CALICE @ Utrecht
- Introduction -

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CALICE Collaboration Meeting, Utrecht, The Netherlands, April 2019

Max-Planck-Institut für Physik
(Werner-Heisenberg-Institut)

Welcome

to Utrecht

- First: a warm ***Thank You*** to our hosts:

  Naomi van der Kolk, Thomas Peitzmann and the whole team at Utrecht University!

- And thank you all for coming to this meeting!

Universiteit Utrecht

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- A group with strong activities at the LHC in ALICE - leading the construction of the first full MAPS ECAL prototype

Universiteit Utrecht

CALICE

Where we are

- Continued progress in our technical program
  - Test beam program - with combined beams high up on the agenda:
    - SiW ECAL + SDHCAL
    - CMS HGCAL + AHCAL

    last fall
  - ⇨ Now a period of rest with the shutdown at CERN
  - But: Activities continue at other facilities
    - ScECAL tests at ELPH
    - SiW ECAL, AHCAL studies at DESY

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- With the new data: Analysis activities picking up speed again…
  … and others coming to fruition: Several papers submitted recently, or in the pipeline

CALICE

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  - Proof of the principle of highly granular calorimetry
  - Establishment of viable technical solutions for collider experiments
  - Common running and performance analysis of ECAL + HCAL systems

CALICE

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- This brings back the question I have been putting forward in the *last three* meetings already:

  How do we make our results as useful as possible to the wider community?
  - Should we provide a evaluation of the strong and weak points of the different technologies we are studying - to inform choices of experiments ?
  - Not a “ranking” of technologies - too many factors contribute, which influence the position of a given application in the “optimisation” parameter space.
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This gains increasing relevance once concrete projects fall into place!

CALICE Review

The “Highlight” of the last months

- Review of CALICE by the ECFA Detector R&D Panel at DESY, November 6 & 7, 2018
  - Panel members:
    - Martin Aleksa
    - Silvia Dalla Torre (ECFA panel member)
    - Doris Eckstein (ECFA panel member)
    - Marek Idzik
    - Arno Straesser (ECFA panel member)

CALICE is the first (and so far only) project that was reviewed by the “restarted” panel

Review report available on CALICE twiki and ECFA R&D panel webpage.

CALICE Review

Committee Recommendations

CALICE is a collaboration to develop, test and establish technological solutions for highly granular calorimeters optimised for particle flow, generally, but not exclusively, in view of applications at high energy lepton colliders. During the last years CALICE has demonstrated the feasibility of this concept by prototyping activities accompanied by simulation studies.

We recognize the effectiveness of the R&D collaborative effort and congratulate to the achievements realised in an environment where the internationally agreed path towards future high energy colliders is still open to different options.

Independent of this future development, the committee recommends that the CALICE collaboration continues to analyse the rich set of data that has been and will be collected in a number of test beam campaigns with prototypes of different technologies and to publish the results. These data are a crucial input for an improved understanding of hadronic showers. The exploitation of these data shall be continued in close collaboration with the GEANT4 team to contribute to an improved modelling of hadronic interactions, which is also of interest beyond high energy physics applications.

CALICE Review

Committee Recommendations

Furthermore, the CALICE collaboration is encouraged to bring the main proposed technologies to a comparable level of maturity and understanding, including a simulation of jet performance with particle flow algorithms. The collaboration is also invited to provide input for scalable cost models for the different technological approaches. This work will be the basis for the choice of an optimal calorimeter concept and layout in case of a positive decision about the realisation of a linear collider.

The CALICE studies established important ingredients for the decision and design of the CMS HGCAL, thus demonstrating the fertility of the CALICE effort. The HGCAL realisation offers the opportunity to validate the detector concepts in a full experiment and to profit from an advancement in integration aspects, mechanical engineering and development of electronics using technologies suited for future applications.

CALICE Review

Committee Recommendations

Since the calorimeter concepts studied by CALICE will be valuable for for particle physics experiments in general, including circular colliders, the CALICE collaboration shall be open for such applications. We encourage to explore the possibility of a un-pulsed, continuous operation of the calorimeters, which includes aspects of electronics readout, cooling and layout optimisation. The future CALICE test beam programme shall thus explore the timing capabilities of the new prototypes. Moreover, the physics programme may be extended by using further combinations of absorber and sensitive material, e.g. tungsten and scintillator.

