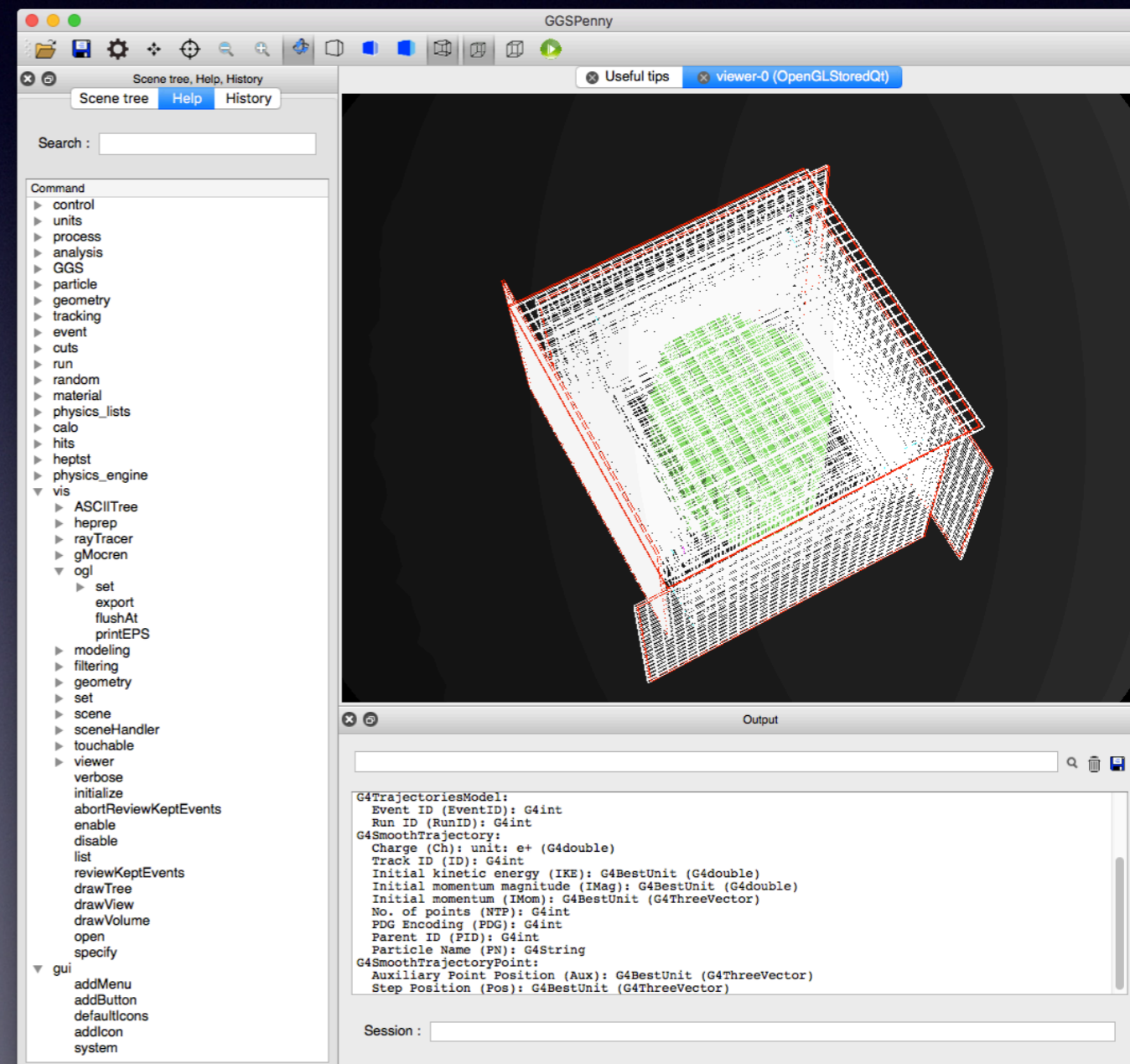# HERDward

A prototype for a HERD event display

V. Formato - I.N.F.N. Sezione di Perugia
XX/10/2017 - CERN - 5th HERD Workshop

What we have so far…

- Working simulation code

- Two geometry models

- Everything based on the GGS framework (see N. Mori's talk)

- Detector geometry in "proprietary" format (*dll plugin*)

- Some basic visualisation options, based on G4 interface

Pros and cons

- Useful for quick inspection of the geometry (spotting positioning bugs and so on…)

- You can just run one event and see what happens (although… see next slides)

- You get the full display of simulated particles, but no display of energy deposition in sensitive volumes

- Visualisation can get a bit cluttered.

