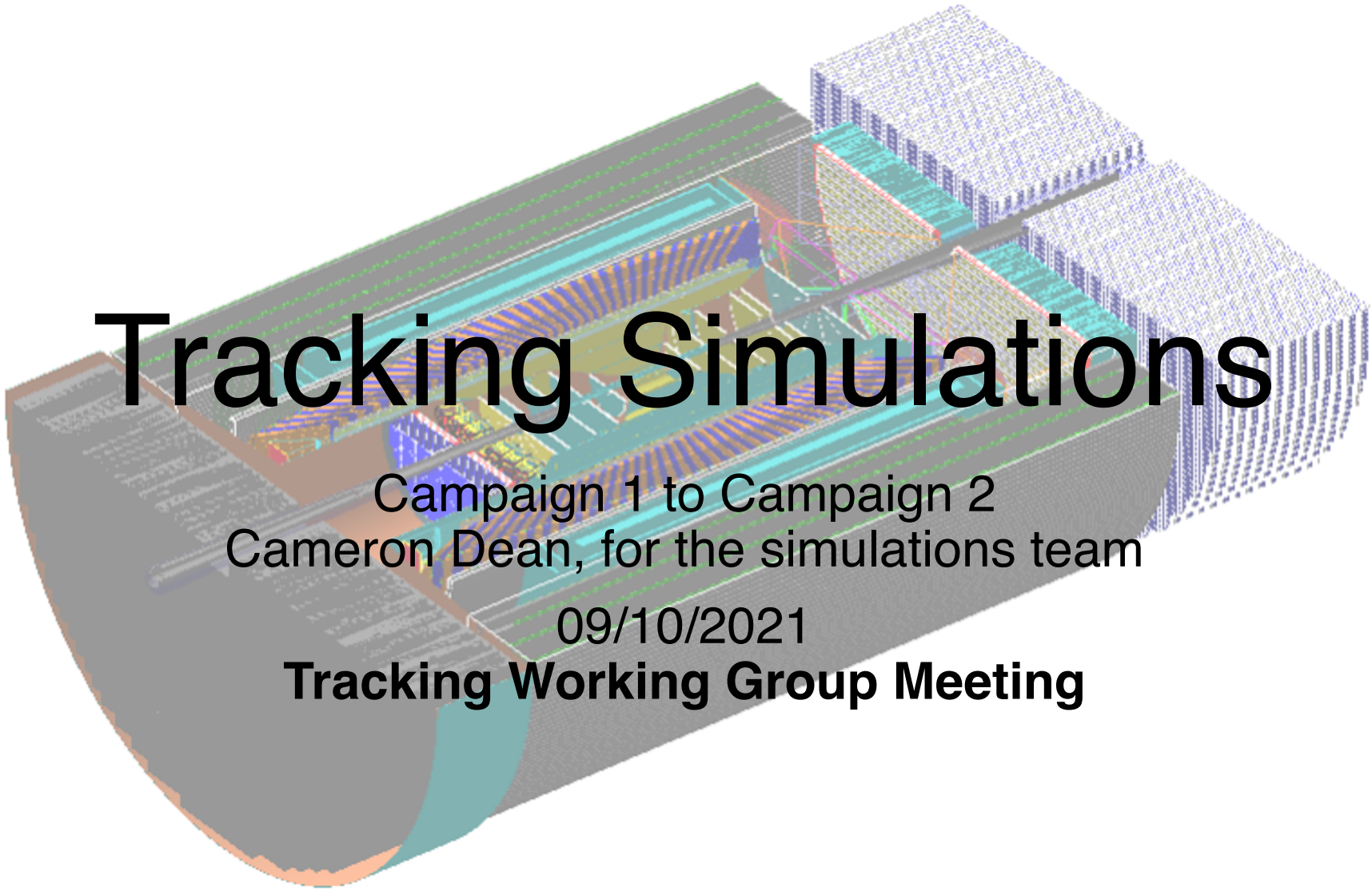


Tracking Simulations

Campaign 1 to Campaign 2

Cameron Dean, for the simulations team

09/10/2021

Tracking Working Group Meeting

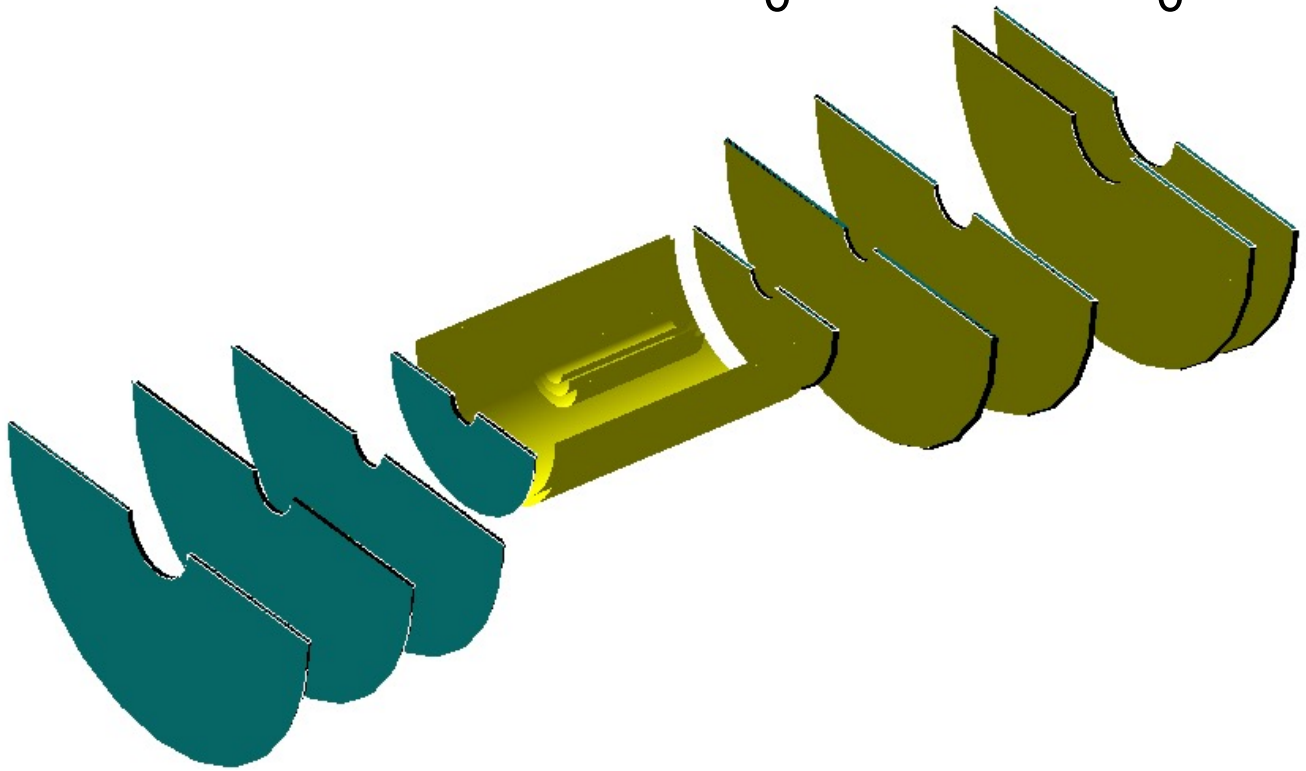
Overview

- Major changes between campaigns 1 & 2:

1. Most trackers were repositioned
   - EEMCal, DIRC and RICHs moved
2. Detector resolutions were updated
3. Some detectors were removed
4. Support structure was added between EHCal and dRICH

