

# Very short status on activities in Task 14.3.1: Infrastructure for Silicon Calorimeters

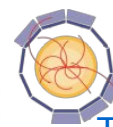
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IT Accelerator Engineering Center ITAEC

**AIDA-2020 WP14 F2F,  
CERN  
2020-02-13**



# Publications

## Beam Test (DAQ → see dedicated presentation)

- **DESY-2017-06:**
  - on FEV10/11: NIM A accepted
    - Beam test performance of the highly granular SiW-ECAL technological prototype for the ILC
  - on log slab: VCI conf. paper published (NIMA)
    - Update presented at CHEF-2019 on S/N ratios
- **DESY-2019-07**
  - LCWS proceedings (in prep) + CHEF'19 presentations
    - FEV13: timing perf.
    - FEV-COB: first commissioning

Development and test of the chip-on-board PCB solution for the SiW-ECAL of the ILD.

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## Preparation and operation of SiW-ECAL technological prototype for DESY test beam 2019

Kiichi Goto for CALICE SiW-ECAL group



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Spectrometers, Detectors and Associated  
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## Beam test performance of the highly granular SiW-ECAL technological prototype for the ILC

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<https://doi.org/10.1016/j.nima.2019.162969>

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Nuclear Instruments and Methods in Physics  
Research Section A: Accelerators,  
Spectrometers, Detectors and Associated  
Equipment

Available online 17 September 2019, 162732

In Press, Corrected Proof



## ILD silicon tungsten electromagnetic calorimeter first full scale electronic prototype

Frédéric Magniette<sup>2, 3</sup>, Jérôme Nanni, Rémi Guillaumat, Marc Louzir, Marc Anduze, Evelyne Edy, Oleksandr Korostyshevskiy, Vladislav Balagura, Vincent Boudry, Jean-Claude Brient, ILD concept group

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# Preparation of 2020 beam tests

## FEV10/11 status

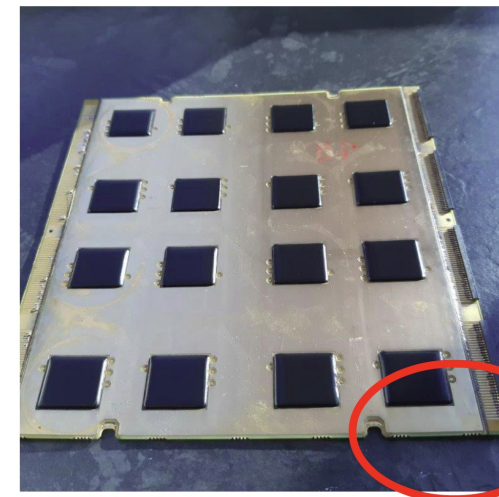
### DESY in March

- Unprecedented number of layers: 16–22
  - 11(+1) FEV10/11:
    - Adaptation to compact DAQ
    - 3 recovered
  - 2 FEV12 completed (1→4 wafers)
    - with some difficulties
  - 1 uncompleted COP
    - Defect procedure in encapsulating chips (Hybrid SA): cooked at 140°C for 6h → bending
  - 2(+3) FEV13
  - (2 FEV13):
    - Material tested and send to Japan for assembly
- First use of the Compact DAQ at full capacity (15 Layers)

### DESY in November:

- all in 2 single structure

SLAB	DESY 2017		CERN 2018		Comments and 2020 status
	status	calibrated cells	status	calibrated cells	
13		0%		0%	Glue spilled in the SMBv. <b>Recovered for 2020</b>
14		0%		0%	Error in the SR retour → fixed
15		0%		0%	Stopped working during the 2017 commissioning. <b>Being recovered for 2020 ?</b>
16		92%		?	At CERN : low performance on the corners of the ASU and SMB interface
17		93%		95%	
18		94%		?	At CERN : a pattern of lower MIP values is seen in the center of the ASU.
19		93%		93%	
20		94%		96%	
21		54%		0%	Stopped working at DESY 2018. <b>Fully recovered for 2020</b>
22		84%		87%	
xx		0%		0%	FEV10 Never used → operative now.



# FEV12 post-processing

## FEV12 (two ASUs)

- ▶ Threshold issue during 2019 → fixed.
- ▶ 3 more 500um wafers glued in each ASU
- ▶ ASU 86, some issues were found during the gluing made the result “less optimal” than usual due to:
  - Different glue (different viscosity)
  - Connectors were in place → need of readaptation of the aspiration plate
  - New software for the robot → needed some tuning
  - Intrinsic difficulty of gluing wafers on a board with a wafer.
- ▶ Result:
  - Wafers slightly missaligned → the one near the connectors is 100-200um outside → DANGER
  - One wafer with only 90% of cells connected.
- ▶ The other looks perfect.
- ▶ **Both are operative (tests ongoing)**

