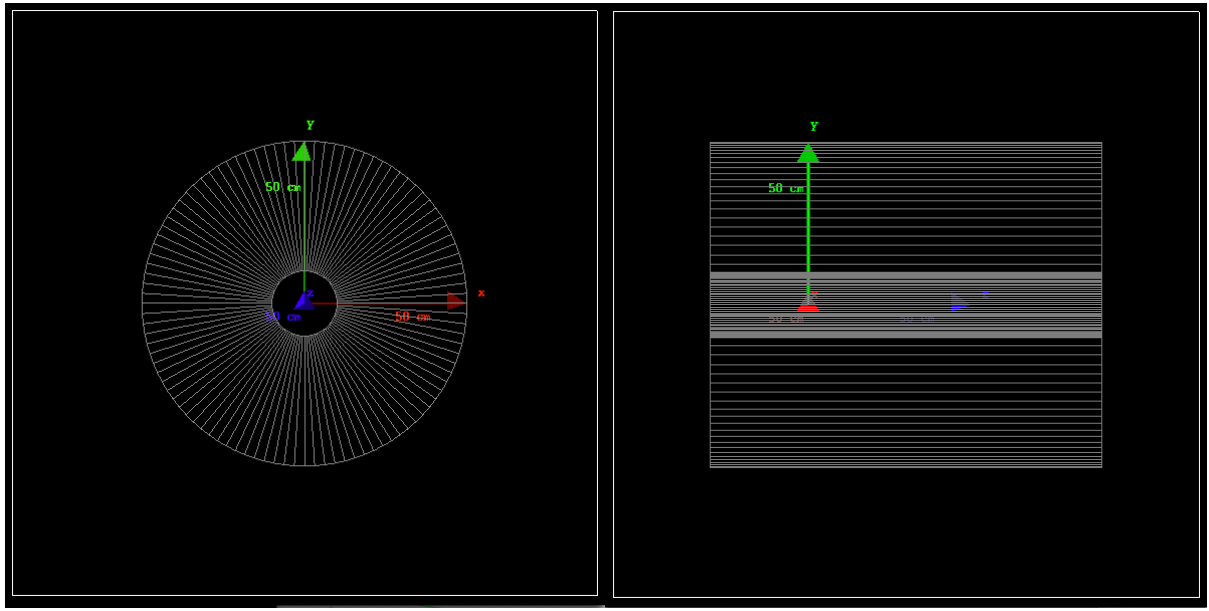
# LAMPS simulation

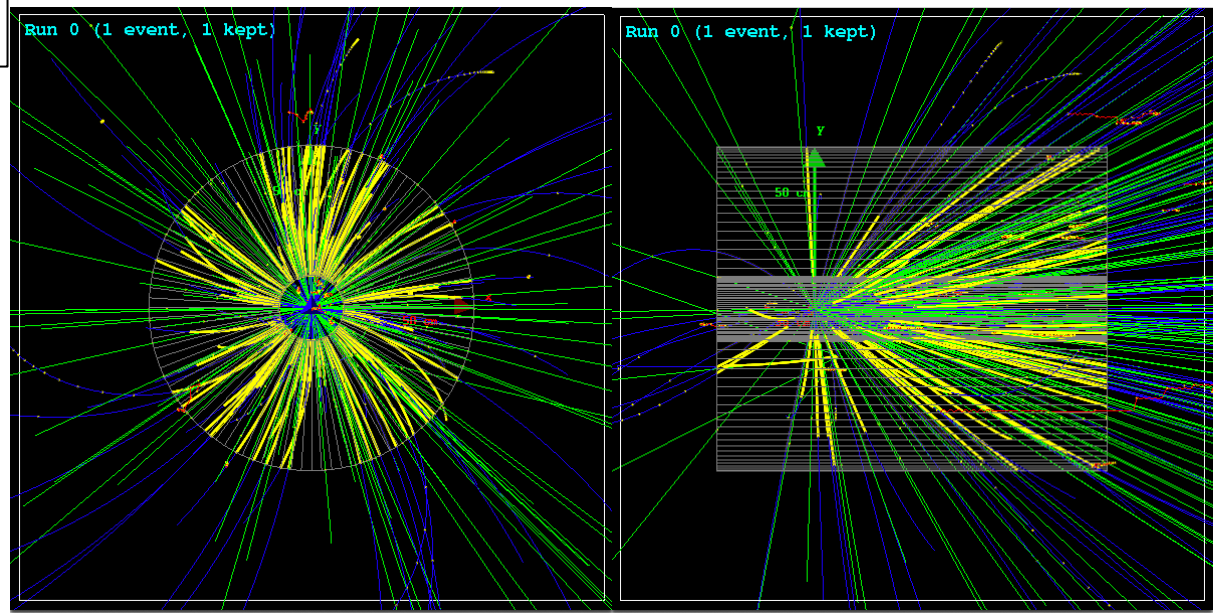


- Repository
  https://github.com/LAMPS-collaboration/kebi

- GEANT4 simulation
  - Read several configuration files (top level configuration/detector configuration)
  - Read text file for primary particles



1 IQMD event (262 primary particles)




```
G4VisFile    s geant4_vis.mac (Geant4 macro)
G4InputFile  s input/iqmd_test.gen (Primary particle)
G4OutputFile s $KEBIPATH/data/iqmd_test.mc.root (Output file name)


