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List of machines

- telescope@pcaidatb --> computer in control room (accessible from outside through lxplus). Internal IP: 192.168.5.251. External IP: 137.138.113.254. Used only as terminal, to connect to the machines in the zone.
- vertextb@pcvertextb --> computer running run control and Timepix3/CLICpix producers in beam area. Data is stored in /data/CERN_... Internal IP: 192.168.5.252. External IP: 137.138.113.219 (updated May 7, 2015)
- telescope@192NOSPAMPLEASE.168.5.2 --> NI crate windows computer, running NI producer and telescope DAQ / slow control. Not registered on external network. Can be accessed through "Remmina" client on pcaidatb. (Note that at first the remote window stays white. This can be fixed by enlarging it once to full screen.)
- telescope@pcx17261 --> pcx17261 (zenpixelwiki). Internal IP: 192.168.5.1??. External IP: 137.138.113.211. Currently not used by us. Connected to MiniTLU.
- testbeam@192NOSPAMPLEASE.168.5.3 --> AIDA DCS Windows PC. Not registered on external network. Can be accessed through "Remmina" client on pcaidatb. Not used anymore.
- telescope@atlaslab01 --> atlaslab01 (ATLAS FEI4 ROI computer). Internal IP: 192.168.5.4. External IP: 137.138.113.209.
- lcd@pclcdpixeltb --> laptop running Timepix1 producer. Not used anymore.
- pixel@pclcd20 --> PC that used to run CLICpix producer. Internal IP: 192.168.5.6. Not used anymore (CLICpix producer now runs on pcvertextb.)

Setting up machines after power cut

- Switch on all PCs.
- Push "recall" three times on 8V power supply (at the bottom left of the rack).
- Set FEI4 sensor HV to -100 V (Keithley 2410 source meter on top of rack). Set current limit to 3 uA ("edit" button).
- on pcx17261 (zenpixelwiki): "sudo ifconfig eth1:1 192.168.5.2" This PC is currently not used by us.
- on AIDA DCS Windows PC (through remmina): start DCS. Set limit on "GG AC" to 100 V and switch on at 100 V. Current should be $< \sim 1$ uA. Not used anymore.
- on atlaslab01: enable ROI trigger with "cd ~/pybar/branches/2.x.x/host", "python scan_eudet_fei4_self_trigger.py"

Starting DAQ for Timepix3

- ...

Starting DAQ for CLICpix/CCPDv3

- on pcvtextb in directory ~/eudaq: use `./mySTARTRUNCLICpix_testbeam0515`, open `"CLICpix_testbeam_0515"`
- on NI Windows PC (accessible through Remmina RDC, or via rdesktop command `"rdesktop 192.168.5.2 -u telescope -p 'telescope+' -z -g 1280x800"`):
 - ◆ make sure Mimosa26 DAQ is running and JTAG configurator is open.
 - ◆ after power cycling: program JTAG with Mimosa 26 JTAG configurator. Chose threshold (normally 7, `C:\Users\telescope\Desktop\JTAG_CONFIG\M26TB_CERN_2011_thresh7.mcf`). Hit "all", "read", "start" in this order.
 - ◆ double click `"StartNIproducer.bat"`
 - ◆ check that power consumption on 8V power supply for Mimosa planes is at nominal value of 3.55 A: labview program `measure.exe` vi-shortcut on the desktop. The program reads every second the voltage (should be 8V) and current (should be 3.55A), and offers possibility to disable and enable the output for power cycling.

- To start CLICpix producer:

```
On pcvtextb: cd uASIC/software/ ./CLICpixProducer.py -r tcp://192.168.5.252:44000
```

- ◆ check for [ERROR] messages on the screen after "Config".
- ◆ configuration file is loaded from `~/uASIC/software/trunk/data/[chipid]/equalization/last/clicpix.cpc` according to chip-ID read from the board.
- ◆ log files are in `~/uASIC/software/trunk/logs`
- Start oscilloscope DAQ for single-pixel analog readout (only for special runs):
 - ◆ on pcvtextb:
 - ◆ `cd ~/uASIC/software/trunk`
 - ◆ `./scope.py`
 - ◆ note directory name and write it to elog
- Start run in eudaq run control. "Config" is only needed when starting from scratch or when changing configuration for CLICpix, such as the threshold, or global settings, such as the number of bytes per run.

Recovering from eudaq run control crash (run control window disappears)

- Check for error messages in Data Collector and NI Producer windows (e.g. socket error). Check for log collector disconnected message in shell window from which the run control was started. Note this information in the elog and the time when it disconnected.
- Kill run control with `./myKILLRUN` on `pcvertextb` (same shell as from where it was started).
- CTRL+C CLICpix producer running on `pcvertextb`.
- `./mySTARTRUNCLICpix_testbeam0515` on `pcvertextb`.
- re-start CLICpix producer on `pcvertextb` (see above)
- re-start NI producer on NI crate computer, by closing the ROOT session window for NI producer (the last line in the window should be `Start Run: run_no`) then double click `"StartNIproducer.bat"`.
- Modify configuration file in case of automatic scan, such that already completed scan steps will be skipped. Re-start runs with `"Config"` and `"Start"`. Note first run number in elog.

