

SLAB ID

Slab ID : 13

ASU version : FEV11

Skiroc version : Skiroc2

NASICS : 16

DIF ID : 08 **Firmware version :** 1603

SBM ID : V4b 11

SMBversion : SMBV4

Wafers ID/Info : ?

Comments :

Kapton tape covering the internal face of the aluminum plate that covers the ASU.

Folder → slab13

**Very bad results → A lot of noisy channels not hunted by the find noisy algorithm.
Chips 7-8 (from 1-16) are lost on some runs.
Very bad scurves quality.**

NOT READY FOR BT, but make a double check with higher THRESHOLDS

Commisioning by : A. Irles

at : LAL, ECAL workshop

setup : Prototype rack (as used in 2016). PVC prototype for single slab. Cosmics taken in a table.
Cable : HV 6 connected to first HV connector in patch pannel.
Slab/dif 1, connected to first connector in patch pannel.
GDCC V1_1, port 1

SOLDERING POINTS, CABLING, etc (visual inspection)

With closed aluminum cover, turn around the slab and check soldering points in :

- *DIF resistors (for slow control) OK*
- *HV (GND at SMB) Ok*

comments and others :

- *thick HV filter in the adaptator card. This is a clear difference with all other slabs...*
- *aluminum plate is not grounded.*
- *bottom of the slab (aluminum) is not grounded.*

Turn slab around, open aluminim cover and do a check of soldering points :

- *HV GND (bottom slab)*

comments and others :

ELECTRICAL + SIGNAL CHECKS (multimeter)

Electrical checks (NOT POWERED SLABS)		
		Comments
GND/PCB	ok	
RESISTOR/DVDD	ok	
SlowControl :	ok	
S4-S16	ok	
SRIN-SROUT	ok	
Readout Return S9-S21	ok	
GND HV and bottom PCB	not	
No shortcuts between VDDA/VDD/GND	ok	

Electrical checks (Low Voltagage on)		
		Comments
Green LED in SLAB	ok	
BLUE LED light (DIF) blinking	ok	
1.2V and 2.5V in J3 and J4 (DIF)	ok	
VDDA	ok	3.48 V
VDDD	ok	3.28 V
Configure : RED LED blinks	ok	

Comments :

DAQ SETUP

Short acquisitions tests :

- spill 4Hz, width 5 ms, BT mode
- 1 minute
- dif 1 1 1

 $PA=1.2pF$
$$cc=6pF$$

hold (manual) =150

DAC (manual) = 200 DAC

Find noisy, scurves

- spill 4Hz, width 2.5ms, BT mode
- dif_1_1_1

$$PA=1.2pF$$
$$cc=6pF$$

hold (manual) =150

Cosmics

- spill 4Hz, width 150ms, BT mode
- 1h
- dif 1 1 1

$$PA=1.2pF$$
$$cc=6pF$$

hold (manual) =150

CALICOES/PYRAME VERSION :

DATA/RESULTS folder : /home/data/prototech/BTJune2017_commissioning/slab13 (pc-ecal03)

SlowControl :

[illegible]

ANALYSYS code :

<https://github.com/airqui/tpecal/commit/8d5eb4a32a5522ccfd476e5257d9aac9ed78258a>