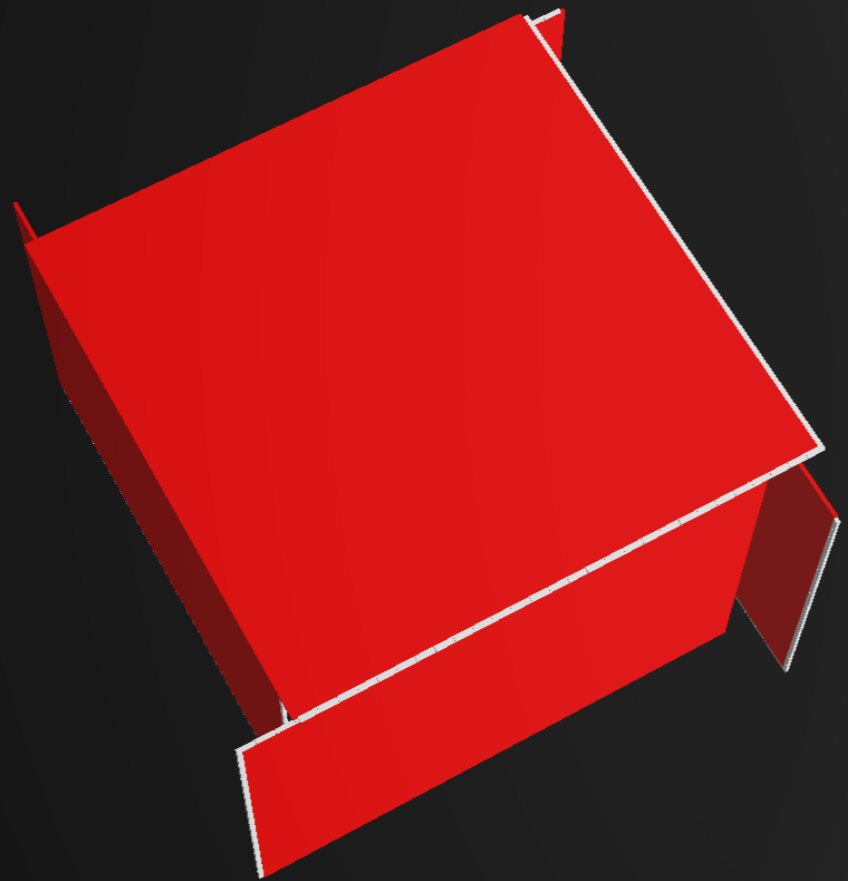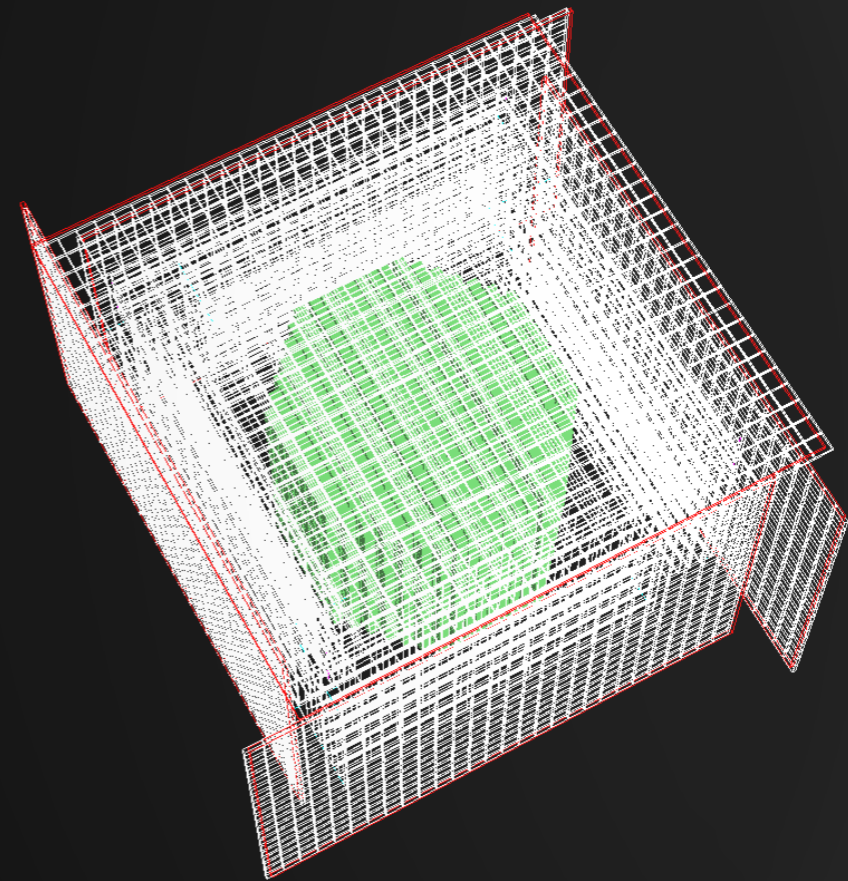- 4 visualisation options, some of them quite