



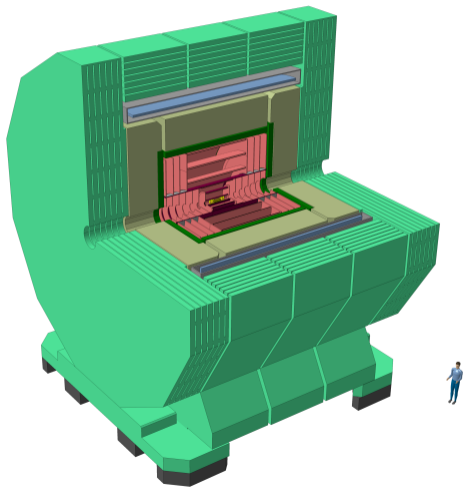
CLD Plans

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On behalf of the CLD team

FCC Week
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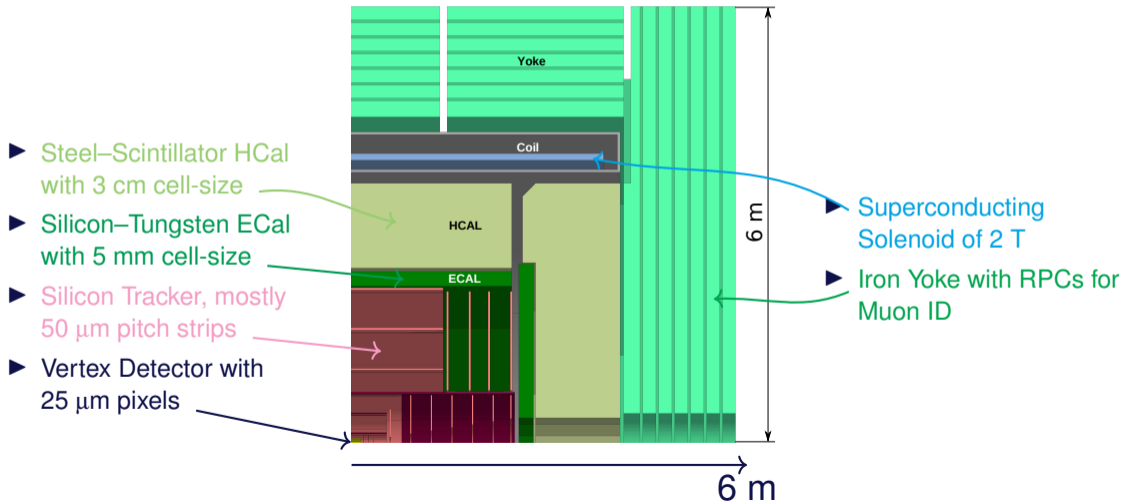
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CLD Detector Layout

General purpose detector for Particle Flow reconstruction [1, 2]



Software, Simulation, Performance

- ▶ Provide advice and support for using the currently available detector model or to implement updated detector models
- ▶ Provide simulation samples with single-particle guns, and maintaining them for every new version of the geometry
 - ▶ Hosted on ANL web-space for anonymous access:
<https://atlaswww.hep.anl.gov/hepsim/index.php>
- ▶ Validate resolutions and efficiencies using single particles, and run such tests on every new major version.
- ▶ Re-tune Delphes fast simulations to reflect the full simulation studies.

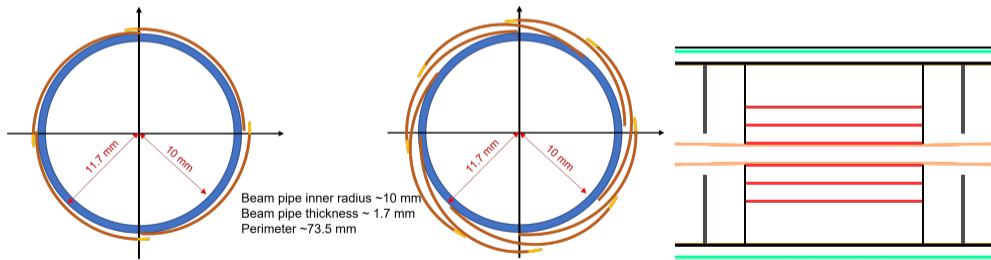
GitHub repositories for code, questions, bug reports:

- ▶ Reconstruction: <https://github.com/key4hep/CLDConfig>
- ▶ Detector model: <https://github.com/key4hep/k4geo>
- ▶ Or specific packages under <https://github.com/key4hep>

Many interesting studies using CLD full simulation presented in the software session.

