IPMI, SlowControl, DQM

Status, Performance, Lessons learned

(Seeon, 13.5.2016)

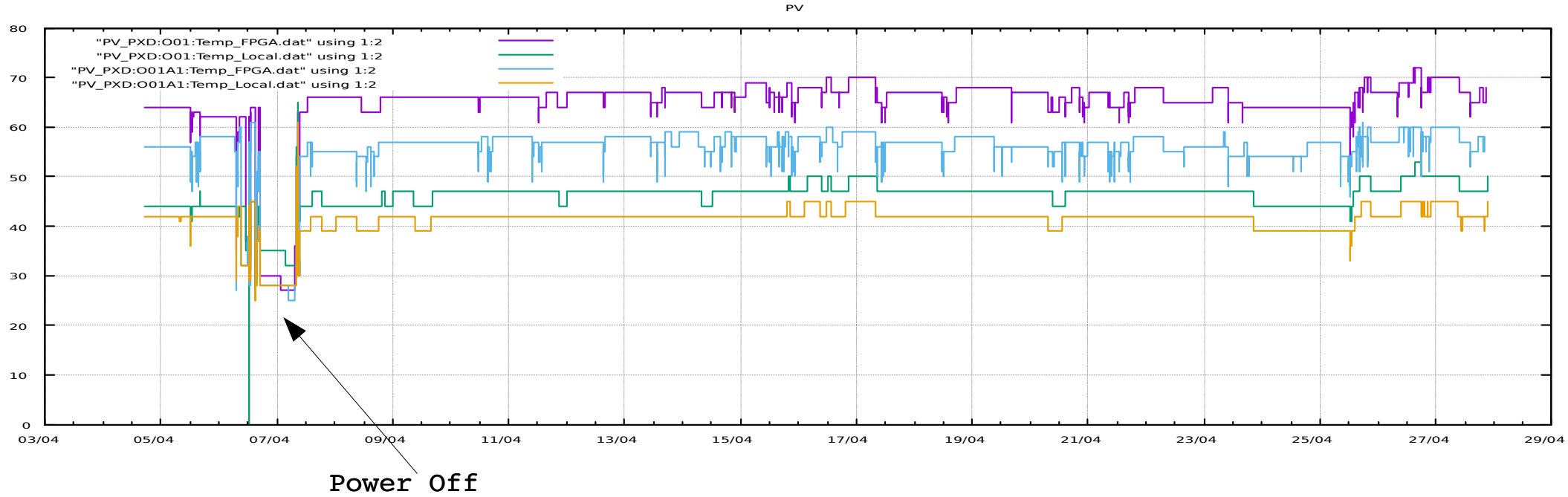
IPMI @ DESY TB

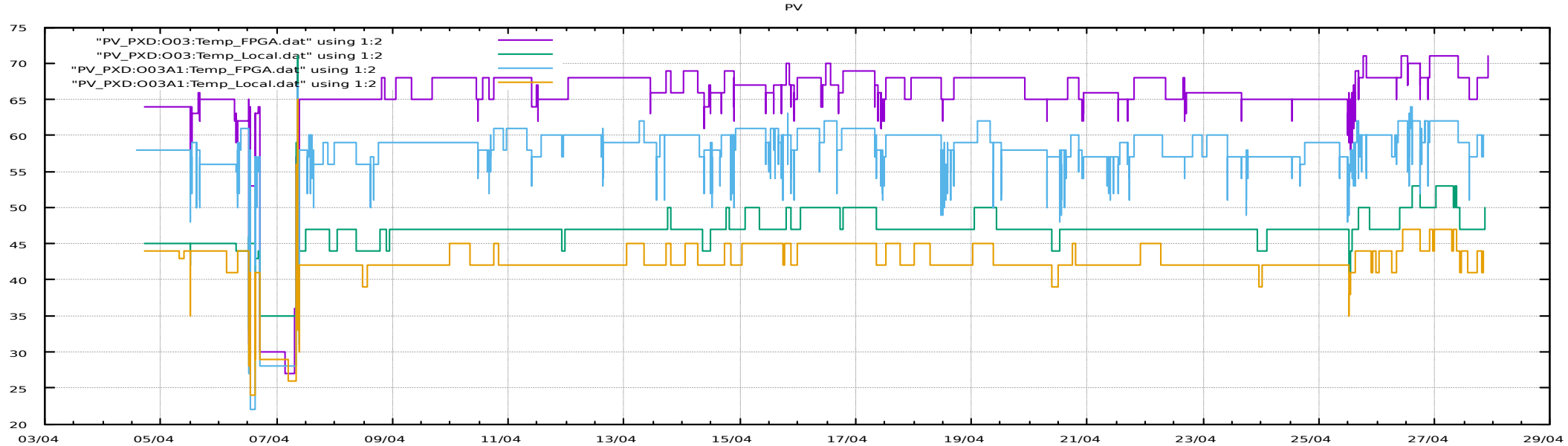
- IPMI – Monitoring and Control Boards
  - 2 IPMC used on ONSEN Carrier
  - 2 MMC used on ONSEN AMC cards
  - (none for DATCON, new shelf was not available yet)
  - ATCA "Pizza" shelf with redundant Shelf Manager (ShM)
  - OPI for shelf, Carrier and AMC, available from repository and web opi.
- Running 24/7; one IOC restart due to changing AMC slots in the first week
- Sensor data (ShM, IPMC, MMC) was archived for the whole beam time
- A few sensors (temperature) were integrated into the alarm system in the last week as test cases.

