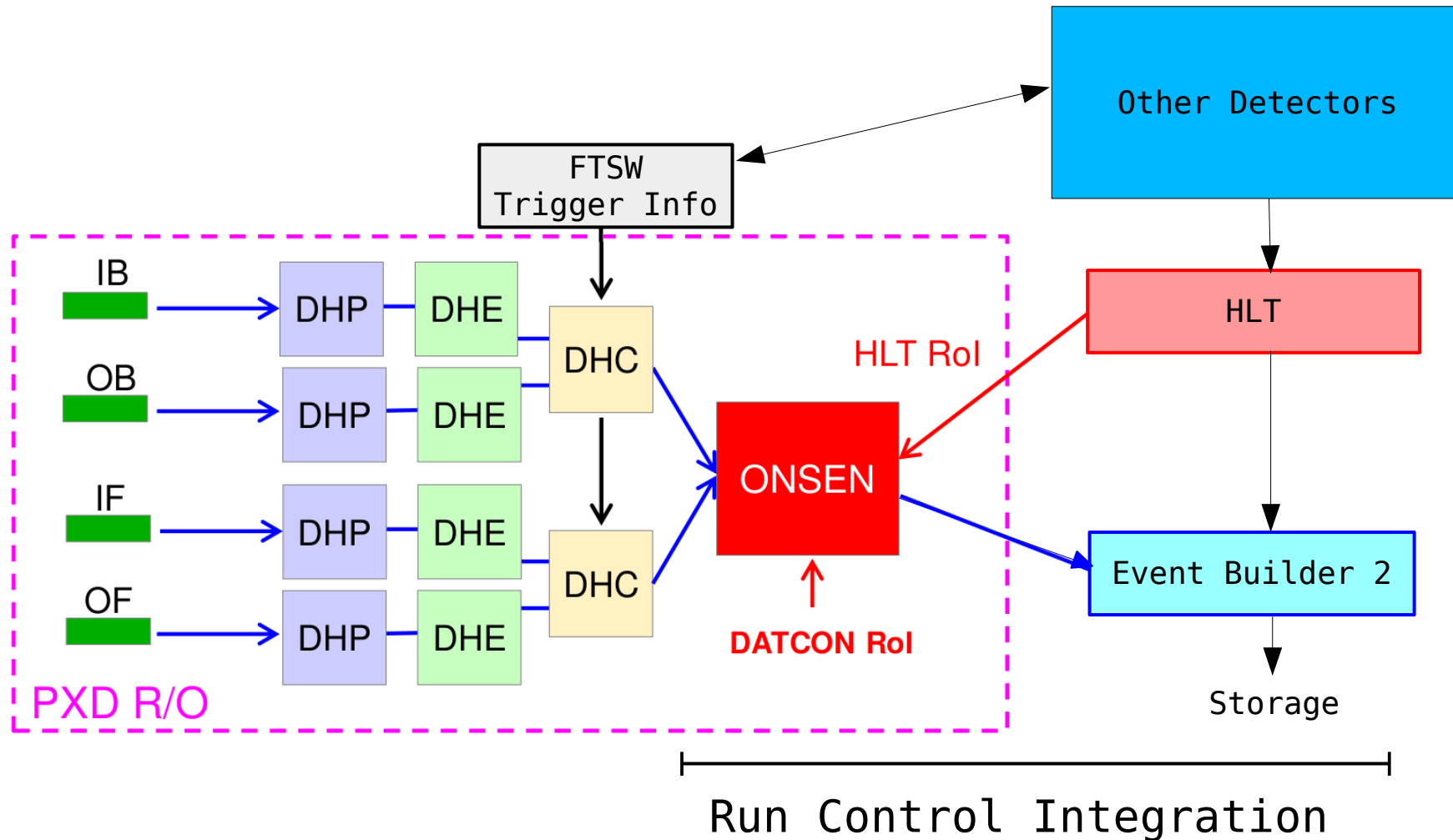


DAQ Integration, GCR, ROIs generation

DAQ Integration



- DAQ integration already tested in autumn 2017.
- HLT → ONSSEN, ONSSEN → EB, FTSW ↔ DHH
- Run Control ↔ Global RC

DAQ Integration Summary

- No major issues with PXD (DAQ/integration) during GCR
 - Stable running
 - Took part in most of GCR
 - TB exercise and early setup in autumn payed off
- Minor problems
 - ROI generation/sender integration in HLT (not so much from the process itself, but switching it on/off, if PXD was to be included/excluded in DAQ) → fixed
 - DHH needs trigger deadtime (no overlapping events), limits trigger rate
 - If there is something wrong, we got immediate ERROR after run start. (More error checks in hard-/firmware → Avoid to take broken data)
- No problems from Run Control side
 - Network and firewall

