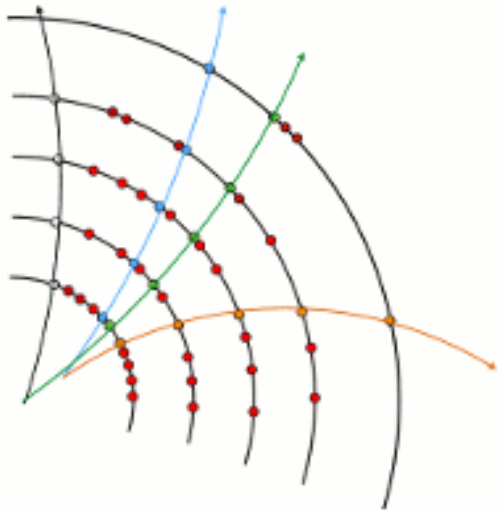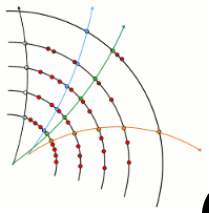# Status of simulation and reconstruction

Julia Hrdinka (TU Wien)

On behalf of the ACTS & FCCSW Team

FCC-hh detector meeting

Outline
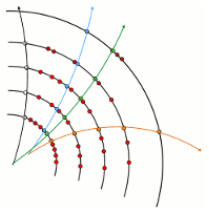
ACTS software
  ➢ current status and plans until may

ACTS & FCCSW
  ➢ status of ACTS integration into FCCSW

Road map to Berlin
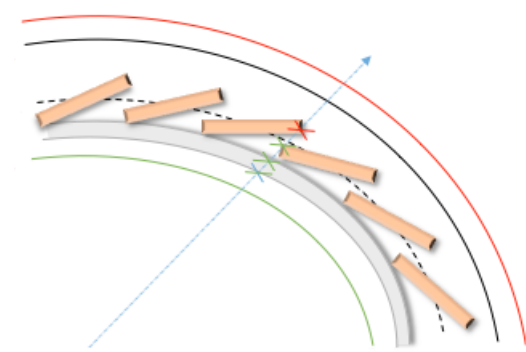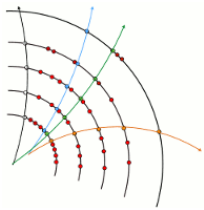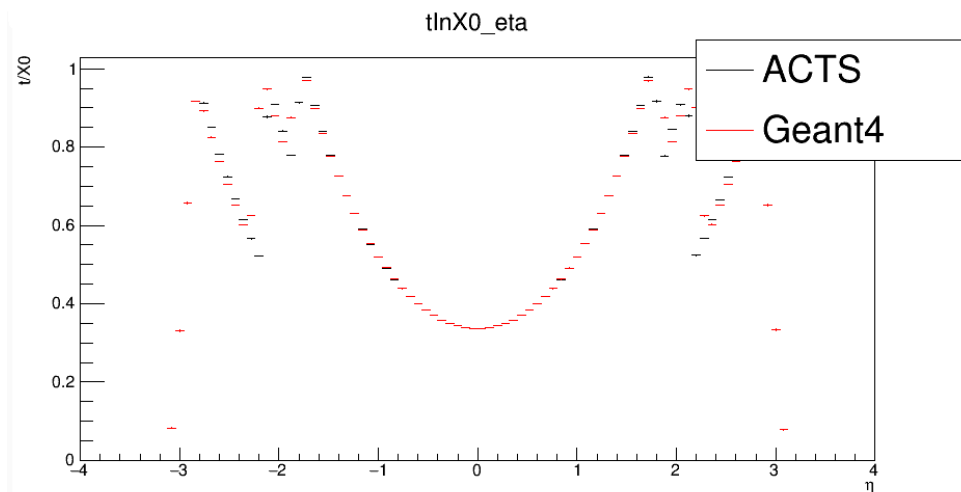
ACTS Status & Plans until May

Magnetic Field Service

➢ possibility to read in magnetic field map from *txt* or *cvs* file

➢ optimized look up mechanism taking symmetries into account

➢ planned to return magnetic field cell instead of returning field by value (good practice in ATLAS)

