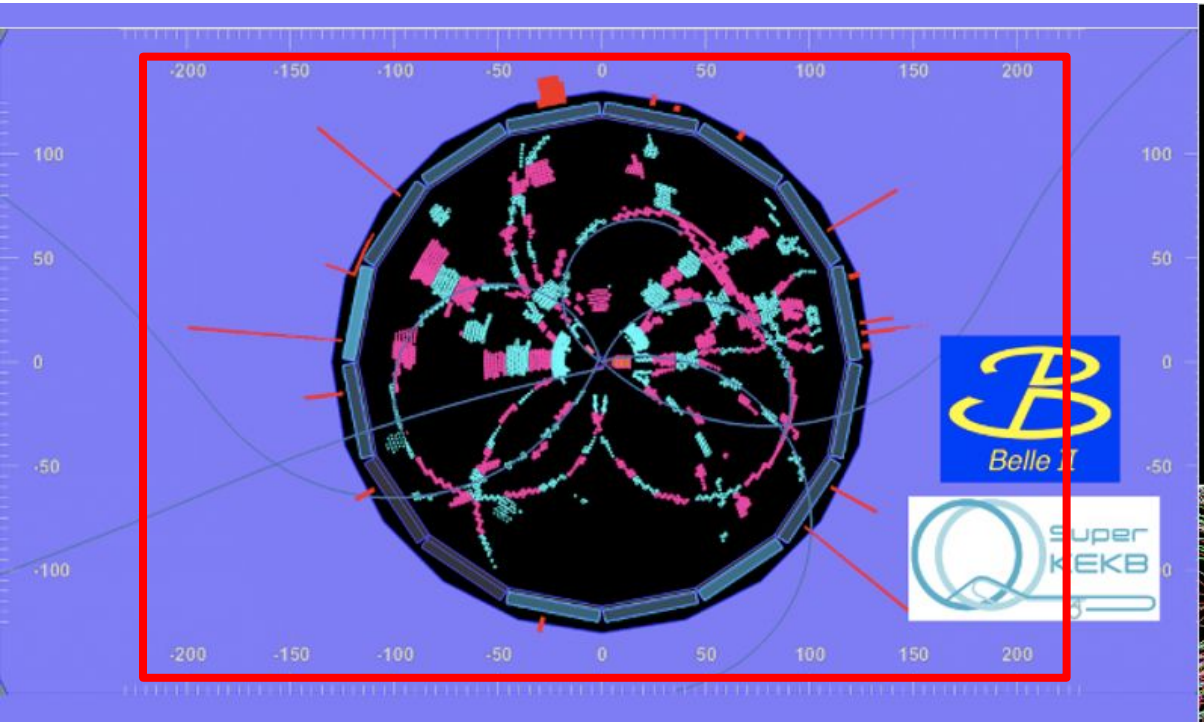
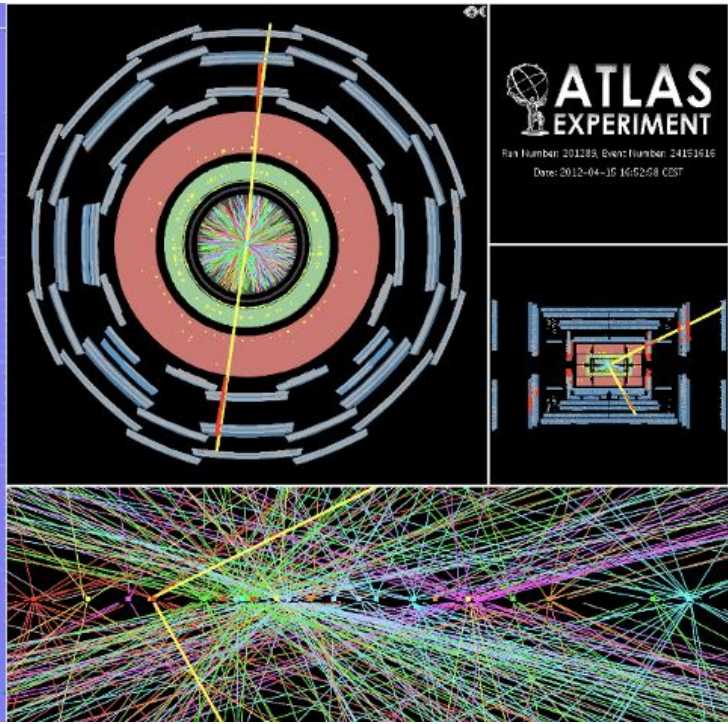
Tracking Workshop for HEP - January 2019





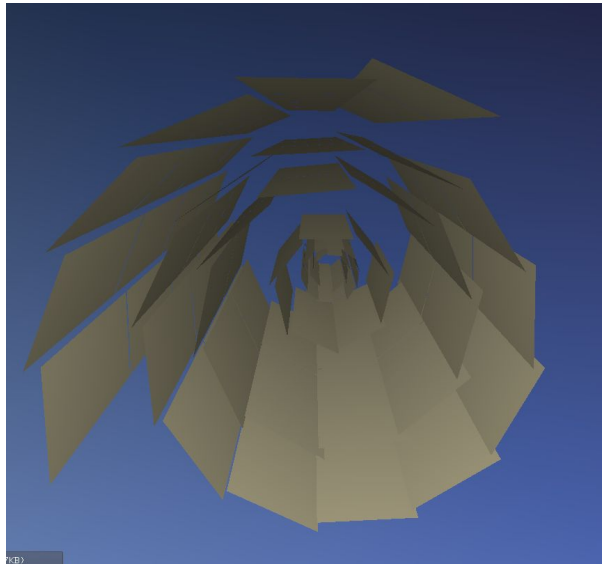
Belle II Project

Project Plans

- Implement Belle II Geometry with ACTS
  - General Geometry
  - Material Effects
  - Magnetic Field
- Test and validate by comparing between Genfit2 and ACTS results
- Start porting algorithms to ACTS:
  - DAF
  - T0 Extraction

Achieved Goals

- Belle II Geometry except slanted SVD parts was successfully ported!
  - Building ACTS within Belle II framework (different ROOT, C++, Geant4, build system)
- Written a lot of validation tools
  - Belle II has its own “event processing framework” -> needed to port most of the algorithms
  - Nice way to understand them!
- Exported Material Effects and Magnetic Field
  - Still struggling with the validation of the propagation
  - CDC needs different treatment



Next Steps

- Go on with the validation
- Also try out the CDC propagation
- Make some speed studies and understand performance of ACTS
- First Kalman Fit and more validation
- We have data….

Feedback to ACTS Developers

ACTS is great! Nice templated structure, good code documentation!

Issues we have seen:

- Asymmetric detector
- **Sometimes it is very hard to see, which properties the template classes have (should have)**
- “How to build your detector with which assumptions”
- Actor and Aborter examples/helpers
  - Setting up a propagator is not a very simple task to do
- Kalman Filter (results) is a bit hard to understand