

NP04 status and plans

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Introduction

- Filling almost complete:
 - 6.8 m, 70 cm missing
 - Expected on next Monday

<https://np04-slow-control.web.cern.ch/np04-slow-control/app/#!/tinternal>

IFIC top			
0001 (7.385 m)	141.2 K	0002 (7.267 m)	136.1 K
0003 (7.149 m)	128.3 K	0004 (7.031 m)	120.1 K
0005 (6.913 m)	108.2 K	0006 (6.795 m)	87.4 K
0007 (6.677 m)	87.3 K	0008 (6.559 m)	87.3 K
0009 (6.441 m)	87.3 K	0010 (6.323 m)	87.3 K
0011 (6.205 m)	87.4 K	0012 (6.087 m)	87.4 K
0013 (5.969 m)	87.4 K	0014 (5.851 m)	87.4 K
0015 (5.733 m)	87.4 K	0016 (5.615 m)	87.3 K

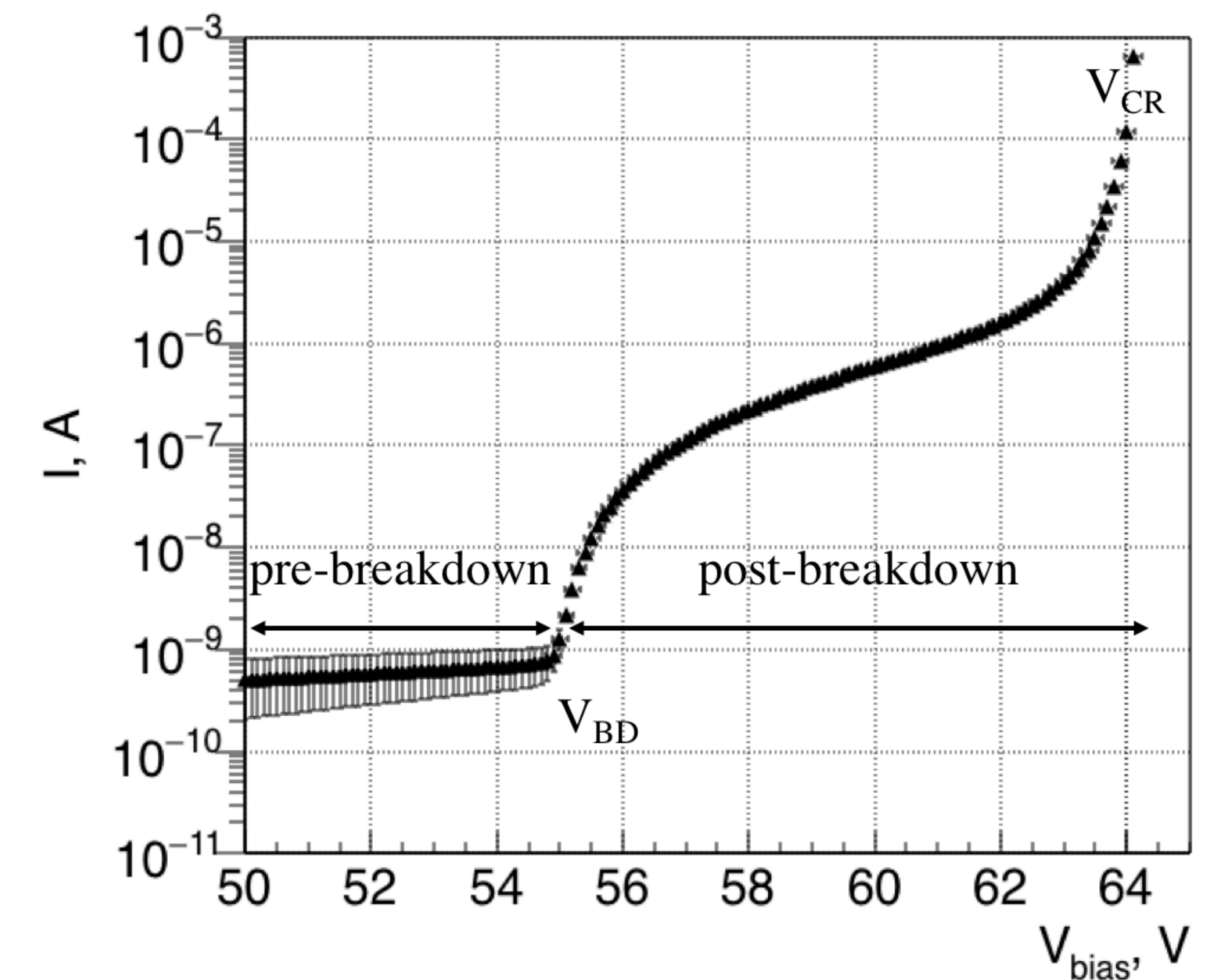
- People at CERN this week:
 - Manuel, Alessandro, Renan, Anna, Federico, Henrique Laura, Jairo, Daniel, Sam and Anselmo

