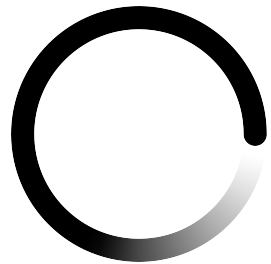


# FCC Detector Full Sim

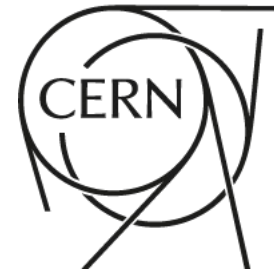
## News

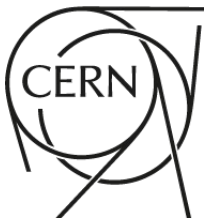
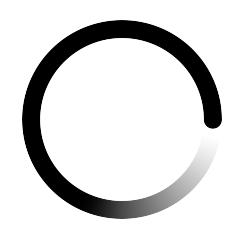
Brieuc Francois (CERN)

Nov. 8<sup>th</sup>, 2023

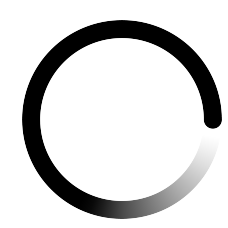


**FUTURE  
CIRCULAR  
COLLIDER**

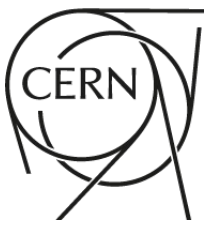




- FCCDetectors → k4geo migration is almost completed
  - PR#276 Noble Liquid ECAL barrel detector builder + documentation
    - Merged
  - PR#271 ARC (PID) barrel + endcap detector builders, compact file, examples, tests, documentation
    - Merged
  - PR#273 Detailed version of the IDEA vertex detector
    - Merged
  - PR#282 IDEA (simplified version from FCCDetectors) and ALLEGRO detectors
    - Merged
  - Migrating now PR's opened in FCCDetectors during the migration (Noble Liquid ECAL segmentation improvement)
    - PR#293 (merged) and PR#296 (under review)
- To be integrated (not part of the 'migration', was never used inside FCCDetectors)
  - Dual readout crystal ECAL, Dual readout fiber HCAL (PR#292), Detailed drift chamber