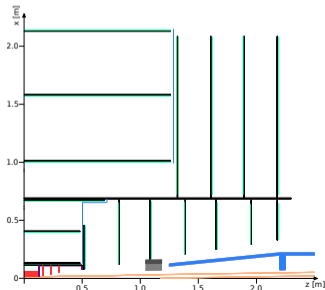
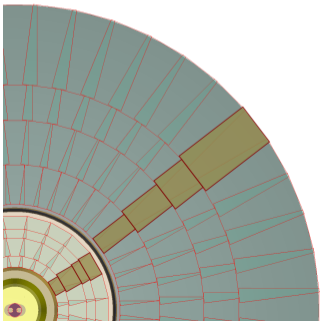
Vertex Detector

- ▶ The FCC-SEED (Snail shape vErTEx Detector [3]) is going to be implemented into the CLD concept (left, middle)
- ▶ Updated material estimates could be done for existing layout (right), which might be easier to validate with current tracking software



Main Tracker

- ▶ For near term we will use the current detector description based on ALICE ITS technology for geometry optimization and performance studies
- ▶ Some Eols covering related R&D [4, 5]
- ▶ Information exchange and discussions on status and directions at BNL Tracker workshop ([C. Paus' talk](#))
- ▶ Interested parties to perform silicon-system-level studies are very welcome as the majority of this community is still busy on HL-LHC upgrades



ECal

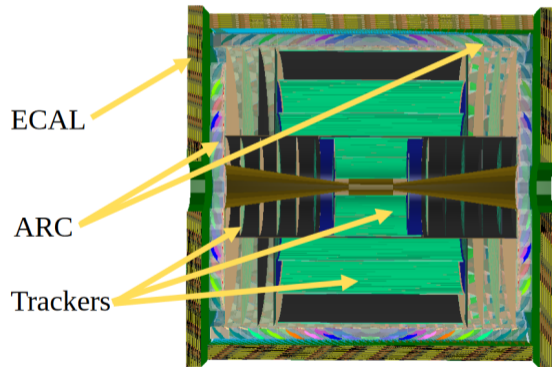
- ▶ Can benefit from Silicon–Tungsten ECal work covered by separate EoI [6]
- ▶ Progress and planning shown in [V. Boudry's talk](#)

HCal

- ▶ SiPM-Tile EoI covering the needs [7]

ARC: Rich-Detector

- ▶ Option available as separate detector model.
- ▶ See also presentation by Serena Pezzulo from Tuesday: [Status of the ARC](#).



TDAQ

- ▶ Trigger and DAQ needs covered by separate EoI [8].

MDI

- ▶ Rely on common effort.

Summary

- ▶ CLD detector model studies in full simulation for many years
- ▶ Many opportunities to get involved at the core level of the detector
- ▶ Synergy with many EoIs



Thank you for your attention!

References

- [1] N. Bacchetta et al. *CLD – A Detector Concept for the FCC-ee*. 2019. arXiv: 1911.12230 [physics.ins-det].
- [2] Jinlong Zhang et al. *The CLD Detector Concept for the FCCee*. https://indico.cern.ch/event/1529896/contributions/6436835/attachments/3036759/5363090/CLD_EOI-150225.pdf.
- [3] Jeremy Andrea et al. *FCC Snail-shape vErtEx Detector (FCC-SEED)*. https://indico.cern.ch/event/1529896/contributions/6436857/attachments/3036741/5363070/Expression_Of_Interest_for_a_Vertex_detector_at_FCCee-january2025.pdf.
- [4] Anthony Affolder et al. *Large Area Tracking Systems for FCC-ee Detectors*. https://indico.cern.ch/event/1529896/contributions/6436817/attachments/3036725/5363053/FCC_EOI_SCIPP-100325.pdf.
- [5] Jens Weingarten et al. *Monolithic Active Strip Sensors*. https://indico.cern.ch/event/1529896/contributions/6436834/attachments/3036756/5363087/2025-01-30_EOI-Tracker_v2.pdf.
- [6] Vincent Boudry et al. *A Silicon-Tungsten ECAL for the FCC Detectors*. <https://indico.cern.ch/event/1529896/#23-siw-ecal>.
- [7] Frank Simon et al. *SiPM-on-Tile HCAL Expression of Interest*. https://indico.cern.ch/event/1529896/contributions/6436838/attachments/3036758/5363089/AHCAL_FCC_ee_EOI-140225.pdf.
- [8] Davide Cieri et al. *Expression of Interest: Development and Implementation of Advanced TDAQ Systems for FCC-ee Experiments*. https://indico.cern.ch/event/1529896/contributions/6436830/attachments/3036746/5363075/FCCee_TDAQ_EoI-200325.pdf.