- Rollout:
  - IPMC/MMC boards provided for KEK test setup

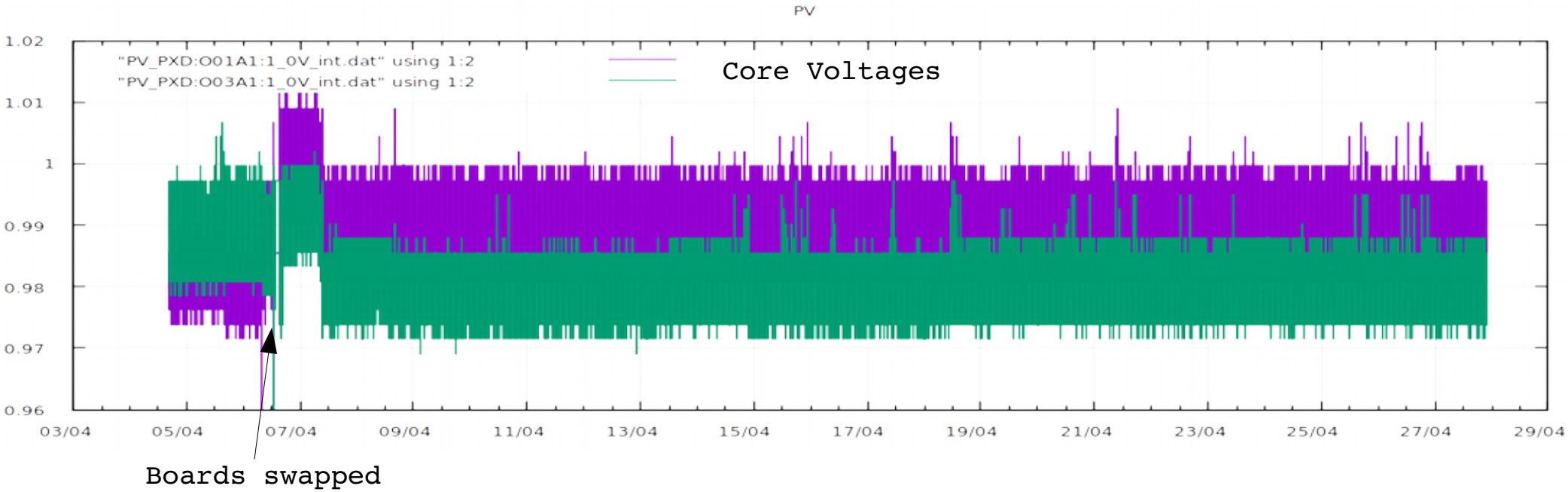
Archived data – Temperatures

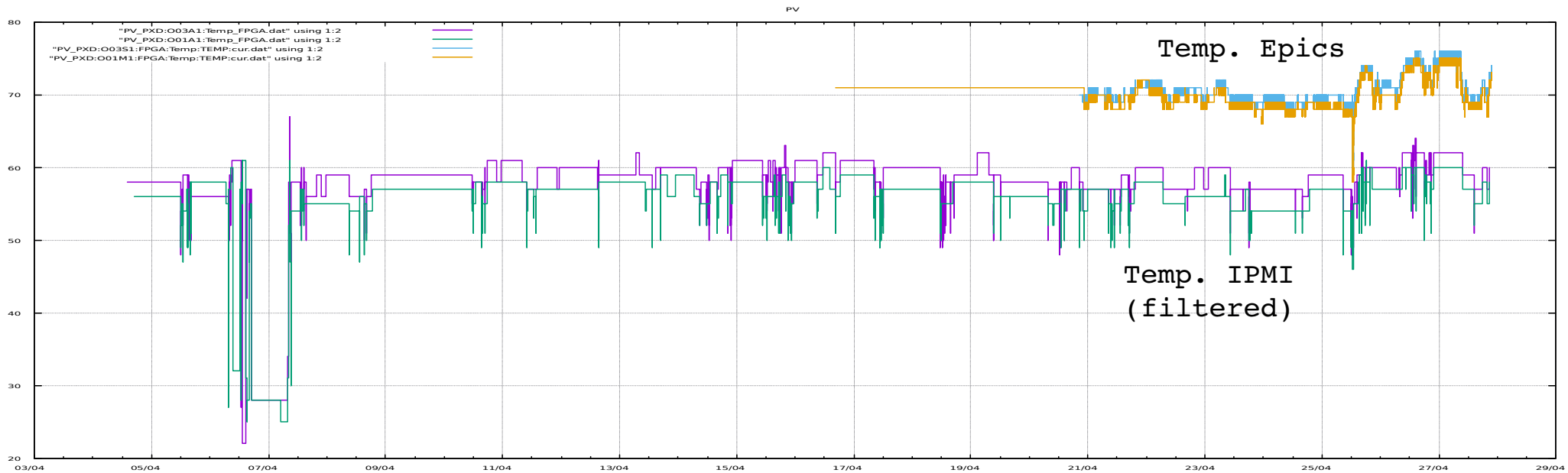
(Data is pre-filtered for storage reason, only changes >2 shown)