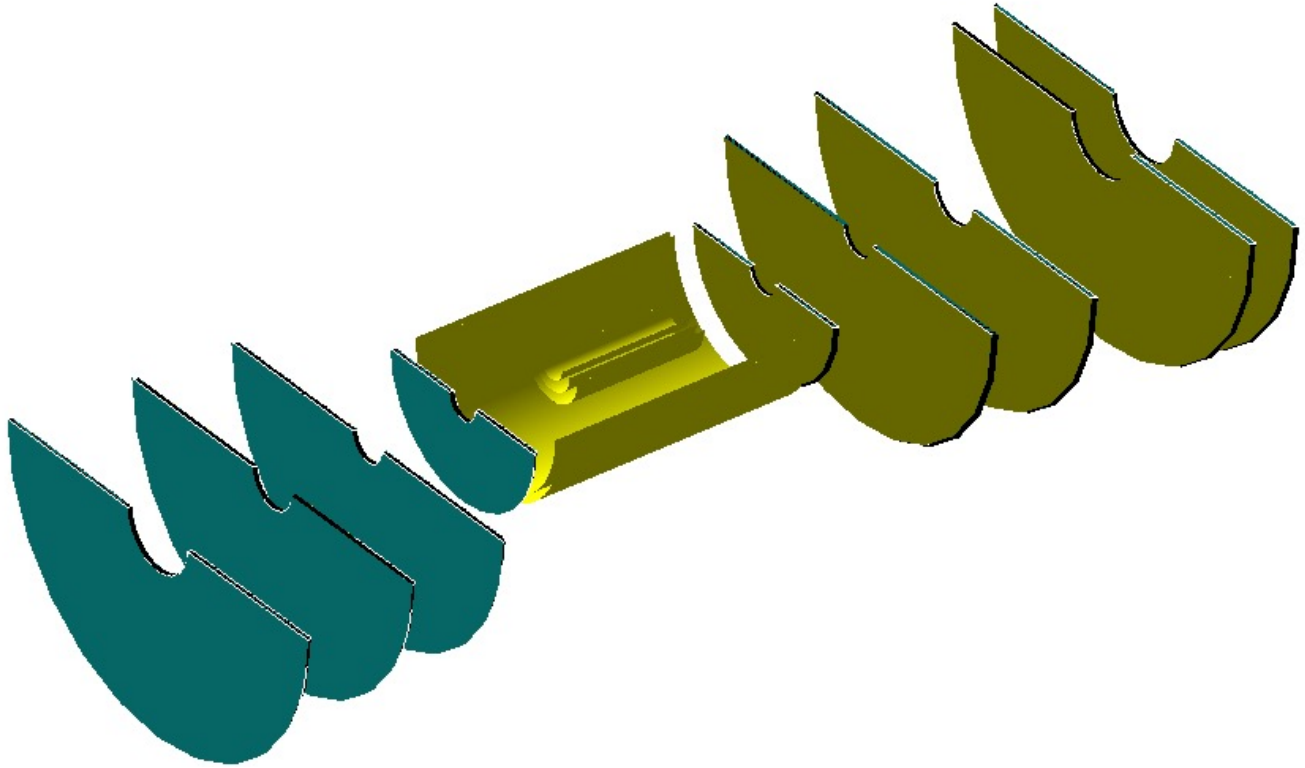
Barrel

- Barrel detector reduced from 4 layers to 2 layers
- Vertex detector increased from 2 layers to 3 layers
- Barrel thickness reduced from 0.55%X_0 to 0.05%X_0



