Software & Simulation
toward Reference Detector TDR

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On behalf of CEPC Software Working Group

Status of CEPCSW

- Software and Simulation Meeting Minutes:

https://jupyter.ihep.ac.cn/wgPvqGuuRJKk_18sHUHHQw

- Software for Ref-TDR

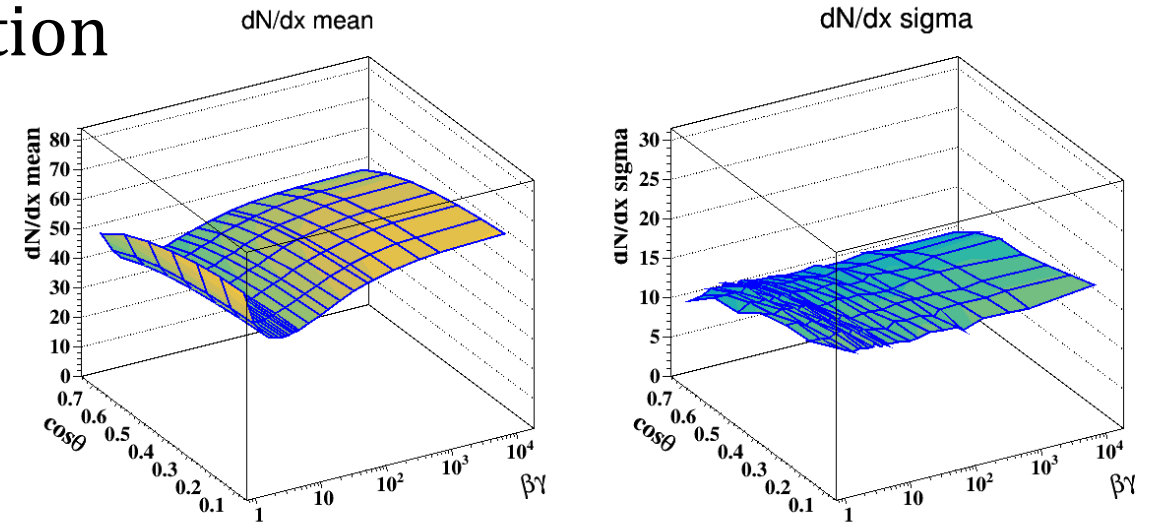https://code.ihep.ac.cn/cepc/CEPCSW/-/issues/1
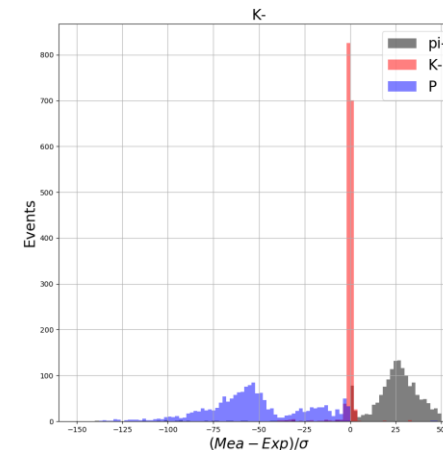
- Release tdr24.5: PID
  - dN/dx
  - TOF
  - MUC

dN/dx

- Track-level dN/dx: Parameterization from Garfield++ based full simulation

- Standalone software is available

- Next to Do
  - Validation is ongoing
  - Will be released soon

TOF

- RecTof EDM in CEPCSW
- Technical problems will be fixed soon
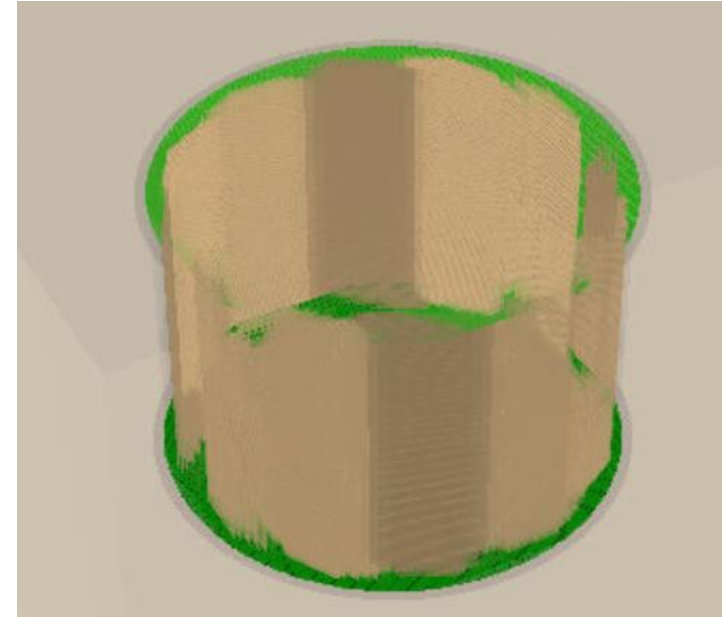- Release and Validations