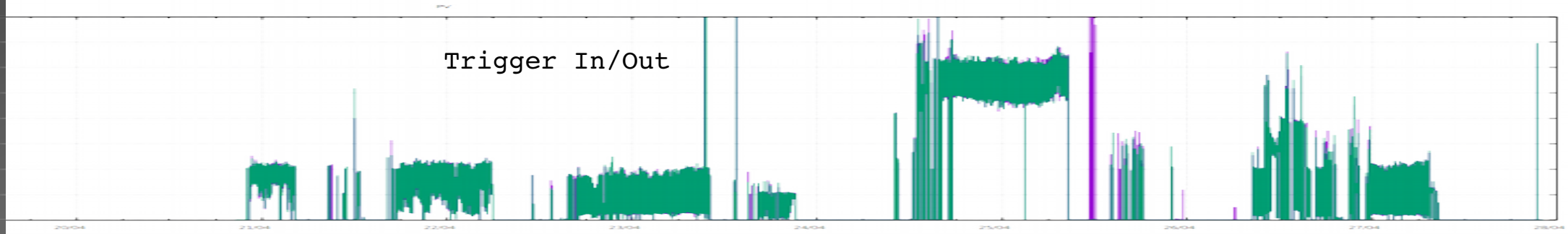


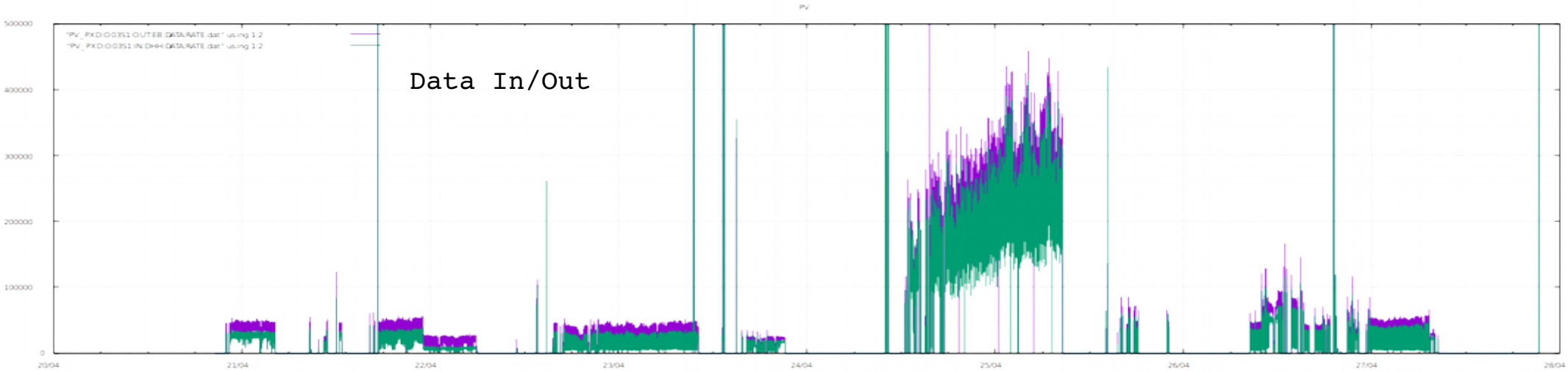
Archived Data

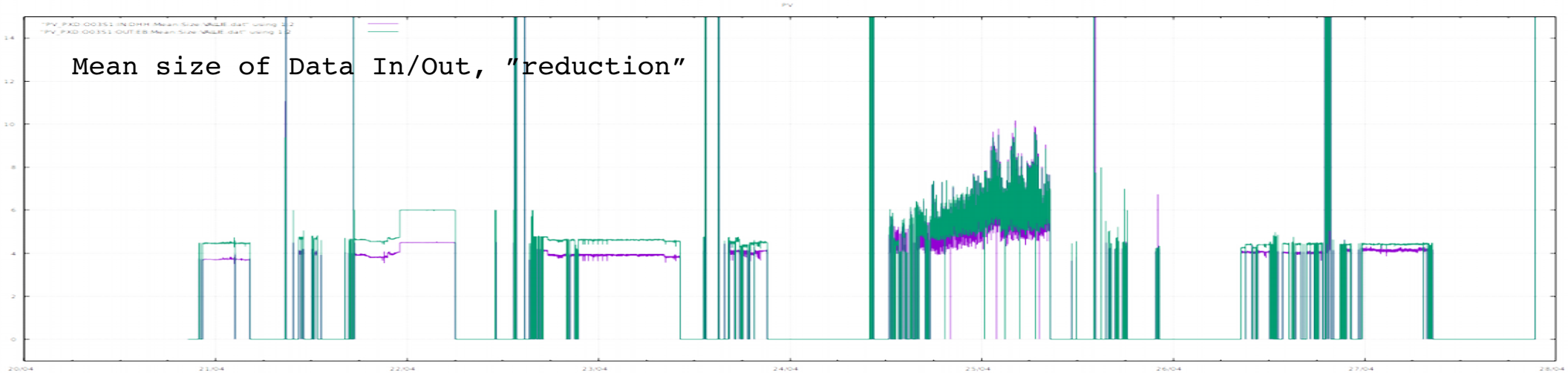




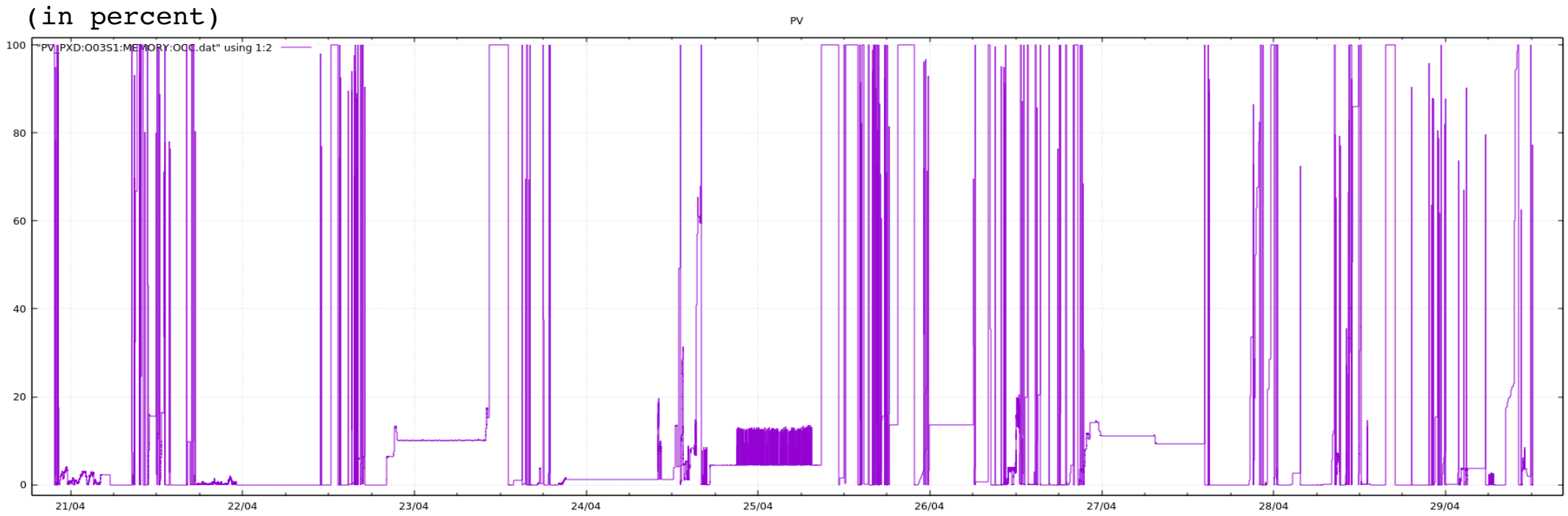
Rates and Reduction







Memory Occupancy



- Occupancy on Selector – depending on trigger rate and HLT computing time