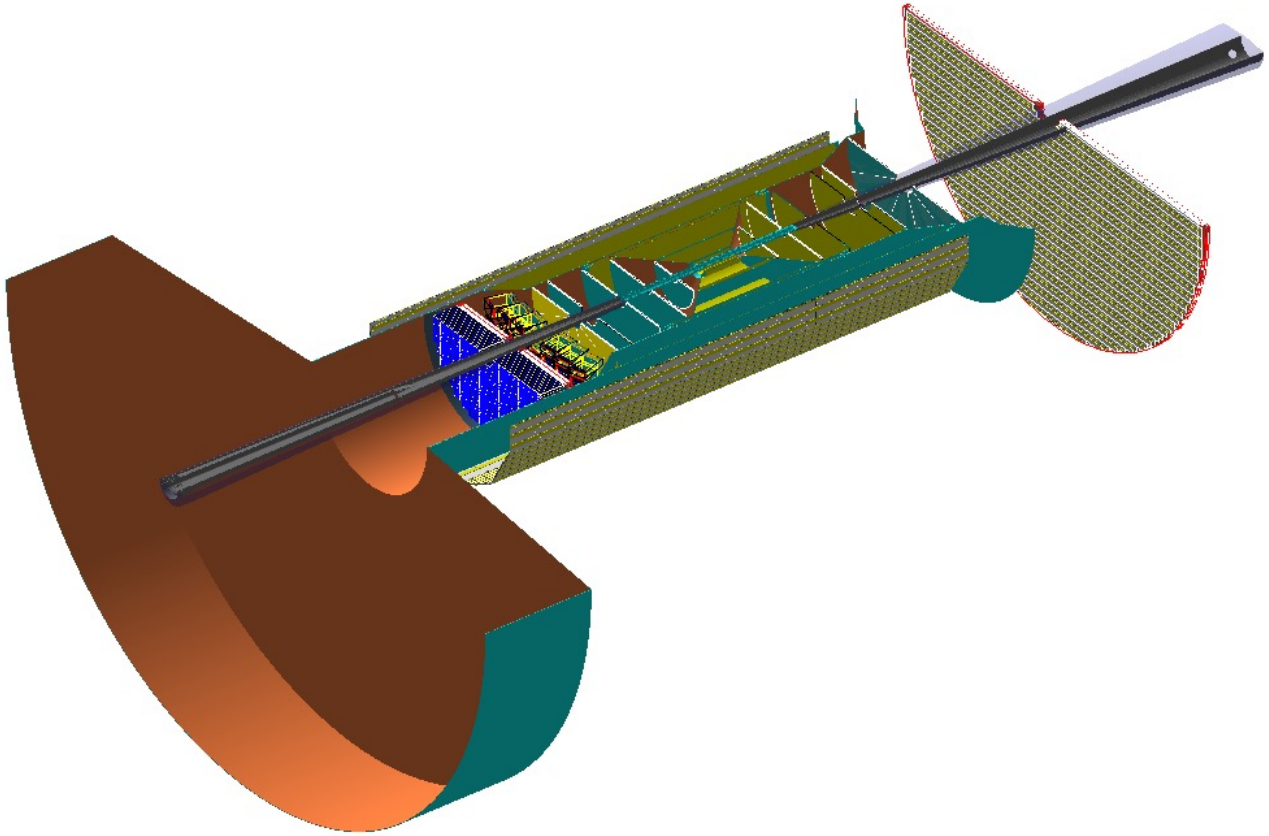
FST

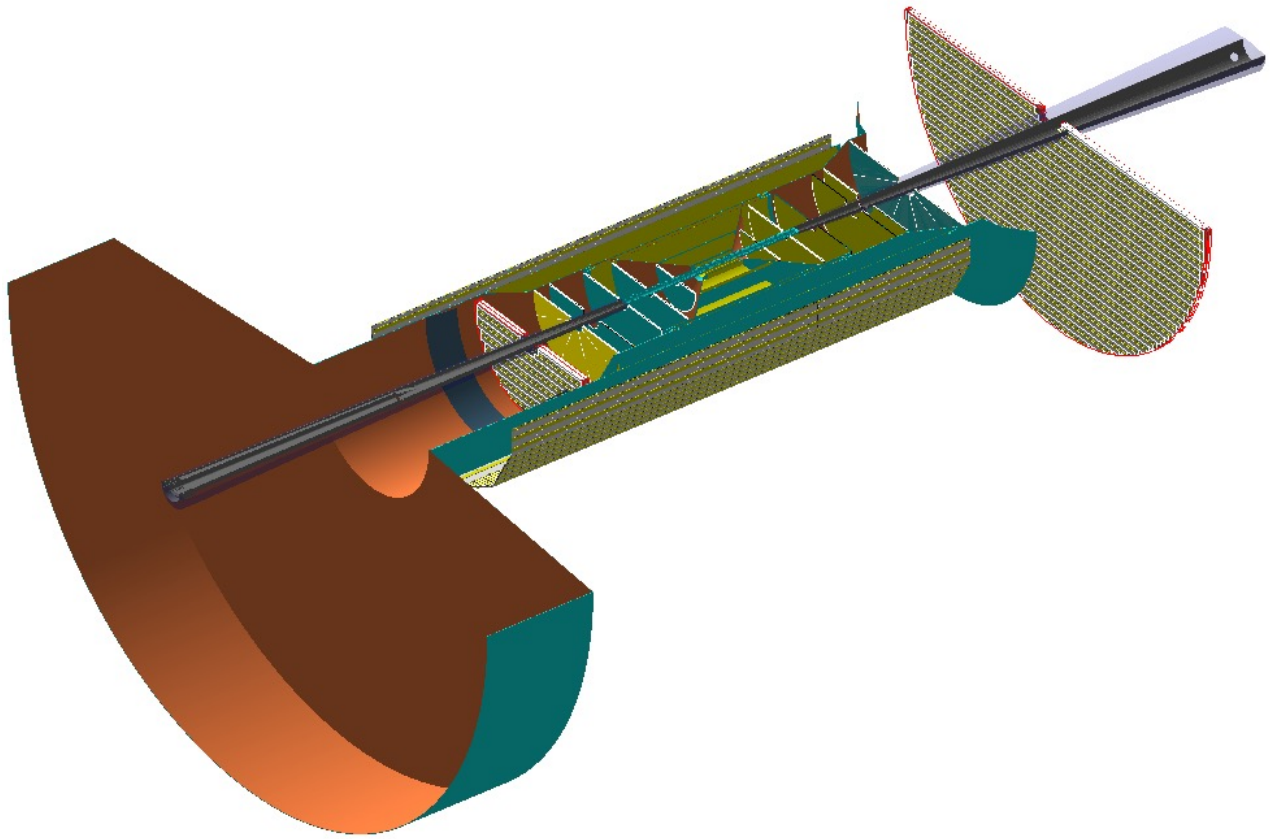
- FST was pitch reduced from 20→36 microns to uniform 10 micron
- 1 layer dropped in e-going direction (was at -125cm)
- Last e-going tracker mover from -115cm to -107.1cm



