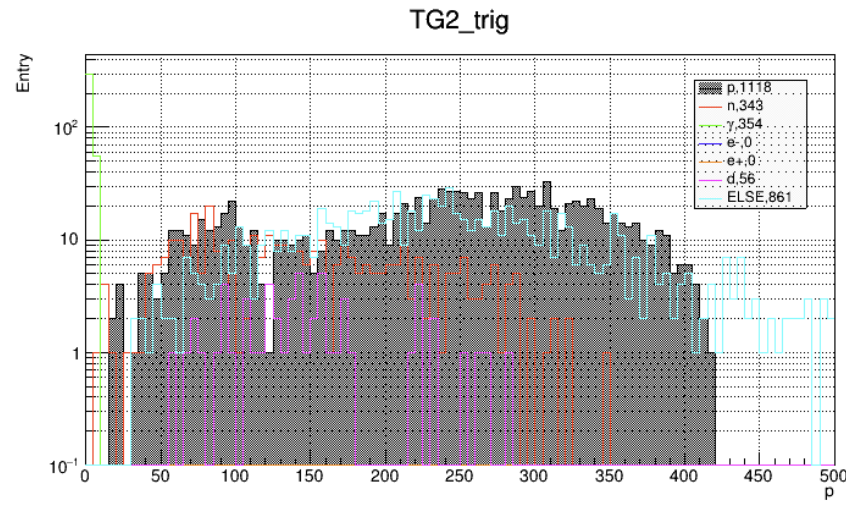
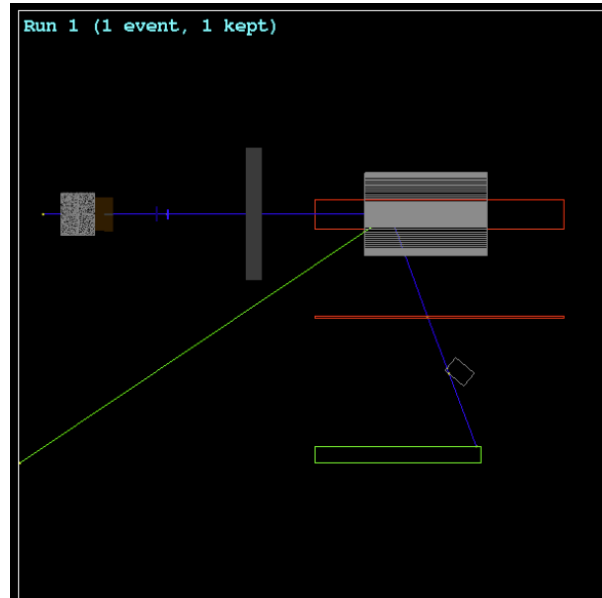


LAMPS software and simulation

Sanghoon Lim
Pusan National Univeristy

- Based on generalized analysis framework KEBI
 - main repository: <https://github.com/LAMPS-Collaboration/kebi>
 - forked repository for beam test simulation: <https://github.com/LAMPS-Collaboration/kebi>
 - will be merged to the main repository for further development
- Documentation
 - class reference (doxygen)
 - installation in different OS (linux, macos)
 - tutorials



Ongoing additional analysis (Y. J. Kim)

- LAMPS simulation

event generation



detector simulation

readout/digitization

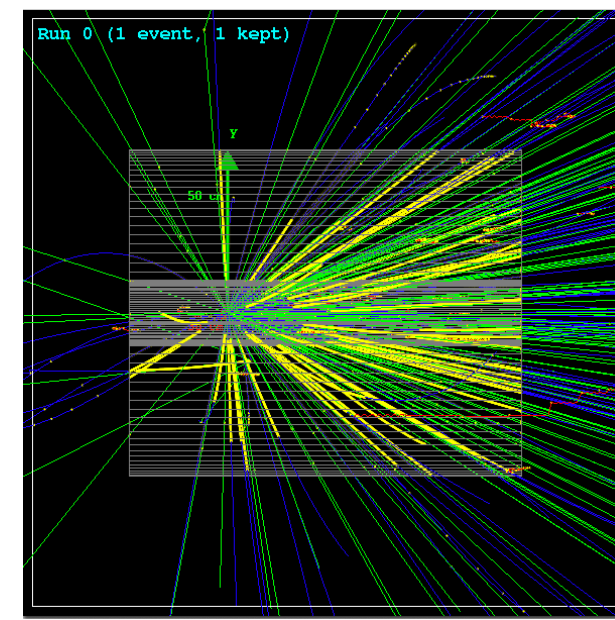
hit/cluster reconstruction

track finding/fitting

vertex finding

analysis

- 10 IQMD events (Au+Au 250 MeV/A)
- Single particle generation
 - Tracking performance evaluation
- Physics list in Geant4
 - Tracking performance evaluation
 - Analysis code preparation



