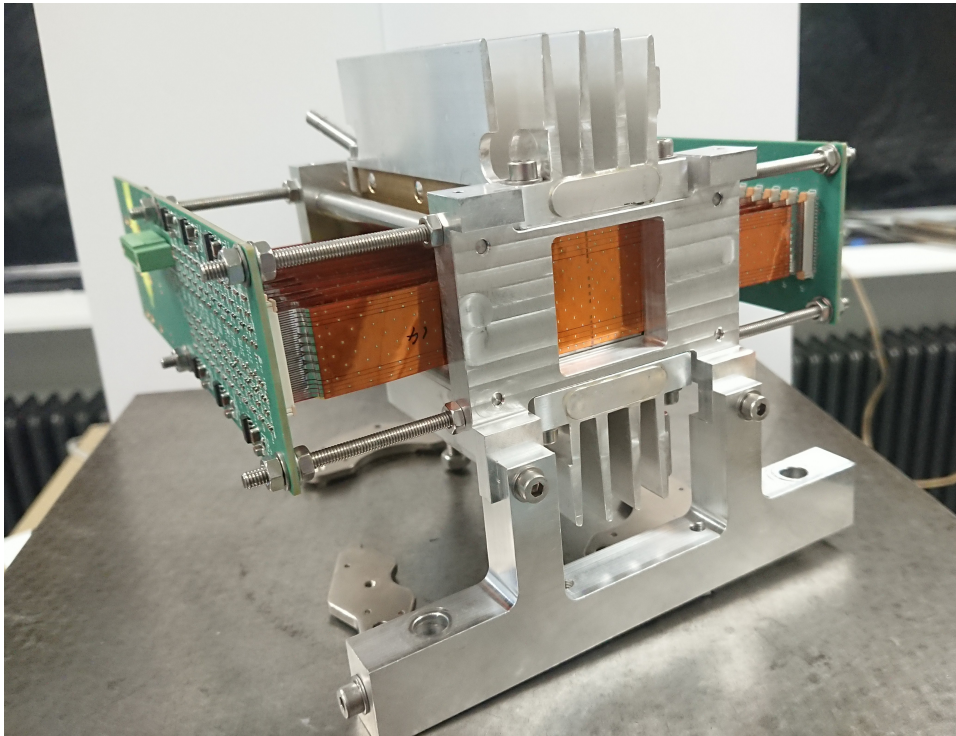


Report from the Technical Board



Katja Krüger
CALICE meeting
Montreal
4 March 2020

Since CERN CALICE meeting

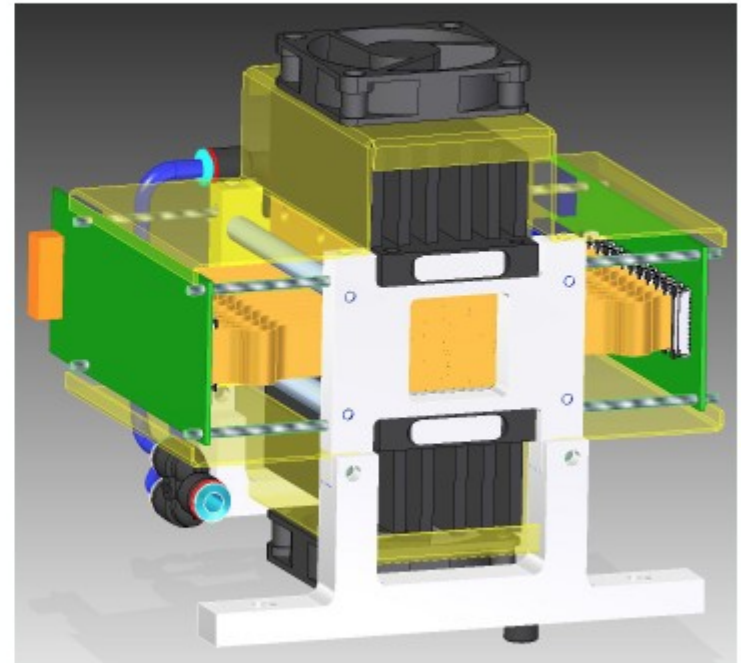
- > 2 Technical Board meetings since TB report during CERN meeting
- > two testbeams since then:
 - MAPS ECAL (ALICE FoCAL): 25. Nov. - 2. Dec 2019 in TB24, 17.-13. February 2020 in TB22 and 6.-13. April 2020 in TB22 at DESY
- > further planned testbeams in 2020 at DESY
 - SiECAL:
 - 23.-29 March in TB24
 - 30. November – 6. December in TB22
 - AHCAL:
 - 16.-22. March in TB24
 - 1.-7. June in TB24
 - 17.23. August in TB24
 - 19.25. October in TB22
 - (CEPC) SciECAL: 17.-30. August
- > software