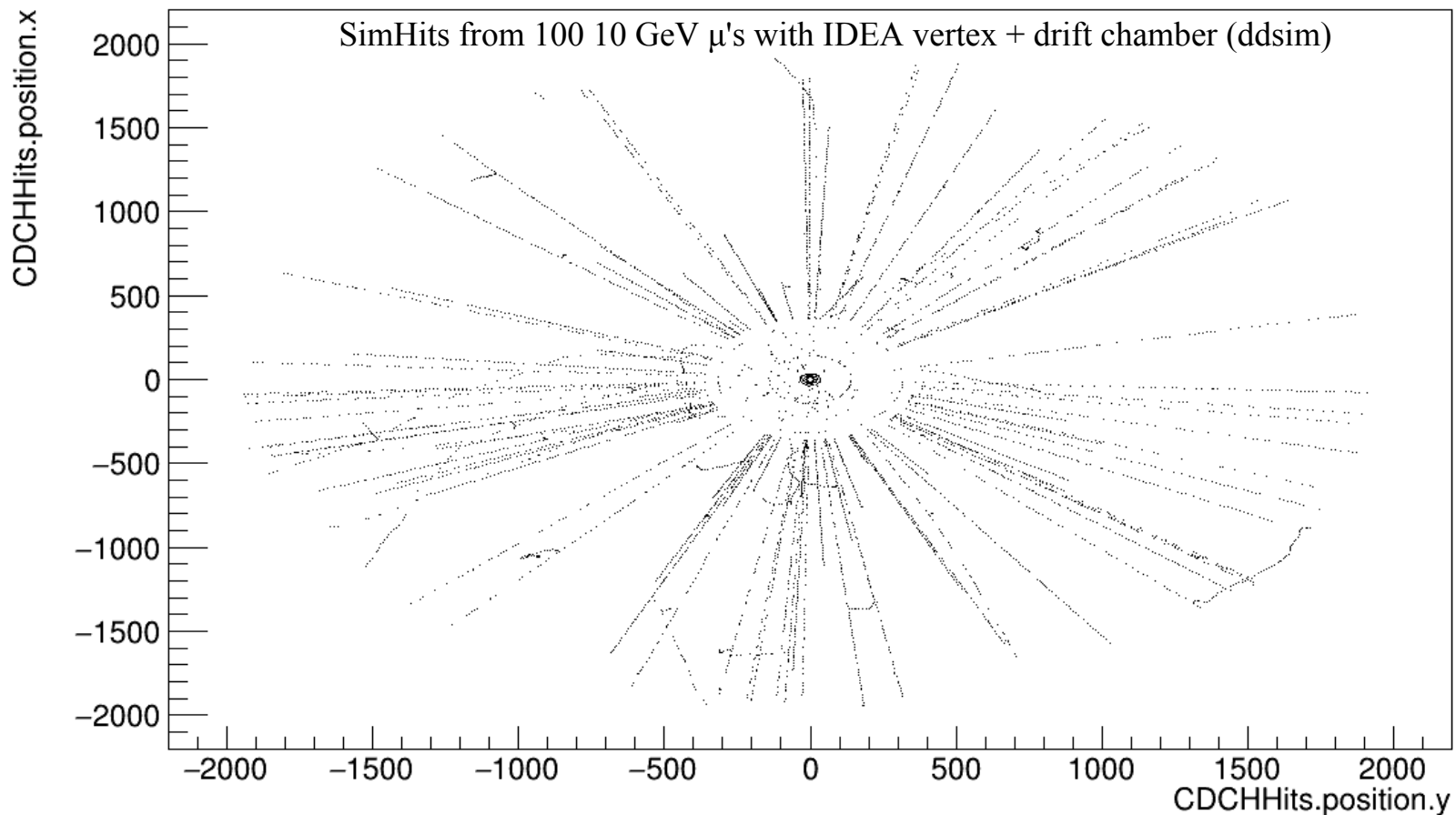


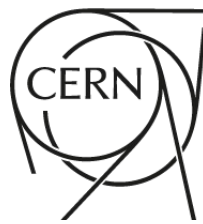
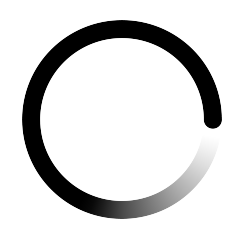
# IDEA vertex + Drift chamber



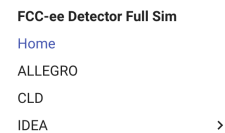
- Teaser: started to integrate the detailed Vertex detector and Drift chamber in k4geo
  - Will open a PR when I will have fixed the memory consumption
    - 10 GB due to the intersection solids (boolean operation)

CDCHHits.position.x:CDCHHits.position.y





- Started to prepare a draft [website](#) to host FCC Full Sim related information
  - General introduction, recipes, detector dimensions, contact persons, ...
    - CERN account needed
  - Based on MkDocs, using Markdown, very simple Web IDE editing
  - Please review it, propose modifications/additions and contribute
  - Volunteer to be the contact person for the detector you are implementing/maintaining!



## Introduction

Welcome to the FCC-ee Full Sim webpage! This page hosts relevant information regarding FCC-ee detectors implementation, simulation and reconstruction in the Key4hep framework. It includes recipes to run the various simulations, detector dimensions, name of contact persons and much more!

## General Considerations

The goal we are pursuing is to implement all the FCC-ee subdetector geometries and reconstruction in a consistent software framework ([Key4hep](#)), among other benefits, be able to easily exchange part of the simulation across detector concepts.