DAQ Integration Summary

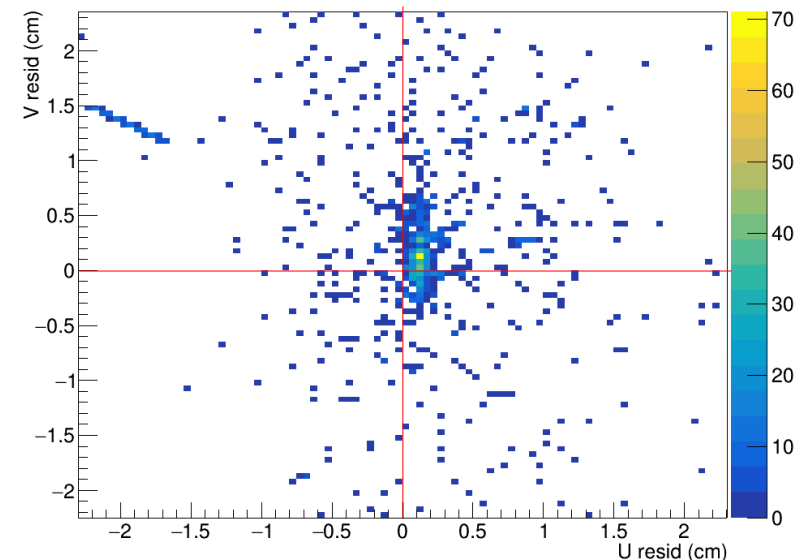
- Time without magnetic field was used for local runs
 - DHH firmware development and tests
 - Module optimization
 - DAQ tests
- DATCON
 - Added for some runs (incl RC), check that trigger data is consistent
- HLT: ROI feedback
 - For test full module ROIs and/or “send all” flag were used
 - Fixed script on HLT
 - Real ROI calculation was not foreseen for GCR (and scripts not prepared)

ROI Generation on HLT, Online “Performance”

- Online ROI generation (but no selection on hardware!) is switched on since March 15.
 - ROI feedback mechanism ✓
 - Statistic is low → hard to judge performance (~1000 ROIs altogether until beam start)
- Observations:
 - Most of ROIs have a pxd cluster or tracklet inside or nearby.
 - Misalignment of order 20-30 pixel (~1-2mm) consistent with offline residuals of track-intercepts and pixel hits
 - ROIs covering both modules of one layer as well as ROIs in both layers for one track have been observed in some events
- Alignment not done yet.
- Remark: ROI calculation has been developed for tracks from IP, not for cosmic tracks. We might lose some tracks which just “touch” module from outside

Offline calculation (HLT on data)

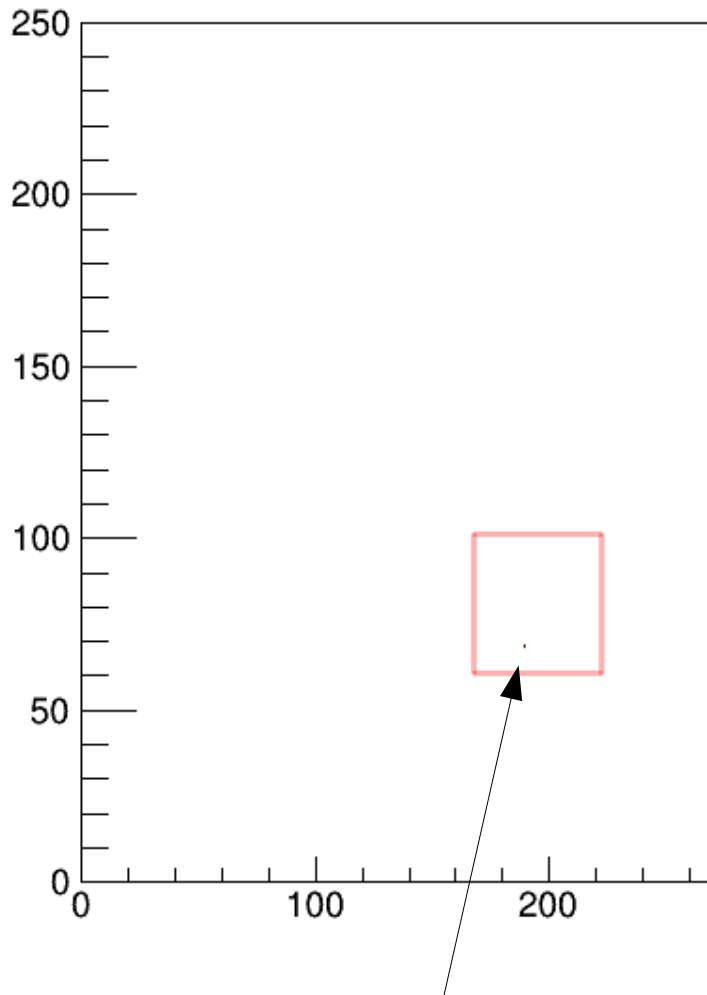
V vs U residuals = intercept - digit, for sensor 2_1_2