COMMENTS : (suspicious ADC=4 channels masked by default)

```

rocN=0
for roc in list_dev("skiroc","root"):
    reconfigure(roc,"allow_trig_chans_skiroc","all")
    reconfigure(roc,"enable_preamp_chans_skiroc","all")
    reconfigure(roc,"disable_preamp_chans_skiroc","37")
    reconfigure(roc,"disallow_trig_chans_skiroc","37")
    if rocN==1 or rocN==9:
        #preamp
        reconfigure(roc,"disable_preamp_chans_skiroc","41")
        reconfigure(roc,"disable_preamp_chans_skiroc","42")
        reconfigure(roc,"disable_preamp_chans_skiroc","43")
        reconfigure(roc,"disable_preamp_chans_skiroc","44")
        reconfigure(roc,"disable_preamp_chans_skiroc","45")
        reconfigure(roc,"disable_preamp_chans_skiroc","46")
        reconfigure(roc,"disable_preamp_chans_skiroc","47")
        reconfigure(roc,"disallow_trig_chans_skiroc","41")
        reconfigure(roc,"disallow_trig_chans_skiroc","42")
        reconfigure(roc,"disallow_trig_chans_skiroc","43")
        reconfigure(roc,"disallow_trig_chans_skiroc","44")
        reconfigure(roc,"disallow_trig_chans_skiroc","45")
        reconfigure(roc,"disallow_trig_chans_skiroc","46")
        reconfigure(roc,"disallow_trig_chans_skiroc","47")
        print("roc=%s"%(roc))
    if rocN==0 or rocN==8:
        reconfigure(roc,"disable_preamp_chans_skiroc","5")
        reconfigure(roc,"disallow_trig_chans_skiroc","5")
    if rocN==7 or rocN==15:
        reconfigure(roc,"disable_preamp_chans_skiroc","3")
        reconfigure(roc,"disallow_trig_chans_skiroc","3")
        reconfigure(roc,"disable_preamp_chans_skiroc","9")
        reconfigure(roc,"disallow_trig_chans_skiroc","9")
        reconfigure(roc,"disable_preamp_chans_skiroc","10")
        reconfigure(roc,"disallow_trig_chans_skiroc","10")
    if (rocN==9 or rocN==1):
        reconfigure(roc,"disable_preamp_chans_skiroc","48-53")
        reconfigure(roc,"disallow_trig_chans_skiroc","48-53")
    rocN=rocN+1
    if rocN==16:
        rocN=0

```

short ACQ tests

Horizontal position. Open slab.

NOISE_0 : Make short acquisition and convert the data → Conversion ok ? YES

Cover the slab with aluminum plate isolated with kapton tape. Test that is not grounded.

NOISE_1 : Make short acquisition and convert the data → Conversion ok ? YES

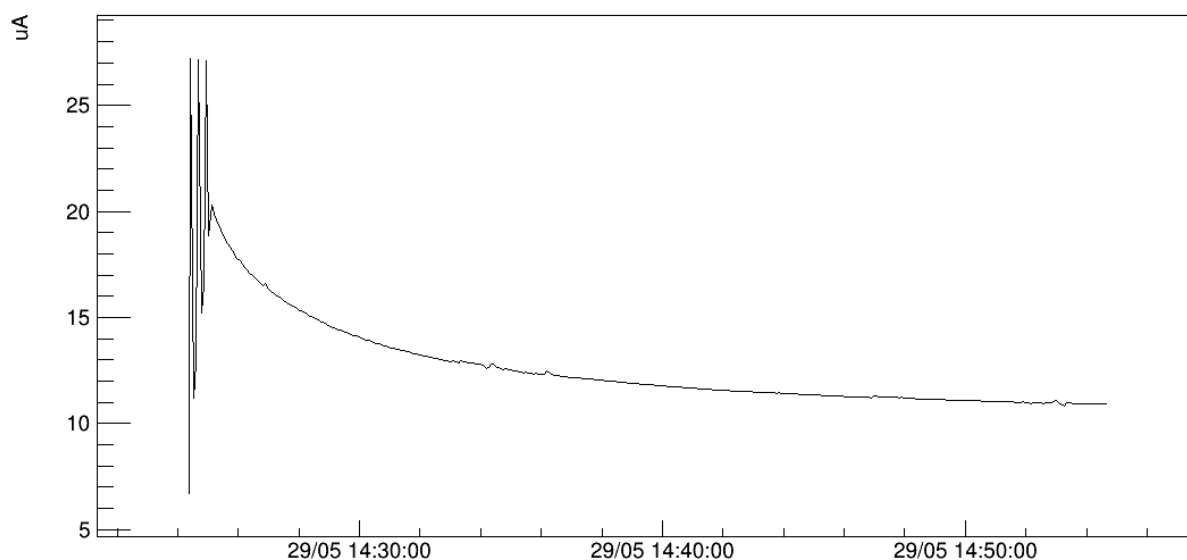
Place it in the PVC prototype, cover it with black waste bag, HV ramp up..

NOISE_2 : Short acquisition, convert data → conversion ok ? YES

Wait 30 minutes (HV stabilization)

Comments : noise_2 to noise_4 were used just to script developmnet

HV current vs time plot



FIND NOISY :

Algorithm :

timed_find_noisy_scan_run(run_name,trigger_thr_fn,trigger_step_fn,acq_time_fn,acq_time_final_fn,spill_lenght_final,1,1,0.05,0.01)

disallows triggers and disable preamps of all noisy channels.