  - 100% – firmware

Preparations for Test Beam @ DESY

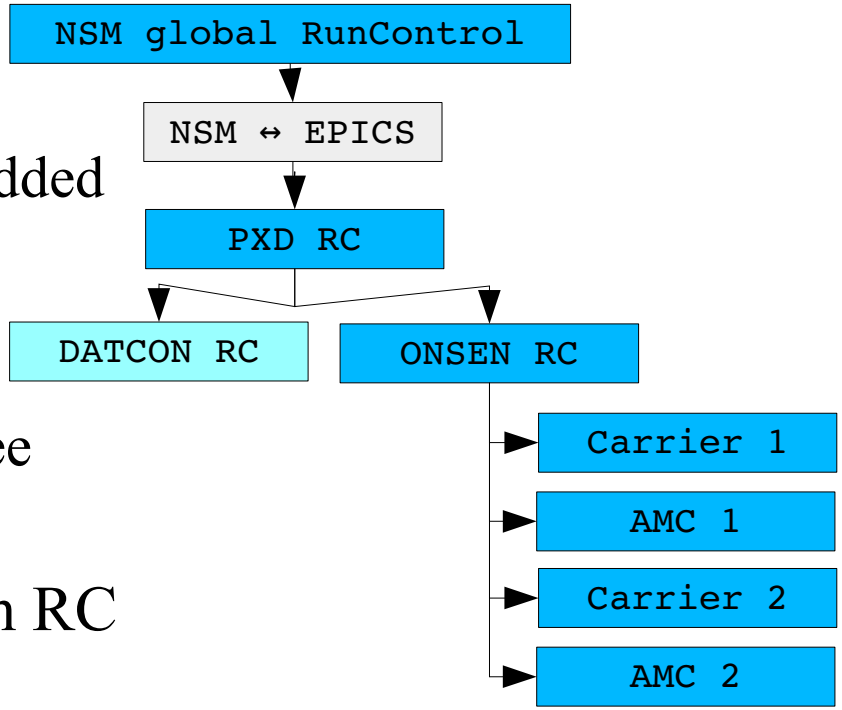
- Built CSS GUIs in a way they scale to ~40 ONSEN boards
  - Done by scripting and finally precompiling OPIs
  - Only few OPI were designed specifically for the downsizeed system
- New Run Control scheme adapted and GUIs changed (decided only few weeks before beam time)
- PXD DQM – Display Histograms from Express Reco within CSS
  - First examples prepared, scales to full system

RC and Merger, Selector OPI

Normal operation, ONSEN participates in Global RC and real status is reported back