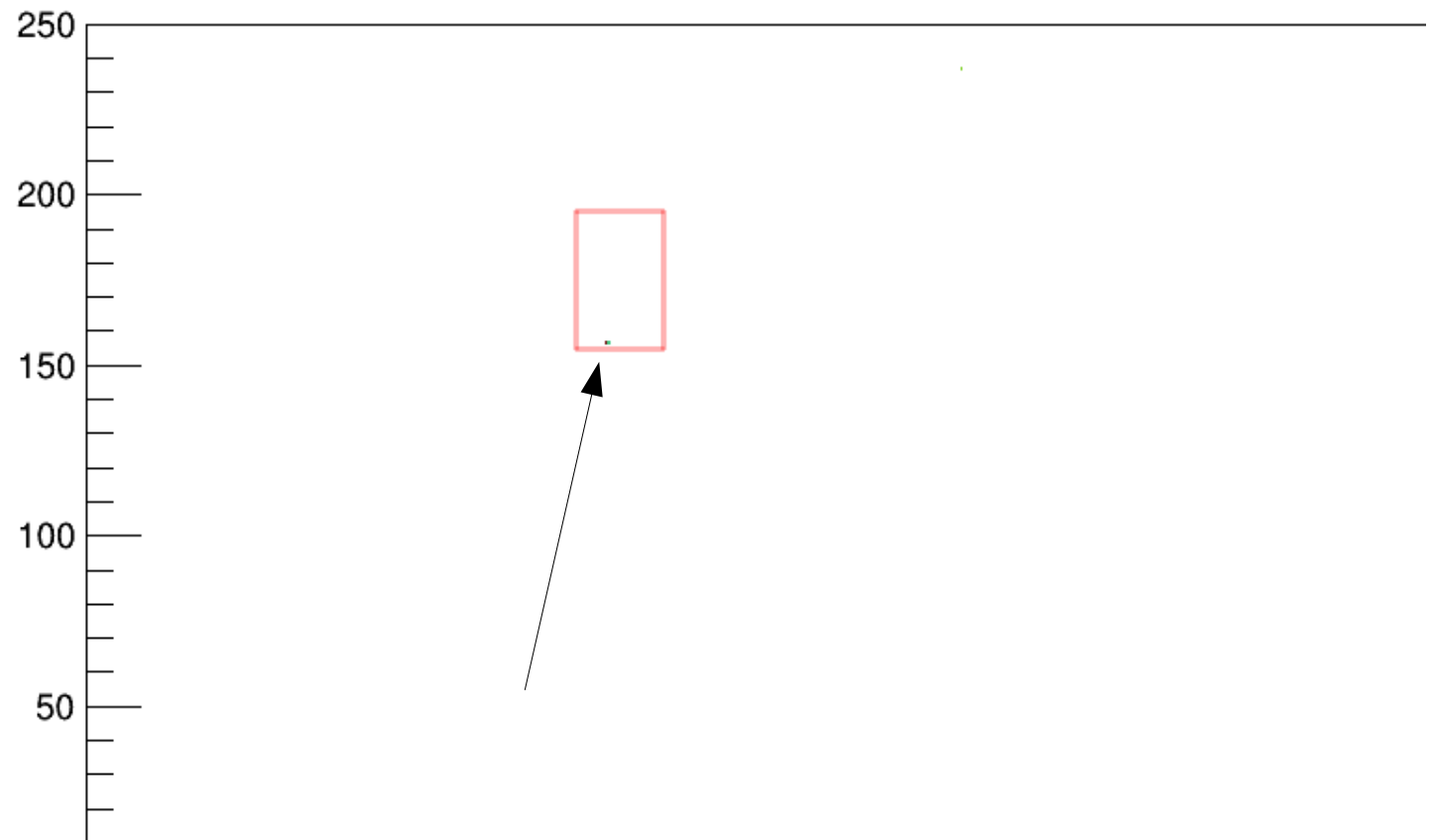
Selected Examples

Online HLT ROIs and recorded PXD data from recorded files.
Example with two ROI with clusters in both layers.