Seeding

➢ complete porting of ATLAS seed finder

➢ better support of inclined layouts
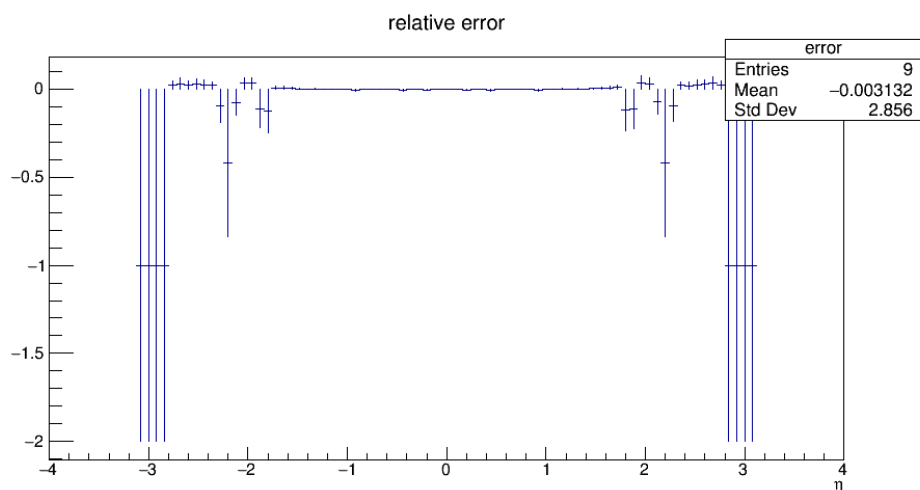
➢ simplification of seed finding in single layers
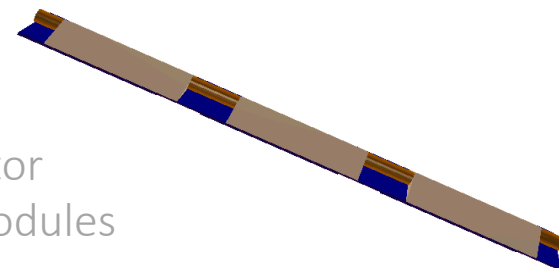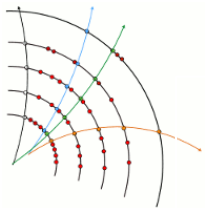
ACTS status – material mapping

tlnX0_eta

relative error

Map material from full & detailed geometry onto ACTS tracking geometry

- ➤ automatic material mapping onto layers finalized
- ➤ material described in 2D grid on layer
- ➤ needed for reconstruction & fast track simulation
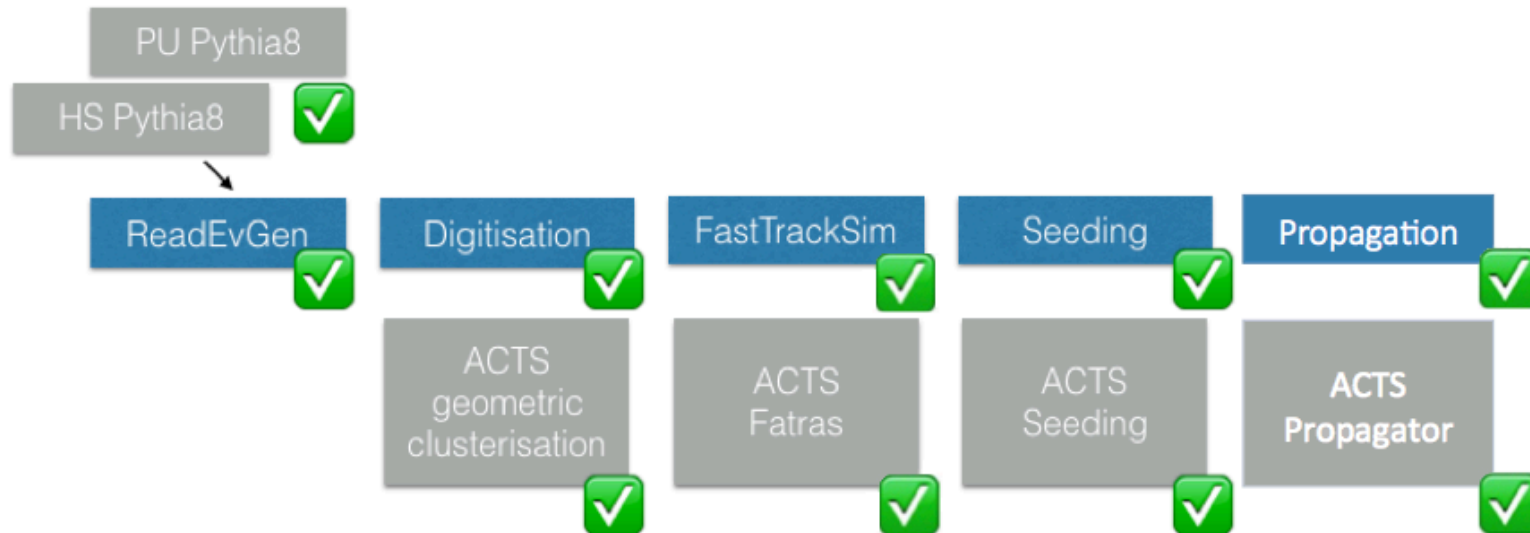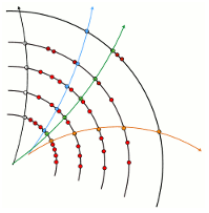
using test detector with complex modules