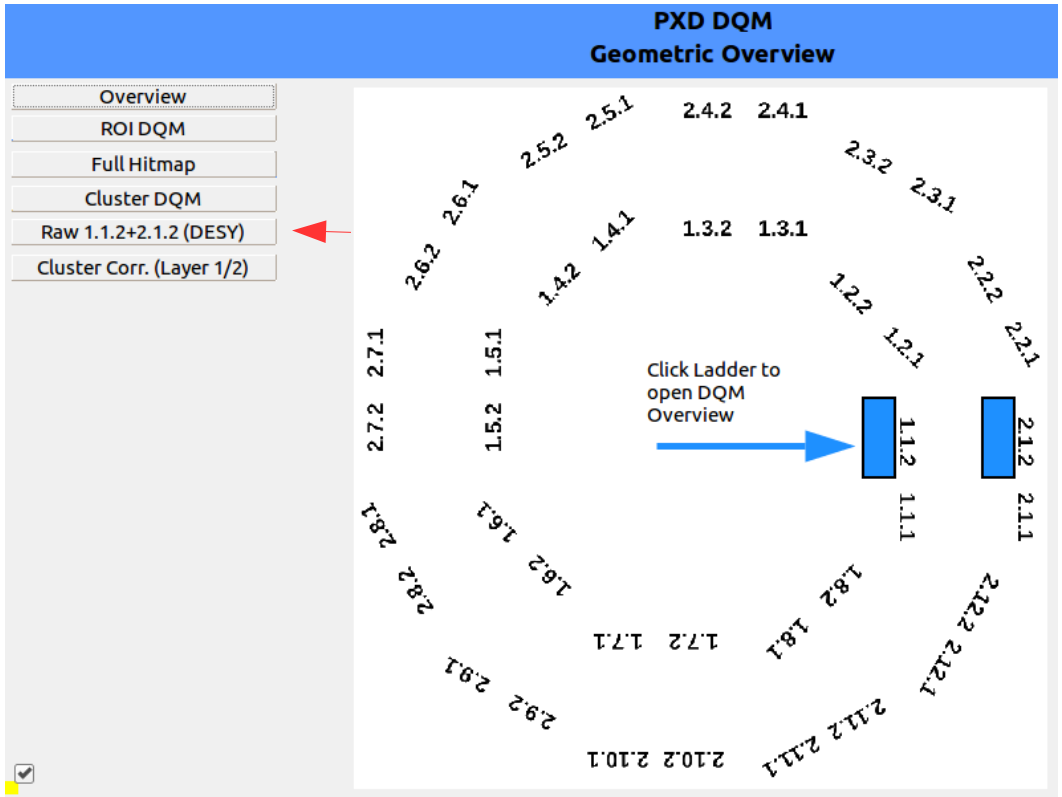
Run Control

- RC IOCs installed on iocpxd PC
  - ONSEN “board” RC ioc running on the embedded system
- RC connected to global RC
  - Working nicely after some initial problems (see below)
- (DATCON only tested shortly, then removed from RC again)
- Masking system out of global RC turned out to be error prone (esp. switch between local and global mode)
  - Quick fix was done at DESY
  - A better solution is worked on right now, which will be more robust if system drop out unexpectedly (timeouts ...)



