SiW-ECAL TB2021/22
Analysis efforts Kick-off

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OMEGA Microelectronics

LLR

IJCLab Irène Joliot-Curie Laboratoire de Physique des 2 Infinis

LPNHE PARIS

LPSC Grenoble

cnrs IN2P3 Les deux infinis

P2IO Physique des 2 Infinis et des Origines

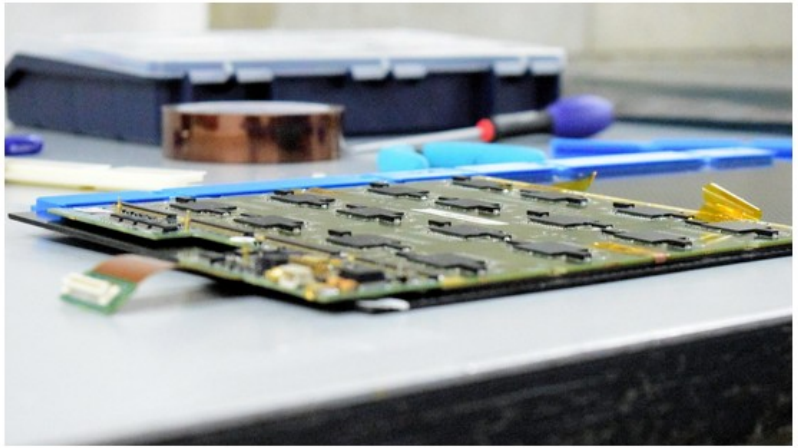
Ciemat Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas

九州大学 KYUSHU UNIVERSITY

SUNG KYUN KWAN UNIVERSITY(SKKU)

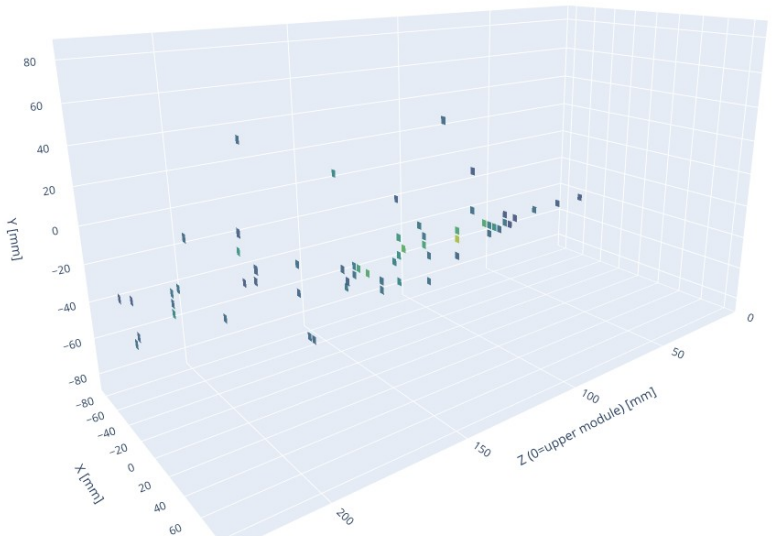
東京大学 THE UNIVERSITY OF TOKYO

Test Beam



Test Beam

- **DESY offers non-spilled beams of 1-6GeV (e-, e+)**
- **15 layers with 1024 readout cells each**
  - More than any LHC calorimeter
  - But it fits in suitcase
- **First week dedicated for commissioning**
  - Threshold optimization, single cell calibration, etc
- **Second week dedicated to electromagnetic showers**
- Mounting started monday afternoon
- Ready for data taking since wednseday morning
  - But the DESY movable stage crashed... we got delayed by one day.
  - **Since then: the smoother data taking :D**



Next... is analyze the data

https://github.com/SiWECAL-TestBeam

- **SiWECAL-TB-analysis** → code for commissioning, detector operation and technical analysis
- Branch during the beam test: slboard_TB2020
- New branch to be created: TB2021-Analysis (as master)
- Ongoing updates:
  - Update macros for the correct reading of the settings (with or without the DESY table) **Yuichi**
  - Update the low/high gain pedestal calculation **(Adrián)**
  - Update the building event (from root to root files) **Jonas** (more comments later)
- Dedicated folder with the calibration constants + list of masked channels per run
  - To be done **(Adrián)**
- Folder with run selection/ list info ?

Master code for "technical" studies.