A continued support in human and financial resources as well as access to and support at test beams is required to accomplish the goals according to the above mentioned recommendations.

Evolving Landscape

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    General sentiment: We cannot continue to wait for Japan, need to make the LC case in Europe now.

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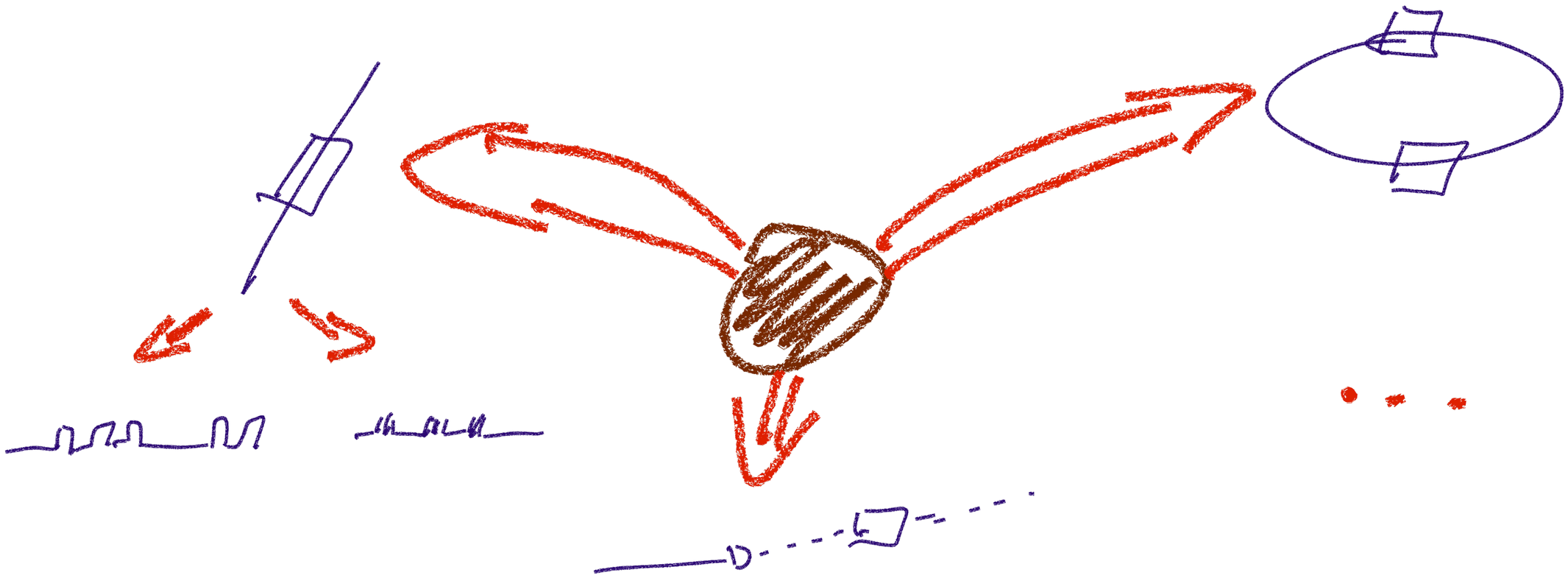
➪ The discussions in Granada will get very interesting - but will most likely not bring clarity yet.

Evolving Landscape

The Meaning for CALICE



- Opportunities for our technologies: All future collider projects are interested, as well as non-collider projects - and each comes with its own set of technological challenges

➪ Continue the path of diversification - and remain open for new developments and new groups!

Upcoming Events

Direct Relevance for CALICE

- European Strategy Open Symposium, Granada, Spain, May 13 - 16, 2019
- EPS-HEP 2019, Ghent, Belgium, July 10 - 17, 2019
- LeptonPhoton 2019, Toronto, Canada, August 5 - 10, 2019
- LCWS 2019, Sendai, Japan, October 28 - November 1, 2019
- …

- Next CALICE Meetings:
  - Fall 2019 to be decided at this meeting - if there are additional proposal let me know today!

CALICE: A Time for Change

- My second term as Spokesperson comes to an end at this meeting:
  Elections being prepared in the Institute Board

  One candidate: **Roman Pöschl**

Discuss with your institute representative, in preparation for the IB meeting on Friday lunch time.

Elections will take place electronically in the coming weeks.

Finally…

… lets get to work!

Enjoy the Meeting!