Available CLICpix/CCPDv3 assemblies:

- Samples SET 9-15 are available for the May 2015 beam test. See Google spreadsheet with information on available samples [↗](#).

DESY Table in

- Change cables from control box in H6B to distribution box, to allow for remote control from control room
- 1 unit is 10 μm
- Center of beam in Timepix3 plane for October data taking was achieved for table position horizontal=-2677, vertical=1000.
- Center of beam in Timepix3 plane for negative polarity November data taking was achieved for table position horizontal=-1300, vertical=-3200.
- Center of beam in Timepix3 plane for positive polarity November data taking was achieved for table position horizontal=-1700, vertical=-3200.
- In May 2015 we found the table in position: -1500 vert, -3200 hor; we move it to the parking position: -23800 hor, -12230 vert We take data with new beam steering, no bending. For position horizontal: -407, vertical: -1501: beam spot is in center of MIMOSA planes. We use however the position vertical -1000, so that the beam spot is centered at the lower edge of the MIMOSA planes, where they overlap with CLICpix.

Rotation stage for DUT

- The DUT is mounted on a PI M-060-DG rotation stage. It is remote controlled via the PIMikroMove tool installed on the NI crate PC.
- The DUT rotates along the vertical axis between 0 (sensor surface perpendicular to the beam) and +90 deg (along the beam direction). We typically take data in a range between small negative angles and ~+80 deg.
- For the August 2015 configuration the rotation target angle set in the PIMikroMove tool corresponds to the desired rotation angle -73 deg. So for example for perpendicular incidence the set angle is -73 and for +90 deg it is +17. (Note that for May 2015 data taking the offset used to be -74)
- Detailed description (pdf file, numbers therein valid for May 2015)

FEI4 ROI trigger region tuning

- Check the position of the ROI using the hit maps of the online monitoring. The FEI4 is mounted sideways. Increasing columns correspond to larger y (vertical) coordinates in telescope reference frame. Increasing rows correspond to larger x (horizontal) coordinates in telescope reference frame. Columns in FEI4 are 250 um wide. Rows in FEI4 are 50 um high. Overall chip dimension: 80 columns (19 mm) x 336 rows (20 mm). The Mimosas26 chips are 18.4 um x 18.4 um, with 1152 columns (horizontal in telescope frame) and 576 rows (vertical in telescope frame), i.e. ~20 mm x 10 mm.
- Login to atlaslab01 (user telescope). `cd ~/pybar/branches/2.x.x/host"`.
- Edit script `scan_eudet_fei4_self_trigger.py`. Find the place where `self.col_span` and `self.row_span` are set. Comment out and label last setting and add two lines with new `self.col_span` and `self.row_span` range.
- start trigger script: `"python scan_eudet_fei4_self_trigger.py"`. Re-start once in case of error message. In case of repeated errors check the power supply voltages of the FEI4 plane. If problems persist, contact expert.
- Note: trigger configuration stays, even after killing the script, despite the message saying otherwise.

Data quality and log book

- ssh vertexb@pcvertexb
- cd ~/eudaq/bin
- ./MagicLogBook.exe -p elog runnumber
- ./MagicLogBook.exe -p elog runnumber- (for all runs starting from runnumber)
- ./MagicLogBook.exe -p elog runnumber1-runnumberN (for all runs from runnumber1 to runnumberN)
- ./TestReader.exe -b runnumber (For Timepix3: VBIAS contains bias voltage, VTRESH contains threshold. For CLICpix: CLICpix_THRESHOLD contains threshold. Keithley voltage is not in bore?? At least not for threshold scan.)
- ./OnlineMon.exe -sc 1 -f runnumber. Check for correlations, number of hits and clusters for each plane, hot pixels in Mimosa. Compare with known good runs taken in similar conditions.
- Check from time to time that the current drawn by the 8V powersupply for the Mimosa planes is at the nominal value of 3.55A, see above. If more than ± 0.03 deviation: power-cycle 8V: on powersupply: click "local", then 2 x "on/off". Or remotely using Labview VI running on the ni-crate computer: measure.exe vi-shortcut on the desktop. The program reads every second the voltage (should be 8V) and current (should be 3.55A), and offers possibility to disable and enable the output for power cycling. After power cycle: check LV cable connection to the Mimosa planes (if you have access to the zone) and re-program JTAG.

Shift plans

- [Shift plan May 2015 \(Google spreadsheet\)](#)
- [Shift plan August 2015 \(Google spreadsheet\)](#)

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