LAMPS simulation

- TPC active volume only
- To do:
 - Implement detailed materials (frame, readout board) and other detectors
 - 3D drawing for each detector will be ideal information

- B-field
 - Option 1
Uniform field
 - Option 2
Field map
Implemented by C. Kim
(uniform field can be set)

event generation

detector simulation



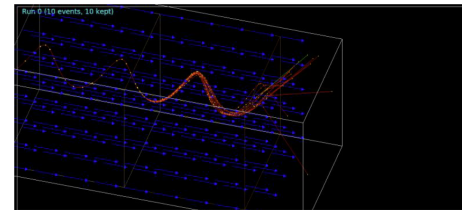
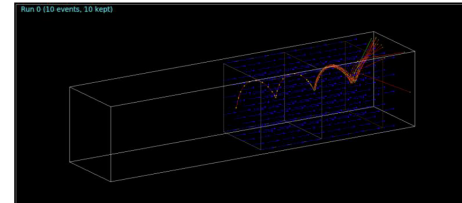
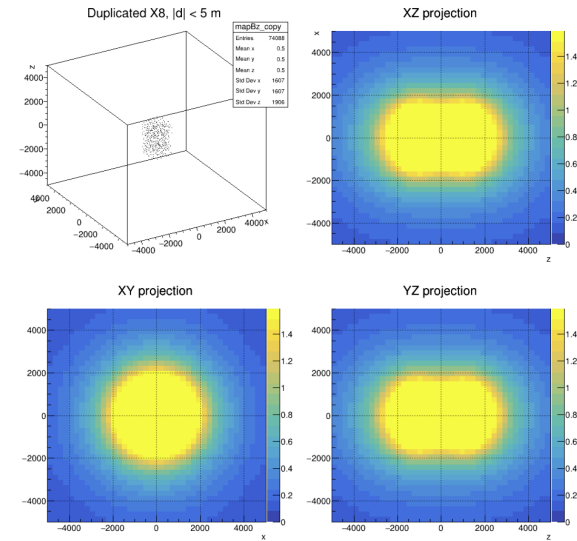
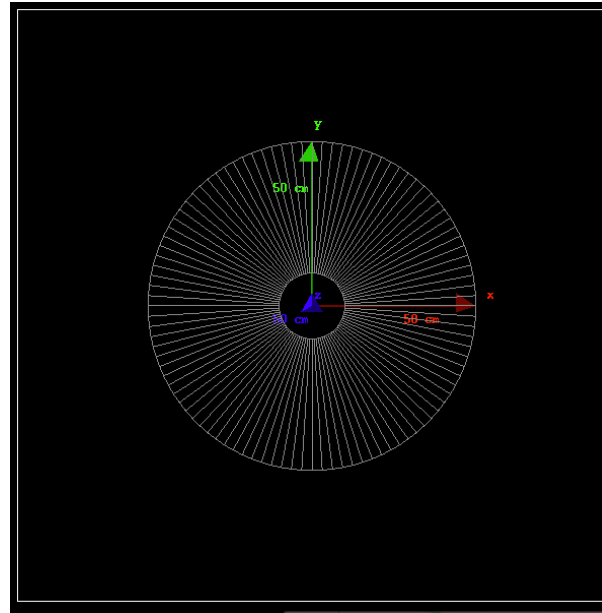
readout/digitization

