

SiW-ECAL Kick-off meeting for TB July 2018

A. Irles, LAL
23rd May 2018, CLIC Workshop



- New single slab commissioning procedure (passport delivery)
- New electronic rack
- Possible setup (long slab + single slabs stack)
- In beam commissioning procedure.
- Electromagnetic showers program
 - Pedestal oscillation studies
 - Long data taking runs
- Calendar
- Person power

Improved commissioning procedure

● Improvement for

- Slab 18: from 75 to 45 noisy channels masked
- Slab 19: from 72 to 33 noisy channels masked
- Slab 22: from 173 to 48 noisy channels masked
- From $\sim 8\%$ to $\sim 4\%$

● It is better established (and tested)

● It is generic and flexible

- usable for short and long slab

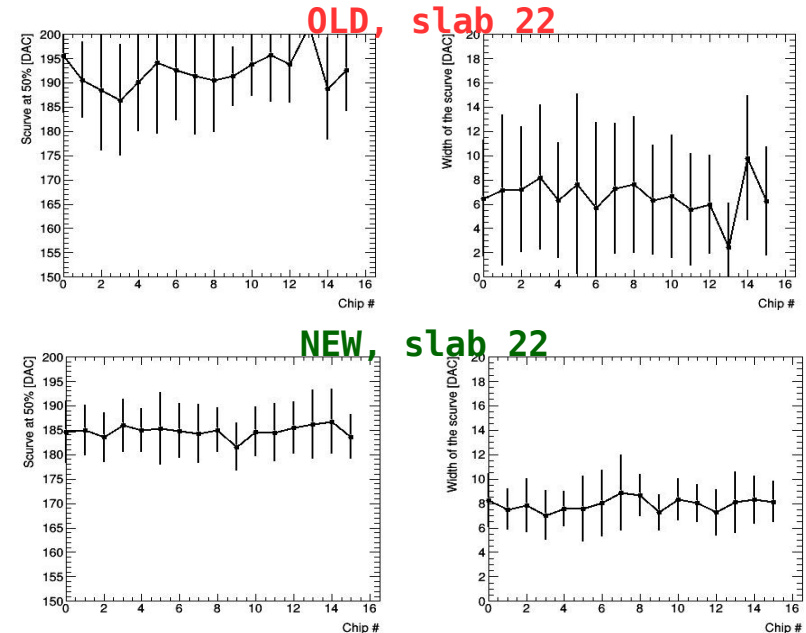
● Includes calibration and pedestal analysis!

- With cosmics or source

● Between 0.5-2 h in total (per slab)

● Already in pyrame3: features/calicoes3_commissionings

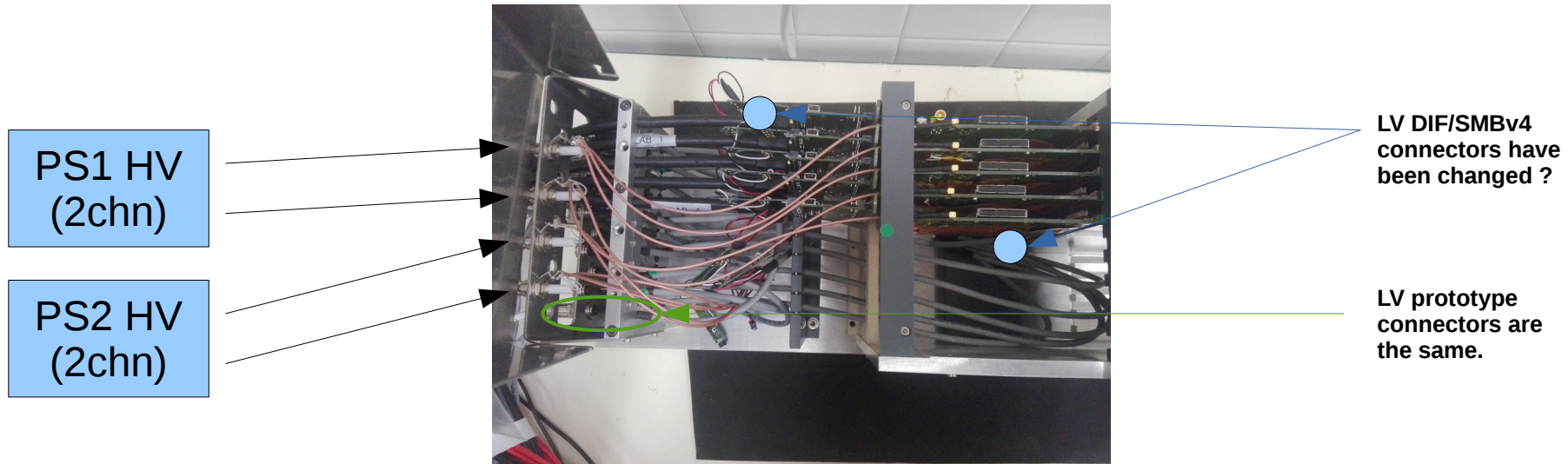
● Twiki (work in progress!) <https://twiki.cern.ch/twiki/bin/view/CALICE/SiWDESY201706Commissioning>