tpcPar f input/kbpar_tpc.conf (TPC configuration file)


SensitiveDetectors s TPC (Sensitive detector)
```

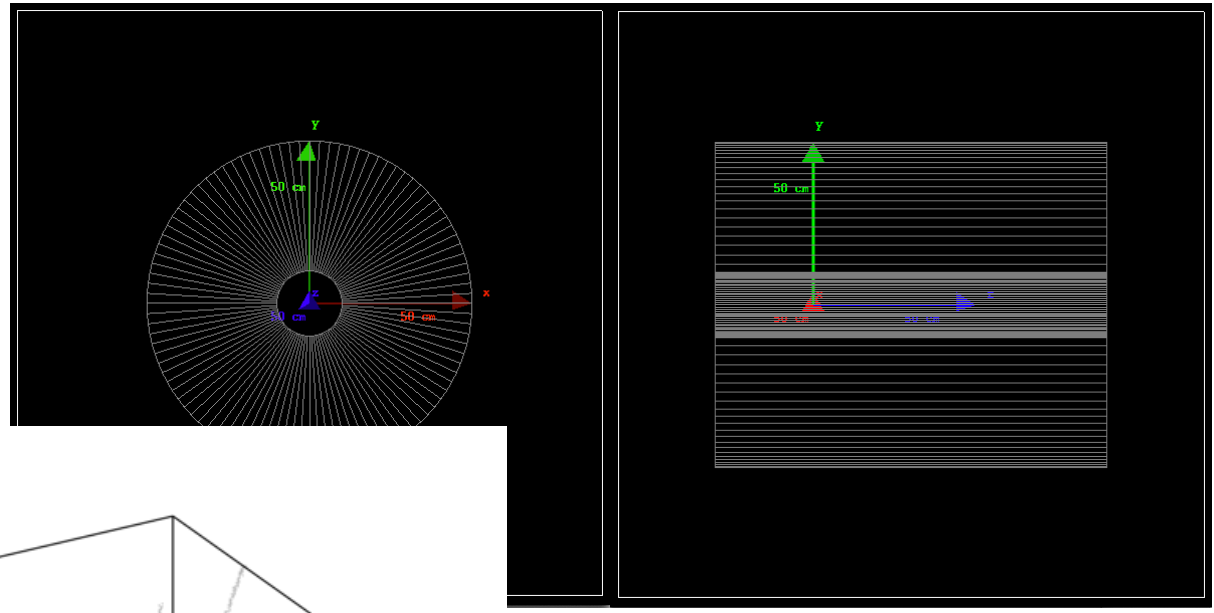
```
p (p: momentum unit, e: energy unit)
12 (number of events)
0 1 0 0 0 (index/number of primary/vx [mm] /vy/vz)
2212 70.7107 0 70.7107 (pid/px [MeV/c] /py/pz)
1 1 0 0 0
2212 137.413 79.3353 121.752
2 1 0 0 0
2212 129.904 225 150
3 1 0 0 0
2212 2.26285e-14 369.552 153.073
4 1 0 0 0
2212 -241.481 418.258 129.41
```

