

## Setup components for PXD9 module test

- Same as for hybrid5 till Breakout Board
- Backup of 2 SFP adapters (optical/copper)
- PXD9 Breakout Board (with solder jumper sw-sub Sense/Force)
- Glenair cable to Patch Panel (and Ethernet cable)
- 4 types of Lab Patch Panel (IB, IF, OB, OF)
- Fixation between patch panel and Kapton (or tape if sufficient for stress relief)
- Cooling block for PXD9
- Cooling adapter for PXD9: IF, IB
- Vacuum for PXD9 (in particular for IB modules)
- Clamps to fix modules to LUJ-Sbs (black base jig)

## Software Issues to address before/during the Meeting

- New DHH firmware requires “Enable trigger” also for memory dumps (depending on firmware version, *Philipp L.*)
- Review code “Feature/pedestal scan analysis”  
([https://stash.desy.de/projects/B2G/repos/pxd\\_sc\\_lab\\_framework/pull-requests/23/overview](https://stash.desy.de/projects/B2G/repos/pxd_sc_lab_framework/pull-requests/23/overview))
- Review code “Feature/offsets memdump”  
([https://stash.desy.de/projects/B2G/repos/pxd\\_sc\\_lab\\_framework/pull-requests/24/overview](https://stash.desy.de/projects/B2G/repos/pxd_sc_lab_framework/pull-requests/24/overview))
- Development of verification of correct JTAG writing:
  - -> DHP pedestals
  - -> DHP offsets
  - -> DHP switcher sequence (already included in automatic power up sequence, but not in our python library)
- Include the upper “verification of correct JTAG writing” into sampling point curve (sampling point curve scripts are already according to coding guidelines, but verification of sw seq is missing)
- **source measurements** / analysis scripts (include motor stage)
- **archiver** scripts should be pulled into master branch (pull request (*Philipp L.*))
- **adc\_curve-smallimprovements** should be pulled into master branch (pull request (*Philipp W.*)) – finished?
- **lab\_offsets\_image** should be pulled into master branch (pull request (*Felix*)) – review code again and test after minor changes!
- **elog\_gransummary** should be pulsed into master branch (pull request (*Harrison*)) – finished?
- **temperature scan issue:** cannot upload offsets/pedestals when having the continuous temperature scan active (just deactivate during upload)
- Other branches; can be used to complete testing procedures?

- Minor issues: correct buttons in CS-studio, e.g., pscontrol.opi opens wrong power up sequence by clicking "PS"
- - voltages\_scan
  - pedestal-source-hybrid5
  - depfet\_iv\_curve
  - pedestal\_evolution
  - elog-additional-arguments
  - handbook
  - unified\_logging
  - pxdtest5 (relevant for gated mode test scripts)

**Priorities:**

- 1) code review of the pull requests (Feature/pedestal scan analysis, Feature/offsets memdump, Thursday, 18)
- 2) Source scripts; Problem: analysis for 6h scan takes ~4 days  
Parallel development in Bonn/Munich/Goettingen (merge the different branches together; what does exist? Filter noisy pixels, filter noisy adcs, plot distributions, etc....

Branches:

- **pxdtest5**
- **pedestal-source-hybrid5**
- **source\_scan\_botho**
- **source scan (comination of ...)**
- anything not at stash

Folders:

- **lab\_source\_scan\_pxd9**
- **lab\_source\_scan\_hyb5**

What do we want in the analysis?:

- How to define a noisy pixel/ADC
- Number of noisy pixels
- Number of noisy ADCs
- Noise
- Signal peak => Signal to Noise ratio
- Peak to valley?

## Ideas:

Split the workload/development: Since MPP has the setups, MPP works on the measure.py scripts. Other groups could work on the analysis with the data by:

- Copying data to local machines via ssh: scp or rsync via ssh
  - Example:

```
rsync -avzhe ssh --progress  
hybrid5@pxdtest1.mpp.mpg.de/pxdtest1/W31_OB1/* ~/mpp-data/.
```

- Work remotely on a shell via ssh
- Use x2go and initiate another session (transfer the desktop); also for Windows available (<https://confluence.desy.de/display/BI/Remote+Setups>)

# Meeting – CW 43?

Assuming that until the meeting the following items are in the master branch, i.e., code review(s) during the next days:

- Feature/pedestal scan analysis
- Feature/offsets memdump
- archiver
- adc\_curve-smallimprovements
- lab\_offsets\_image
- elog\_gransummary

## Agenda

### A) Theoretical Part

- 1) Source measurements
  - a. What do we want to measure? Cd-109, Sr-90? All sensitive area, how many hits? How much statistic is required?
  - b. Define the analysis – what analyses should be performed?
    - i. Landau distribution
    - ii. Masking of noisy pixel/ADCs
    - iii. Peak-to-valley, ring finding
    - iv. sw-DCD regions
    - v. insensitive areas (due to production issues, e.g., partially irradiated by X-ray inspection, etc.)
    - vi. How to compare results between different modules?
    - vii. What of these analyses are relevant for elog/grading?
- 2) What information is relevant for the elog, in particular for final grading for the different module tests
- 3) Discussion of temperature issues, collect ideas how to
- 4) Development of verification of DHP memories (switcher seq, pedestal, offsets) – correct writing via JTAG;
- 5) How to grade – if not already discussed in the last meetings – from elog results?

### B) Practical Part

- 1) Source measurement
  - a. Implement measure script to perform the scan over the entire sensitive area, i.e., include motor stage/stepper
  - b. Implement the analysis (will take some time)
- 2) Implementation of reliable temperature measurement
- 3) Implementation of verification of DHP memories
- 4) Burning test, like emergency shutdowns, etc....