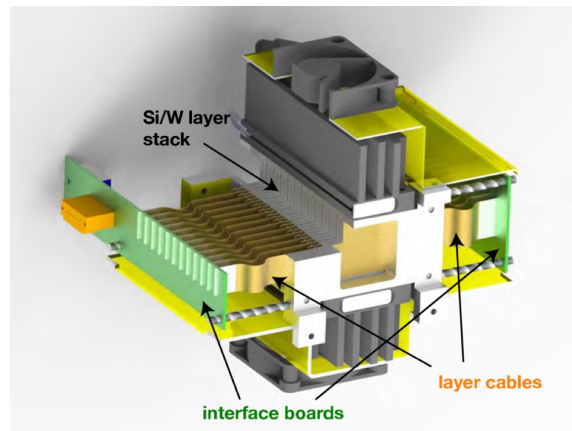


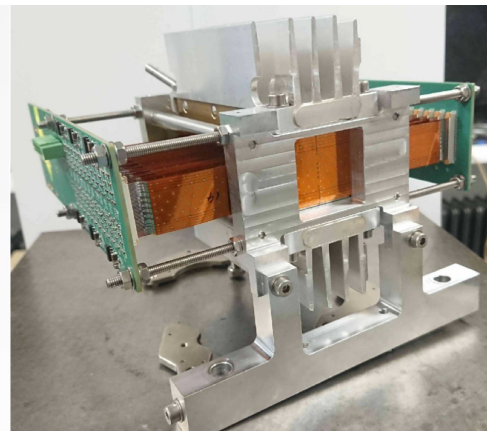
Digital ECAL

Digital ECAL

- Extension of two separate projects
 - EPICAL-2, 24M pixel, 3x3x20 cm prototype
 - See e.g. [J. Alme et al 2023 JINST 18 P01038](#)
 - DECAL, reconfigurable, rad-hard sensor design
 - See e.g. [P.P.Allport et al, Sensors 2022, 22\(18\) 6848](#)



[J. Alme et al 2023 JINST 18 P01038]



[P.P.Allport et al, Sensors 2022, 22(18) 6848]

Proposal for DRD6.1 – current draft

OBJECTIVES

- Deliverable 1: Evaluation of ultimate performance of current state-of-the-art Digital ECAL prototype, EPICAL-2 (“off-the-shelf” ALPIDE sensor)
 - Milestone 1.1 Publication of technical details of EPICAL-2 prototype construction and operation, to demonstrate limitations
 - Milestone 1.2 Publication of existing testbeam data from SPS run, up to 80 GeV
 - Milestone 1.3 Publication detailing simulation framework used for performance evaluation
 - Milestone 1.4 First release of simulation models (user-contributed examples for AllPix2 project)
- Deliverable 2: Establish requirements of custom sensor for digital calorimetry
 - Milestone 2.1 Workshop presentation, reviewing needs for all known future candidate applications (incl. timing)
 - Milestone 2.2 Decision on scope of sensor development: general reconfigurable sensor vs. custom-adaptation of existing sensor

Proposal for DRD6.1 – current draft

- Deliverable 3: next-generation sensor design (clearly overlaps with other areas e.g. DRD 3, 7)
 - Milestone 3.1: review
 - Milestone 3.2: MPW runs
- Deliverable 4: Evaluation of sensor designs (size depends on route chosen for sensor development and hence whether beam-based is viable)
 - Milestone 4.1: initial device evaluation
 - Milestone 4.2: source-based tests
 - Milestone 4.2: beam-based tests

References

1. [J. Alme et al 2023 JINST 18 P01038](#)
2. J. Fasselt, Masters thesis, Humboldt U. Berlin, [CERN-THESIS-2022-326](#)
3. [I.Kopsalis et al, NIM A1038 \(2022\) 166955](#)
4. [P.P.Allport et al, Sensors 2022, 22\(18\) 6848](#)

Institutes – list evolving!