Outuput/cmd file: MaskedChannels.cmd

List of channels :

```
reconfigure("skiroc_1_1_1_1_11","disallow_trig_chans_skiroc","50")
reconfigure("skiroc_1_1_1_1_4","disallow_trig_chans_skiroc","40")
reconfigure("skiroc_1_1_1_1_8","disallow_trig_chans_skiroc","42")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","14")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","32")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","33")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","34")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","35")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","36")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","57")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","58")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","59")
```

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```
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","60")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","61")
reconfigure("skiroc_1_1_1_1_15","disallow_trig_chans_skiroc","62")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","7")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","38")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","39")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","40")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","54")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","55")
reconfigure("skiroc_1_1_1_1_10","disallow_trig_chans_skiroc","56")
reconfigure("skiroc_1_1_1_1_11","disallow_trig_chans_skiroc","3")
reconfigure("skiroc_1_1_1_1_12","disallow_trig_chans_skiroc","5")
reconfigure("skiroc_1_1_1_1_7","disallow_trig_chans_skiroc","3")
reconfigure("skiroc_1_1_1_1_7","disallow_trig_chans_skiroc","15")
reconfigure("skiroc_1_1_1_1_12","disallow_trig_chans_skiroc","7")
```

SCURVES :

Algorithm :

```
run_name="%s/scurves_64_%sHz_%sms_masked"%
(run_group,str(spillfreq),str(spill_lenght_final))
run=new_run(run_name)

acq=timed_scurves("0",run,int(trigger_max_sc),int(trigger_min_sc),int(trigger_step_sc),float(60),
"skiroc")
rc_exec("/opt/root/bin/root -l -q /opt/calicoes/standard/ConvertDirectory.cc\\(\\|\\|"%s/0/\\|\\|\\)"")%
(run["path"]))
rc_exec("/home/calice/tpcal/bin/tpcalana %s/0/ %s scurves 16 0 0 %s"%
(run["path"],run["path"],dif))
```

Outuput/cmd file:

```
/home/data/prototech/BTJune2017_commissioning/slab13/scurves_64_4Hz_2.5ms_masked/Scurve
s_PlaneEvThresh64_buff0_dif_1_1_1_3sigma.cmd

/
home/data/prototech/BTJune2017_commissioning/slab13/scurves_64_4Hz_2.5ms_masked/Scurves
_PlaneEvThresh64_buff0_dif_1_1_1_5sigma.cmd
```

/

home/data/prototech/BTJune2017_commissioning/slab13/scurves_64_4Hz_2.5ms_masked/Scurves
_PlaneEvThresh64_buff0_dif_1_1_1_3sigma_fristzero.cmd

Final set of thresholds (mean value + 3 sigma) per chip :

