



# Software for PED studies

# Information and News

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FCC Joint Detector Concepts C and Software Meeting  
CERN, Zoom

Jul 31, 2023  
G Ganis, CERN-EP

# Recent activities



- By-weekly meeting on full simulation and reconstruction
  - [12 Jul 2023](#)
    - Status of ARC reconstruction
  - [24 Jul 2023](#)
    - Status of IDEA Drift Chamber implementation
- ECFA workshops
  - [Reconstruction](#), 11-12 July, CERN
    - Report by P Azzi later today

# ARC reconstruction (M. Basso)



- ARC is compact  $4\pi$  RICH detector proposed by R Forty et al. to add  $\pi/K$  separation to CLD
  - See for example [this presentation](#).
- Status of Implementation in Key4hep [presented](#) by A Tolosa Delgado at FCC Week
  - Description available in DD4hep, Cherenkov photons can be simulated
  - Reconstruction
- Progress on [Reconstruction](#)
  - Implement algorithm developed for LHCb
    - Hits for a given track line-up at a given Cherenkov angle
      - See [this presentation](#)
  - Will be part of k4RecTracker
  - Working with particle gun to understand implementation details

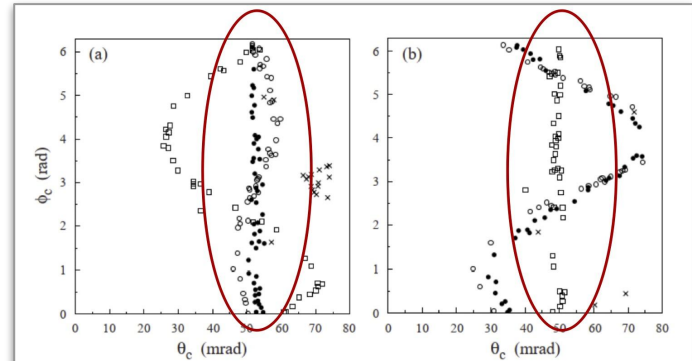


Figure 4: Reconstructed Cherenkov angles ( $\theta_c, \phi_c$ ) for the hits in the event of Fig. 2, when calculated assuming that the photons were emitted from the gas radiator of RICH-1, from two tracks in turn: (a) from the track that gave the right-most ring in the dashed box of Fig. 2, and (b) from the track that gave the left-most ring in the same box. The symbol indicates which track the hit truly originated from: solid points for the track that gave the right-most ring, open points for the tracks that gave the other two rings, and crosses for hits from any other track.

# Status of IDEA DC implementation (B François)

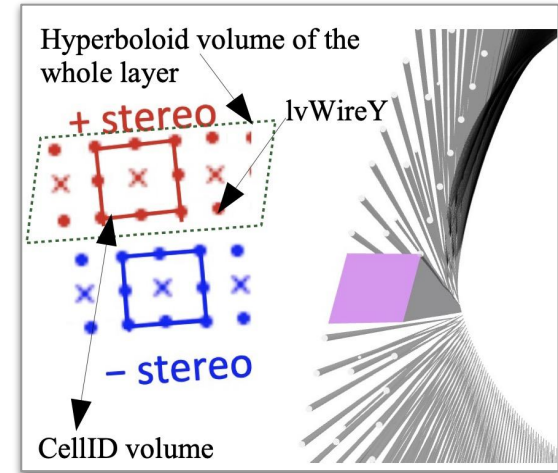


- The IDEA Drift Chamber is the main central tracker for two Detector Concepts

- Full stereo unique volume, 112 layers, with high granularity, low mass and short drift path
  - Complex detector description
  - Available in standalone, but need DD4hep for integration with other detectors
- Good progress since November 2022 (dedicated fellow, BF, input from proposers)
  - Material budget, sim hits in Key4hep

- Recent progress

- Consolidation of the geometry description
  - Bug fixes in description of wires, stereo angles
- Progress on detector segmentation
  - Definition of sensitive volumes



# E-groups re-organization



- Simplification of EOS access

- Unique group for reading: fcc-eos-access
  - Previous ones (fcc-eos-read-...) kept for internal usage but not open anymore
  - All members transferred to fcc-eos-access
- Writing still controlled by fine-grained e-group structure
- [Documentation](#) updated

- Simplification of main communication lists

- Fcc-experiments-sw-dev being phased out
  - Many non-existing/non-valid addresses
- Subscribed to FCC-PED-SoftwareAndComputing-... egroups

# Next meeting



- August 28th
  - Developing agenda: <https://indico.cern.ch/event/1300800/>
- Proposals for contributions welcome