Current activities

- Solve problems with firmware (Daniel)
 - Overlapping channels, self trigger disabled, ...
- IV curves (see Alessandro's talk)
- Tuning of LED pulses (later in this talk)
- Integrate LED calibration configuration into DAQ configuration (Wes)
- hdf5 analysis code: we have several readers for hdf5 files (Renan, Julio, Jose)
- Single p.e. analysis (see Henrique's talk):
 - Lifetime of the slow scintillation component requested by Christos/Filippo to be presented at next coordination meeting on Tuesday
- Discussions about waveform analysis framework (all)

IV curves: problem found

- We started taking IV curves at warm few days before cryostat cooling
 - To minimise the camera/LED downtime we optimised the loop over bias voltages (in dac units) and started at predefined values
- When cooling started temperature went down so fast that the breakdown voltage changed dramatically and we were so unlucky that from that moment started the loop for finding the breakdown voltage just above the actual V_{bd}
- We were observing larger V_{bd} than expected but were blaming the dac/volts conversion
- Problem was found when we observed very large signals and continue observing signals after reducing the bias by 5-7 volts

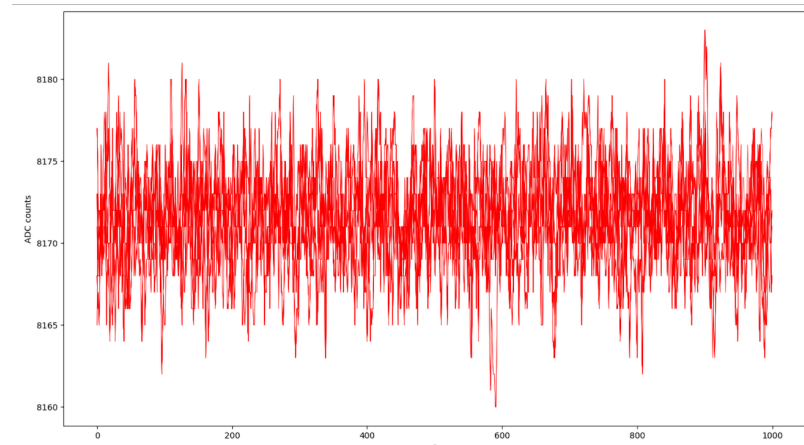


LED tuning

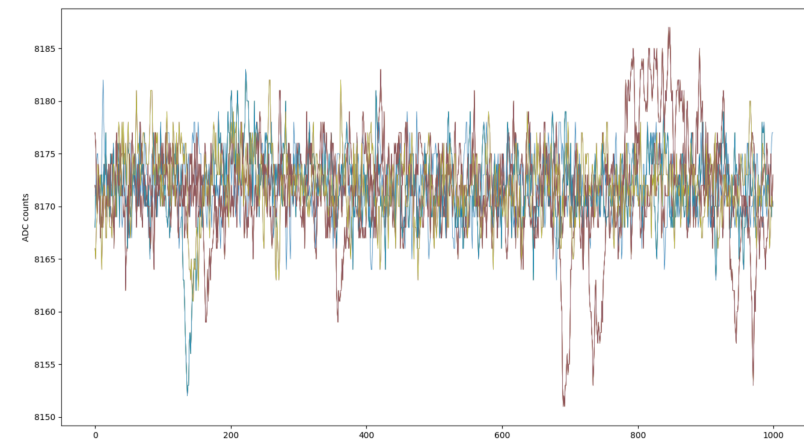
Manuel

- Preliminary manual LED tuning has been done playing with several parameters: SSP bias, LED intensity (%) in configuration file and pulse width
- Two LEDs:
 - 270 nm currently at APA3-4
 - Optimisation at 9 volts, 100% intensity, 10 ticks width
 - 365 nm currently at APA1-2:
 - Gives much more light —> reduce pulse width to 1 tick
 - 50% intensity
 - On the right optimisation varying SSP voltage in slow controls