heavy on the system.
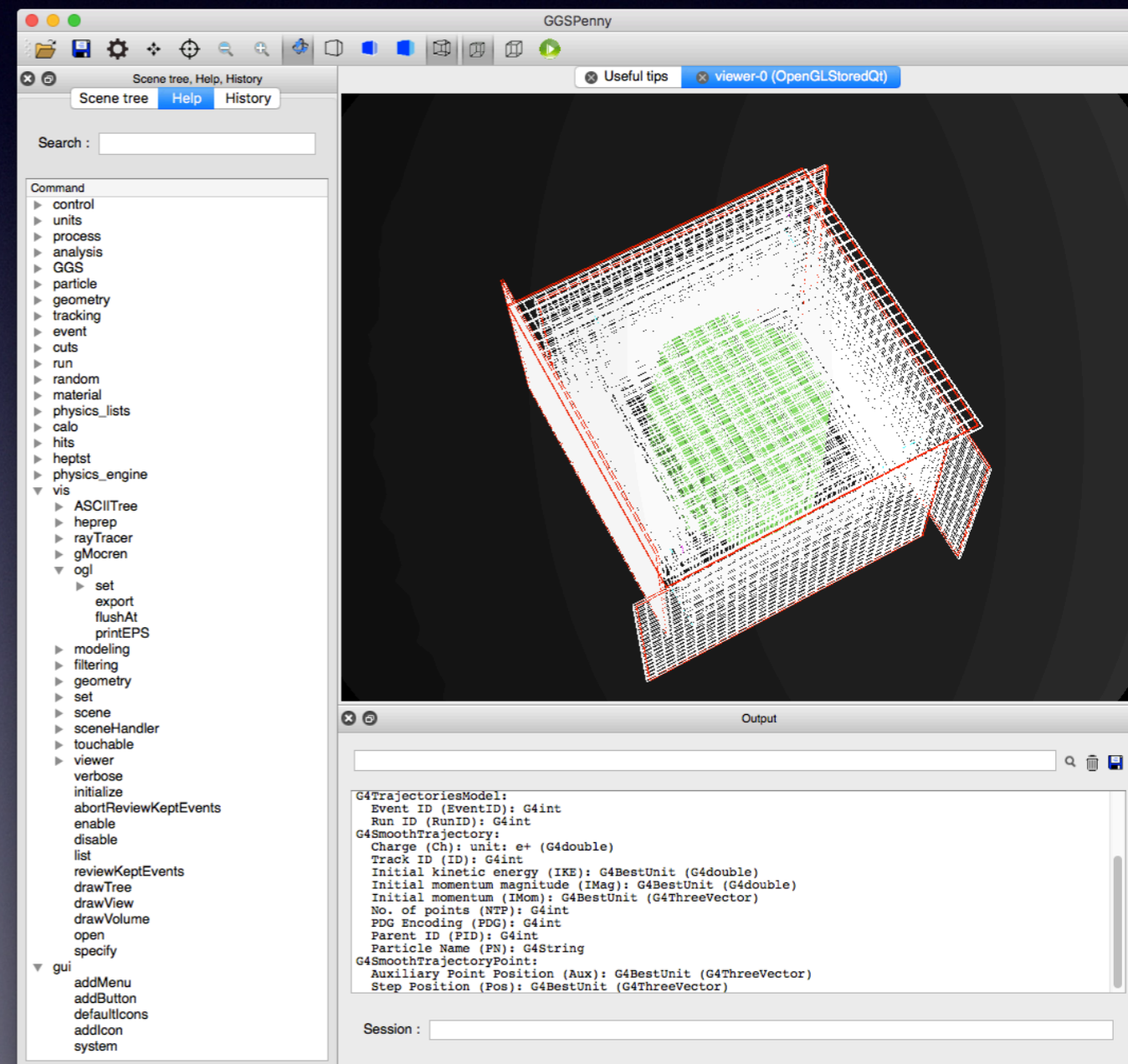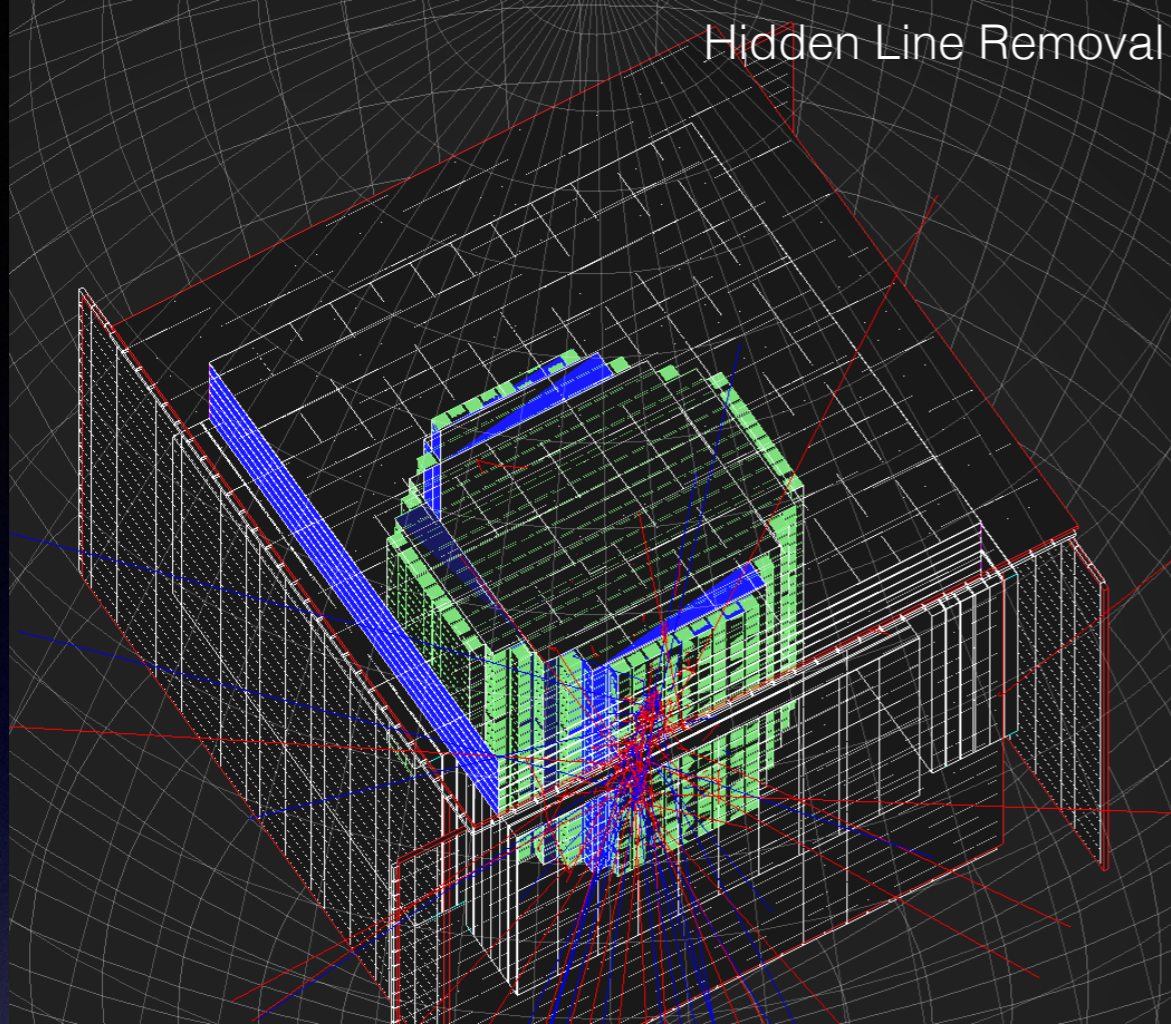
Hidden Line Removal