MUC

- First geometry of the scintillator version of the muon detector

https://code.ihep.ac.cn/cepc/CEPCSW/-/merge_requests/30

- A fast simulation of the muon detector, results in a particle- (muon-) id flag to "fullLDCTrack" or particle flow object ➜ Release tdr24.5

- Full simulation + reconstruction is planed in end of June.
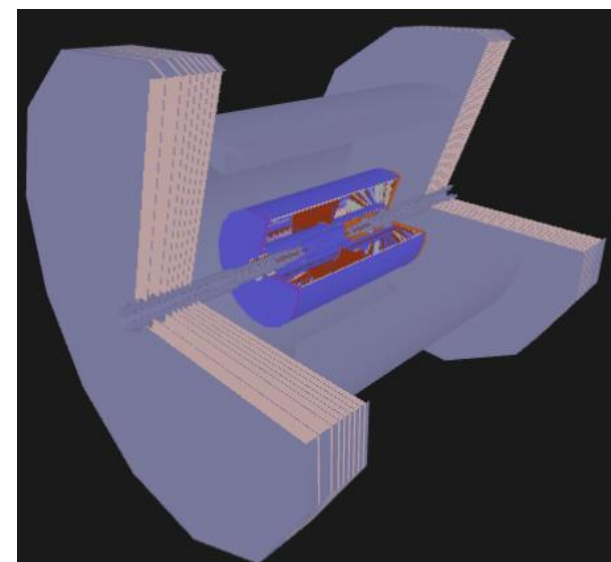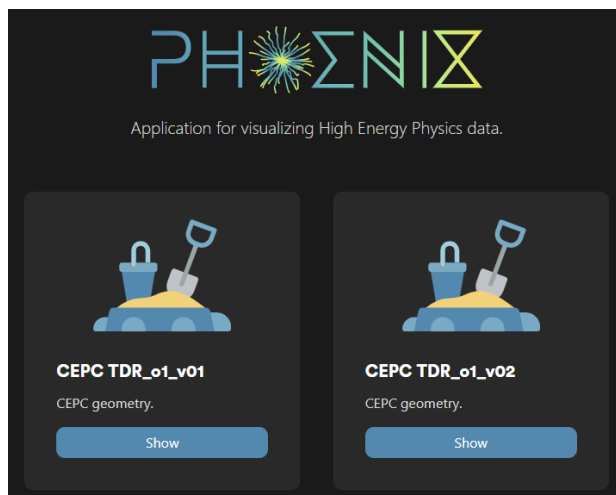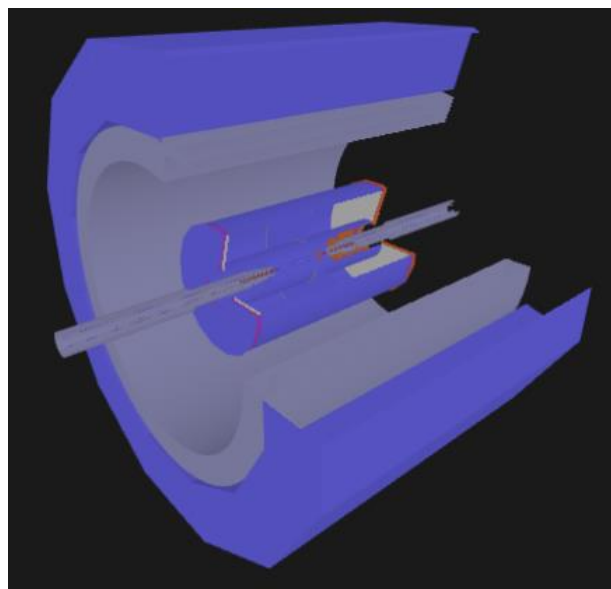
Impact of Inhomogeneity of Magnetic Field

- Magnetic field map with 1cm, 5cm and 10cm grid
- Simulation and Reconstruction use same grid --- Need further discussion

- Plan:
  - Artificially changing the gradient of the magnetic field
  - Simulation with precise magnetic field --- Reconstruction using magnetic field map (different grids)

Calorimeter

- Presentation in CALOR 2024
  - Roman Pöschl: realistic simulation including cracks between modules, package material, digitization, etc.
  - Zhu Renyuan: inconsistency between data and MC

- Progress:
  - Calibration for ECAL and HCAL
  - MC Truth & Reconstruction

Visualization

- Phoenix is an experiment agnostic display, supported by HSF
  - ATALS, FCC, LHCb, Belle-II, etc
- The Phoenix event display for CEPC is available now.
  - **The web application is deployed at IHEP: https://cepcvis.ihep.ac.cn/#/**
  - The latest TDR reference detector geometries are converted from DD4hep to ROOT, then the ROOT files are deployed at the web server.

Arbor Immigration

- Problem of CellID is fixed
- Difference of tracking between CEPCSW and CEPCSoft
- Try to run GSHCAL

Performance of beam background related software is also discussed, Haoyu's talk will include this.

Thank you!