- It is under commissioning at LAL using FEV11_COB

- All pieces ready except the patch panel for HV.
- Possible solution: directly plug the HV to the prototype: we have a PS with 2 channels, we may need one extra PS with two channels.

- Rack ↔ Prototype connectors remain the same... right?



- 7 slabs FEV10 with SMBv4
 - What about slabs 13, 14, 15 ? (or at least 14, 15?)
- FEV13_Jp ?
- Long slab with 5 ASUs and movable support
- Independent DAQs + electronics ? Or sequential testing ?

In beam commissioning for short SLABS using MIPs

- 4Hz + 1.1 ms of active window

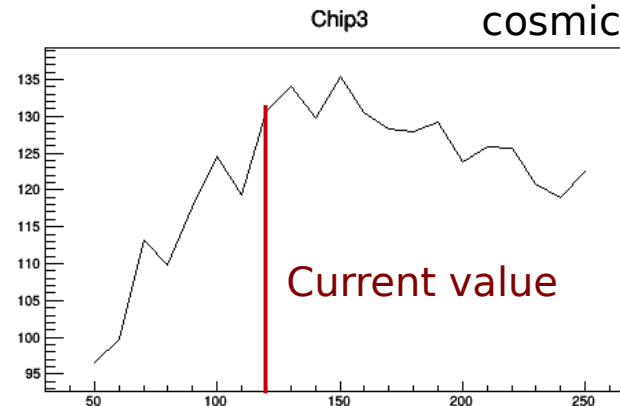
- Some conservative numbers:

- ~2 KHz rates for 3 GeV, beam of ~ 1.7cmx1.7cm (~9 channels)
- 1 min of run is ~ 50 events per channel

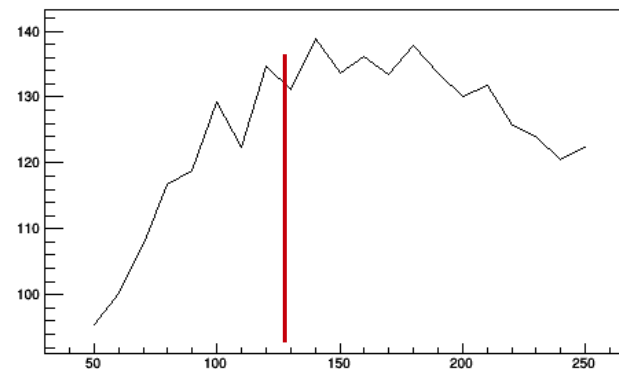
- Hold scan with 1 MIP real signals.

- At least 16 scans (one per chip)
- 1 min per hold value (~70 s counting time for reconfiguration/moving etc)
- 21 hold values
- $21 \times 16 \times 70\text{s} = 6.5\text{ h}$
- Can be easily reduced to a 2-3h run.