ACTS Status
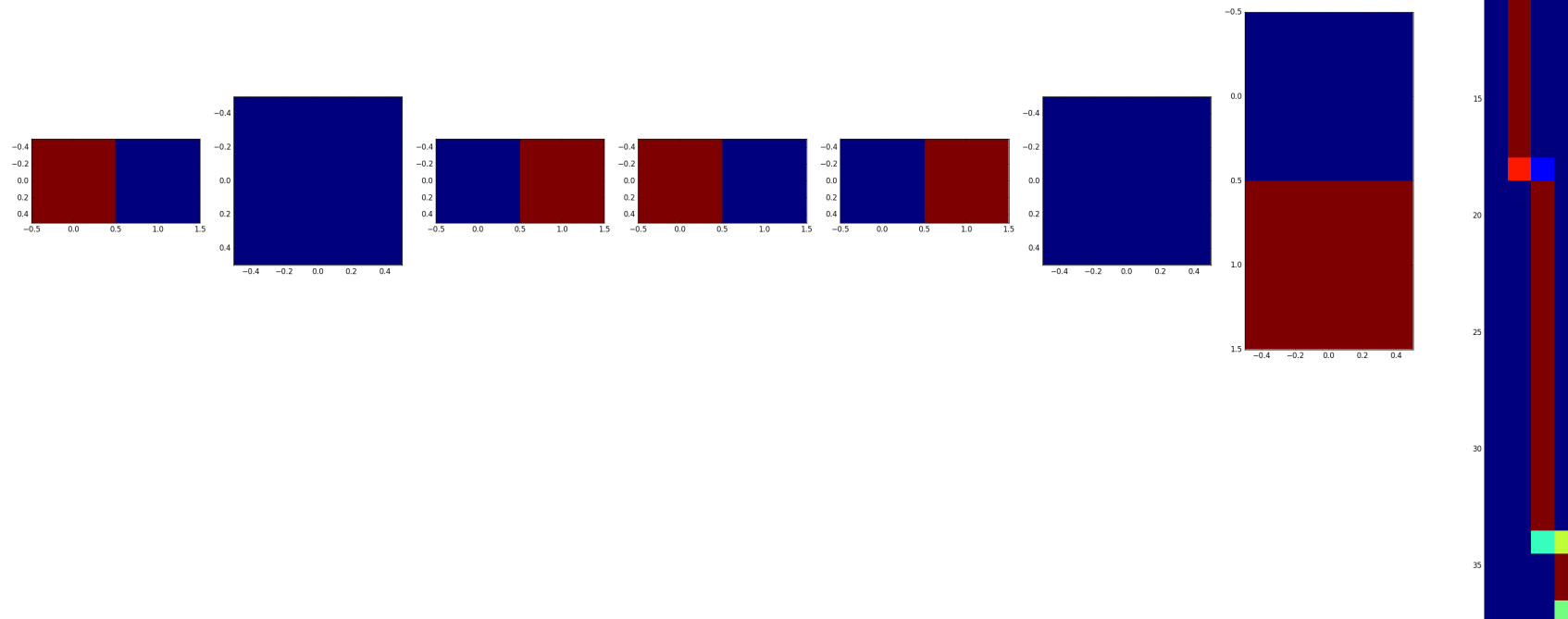
Event Generation – Simulation–Digitization chain

➢ working in ACTS test framework (mimics GAUDI)
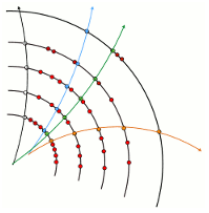
➢ missing modules can be easily ported to FCCSW