hit/cluster reconstruction

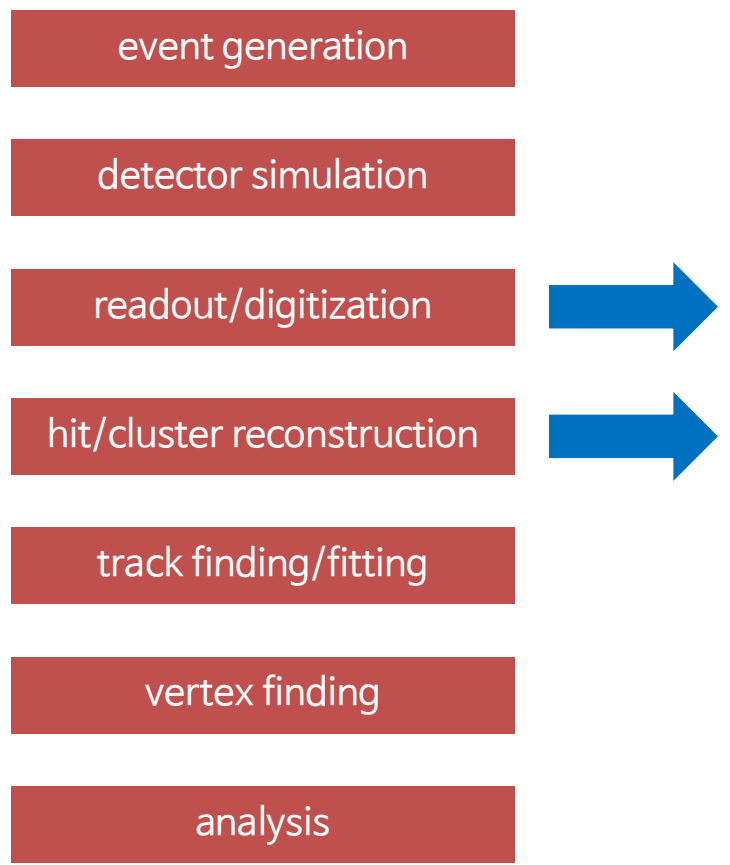
track finding/fitting

vertex finding

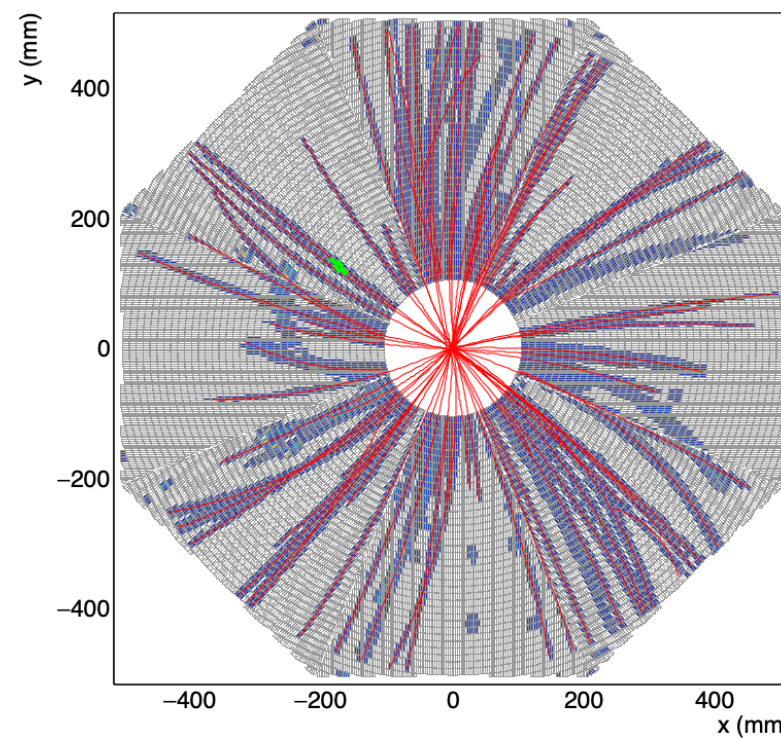
analysis



- LAMPS simulation



- Pulse shape without noise
 - Cosmic data to model noise?
- Updated TPC pad geometry
 - Detailed information from H.S. Lee
 - Implemented by J.W. Lee
- Hit reconstruction
 - z-position based on maximum time bin
 - No clustering



- LAMPS simulation

event generation

detector simulation

readout/digitization

hit/cluster reconstruction

track finding/fitting

vertex finding

analysis



- Initial track finding
- External packages for track fitting and vertexing
 - Genfit2 and RAVE
 - To do:
Code development based on SpiRITROOT
- To do:
 - Tracking performance evaluation tool
- Computing resources
 - Data size (number of events) ?
 - Server/clusters to run LAMPS software and store MC and data