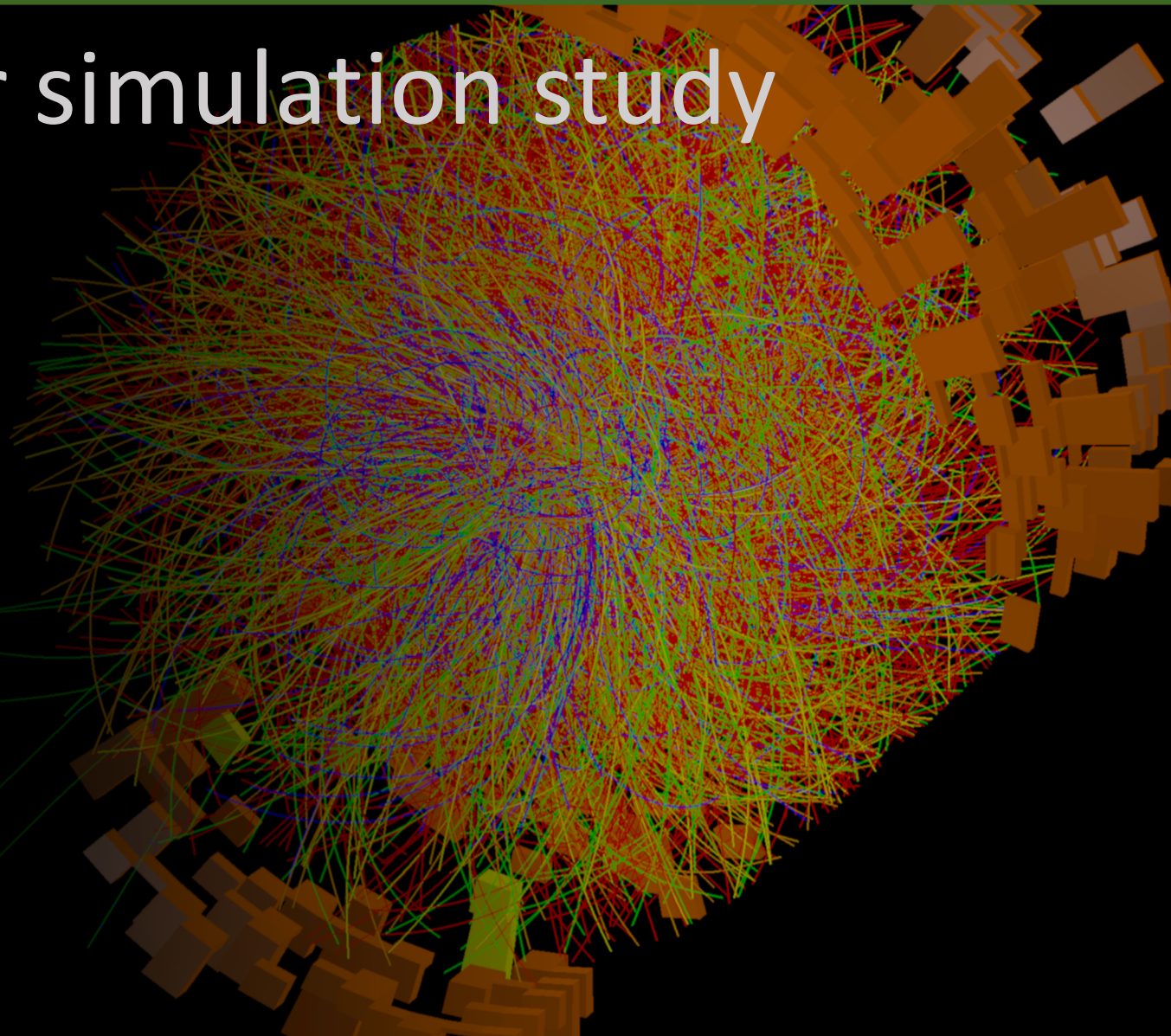# FoCal Geant 4 trigger simulation study

Tsukuba University
Takuya Kumaoka

FoCal trigger study plan

・ Make a code to extract the information (ID, position, energy (2 weeks) ← last week
・ Need to increase statistic to estimate distribution and efficiency / purity.
・ make a trigger to distinguish gamma and neutron according Minho-san Dr thesis.
(consider energy, depth, expansion, and etc...) ← This/Next week   Next week
・ plan algorithm how to fire trigger use for physics using aggregator bord information (a week)
・ inplement the trigger algorithm (1.5 weeks)   Jun
・ check trigger performance (efficiency / purity) (energy/hitposition/angle/particle/background)
(a few weeks)
・ make a code to convert energy information to real ASIC information (TOT/TOA/AOD) (2 weeks)
・ ...