➤ 1 week 25. Nov. to 3. December 2019 in TB24

MAPS prototype

- mTower
- Small digital electromagnetic calorimeter
3x3 cm² with 24 layers of 2 ALPIDE sensors
and 3 mm W absorbers
- Pixel size 29.24 μm x 26.88 μm
- Readout based on ALICE ITS upgrade, with
some adjustments
- Trigger scintillators from MPI Munich

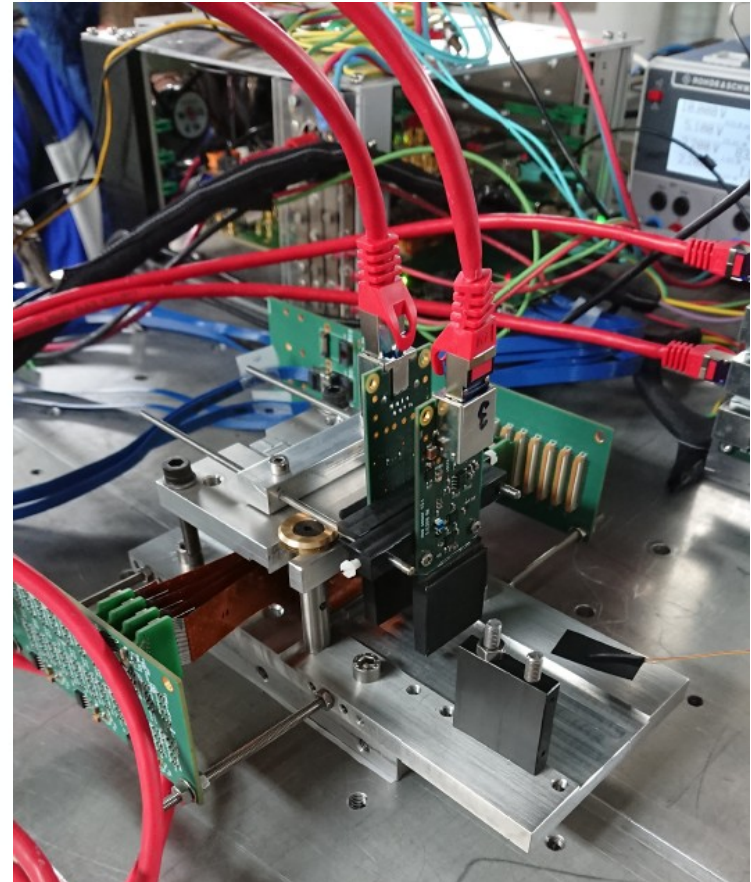


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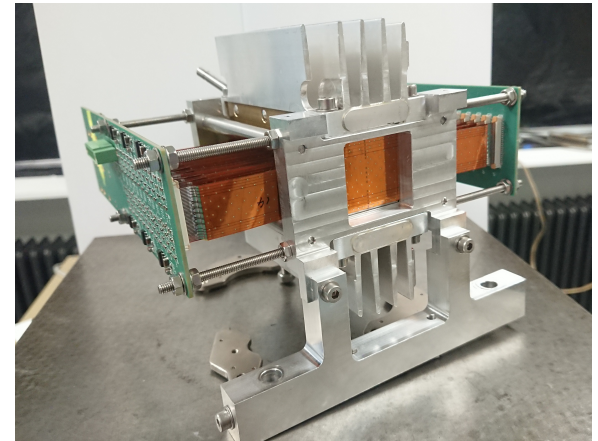
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12 sensor layers



