

CALICE Testbeams 2022

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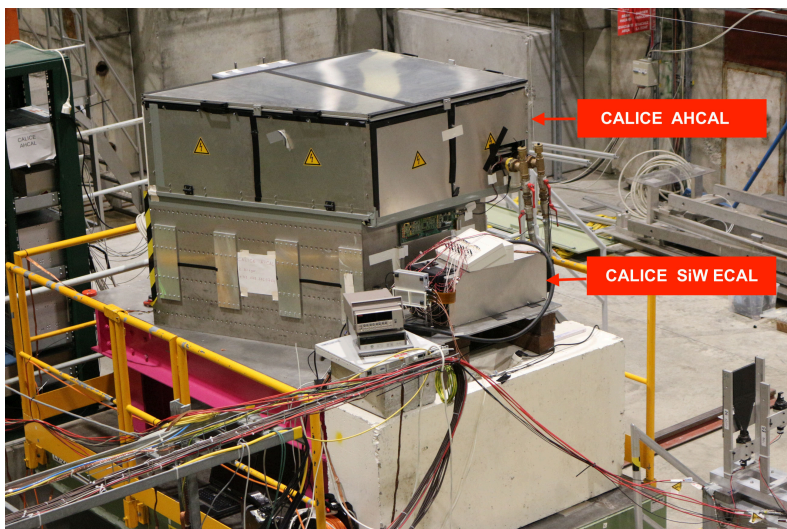
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***PS/SPS Feedback Meeting
01/12/2022***

Prototypes and beam time



SiW Ecal + AHCAL
15360 + 22000 cells



H2 Beamtime 8/6/22 – 22/6/22

SDHCAL
500000 cells



H2 Beamtime 21/9/22 – 28/9/22

ScW Ecal + AHCAL
6700 + cells



H8 Beamtime 19/10/22 – 02/11/22

Data taking – SiW ECAL/AHCAL

Losses of beam time → ~50% Duty Cycle over 2 weeks

- Could only do limited part of our planned program
- Especially missing: planned stand-alone measurements of AHCAL nearly all skipped

Besides stops... good beam quality

– Electrons, hadrons energy scans

- ~ perfectly tuned (hadrons on square root energy scale: 20, 41, 60, 106, 150, 200 GeV)
 - Highest energy beam spot a bit off (2 cm to the right ?)
 - Thanks to Nikos

Temperature alarm in control room

Responsibilities for solving the problem not clear (repaired ourselves at the end)

Data taking SDHCAL

Main goals:

- ❑ Apply a new calibration scheme (based on equalizing the response by applying different threshold value/ASIC) in order to improve on the SDHCAL response homogeneity.
- ❑ Study the difference of hadronic showers produced by protons, pions and kaons in order to exploit their differences in developing new PID techniques.

Important feedback for future tests:

Operation of Cerenkov detectors is involved

Consider extension of support for operation of Cerenkov Detectors

Data taking ScECAL/AHCAL

- Successful experiences with combined setup of CALICE ScW-ECAL+AHCAL
- Completed all the plans, thanks to
 - Strong teamwork, robust detector system and stable SPS beam running (**especially 3 spills per super cycle would be extremely helpful for efficient data taking**)
 - Great substantial support from CALICE and CERN
- Decent statistics of data sets collected (~25M events in total), enabling for
 - Highly granular calorimeter performance studies
 - Detailed shower studies in 3D space and time domain
 - Validation of Geant4 simulation
 - Particle-flow studies: e.g. Arbor
- Structures properly packed and stored at CERN Bldg. 190 (thanks to EP dep.)
 - Ready for future beamtests at PS/SPS after 2022

Final Words

CALICE would like to express its gratitude and appreciation for all the support that we have received (again) in 2022

This spans from the provision of the beams over technical and logistic support
It takes it all to run a successful beam test

It's always a pleasure and we are looking forward to coming back in 2023