Run_2766_Evt_5182460_1.1.2



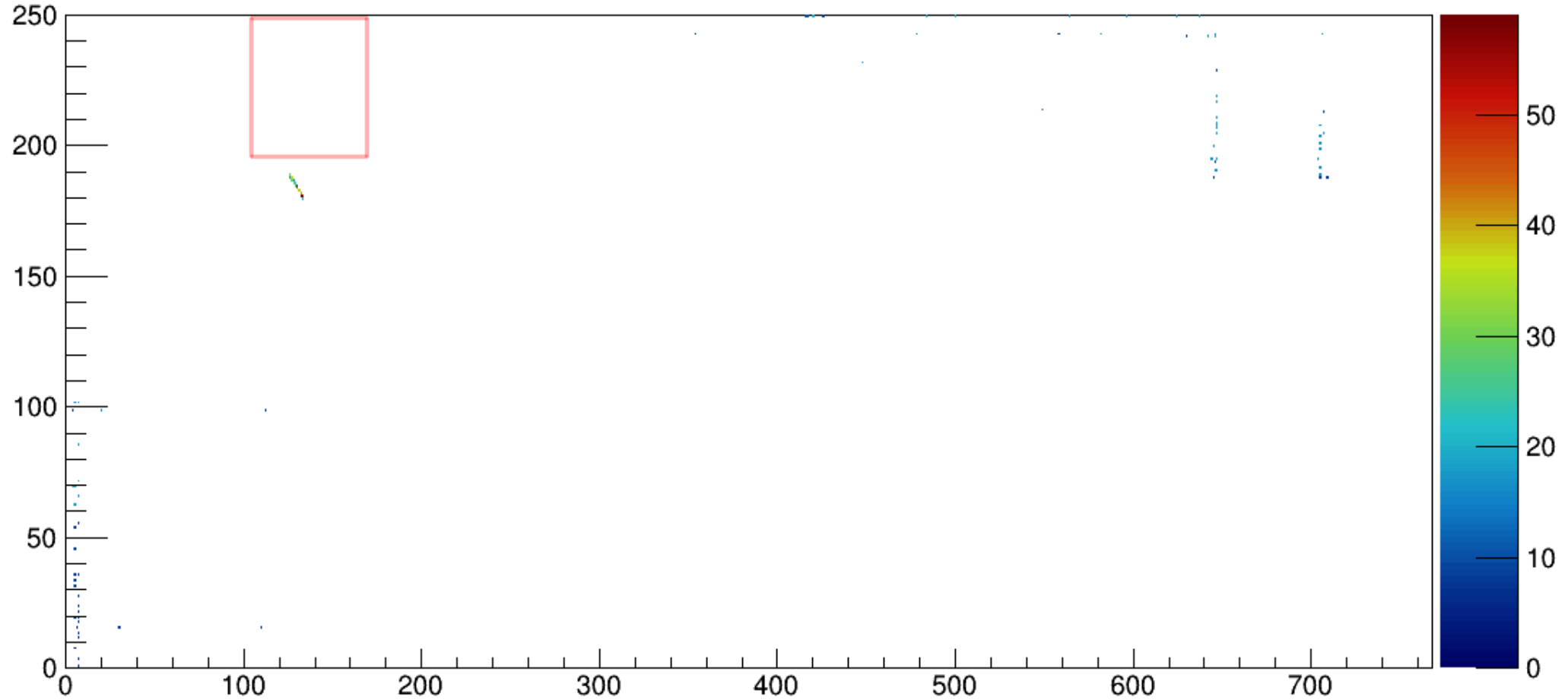
Run_2766_Evt_5182460_2.1.2



Selected Examples

Online HLT ROIs and recorded PXD data from recorded files.