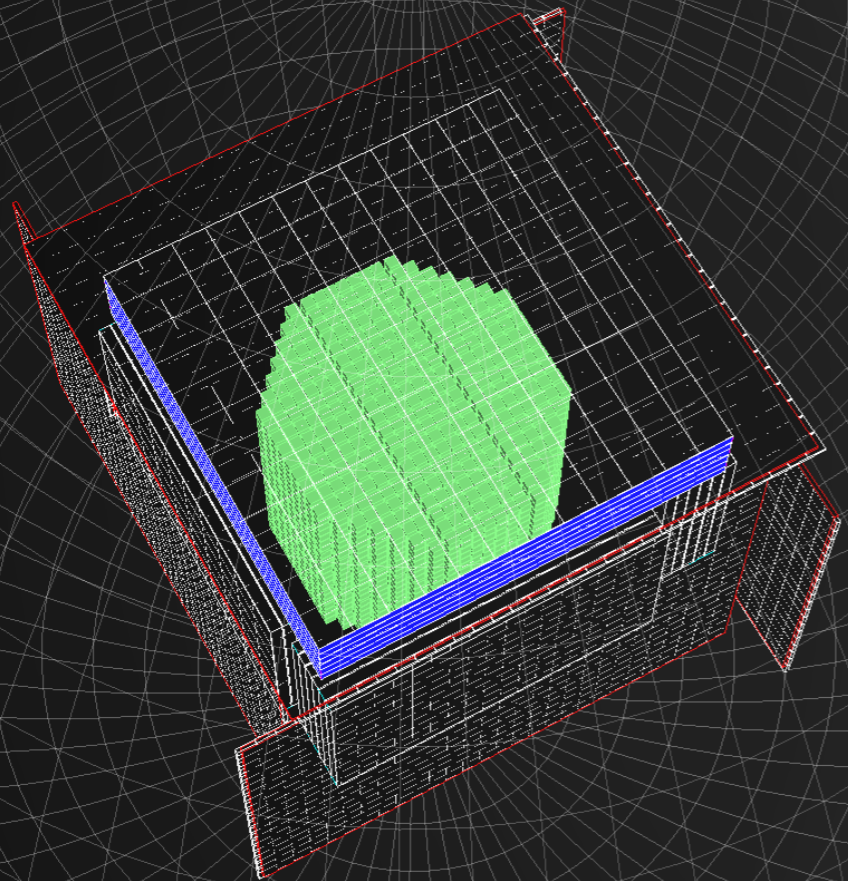
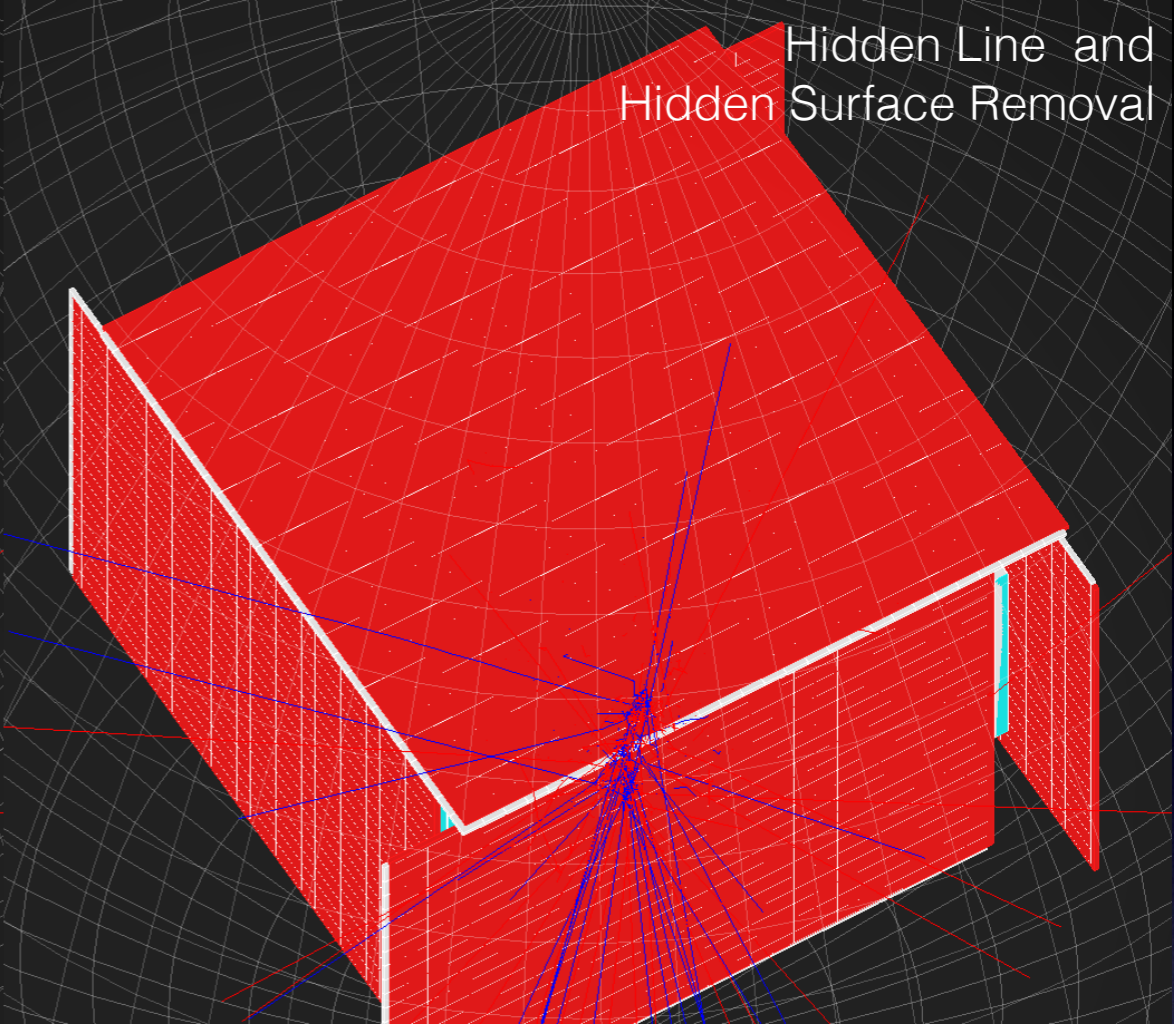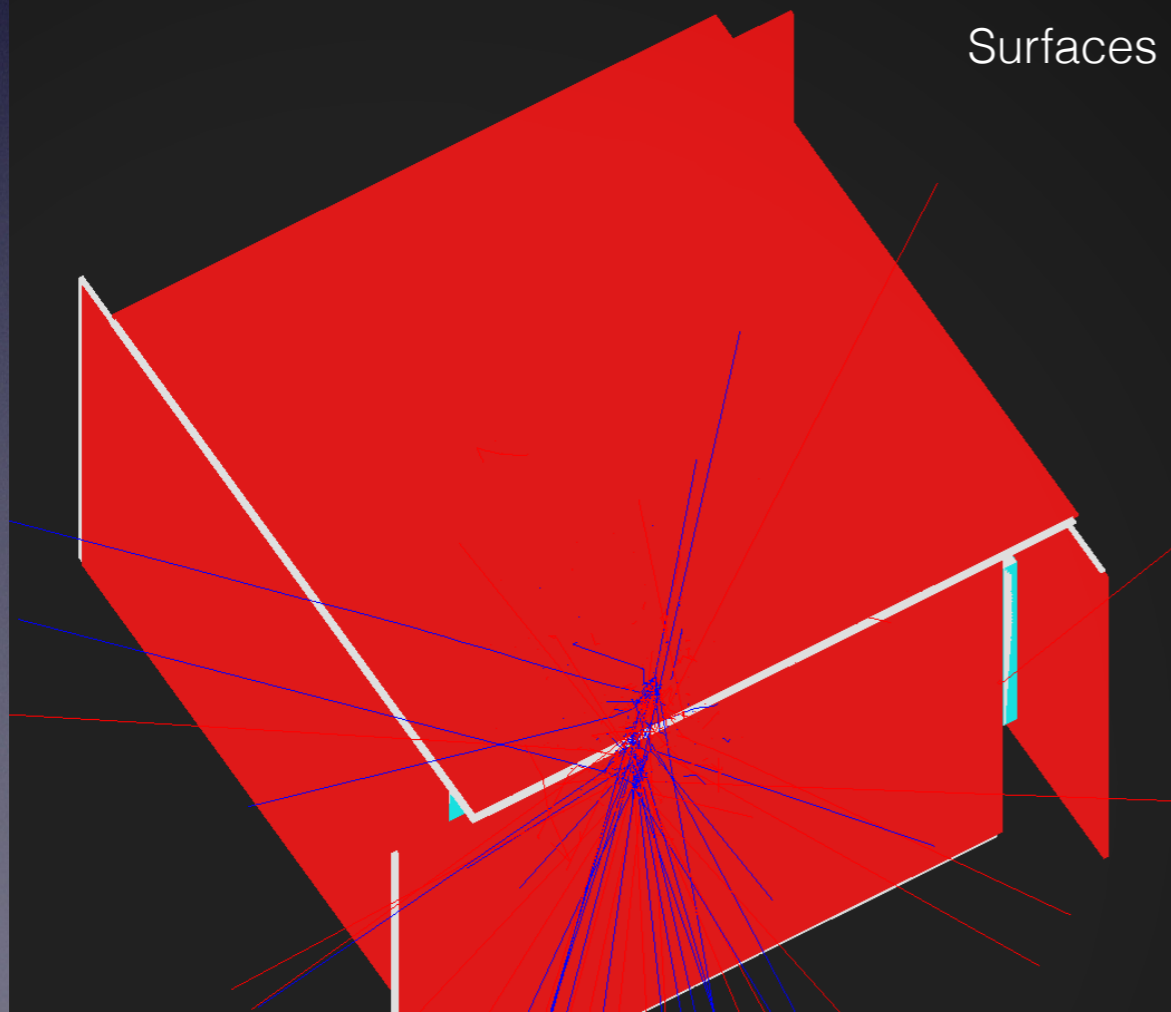Hidden Line and