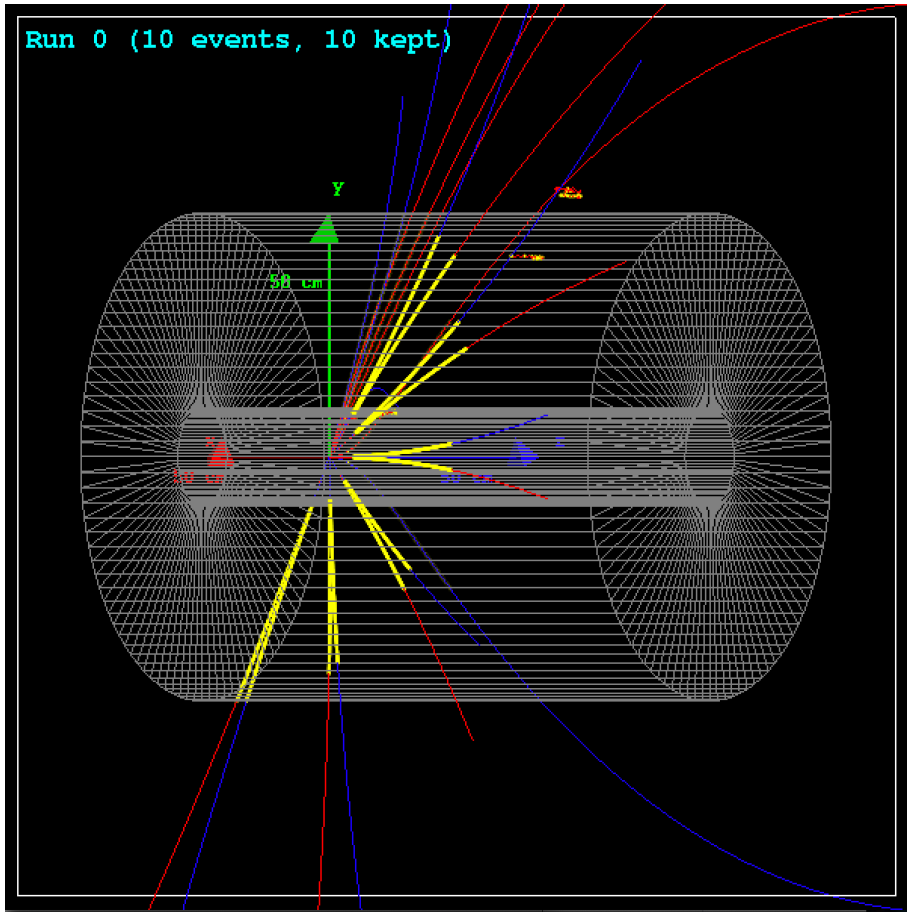
# LAMPS simulation

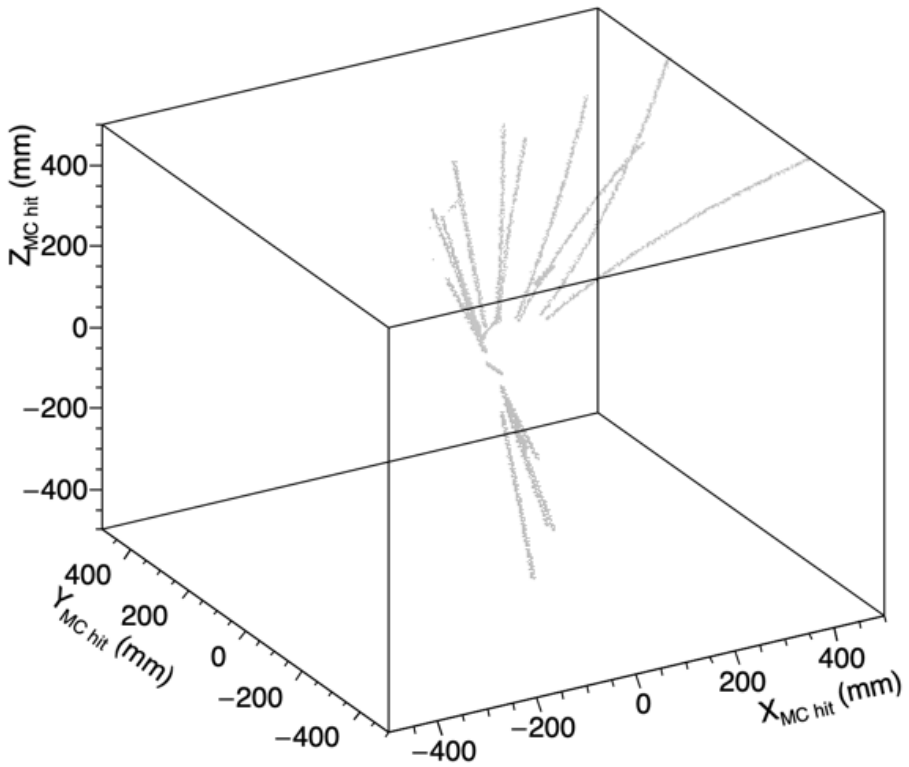


- Repository
  https://github.com/LAMPS-collaboration/kebi

- GEANT4 simulation
  - Read several configuration files (top level configuration/detector configuration)
  - Read text file for primary particles
  - All MC tracks (primary/secondary), MC hits (position/time/deposited energy) are stored in a TTree