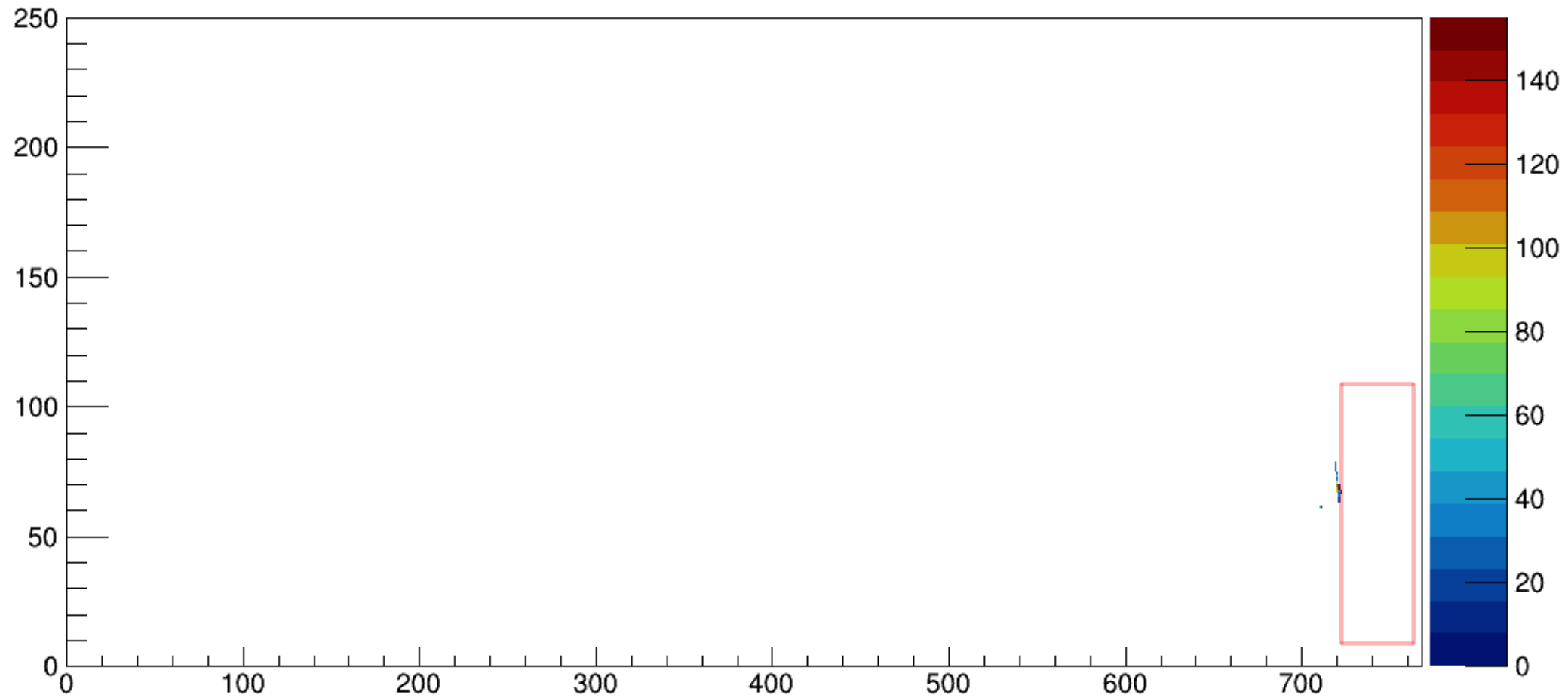
Run_2528_Evt_608_2.1.1



Selected Examples

Online HLT ROIs and recorded PXD data from recorded files.

Run_2766_Evt_6059897_2.1.1



DQM Monitoring

- System could not be tested before GCR
- Global DQM (HLT, ERECO)
 - Old software was used for long time (from GCR in summer, without PXD/SVD/... code)
 - During GCR switch to fixed software release (v01-01) which is running with wrong geometry (too many histograms) and without VXD
- PXDDQM
 - Not allowed to use events server on ERECO (same as event display) due to instability during GCR. This has been fixed. Event server for raw data stream still not available.
- DQM Histogram Server/Web Interface/CSS
 - Currently CSS integration not used; now plain Web Interface seems preferred solution
 - Two different services now for HLT and ERECO DQM plots
- Reference plots “missing” for PXD

(Experts) Shifts

- As PXD (+DAQ) was stable, we often only had on-call shifters and/or remote shifters
- Until now, whoever is at KEK is doing “shifts”, supported by people from Germany.
 - But no “official” shift plan. → Cannot look up who is on shift

GCR “Analysis” and Software

- Number of ROIs by far not match the events we see in PXD
 - CDC, calibration/alignment and/or Tracking issue?
- No real analysis yet.
- Hot pixel filter (Benjamin)
 - Needed for alignment
- Basf2 release v01-02-00 frozen, will be used for phase 2
 - Changes of PXD software
 - Changes of DQM (PXD and others)