```
reconfigure("skiroc_1_1_1_1_1","set_gtrigger_skiroc",str(212))
reconfigure("skiroc_1_1_1_1_2","set_gtrigger_skiroc",str(210))
reconfigure("skiroc_1_1_1_1_3","set_gtrigger_skiroc",str(209))
reconfigure("skiroc_1_1_1_1_4","set_gtrigger_skiroc",str(214))
reconfigure("skiroc_1_1_1_1_5","set_gtrigger_skiroc",str(208))
reconfigure("skiroc_1_1_1_1_6","set_gtrigger_skiroc",str(213))
reconfigure("skiroc_1_1_1_1_7","set_gtrigger_skiroc",str(207))
reconfigure("skiroc_1_1_1_1_8","set_gtrigger_skiroc",str(207))
reconfigure("skiroc_1_1_1_1_9","set_gtrigger_skiroc",str(209))
reconfigure("skiroc_1_1_1_1_10","set_gtrigger_skiroc",str(217))
reconfigure("skiroc_1_1_1_1_11","set_gtrigger_skiroc",str(205))
reconfigure("skiroc_1_1_1_1_12","set_gtrigger_skiroc",str(207))
reconfigure("skiroc_1_1_1_1_13","set_gtrigger_skiroc",str(209))
reconfigure("skiroc_1_1_1_1_14","set_gtrigger_skiroc",str(206))
reconfigure("skiroc_1_1_1_1_15","set_gtrigger_skiroc",str(205))
reconfigure("skiroc_1_1_1_1_16","set_gtrigger_skiroc",str(202))
```

COSMICS : threshold calculated with 3sigmas, find noisy with thresholds 0.05 and 0.01