- > 1 week 25. Nov. to 3. December 2019 in TB24: concentrating on many “technical” aspects in analysis
 - pedestal
 - noise dependence on thresholds
 - alignment
 - readout rate
 - discovered a problem limiting the readout rate to ~ 100 Hz, while expected ~ 5 kHz
- > 1 week 17.-24. February 2020 in TB22
 - full 24 layer mTower (1 layer broken)
 - readout rate problem understood (data transfer to PC)
 - concentrating on physics measurements
- > will have 1 more week 6.-13. April 2020 in TB22



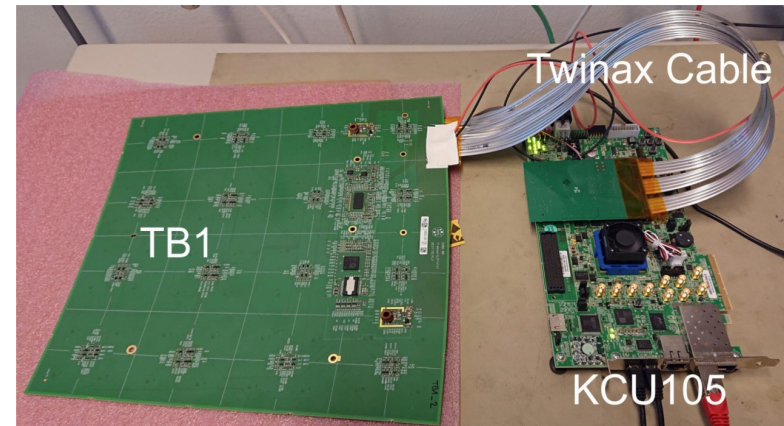
- > beamtime:
 - 1 week 23.-29 March in TB24
 - 1 week 30. November – 6. December in TB22
- > step-by-step development towards full SiECAL prototype with ~25 layers
- > goals for March:
 - test new compact DAQ system with more layers (up to 15)
 - test FEV-12 COB with full silicon wafer
 - MIP calibration, stability, ...
 - EM showers: effects in shower core? shower profiles, ...
- > goals for November:
 - up to 25 active layers
 - compact stack for all layers
 - integration: EUDAQ, beam telescope, ...

> beamtime:

- 1 week 16.-22. March in TB24
- 1 week 1.-7. June in TB24
- 1 week 17.- 23. August in TB24
- 1 week 19.- 25. October in TB22

> goal for all: smaller tests of new hardware

- Megatile: tested a full-size version in 2019, working on reduced cross-talk
- KLauS ASIC: first stand-alone test with beam in March, then integration into AHCAL DAQ
- CMS HGCAL tileboard prototype: first test with particles



- the beam times of SiECAL and AHCAL in March are back-to-back:
 - 16.-22. March and 23.-29 March in TB24
- in the medium term, combined tests of technological prototypes are a must
- decided to use the opportunity for a first test of combined running with a few layers in March
 - common 40 MHz clock provided by AHCAL CCC
 - hardware synchronisation based on micro-spill and BUSY signals
 - software still under discussion
 - had a fruitful meeting with the experts on 27 February, hardware and firmware modifications look small and feasible
 - will dedicate part of the AHCAL beamtime to these tests

- > beamtime: 2 weeks 17.-30. August
- > plan: operate a full SciECAL prototype in beam in 2020
- > status
 - all EBUs produced and tested electrically
 - all scintillator strips wrapped in ESR foil
 - finish assembly, commission and test with cosmics before shipping to DESY
- > had asked for 2 weeks in October, August is probably too tight in time
 - some discussions with testbeam coordinators, hope for cancellations



- > central space for CALICE software is in svn
 - has serious short-comings
 - unclear long-term support
 - many people nowadays are used to git(hub)
- > investigated several (git-based) options, all have their advantages and dis-advantages
- > decided to go for gitlab (CERN-based)
- > set up by Daniel, now need to fill it with life!
- > CALICE software is based on ilcsoft; for the moment, DESY continues ilcsoft support

Conclusions

- > 2018 saw completion of several important testbeam campaigns at CERN SPS
 - should not forget to acknowledge AIDA-2020 support in papers, proceedings, talks, posters, ... where appropriate
- > 2019 more quiet (as expected), mostly smaller prototypes
 - important for first tests of new developments
- > 2020 will probably similar
- > increased demand at DESY in 2019 and 2020, but we mostly got what we asked for

- > if we want to have successful tests of combined prototypes in 2021, we need to prepare them well, and 2020 is the time to do that!