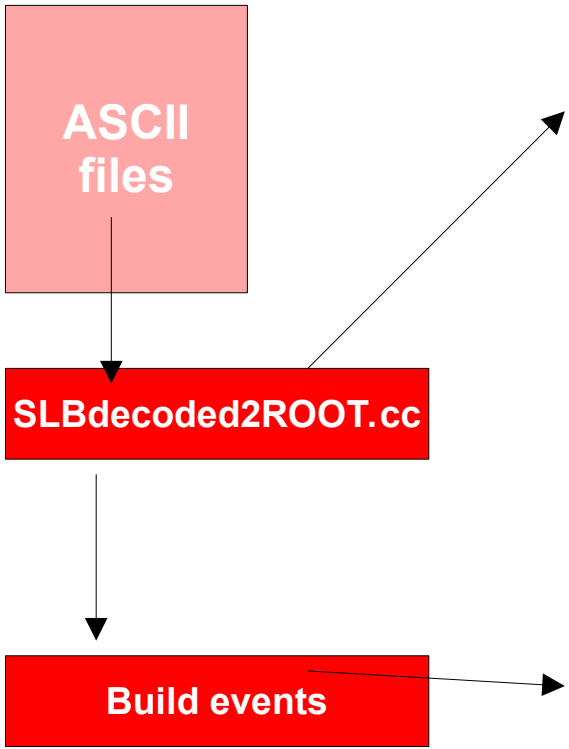
Next... is analyze the data

https://github.com/SiWECAL-TestBeam

- **SiWECAL-Sim** → **embrionic phase**
  - Only generation scripts (DD4HEP) used for the TB2017, debugged and updated. **(Adrian)**
  - To be updated with the latest geometry. **Fabricio**
- Digitization. **Fabricio (to be added)**
- Event building → from ASCII and from root, to LCIO → For analysis in ILCSoft **(Hector)**
  - In synergy with Jonas update

Master code for "physics" studies.

Technical analysis (100% root based)



100% technical studies

- Holdscans (done in DESY). **Adrián+Hector**
- Pedestal and mip calibration (high and low gain) **Adrián**
  - Almost finished.
- Intercalibration (high vs low gain). **Sushaku**
  - Requires pedestal+mip calib
- Noise studies. **Yuichi & Adrian**
- **More ?**

Technical + physics

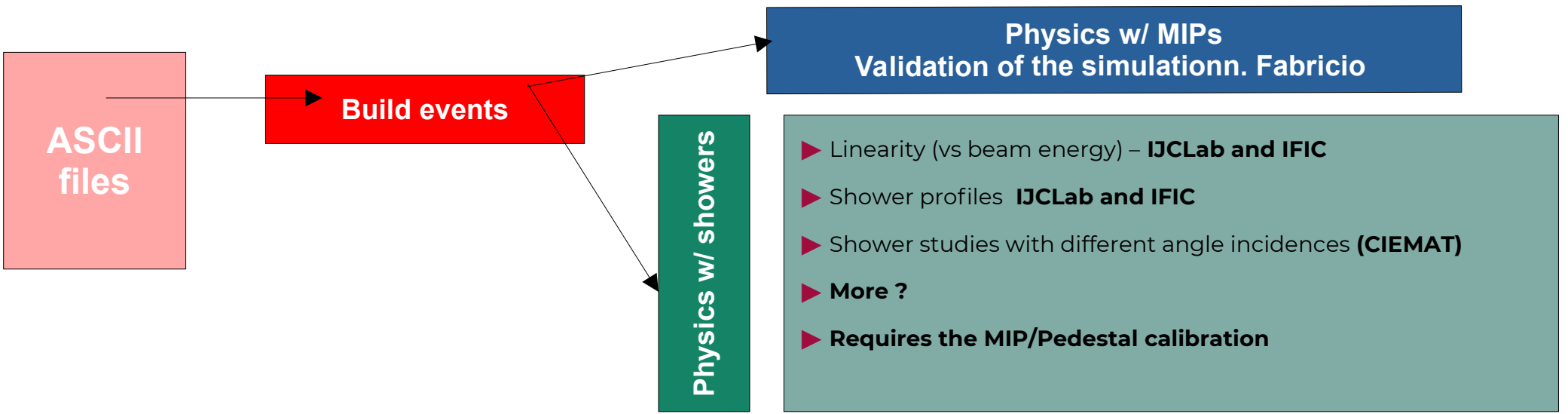
- Study MIP runs with tilted detector. **Jonas**
  - **Needed for the realistic threshold determination**
  - **Required by the simulation !**

I am not assigning tasks, but making educated guesses after discussions at DESY

Physics analysis (LCIO based)

Simulation

- Define xml file with geometry **(Fabricio)**
- Create data files (SimHits) + digitise them (CalorimeterHits) + get MIP calibration constants **(IFIC +Fabricio)**
  - Requires the knowledge of the thresholds per chip
  - + noise studies



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Logistics

- Shall we create a dedicated mailing list ?
  - I think yes
- Shall we plan monthly meetings ?
  - I think yes
- How to access the data ?
  - For example, Hector seems to not be in the list to access the eos.
- Run list ?
- Centralized root conversion ?
  - Only raw files… ?

- **Person power availability. It is key to clarify this asap.**

Some plans

- Short term plans:
  - A technical paper ? Noise, DAQ performance, etc
- Medium term plans:
  - We have time to set up a consistent and robust framework (LCIO based) that will be the backbone of the coming analysis and papers.