Algorithm : Commissioning_cosmics.py

DIF

Wafer 1 :
Estimated cosmic rate :
MIP :

Wafer 2 :
Estimated cosmic rate :
MIP :

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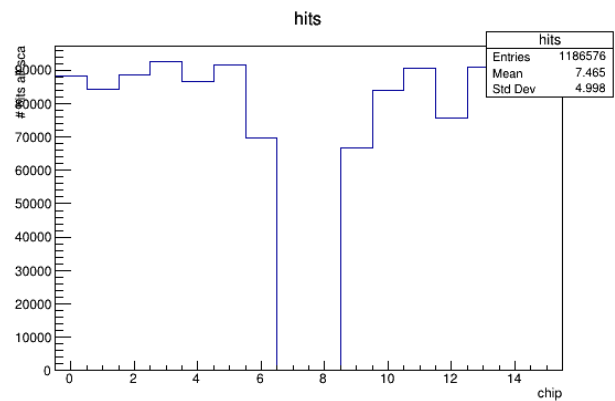
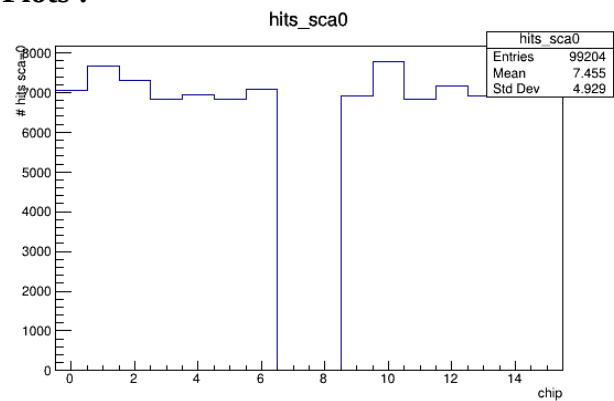
Wafer 3 :
Estimated cosmic rate :

MIP :

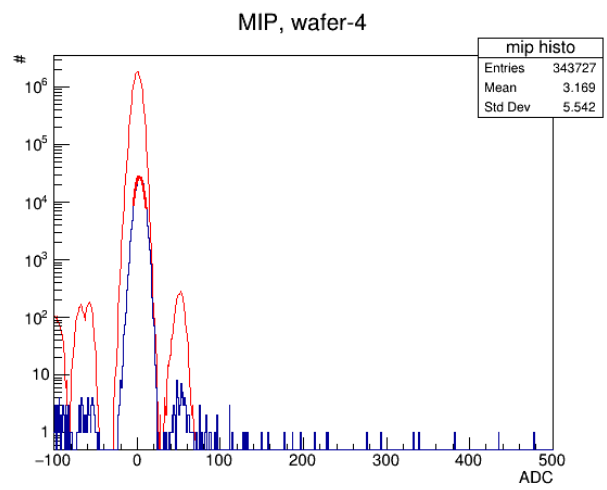
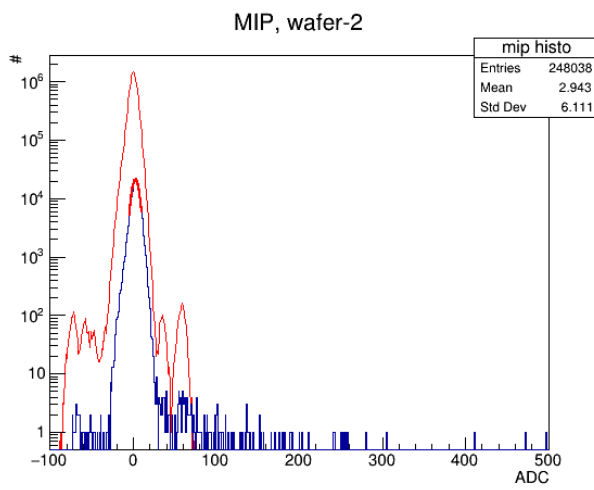
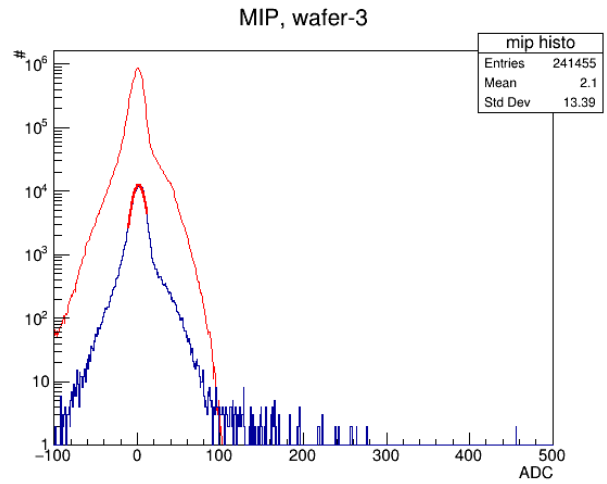
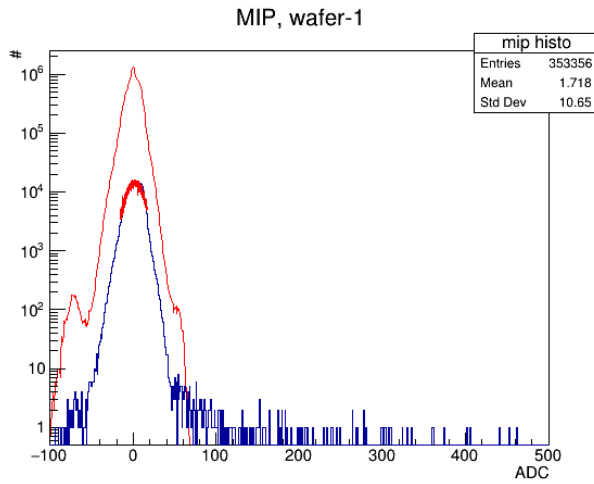
Wafer 4 :
Estimated cosmic rate :

MIP :

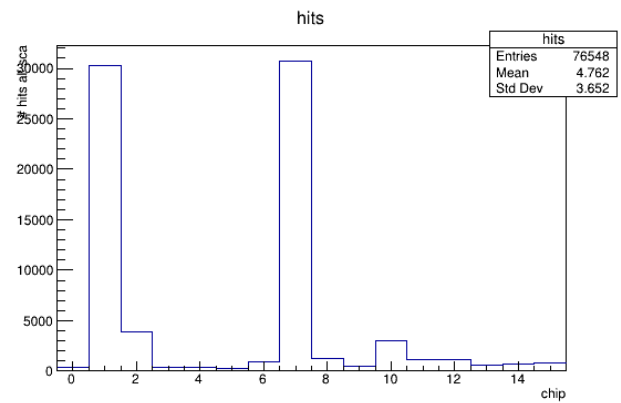
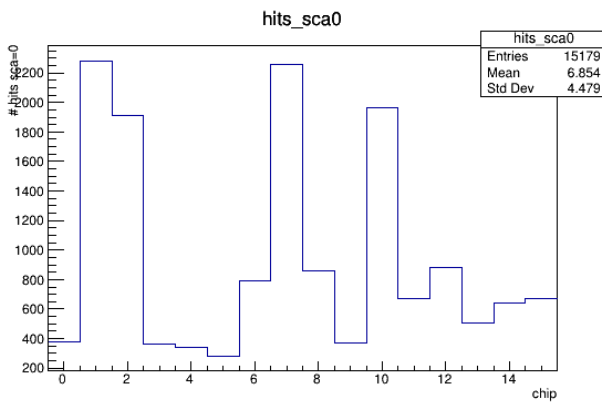