Hidden Surface Removal
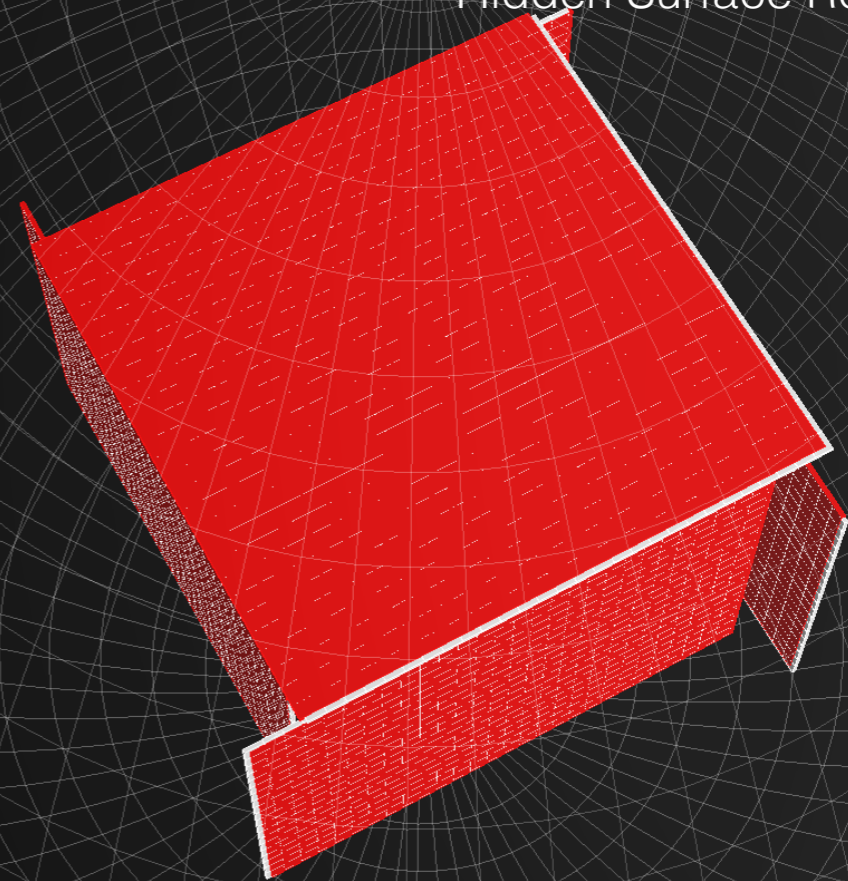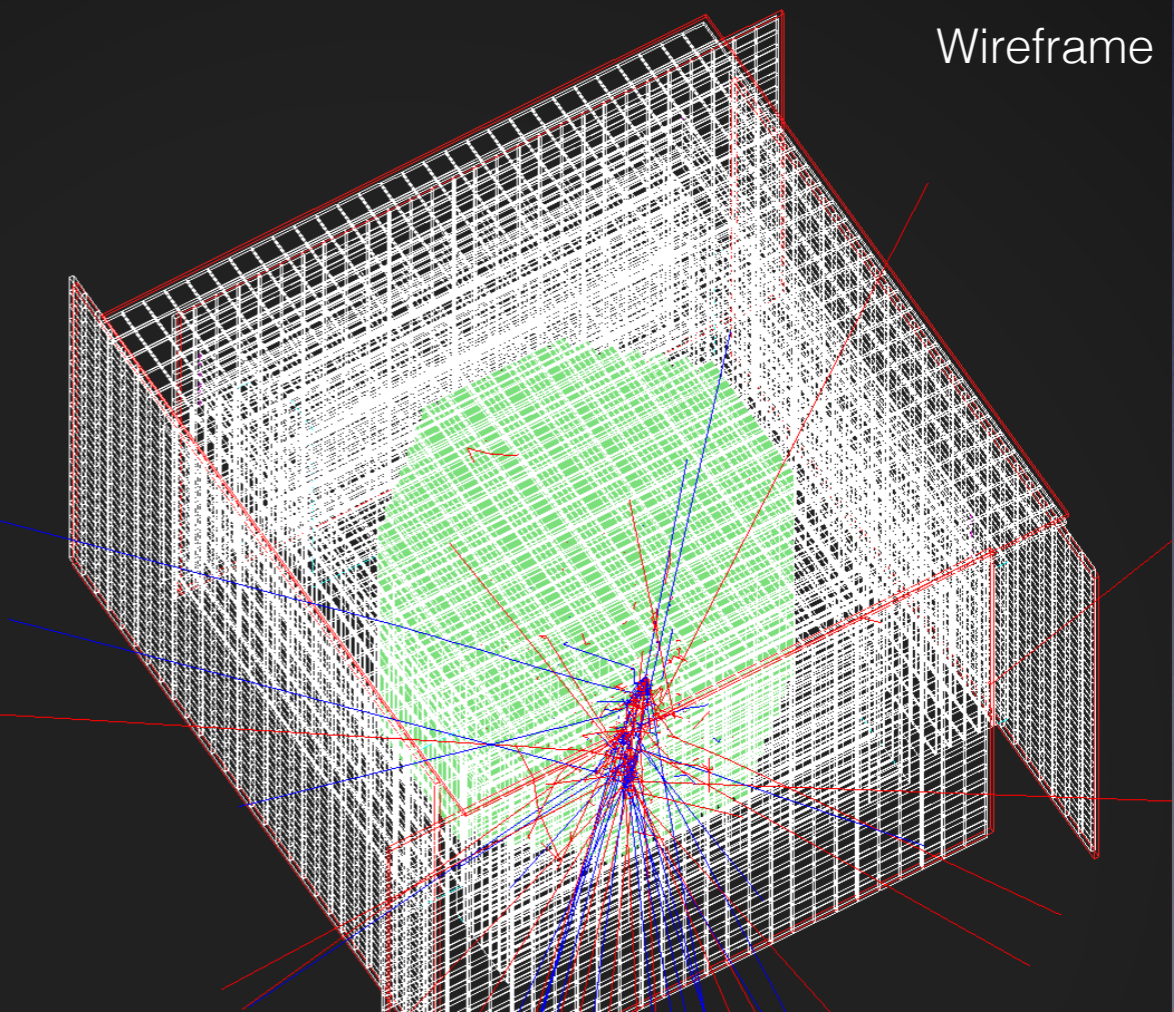
Surfaces