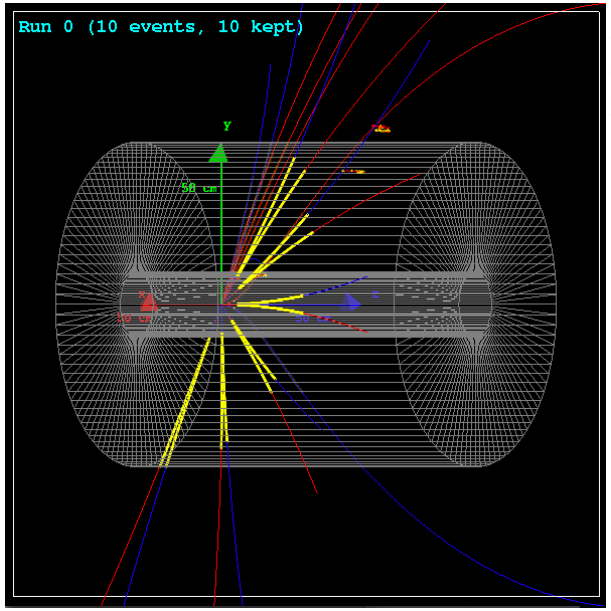



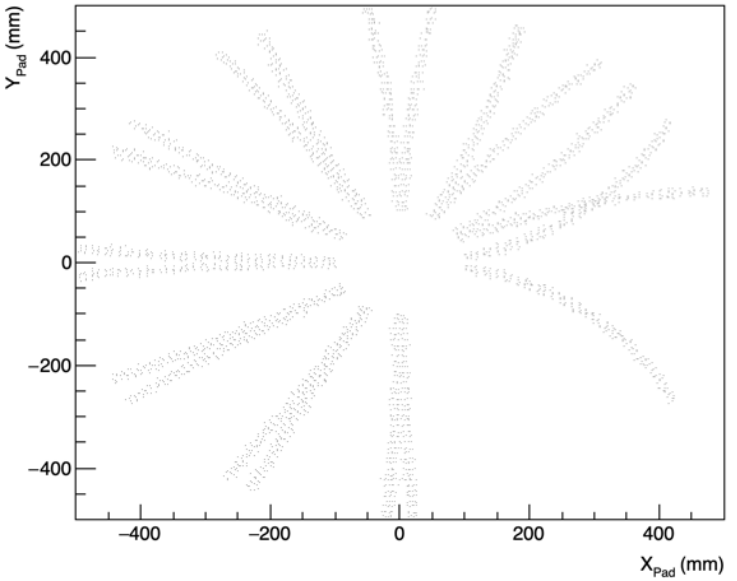



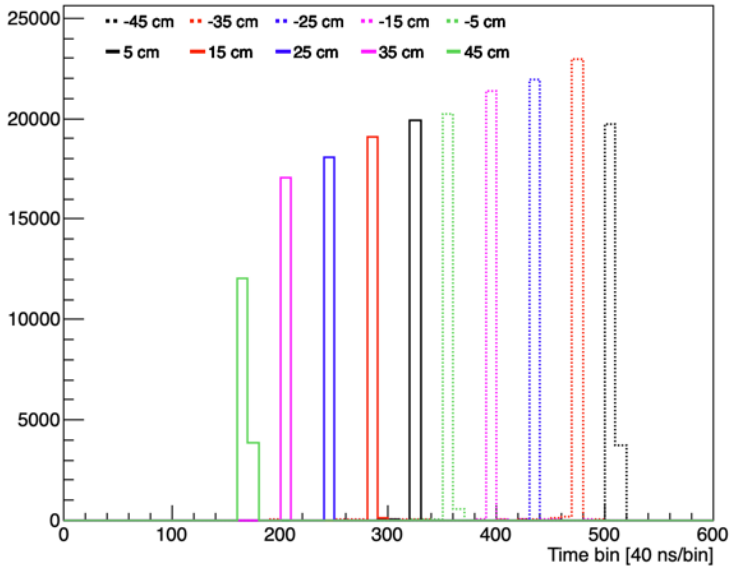
# LAMPS simulation

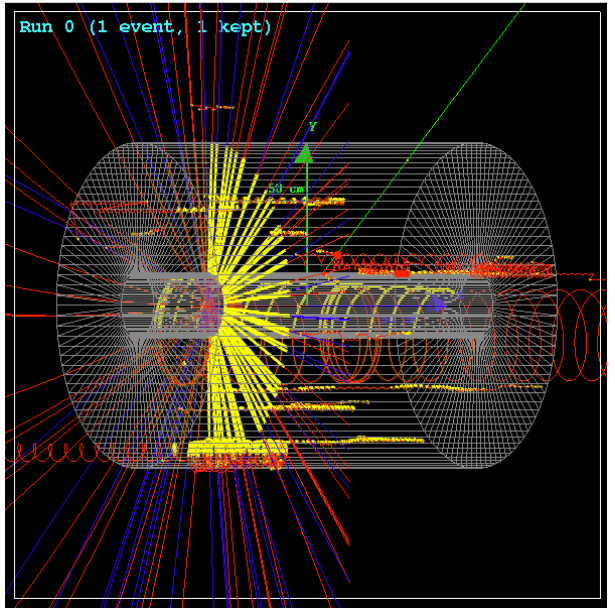


- Digitization
  - Read Geant4 hit information
  - Drift to the readout pad
    Calculate drift time, diffusion
  - Generate ionization electrons for each MC hits
  - Assign readout pad index for each ionization electron
  - 512 samples (40 ns per sample)