ACTS Status - digitization

Energy deposits in clusters along a track

using a simple detector model

ACTS + FCCSW Status

Geometry conversion working
- ➢ TkLayout -> DD4hep -> ACTS

ACTS integration within the next FCCSW release
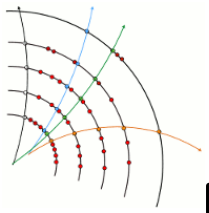- ➢ pull request of V. Voelkl

  https://github.com/HEP-FCC/FCCSW/pull/119
- ➢ Using truth tracking

Preparation of EDM for Tracking
- ➢ Pull request

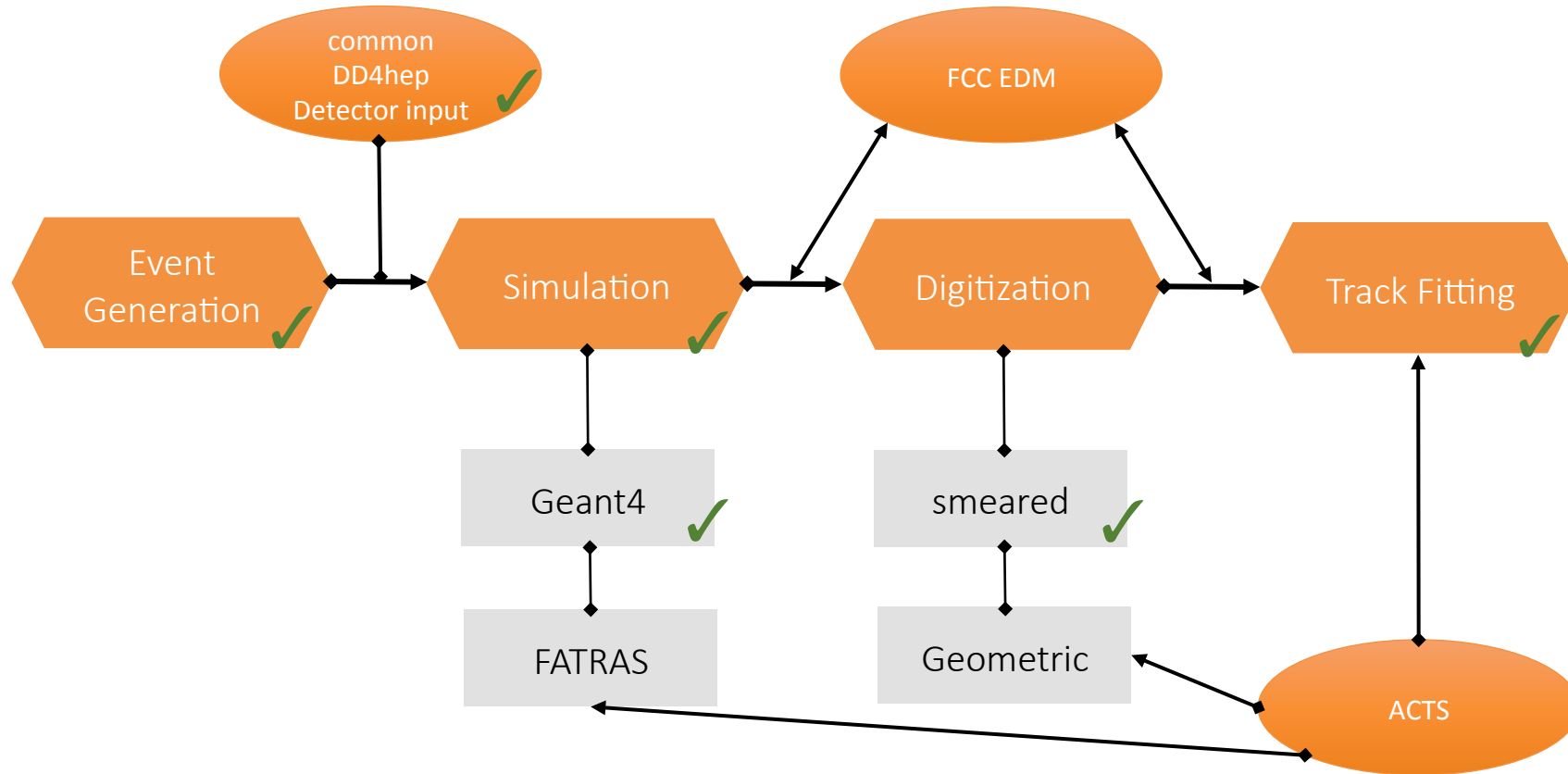 https://github.com/HEP-FCC/fcc-edm/pull/37#pullrequestreview-19080376
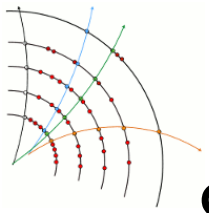
Road map to Berlin

Prototype of tracking application using ACTS within FCCSW

Truth based tracking algorithms bypass conventional track reconstruction

Summary & Outlook

➢ ACTS successfully used in FCCSW

➢ FCC magnetic field can be easily used within ACTS

➢ Implement fast track simulation (fast simulation using tracking geometry) into FCCSW

➢ Write ACTS geometric digitization model for FCC software

➢ Establish track resolutions of current FCC-hh detector model