Wireframe

Hidden Line Removal

Hidden Line and Hidden Surface Removal

Surfaces

Wireframe

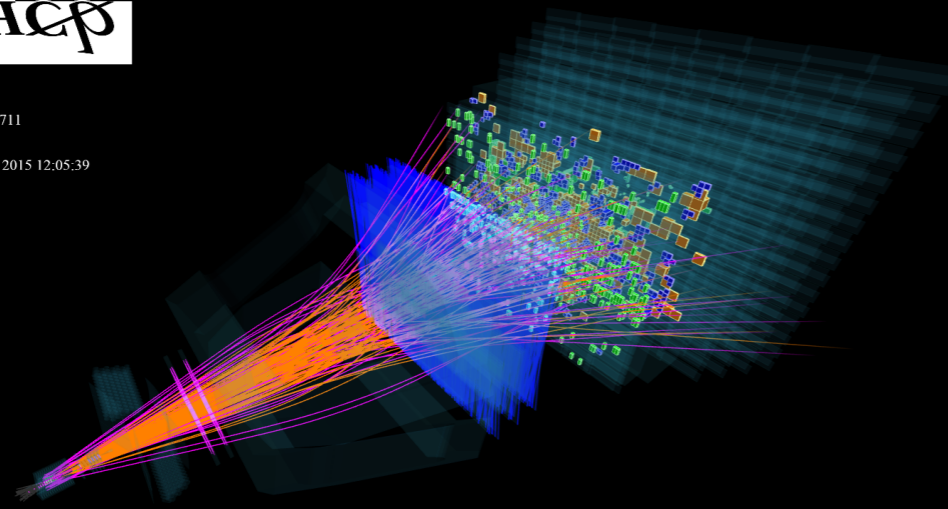# EVE

- Built into ROOT

- Optimised OpenGL support

- Capable of handling both 2D/3D visualisation
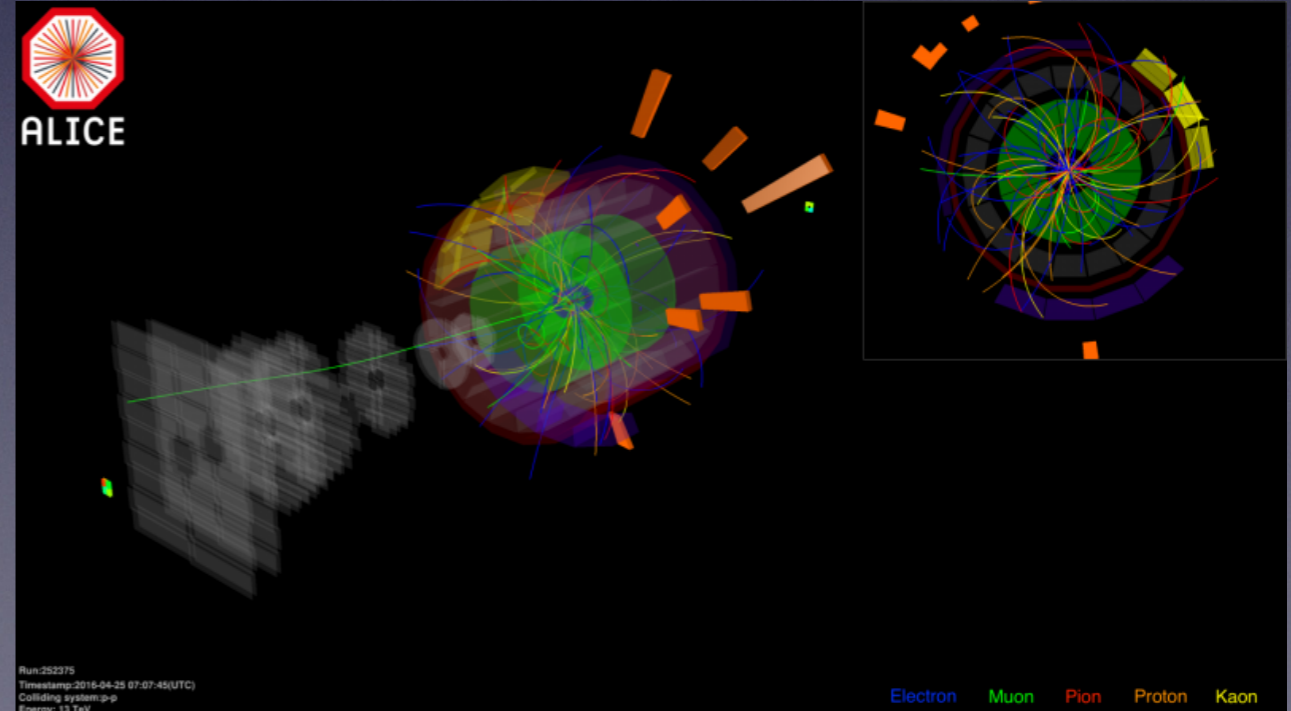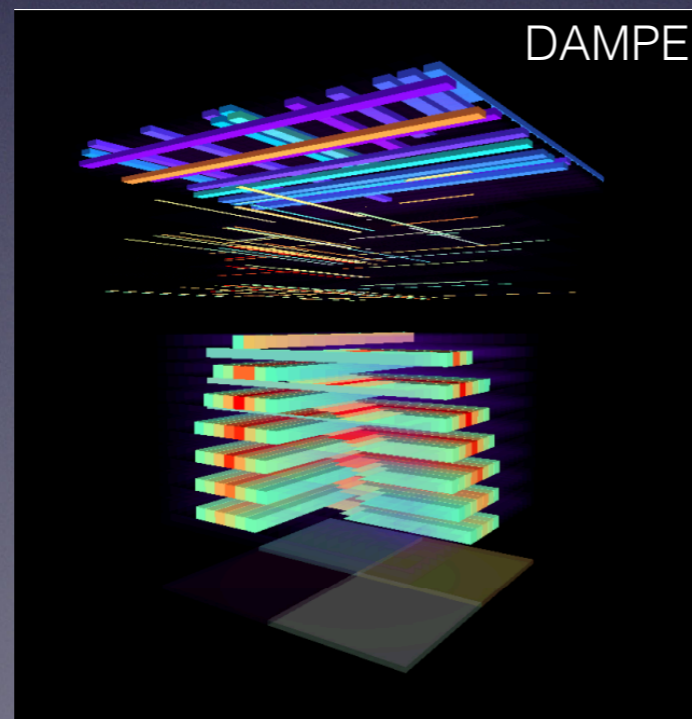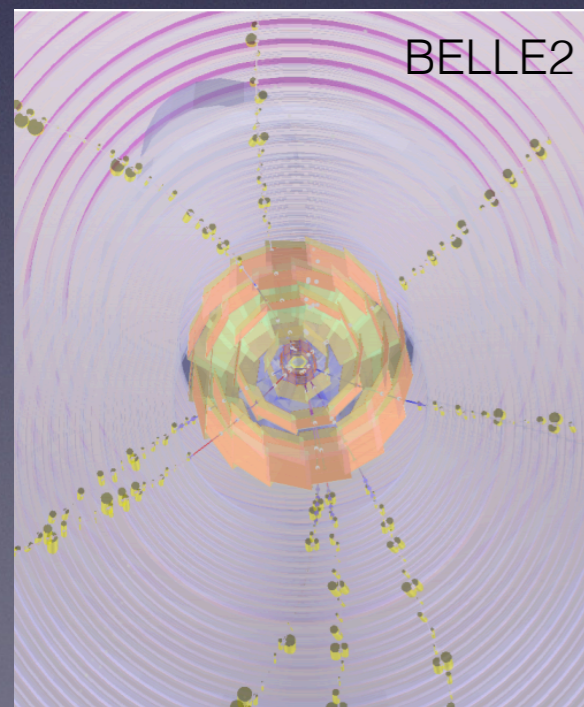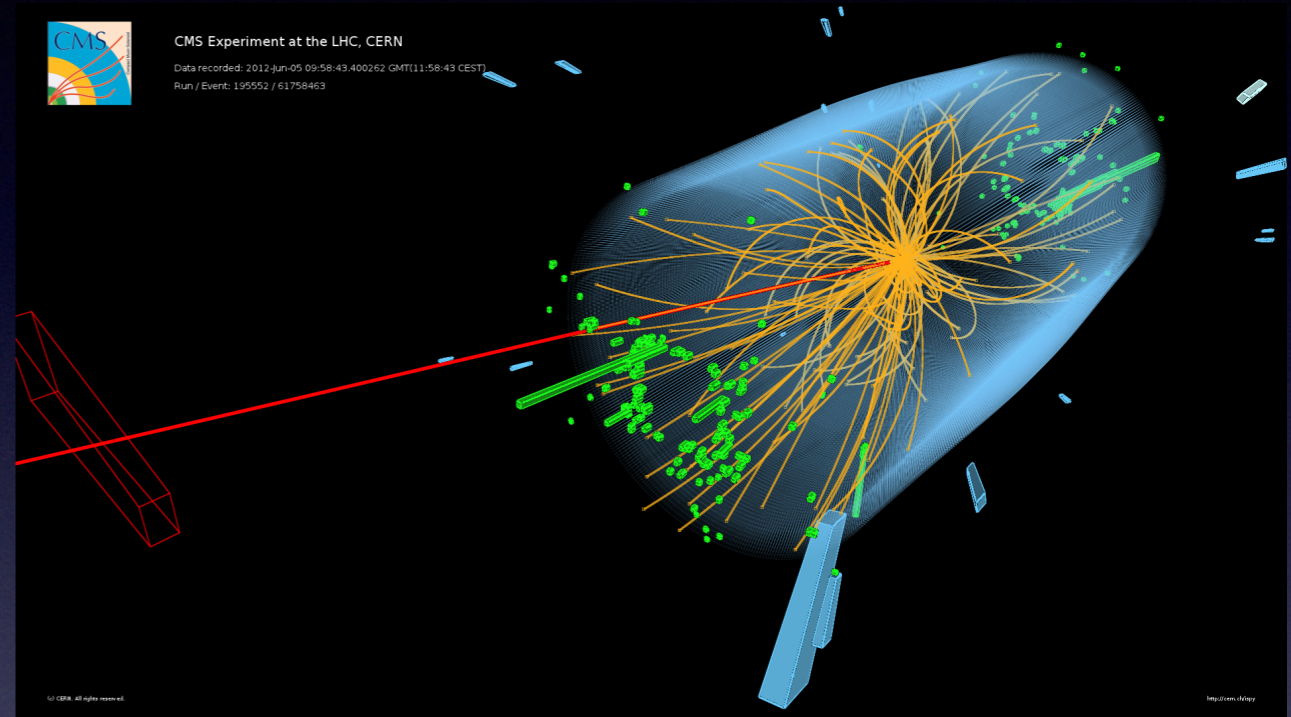
- Explicitly designed for HEP experiments

EVE

BELLE2

DAMPE

CMS Experiment at the LHC, CERN
Data recorded: 2012-Jun-05 09:58:43.400262 GMT(11:58:43 CEST)
Run / Event: 195552 / 61758463

Event 58049711
Run 153460
Wed, 03 Jun 2015 12:05:39

ALICE

Run:252375
Timestamp:2016-04-25 07:07:45(UTC)
Colliding system:p-p
Energy: 13 TeV

Electron Muon Pion Proton Kaon

HERDward

HERD
Wants
A
Realistic
Display

- Built with EVE

- Detector geometry in ROOT format (conversion already implemented in GGS converter)

