

Weekly-2020-1-8

# From the side of ACTS

- New chain of sim/rec
- Material interaction included
- Smoothing with backward navigation available

# New Chain of Sim/Rec

- Splits the reconstruction from the simulation into a separate truth tracking tool.
  - previous: simulation and fitting in the same procedure
  - Currently: sim + rec is standalone

Simulation: ACTFWGenericFstrasExample

--evg-input-type=pythia8

--evg-pileup=50

--output-dir=sim --output-csv=1

--events=10

Reconstruction: ActsRecTruthTracks --input-dir=sim --output-dir=rec

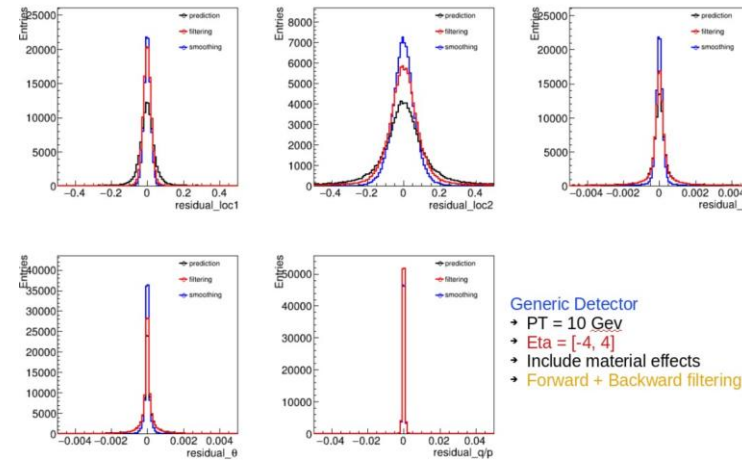
***Remind: This is now only valid for Generic detector( e.g. DD4HEP is not valid, we should make this work)***

# Material interaction

- Material interaction is included as default
  - Previous : material effect not open as default
  - Currently: multiple scattering and energy loss included as hard code

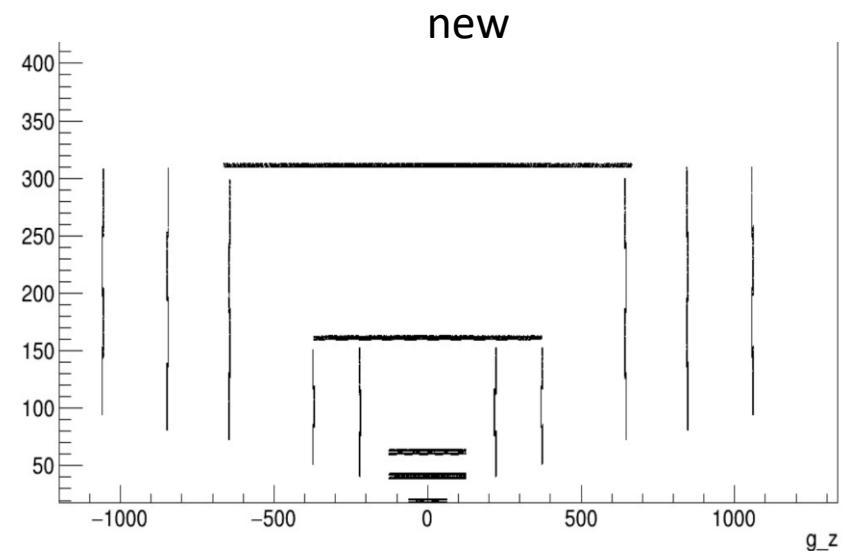
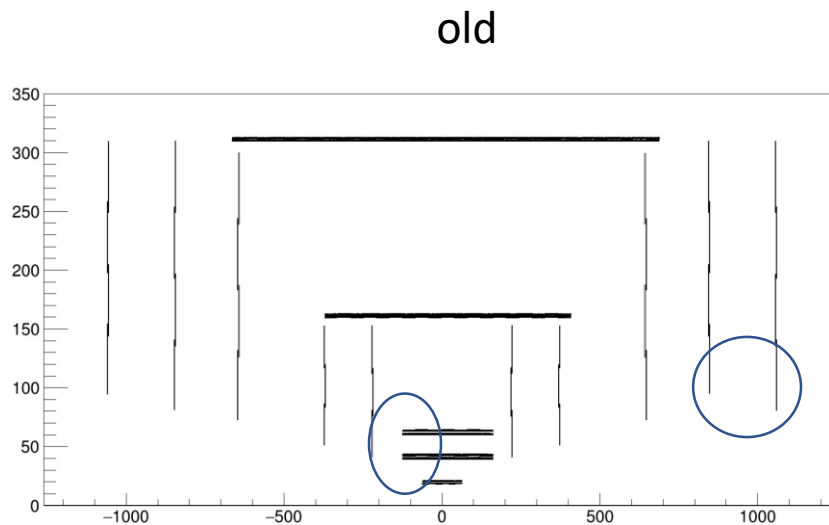
# Smoothing with backward navigation

- The problems of matrix inversion when using the simple and fast smoothing method
- Introducing another method: Backward navigation
  - The backward navigation is available after fixing the overstepping problem when propagation
  - Similar with forward navigation, from last measurement to the first measurement – more time cost but robust
- We can get smoothing parameter now



# CEPC detector: The geometry bug is fixed

- Asymmetry bug is fixed



# To do (for us)

- Make the chain work for the DD4HEP detector
  - Something should be fixed in the digitization process
- Apply propagating to (0,0) after smoothing