GEMs and TTLs

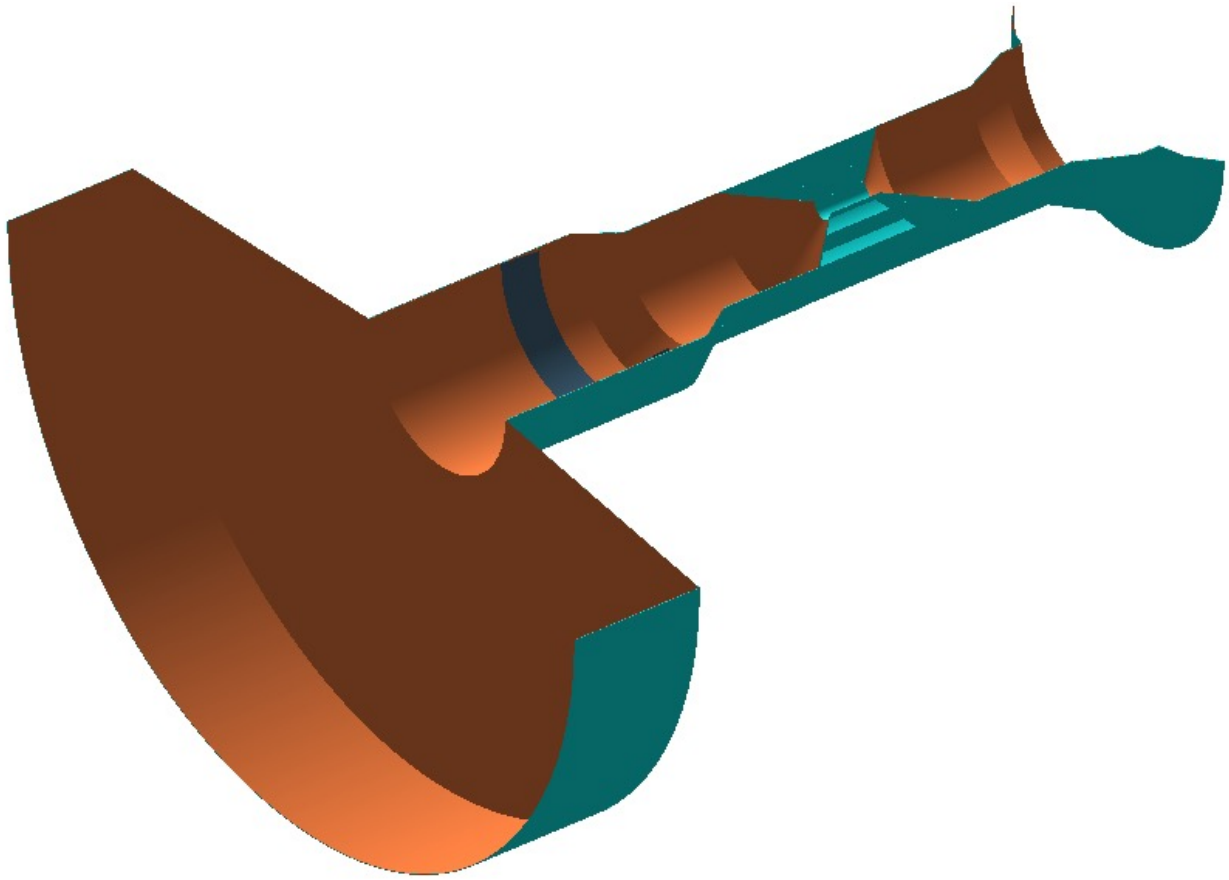
- E-going GEM moved from -160cm to -120cm
- E-going TTL moved to accommodate closer EEMCal





Support

- Support structure added between EHCal and dRICH
  - Inner barrel HCal is too close to wrap support around it
- Structure covers all barrel layers and passes near discs
- Barrel cylinders are half-thickness of FST cylinders (0.5mm vs 1mm)
- Layers are given appropriate thickness of copper, water, plastic, carbon fibre where needed
- Iron cone connects support to EEMCal (5.7%X_0)



Tracking and Outputs

- Campaign 1 tracking used ROOT GenFit
- Detector smearing was setup in each macro for resolution
- Campaign 2 will also use ROOT GenFit
- Sebastian Araya is working on implementing ACTS in to ECCE
- Aim to run this over campaign 2 events to get more realistic tracking estimates
- Will be run as a second stage process
- Tracking evaluator was run in all campaigns
- All simulations are with sims team
  - Jin and I are ironing out overlaps in subsytems