FPGA
・ Learnning FPGA cording by Open-it Slide ← This/Next week
・ Understand Grenoble HGCROC code

Facing G4 install problem

until:
Environment: cern w/o: ALICE setup
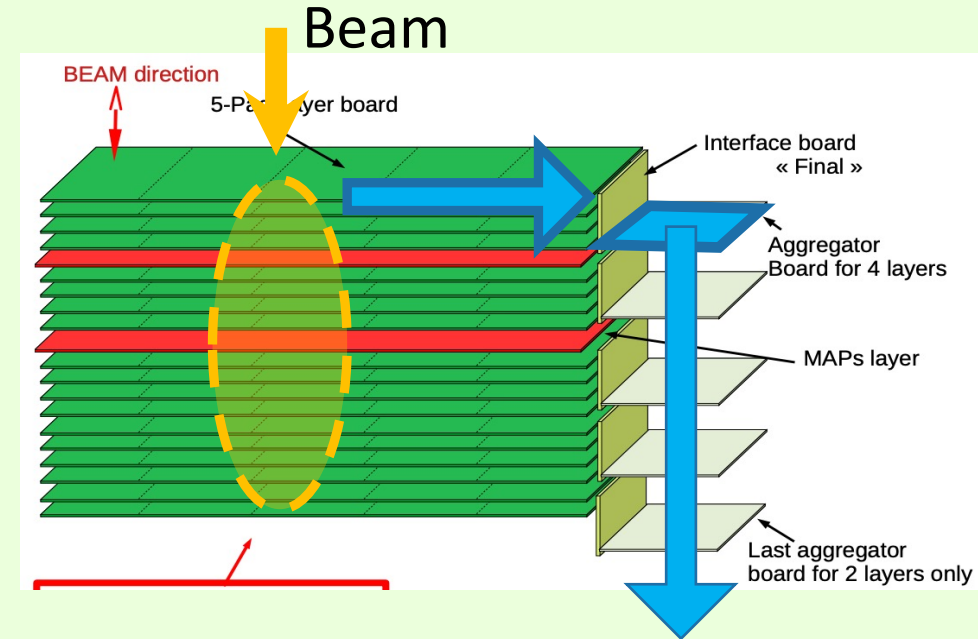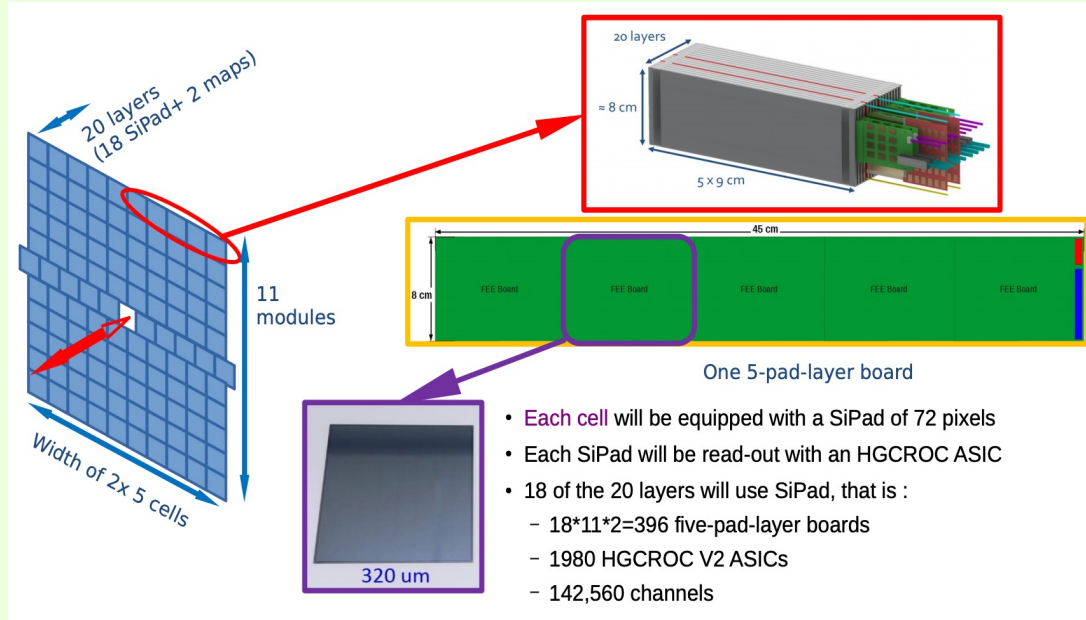G4 otherone setup -> just recent he leave cern

-> need to install G4 own environment
or search for the way to Cmake G4 in ALICE setup
or local

This week: create my work space to install G4.

1. ALICE's main plan is handling the all data by HGCROC and analyse on offline.
-> It is still plan. This depends on the next SPS beam test analysis.
2. As second option, they will use aggregator boad and sum board.
Aggregator board handles some pad information, and select information to send sum board or another system. And sum board handle only few aggregator board information called "crown".
-> I plan to study FPGA for this second trigger.

FoCal trigger study plan

· Make a code to extract the information (ID, position, energy (2 weeks) ← last week
· Need to increase statistic to estimate distribution and efficiency / purity.
· make a trigger to distinguish gamma and neutron according Minho-san Dr thesis.

Next week

(consider energy, depth, expansion, and etc...) ← This/Next week
· plan algorithm how to fire trigger use for physics using aggregator bord information (a week)
· inplement the trigger algorithm (1.5 weeks)

Jun

· check trigger performance (efficiency / purity) (energy/hitposition/angle/particle/background)
(a few weeks)
· make a code to convert energy information to real ASIC information (TOT/TOA/AOD) (2 weeks)
· ...

FPGA
· Learnning FPGA cording by Open-it Slide