Holdscan with
cosmics



Chip12

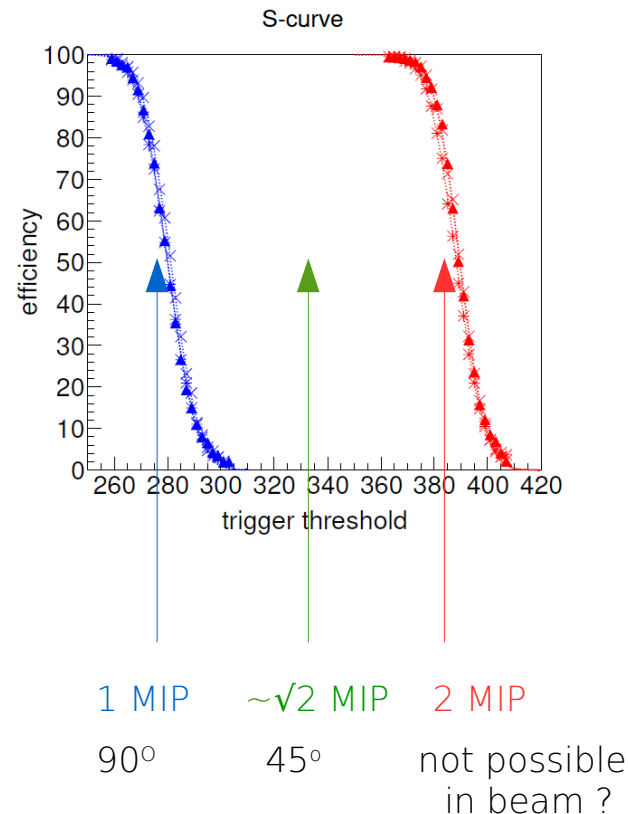


In beam commissioning for short SLABS using MIPs

- **S/N** in the fast shaper (trigger line) Currently estimated to be of the order of **10-13** → **not well known**.

- At least 16 scans (one per chip) in two positions → 90 and 45 degrees orientation
- 1 min per hold value (~70 s counting time for reconfiguration/moving etc)
- 12 trigger values per run
- $12 \times 16 \times 2 \times 70 = 7.5 \text{ h}$
- Indeed I would double the time to have for each scan a run with a slab with low trigger value → use it as reference of number of triggers → **15h + moving the det.**

- This is also crucial to know well where our **trigger threshold** places (current estimations are that in sits on ~0.45 MIP)



In beam commissioning for short SLABS using MIPs

- 4Hz + 1.1 ms of active window
- Some conservative numbers:
 - ~2 KHz rates for 3 GeV, beam of ~ 1.7cmx1.7cm (~9 channels)
 - 1 min of run is ~ 50 events per channel
- If hold value &/or masked channel list is changed, we need a new MIP calibration run.
 - In 2017 this took 50h.
- We are in 6.5+15h+50h + Monday for setup + Wednesday for machine activities
 - → we can finish this in-beam commissioning phase by Friday night

- What do we want/can measure for the long SLAB ?
 - What are the analysis to be done the test long SLAB performance?
- How will the movable structure be moved? Same table than the prototype ? Manual ?
- Same measurements (with a reduced granularity of 5 instead of 16 ASICs) described before ?
 - The 45degrees run sounds difficult
- Estimation of needed time ?

Electromagnetic shower with short SLABS

- We need some dedicated runs to study the pedestal oscillation issue. i.e. :
 - only 1 ASIC enabled in only one SLAB, then increase until we have 1 ASIC enabled per SLAB
 - only 2 ASIC enabled in only one SLAB, then increase until we have 2 ASIC enabled per SLAB
 - All slabs fully operative except the Central SLAB with only 1 ASIC enabled. Then increase it until 16.
 - Play with different power supplies configurations, etc
 - Ideas ?
 - 1h ? 2 days ?
- Do we need more data for electromagnetic showers? It was enough for linearity checks. If yes: probably no more than long energy scan in one single point with W-configuration number 3 will be needed.

- It is the setup available ? (is the dipole accessible?)
- We are not ready to integrate with the telescope + TLU but we can use one or two of ours slabs as reference to track the electron.
 - Then... do we have enough space for the needed X0?
- Estimation of the needed beam time ?

● To do list before passport delivery week:

- Pyrame updates ?
- Slabs 13, 14, 15 ?
- Long slab commissioning.
- LAL rack commissioning.
- EUDAQ producer ?

● Desiderable date to start the passport delivery of single SLAB 18th - 24th June.

- **only 3 weeks to work** , one of these is the ALCW2018 week !!!
- Test the prototype with the LLR & LAL rack ? Only one of the racks ? (Depending on the results of the commissioning)
- What about slabs 13, 14, 15 ? To be tested before the passport delivery week.

● 25th - 29th June work on possible loose ends, prepare the trip and pack.