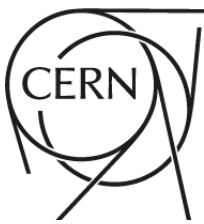
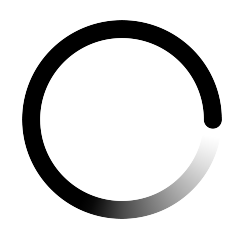
Recent progress, plans, faced difficulties, etc, are discussed at the bi-weekly [FCC Detector Full Sim working meeting](#).

## Using Key4hep

Key4hep is a stack of software packages useful in HEP covering a wide range of applications (event generation, reconstruction, visualisation, ...). The Key4hep team is taking care of building these packages in a consistent way and deliver on a regular basis the so-called "stable stack" releases. To access all these packages from your terminal session, it is enough to call:

```
source /cvmfs/sw.hsf.org/key4hep/setup.sh
```

```
1 # Introduction
2
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14
15 source /cvmfs/sw.hsf.org/key4hep/setup.sh
16
17 NB: To know what packages are available in the Key4hep environment, which is based on the [Spack](https://spack.io/) package manager but has its own fork for agility, take a look at the [Key4hep-spack](https://github.com/key4hep/key4hep-spack/tree/main/packages) and [Spack](https://github.com/spack/spack/tree/develop/var/spack/repos/builtin/packages) repositories.
18
19 Sometimes, we rely on a feature which was developed after the stable stack was released. For this, there is a mechanism that re-builds a complete stack every night by using the 'master/main' branch of each git repository included in Key4hep. The so-called 'nightly build' can be accessed with:
20
21 source /cvmfs/sw.nightlies.hsf.org/key4hep/setup.sh
22
23 Mind that this environment does not guarantee stability, some things might be broken due to ever evolving components relying on each other. To list all the 'nightlies' available, for instance to re-use one that was working for your purpose, use:
24
25 'ls -lah /cvmfs/sw.nightlies.hsf.org/key4hep/releases'
```

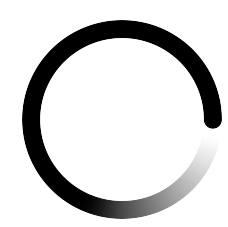


- **Past events**

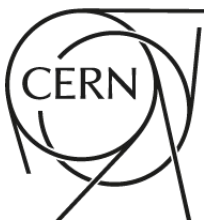
- ECFA Higgs/EW/Top Factories: [Summary talk](#), check the **Key4hep tutorial**
- From the FCC General software meeting
  - [Inspecting edm4hep files](#), [New features in Key4hep](#) (new release coming soon)

- **Upcoming events**

- Next FCC Detector Full Sim working meeting
  - November 22<sup>nd</sup> at 11 am, [link](#)
  - Let me know if you want to present something
- [FCC General Software meeting](#)
  - Nov. 27<sup>th</sup>
- [7th FCC Physics Workshop](#) in Annecy
  - Many software sessions (Key4hep, generators, **joint Detector and Software**, analysis, reconstruction, ...)



# Today's Agenda



## FCC Detector Full Sim Working Meeting



Wednesday 8 Nov 2023, 11:00 → 12:05 Europe/Zurich

2/1-034 (CERN)

Brieuc Francois (CERN)

Videoconference



FCC Detector Full Sim Working Meeting

Join

2/1-034



**11:00** → 11:10 **Round table discussion**

10m



**11:10** → 11:20 **News**

10m



**Speaker:** Brieuc Francois (CERN)

**11:20** → 11:40 **SCEPCal simulation status report**

20m



**Speaker:** Flavia Cetorelli (INFN, Milano-Bicocca (IT))

**11:40** → 12:00 **Update on Full Sim HNL samples with CLD**

20m



**Speaker:** Gaelle Sadowski (Centre National de la Recherche Scientifique (FR))