Lab Framework

PXD Workshop and 24th International Workshop on
DEPFET Detectors and Applications
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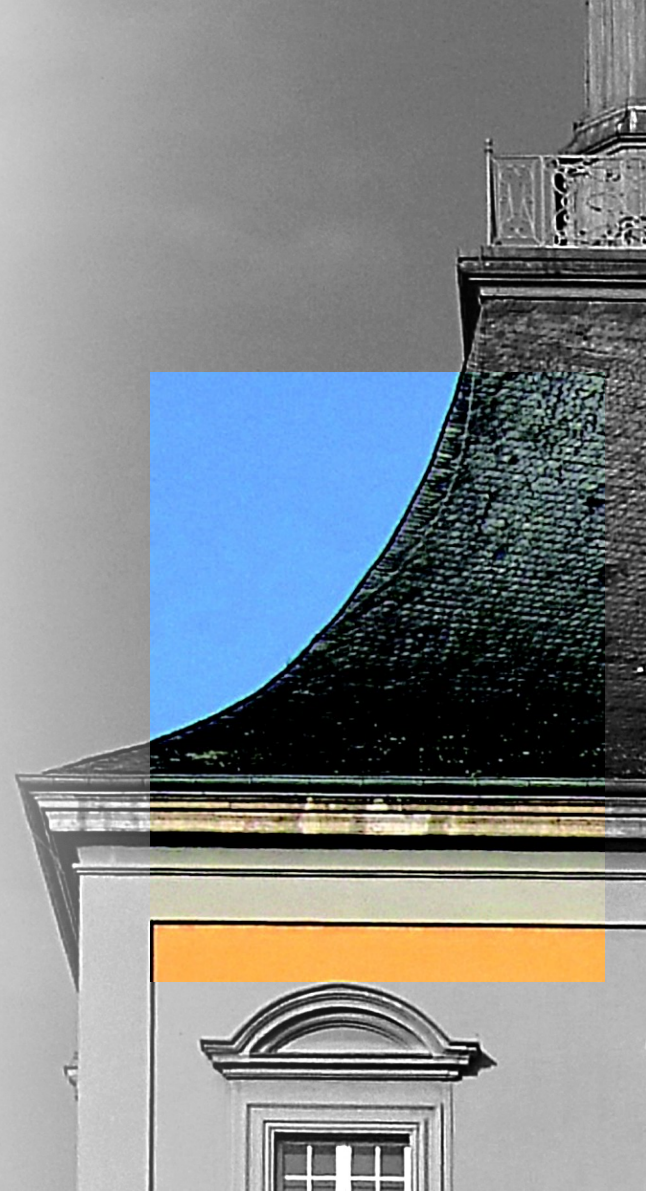

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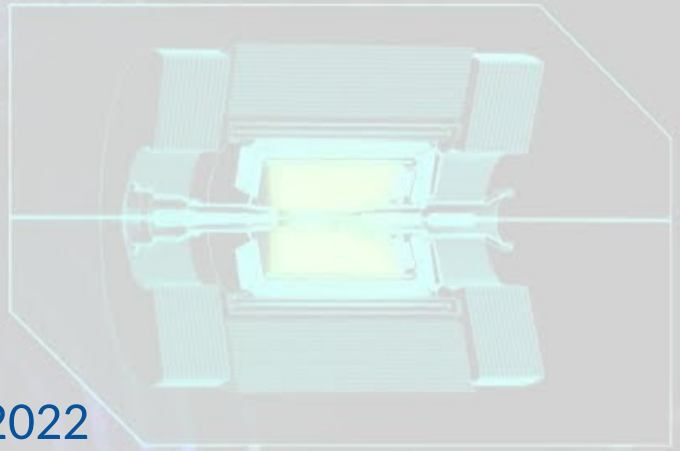
OVERVIEW



- Short recap PXD Workshop 01.2022
- Updates regarding KEK
- More general updates
- Todo list

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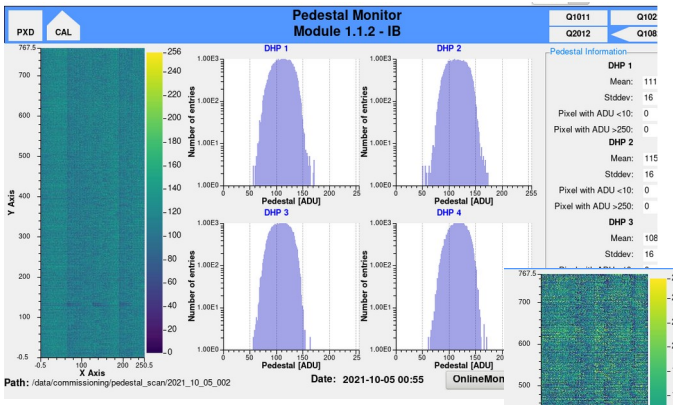
RECAP PXD WS 01.2022