Plots :



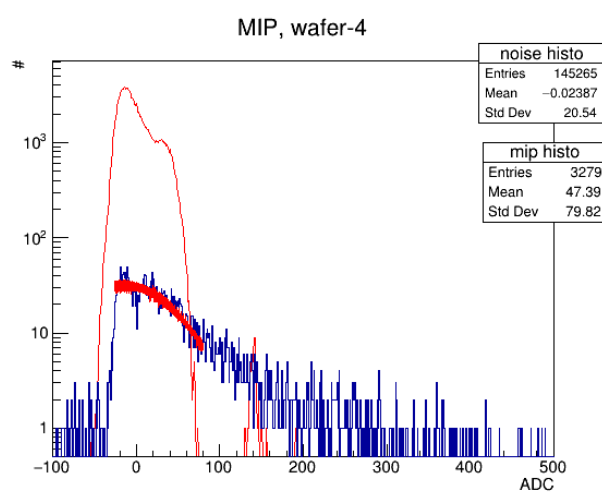
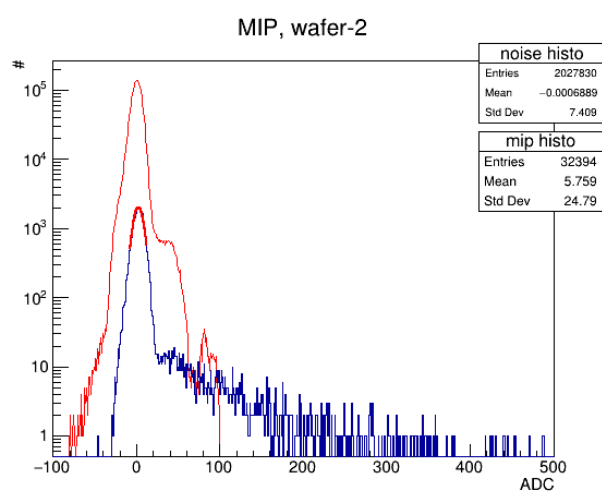
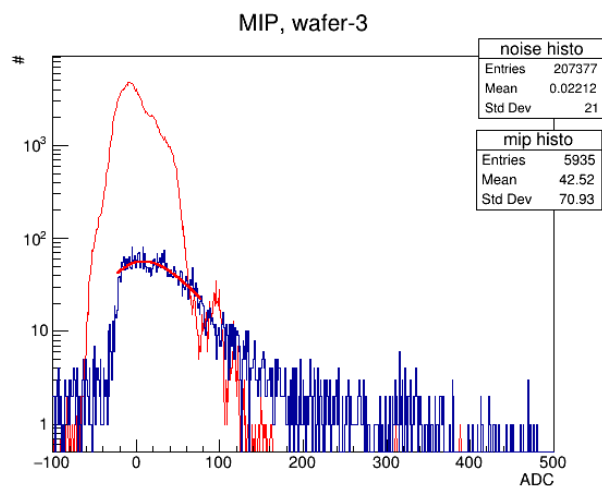
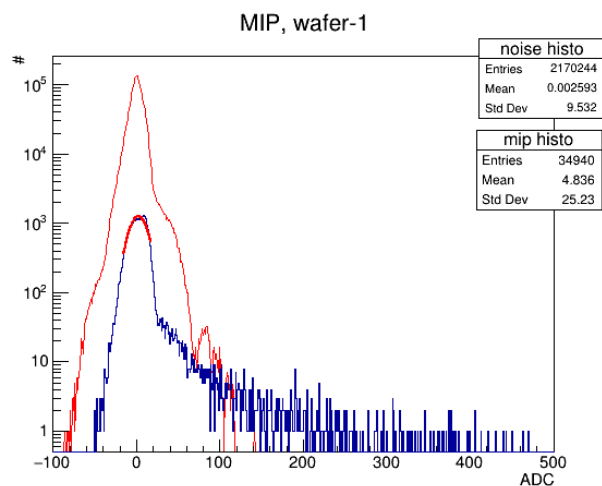
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COSMICS : threshold calculated with 5sigmas, find noisy with thresholds 0.05 and 0.01 (only 10 minutes)

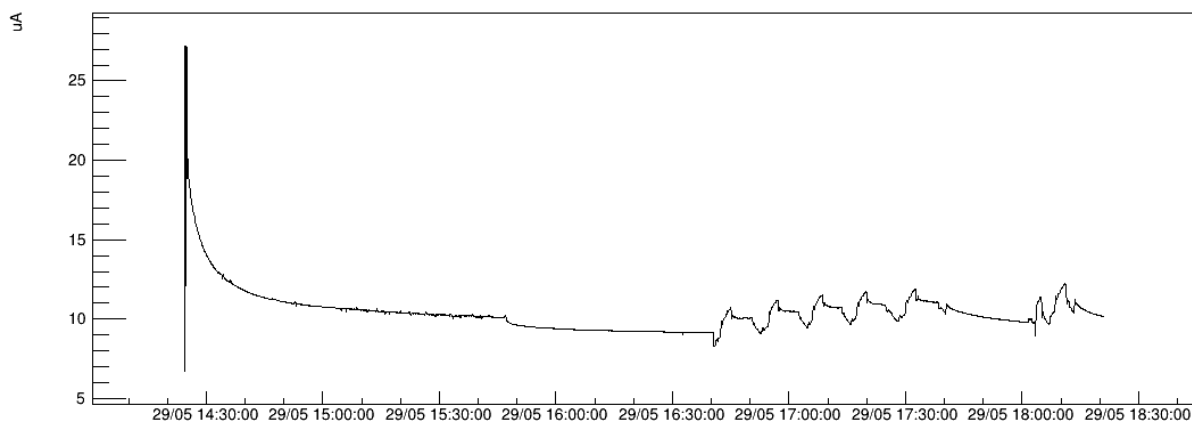


PASSPORT, SiWLC ECAL **SLAB 13**

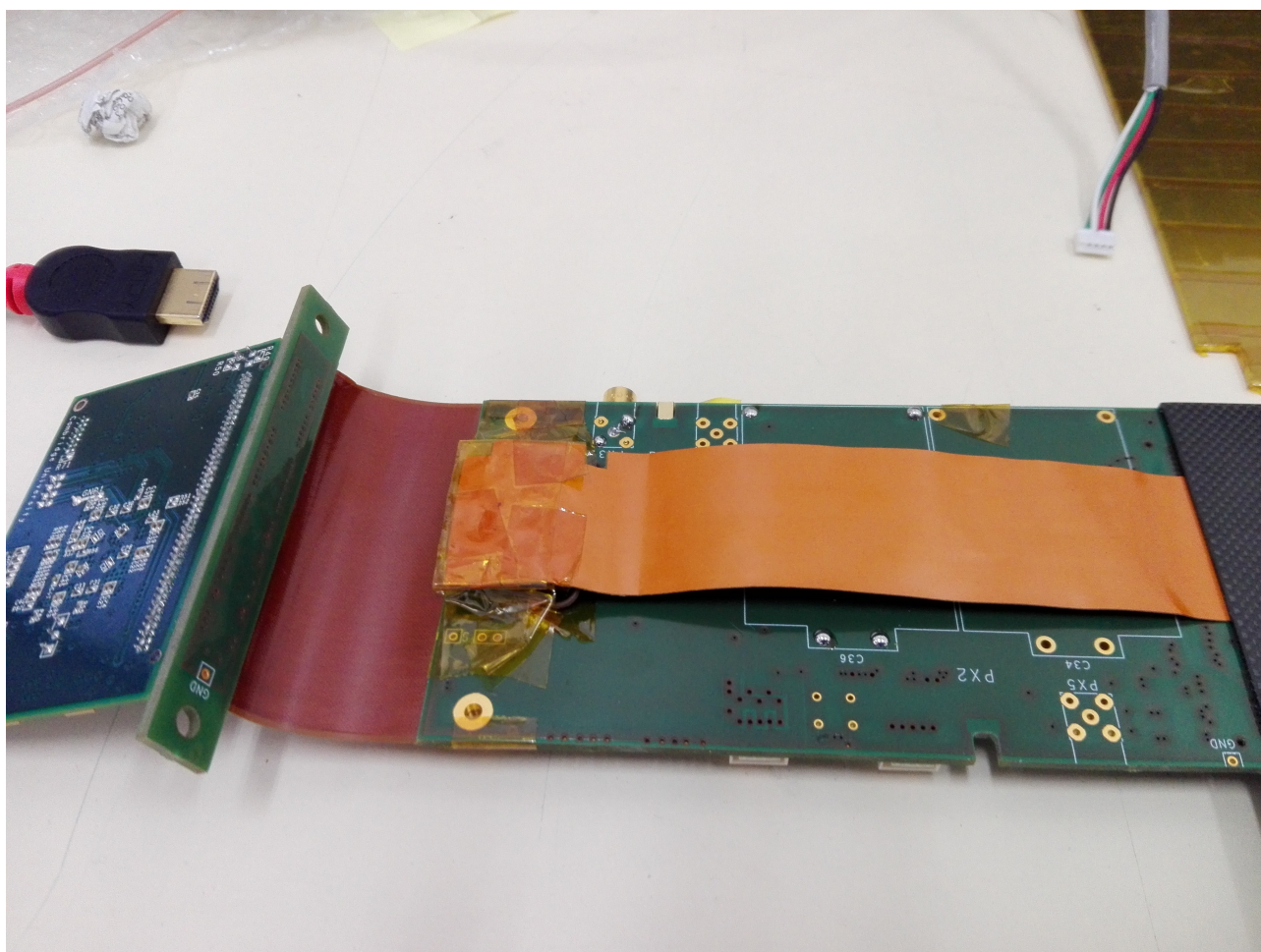


SUMMARY:

HV current vs time plot



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