

How to get PACIFIC thresholds:

#####Record threshold scans (sCurves)#####

Open a terminal in lhcb-labor03

login on the readout pc

if data taking is running, close data taking to perform configuration

>cd sw/pacific_gui

>run ./PACIFIC

from the menu bar:

FPGA →

Select Device →

PACIFIC <0009>/<0010> (unirrad/irrad)

Load configFile to set shaping configuration correctly before scanning

Use a configFile to set the correct shaping configurations!

PACIFIC →

Configuration

→ReadFile→configFiles→<file of interest>

→Write

→Read (to read back)

Available: settings3 & settings4 - files can be found in

data/calibrations/pacificCalib/configFiles/

After loading the configFile, activate only 8 channels at the time:

ConfigurationWindow

→Channels

Untick **Enable Local Thresholds** and click **Apply Th to all**

Then manually set the flag **Enable Local Thresholds** to eight (consecutive) channels by going through the channels.

Record Threshold scan:

PACIFIC →

Synchronous Scan

Choose the correct BX delay and **Run on: Local**. Save the data to a meaningful file. Repeat until all 64 channels are recorded!

#####sCurveAnalysis#####

on lhcb-labor03 PC
open "terminator" from the dock
>run:cd /data/TestBeamCalibration

download the recorded sCurve files (.csv format) to lhcb-labor03:
>run:scp scifi@192.168.0.1:/PATH_TO_CSV_FILES/FILENAME.csv .

change to the sCurveAnalysis folder:
>run: sw/PACIFICtools/sCurveAnalysisP4

REMARK: the software tools can also be downloaded from

<https://gitlab.cern.ch/lhcb-scifi/PACIFICtools>

define the thresholds

set the desired thresholds in units of PE in the *config.cfg* file before running the analysis.

run the sCurveAnalysis

>run: ./sCurveAnalysis -f <FILEPATH> -s -d 0 -i (-x <DEADCHANNEL>)

repeat for all files until all 64 channels are processed.

REMARK: see option -h for overview of the flags and options!

The program outputs a file with the found thresholds in the same folder as the loaded .csv file. Same name plus suffix *_ThresholdCalibration.dat*.

To check the performance of the photopeak fit, use TBrowser:

→ <FILENAME>+ThresholdCalibration.root
→ ThresholdOverlay
→ Overlay_at_CHXX

The lines indicate the position of the found thresholds.

The colors indicate the comparator/threshold:

red: comparator 1 - low threshold
green: comparator 2 - seed threshold
blue: comparator 3 - high threshold

If the lines are not at the correct place, write down the correct position (where it should be) on a sheet of paper. This will be correct manually in the next step!

#####**Create correct .aconf file**#####

Create a configFiles for the PACIFIC with the correct thresholds.

upload the recorded sCurve files (.csv format) to the readout PC:

```
>run:scp THRESHOLDS.dat scifi@192.168.0.1:/PATH_TO_CONFIG_FILES/
```

Load the determined thresholds into the GUI

Open the PACIFIC gui as before and load the threshold files:

PACIFIC →

Configuration

→Load Thresholds File→<THRESHOLD.dat>

→Repeat for all files to set a total of 64 channels

→Save to file→<CONFIGFILE.aconf>

Manual correction

After the automatic thresholds are loaded, go through all channels you wrote down on your sheet of paper and correct the thresholds manually.

Then save the configuration again:

→Save to file→<CONFIGFILE_manually_corrected.aconf>