- Displays energy deposition in HERD sensitive volumes - Close to what an actual event display will look like.
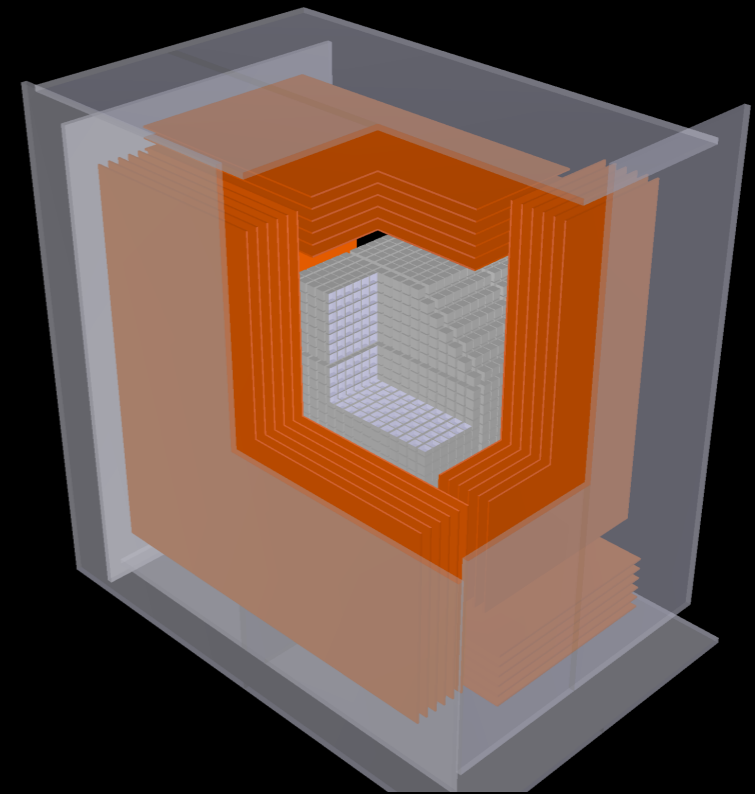
HERDward
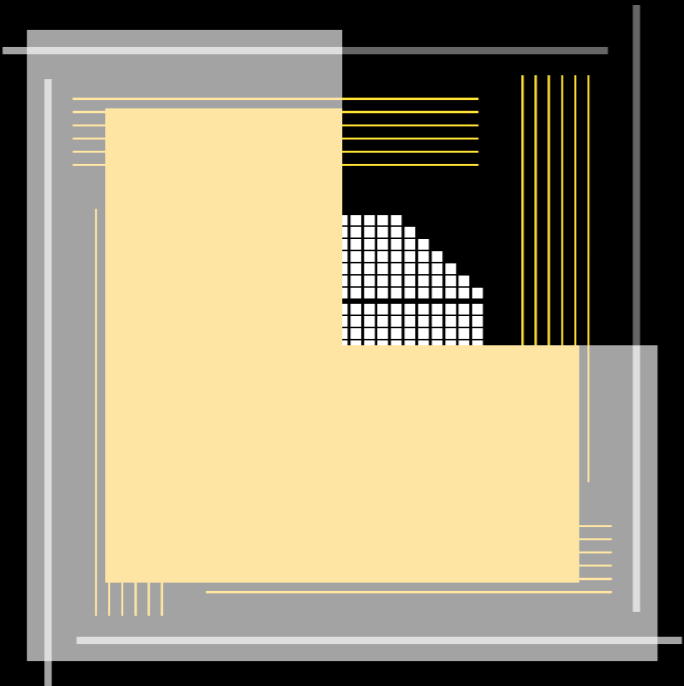
HerdBaseline

- No Segmentation in PSD or STK
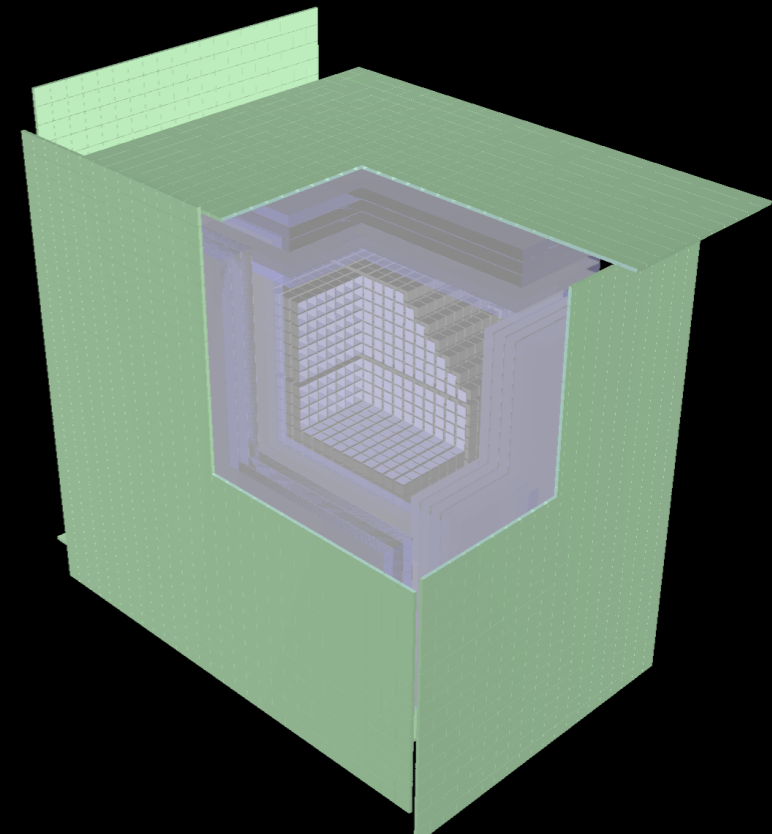- Full Calorimeter segmentation
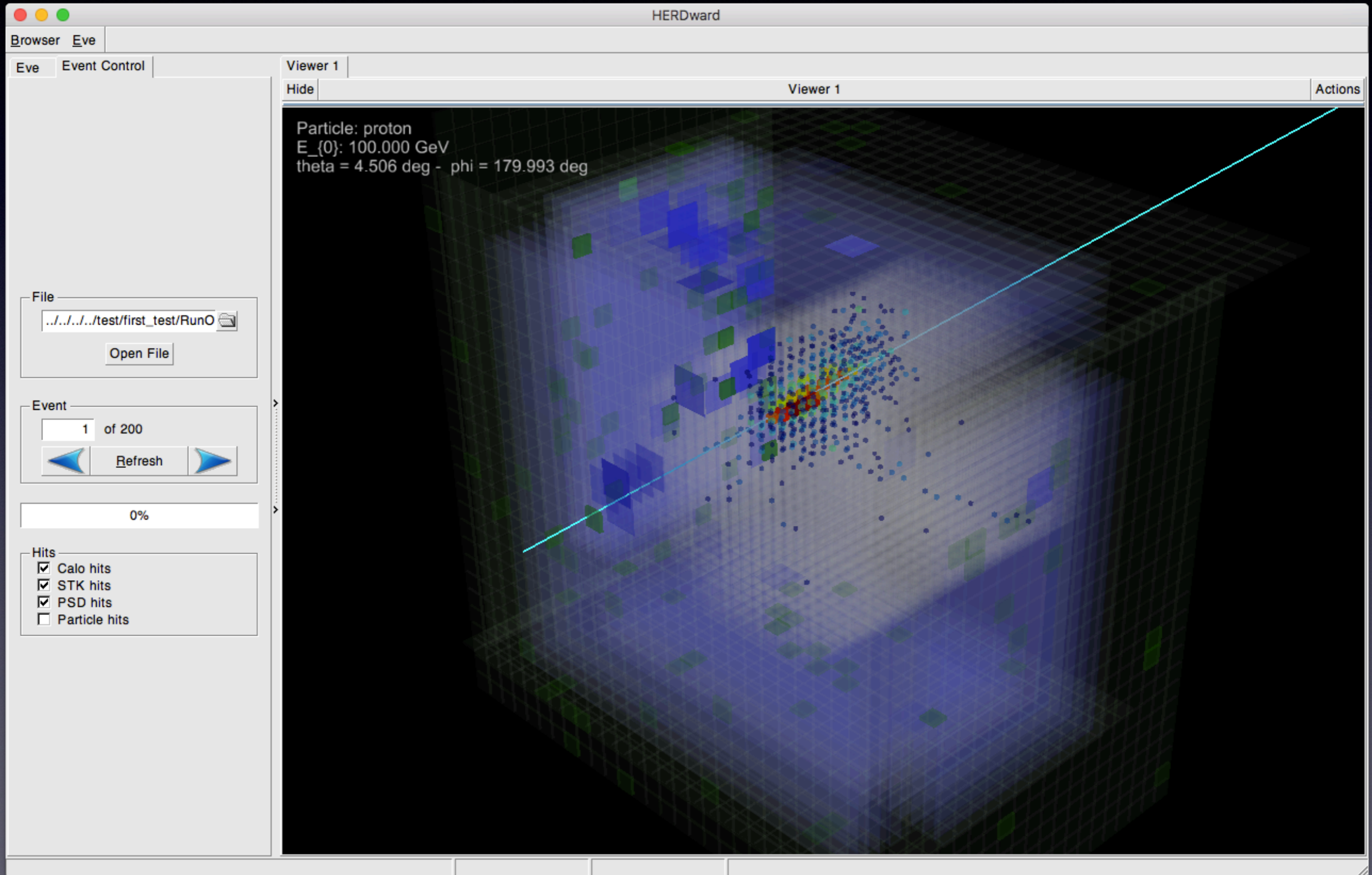- PSD/STK overlaps not optimised