- Lab Framework updates regarding KEK
  - Modification of the Power-up Sequence (*PR1*, *PR2*, *PR3*, *presentation*)
  - Scheduling full calibration if the commitID is changed (*PR*)
  - Special handling of DHP monitoring and temperature measurement when setting DCD parameters → no OVPs (*PR*)
  - The functionality of the DHP Register Monitor can be manually paused (it is now paused during any calibration type) (*PR*)
  - Speedup (~10%) DHH data recording by fixing the waiting time (*PR*)
- More general updates
  - Added checking constraints when setting PVs (*PR*)
  - Ramping of PS during a calibration (*PR*)
  - More comprehensive plots from the offset scan (*discussion*, *PR*)

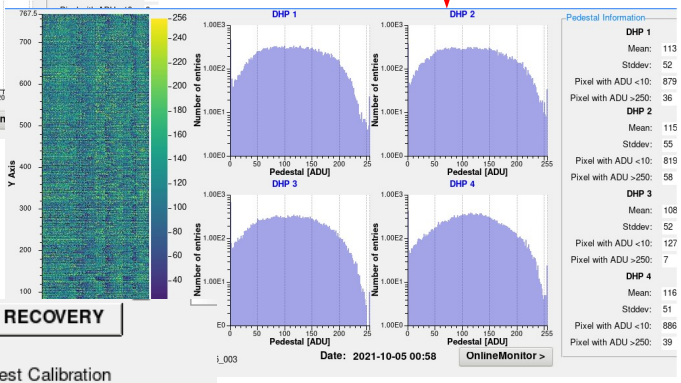
UPDATES REGARDING KEK

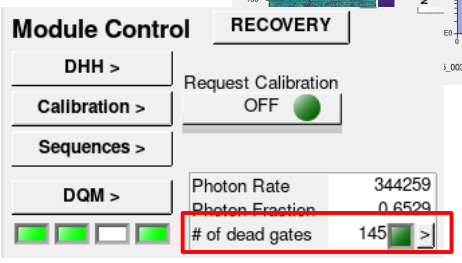
- Offsets calibration investigation (*presentation*, *JIRA ticket*)
  - New approaches were tried
  - Algorithm not robust enough
  - Raw pedestals too wide and wider than the dynamic range
  - Take offsets with lower gain and operate with default gain
  - Operate with lower gain
    - ✓ More pixels into the dynamic range and able to measure signal
    - ✗ Reduced efficiency and SNR
- Investigations on improving the dead gate detection algorithm at KEK (*presentation*)
- Faster pedestal upload by 12 seconds (*PR*)



We wish...

But...





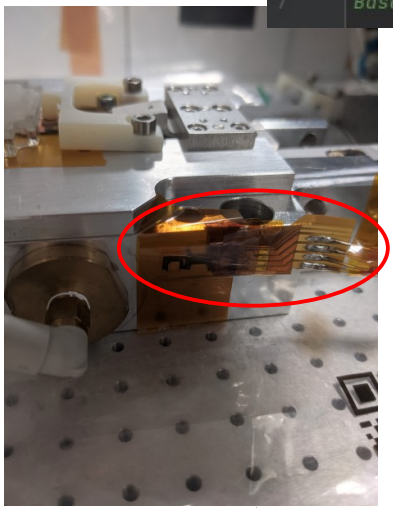
MORE GENERAL UPDATES

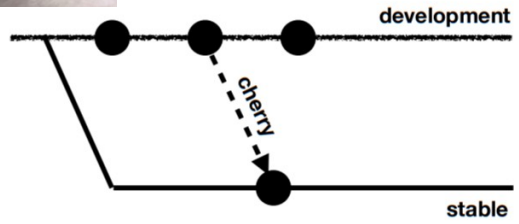
- Calibration class implementation (*PR*, *presentation*)
  - Unify the calibration scripts (measurement, analysis and update to configDB)
  - Reduce duplicated code in the framework
  - Many calibrations have already migrated to this scheme
- Improvements in PXD9 module characterization (mass-testing) for PXD2
  - Additional calibrations (g_m, V_{TH}, ADC transfer curves using external current source)
  - Handbook update for even safer module operation
  - Additional interlock based on temperature and humidity monitoring available (installed and stably running in Bonn)
- New branching model introduced (*presentation*)
  - Three branches: 1) **development** (default), 2) **main** (used for mass-testing), 3) **kek**
  - Feature branches are merged to development
  - When development stable (new release) → merge to main

```
# -*- coding: utf-8 -*-

"""
calibration.py - Calibration class
==================================

Base classes for module calibrations
```





TODO LIST

- Set DCD pixel chain to a defined value during TURNINGON (in progress)
- Fix remaining ADC scan issues with DHC setups
- Further automatization during maintenance days and half-shell commissioning
- More technical stuff…

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THANK YOU!