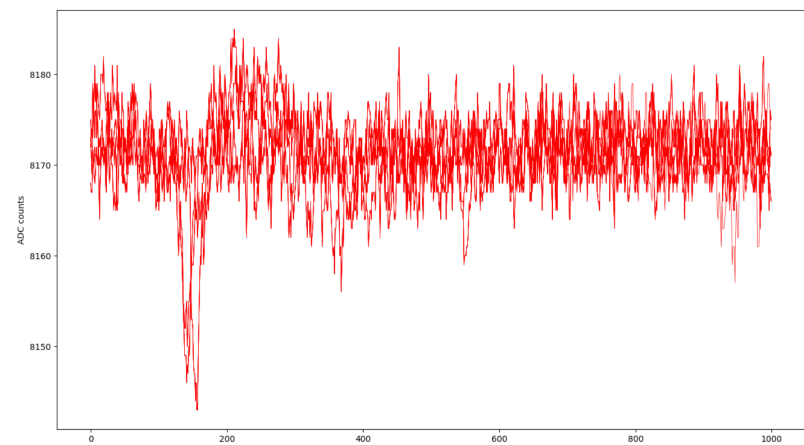
3.3



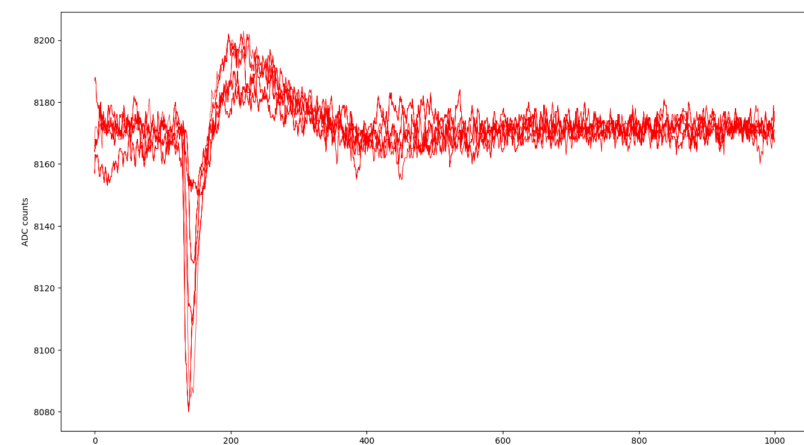
3.35



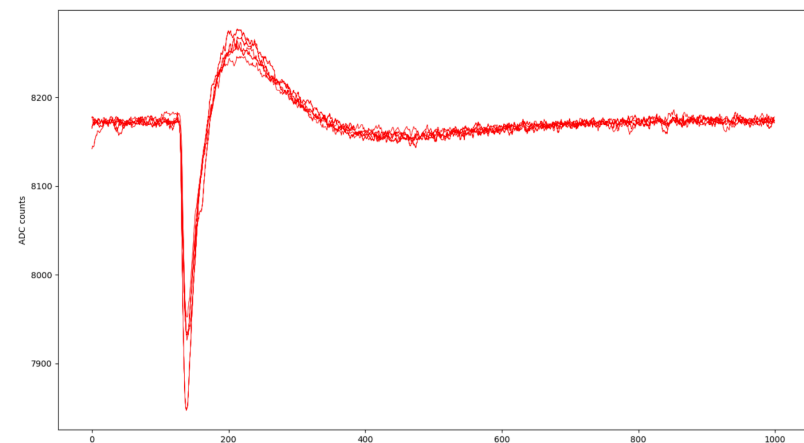
3.4



3.5

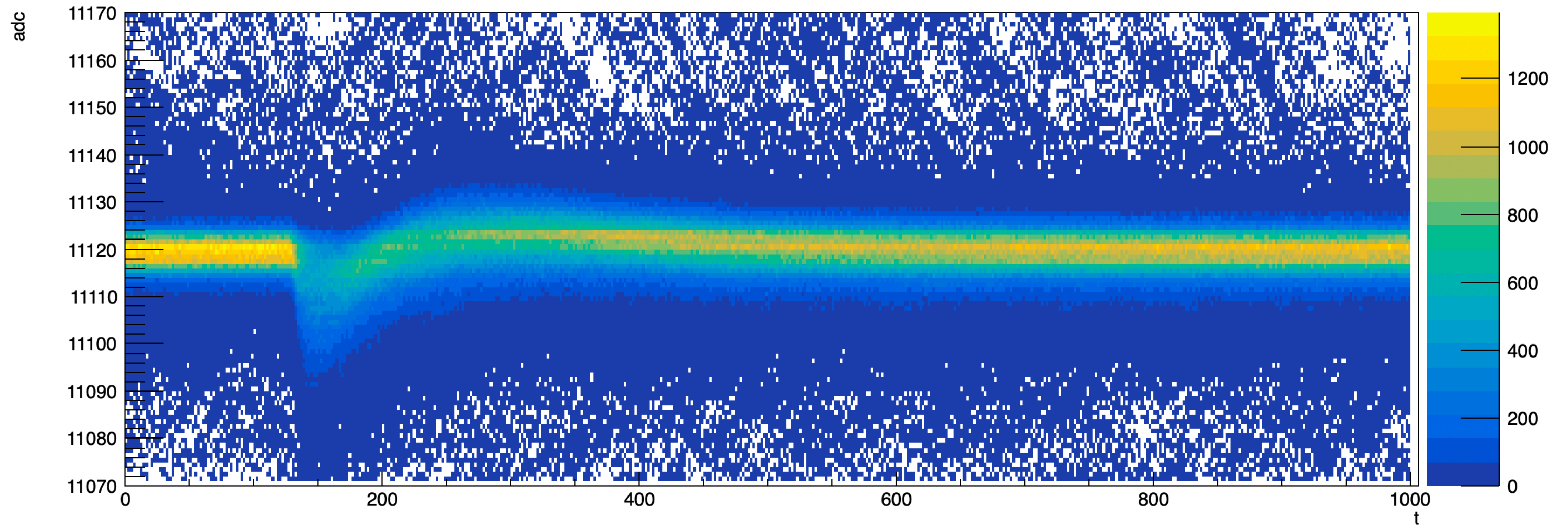


3.6



LED tuning

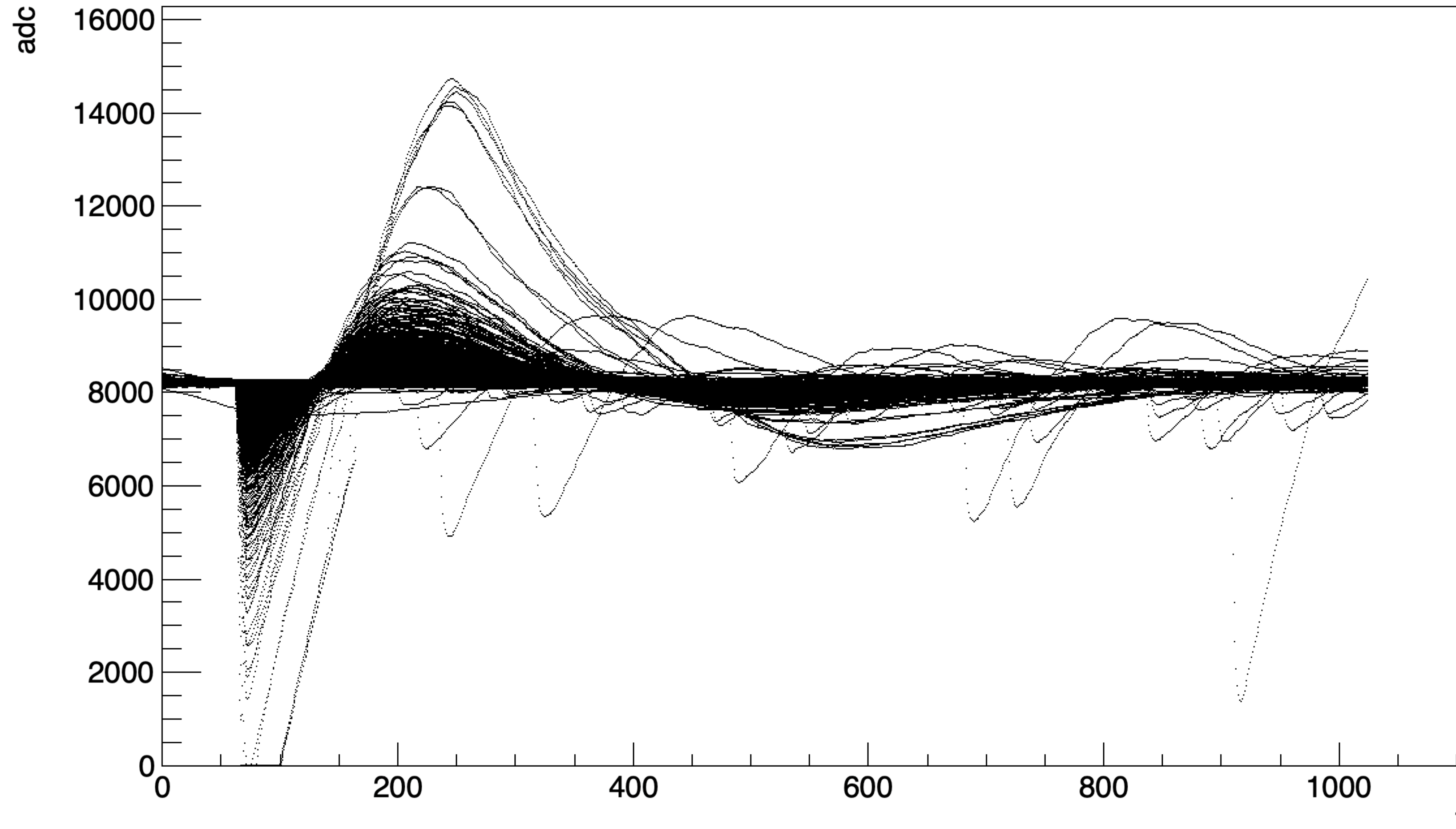
- This is the persistence plot for channel 30 in APA2



- Final led calibration commissioning foreseen for the week of May 6th
- To be used for single p.e. deconvolution

Cosmics with self trigger

- To be used for slow component lifetime



Preliminary run plan for PDS

- Preliminary run plan available with description of the different configurations

<https://docs.google.com/document/d/1eIJR-hDbb46q2zSVWW0pGjzX4X-2Mx0B2IIFZySZX-M/edit?usp=sharing>

- This is a modified version given the current schedule

		February			March			April			May			June			
		purging			cool			filling			purification			operation			
Study	trigger																
IV curves and Vbd	none				d	d	d	d	d	d	d						
Test data in GAr	self																
DCR	TI				d	d	d	d	d	d							
Light yield vs pur.	self											d	d	d	d		
Gain calibration	TI														w	w	w
Self-trigger efficiency	TI+self																
Light yield map with laser	self														?		?
Physics	self																

↑ ↑
Important milestones

d=daily, w=weekly, TI=Timing interface command

Next steps

- LAr filling will be completed on Monday (April 29th)
- Purification will take about 3 weeks
- Regular data taking from end of May
- This is the preliminary beam schedule

https://ps-sps-coordination.web.cern.ch/ps-sps-coordination/schedules/ps/2024/v1.1.0/schedule_runs_v110_20240306_all.pdf