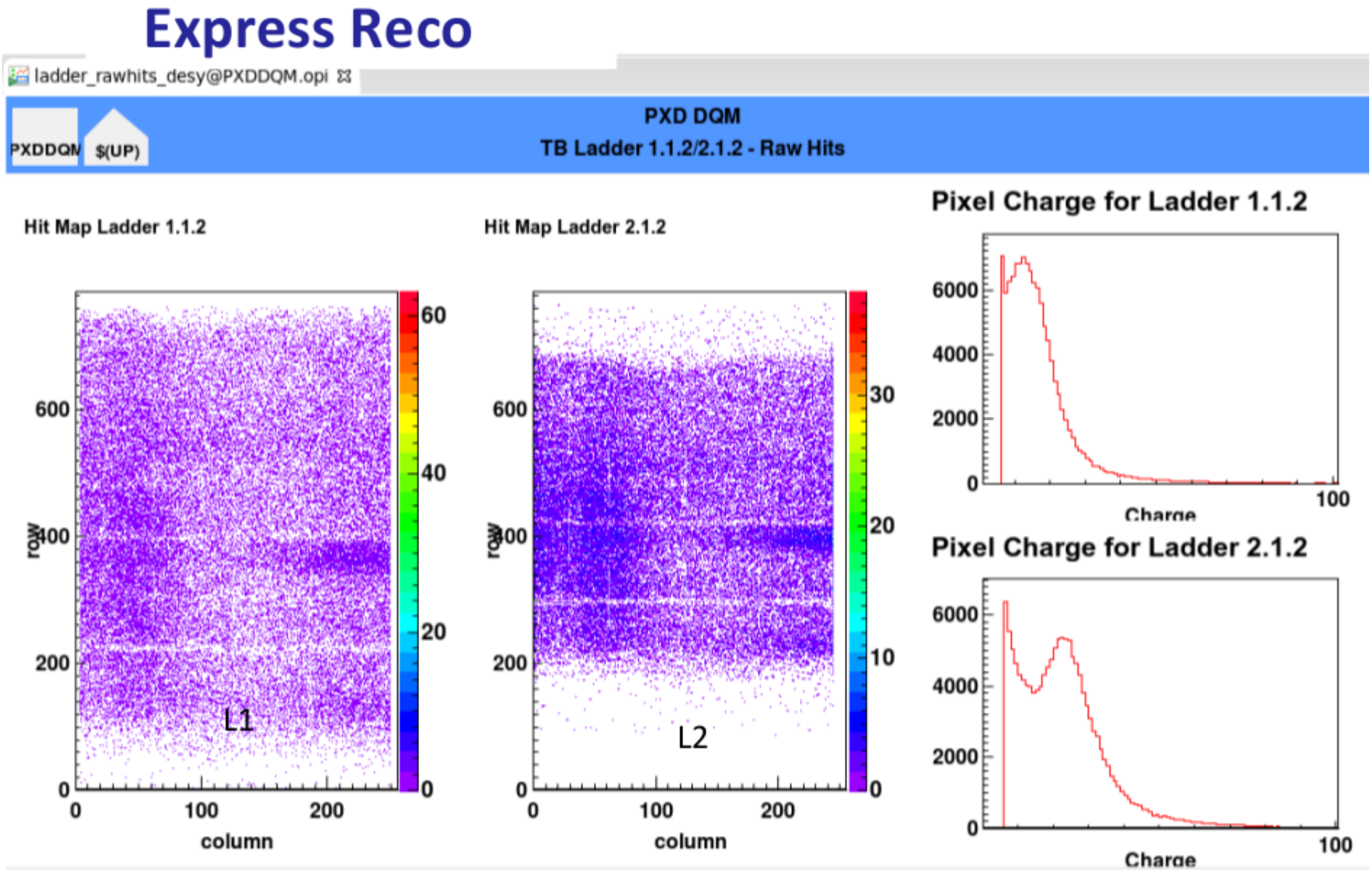
DQM

- DQM GUI prepared with 40 PXD ladders in mind, removed all but two ladders in GUI
- Histograms filled on Express Reco
- Working (if Exp Reco was running)
  - Bug in clustering → only ROI and RawHits available
- Mainly raw hitmaps were used by operators



- Nearly no response when I asked for histogram wishes before TB.

PXD DQM – Hitmaps



(from Carlos mail)

Further Remarks

- Why didn't we notice event mixing, order of data, etc in neither SC nor DQM?
  - We were not looking for it!
  - (a) SlowControl can only monitor/report what is provided by firmware
  - It was detected in unpacking, but … too late
  - (b) Error messages from Express Reco not available to operator
- Solution for (b) exist in basf2 DQM framework
  - Write out f.e. fit values by nsm to EPICS (example from Konno-san)
  - → monitor pxd unpacker error counters

TODOs

- IPMI Issues
  - Long term test with 4 AMCs needed.
  - In-place firmware update for IPMC not possible atm
    - Board design prevents this, ugly workaround needed
- More monitoring of independent checks
  - Report error from Exp Reco to nsm→ EPICS → CSS/Alarm system
- Collect experiences and opinions
  - Seem minimal elements (text) are preferred over fancy GUI widgets
- Add more monitors to GUI and alarm system when provided by firmware
- Alarm System