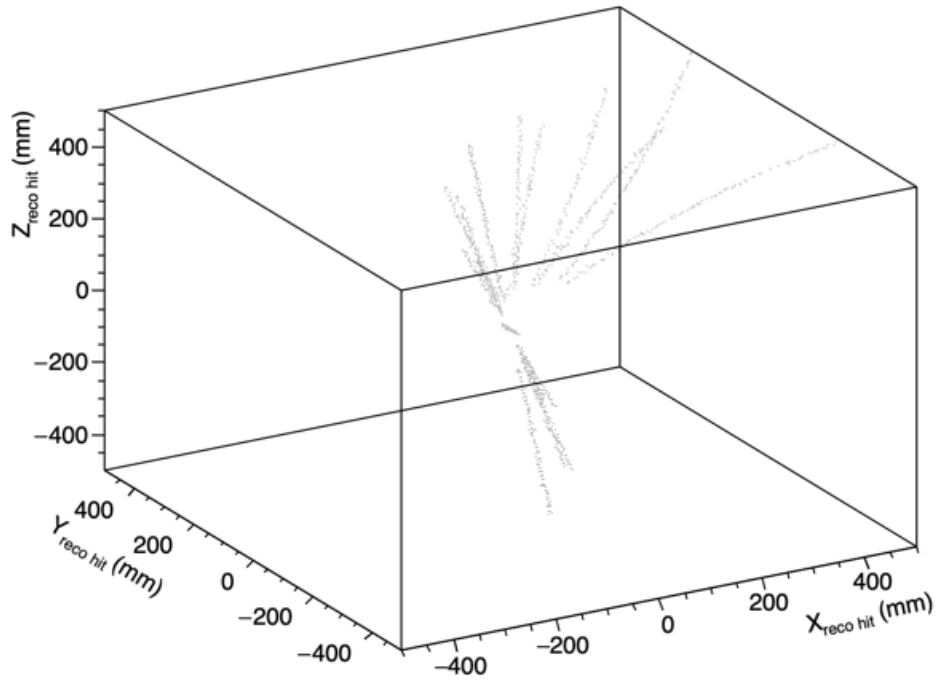



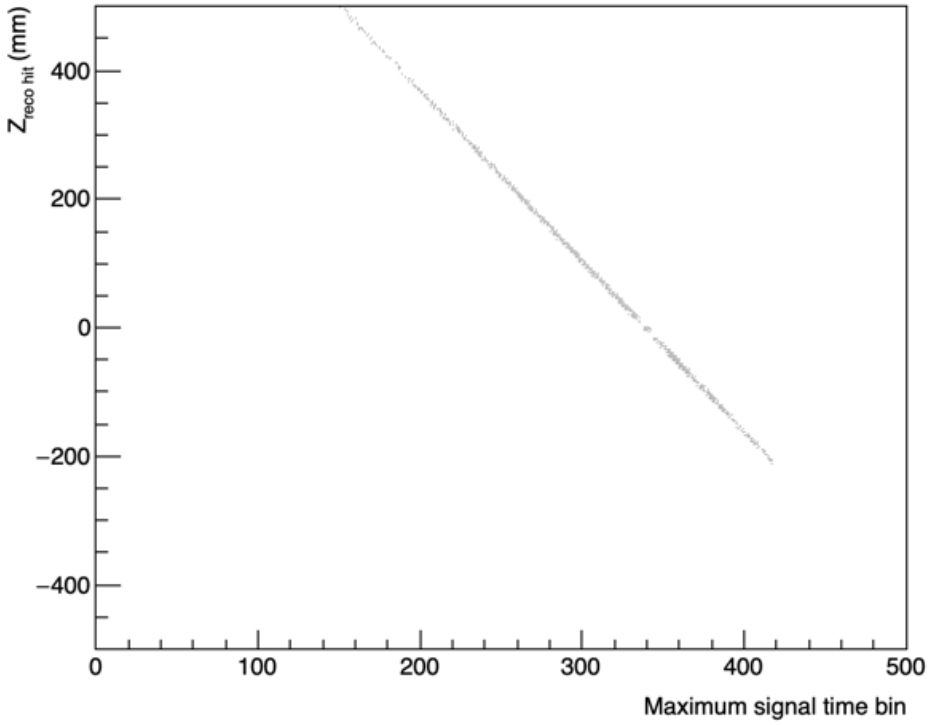
# LAMPS simulation



- Digitization
  - Read Geant4 hit information
  - Drift to the readout pad
    Calculate drift time, diffusion
  - Generate ionization electrons for each MC hits
  - Assign readout pad index for each ionization electron
  - 512 samples (40 ns per sample)

- Hit reconstruction
  - Estimate z position based on time bin of the maximum signal in 512 samples



# To do



- Track/vertex reconstruction
  - Implement external package (GenFit? Rave?)

- Other detectors
- Geometry
- Data structure
- MC validation
- Compatibility with real data

- Priority?