(Junjing Wang, Ming Xu, Zheng Quan)
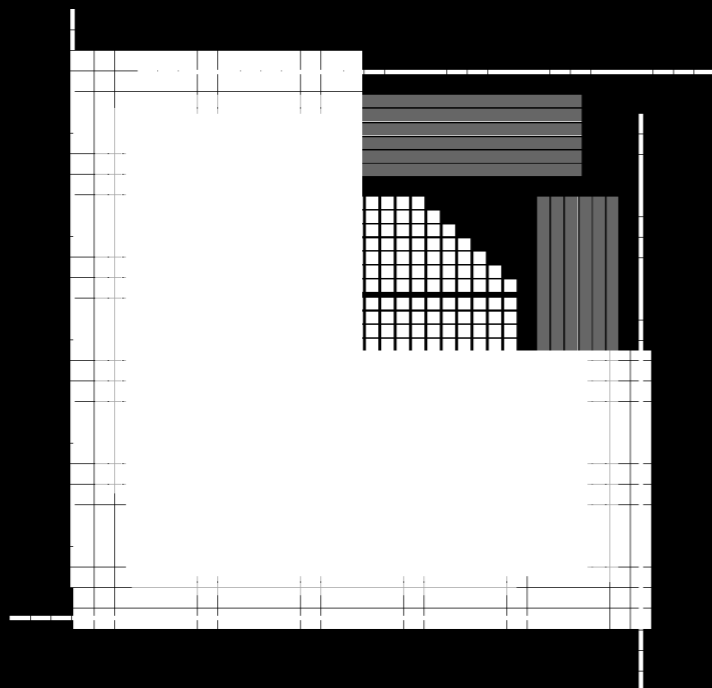
HerdCompactV0

- PSD segmented in tiles, STK in sensors
- Full Calorimeter segmentation
- PSD/STK repositioned, smaller footprint

(Fabio Gargano)

HERDward: GUI

HERDward: GUI
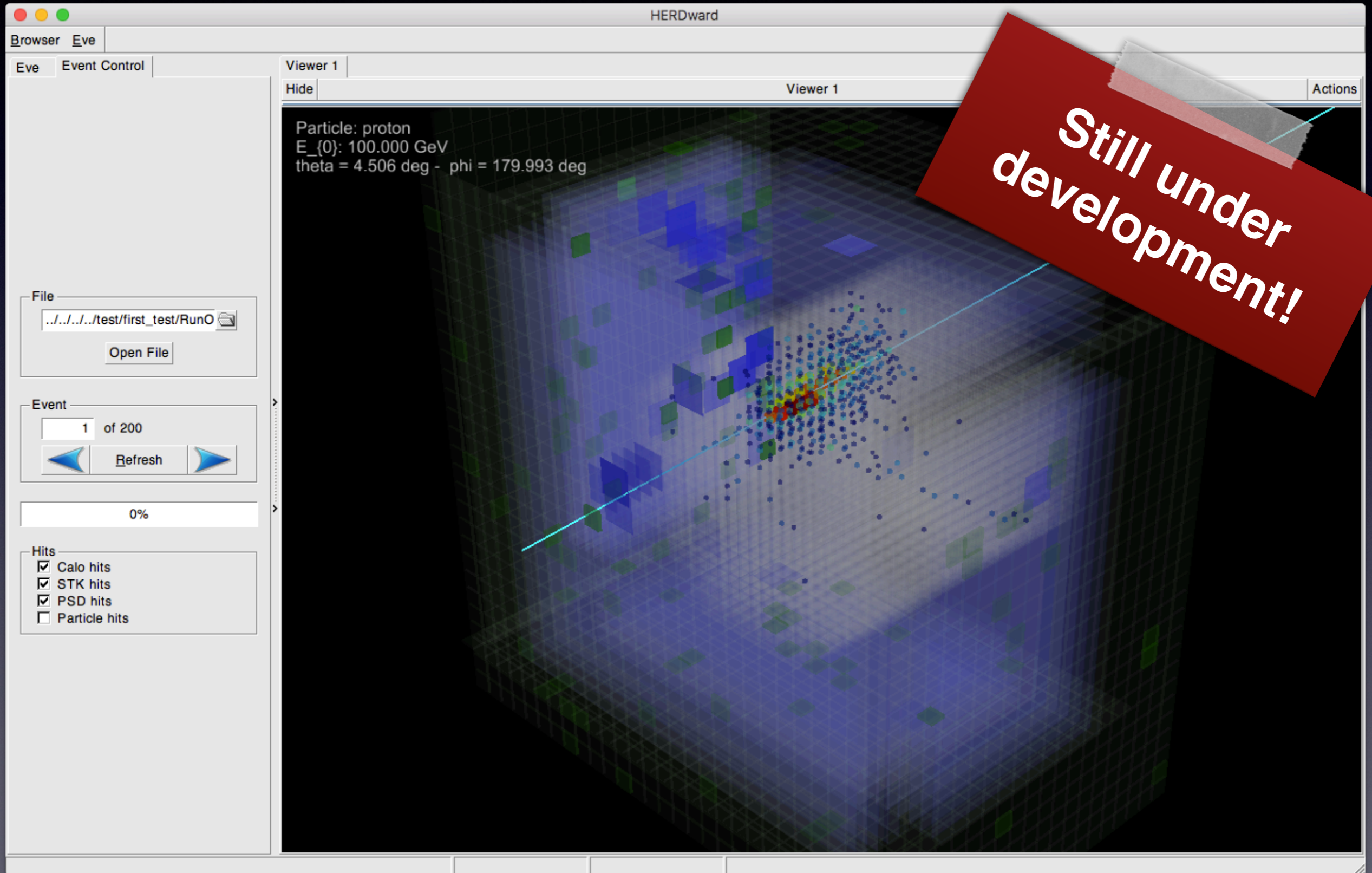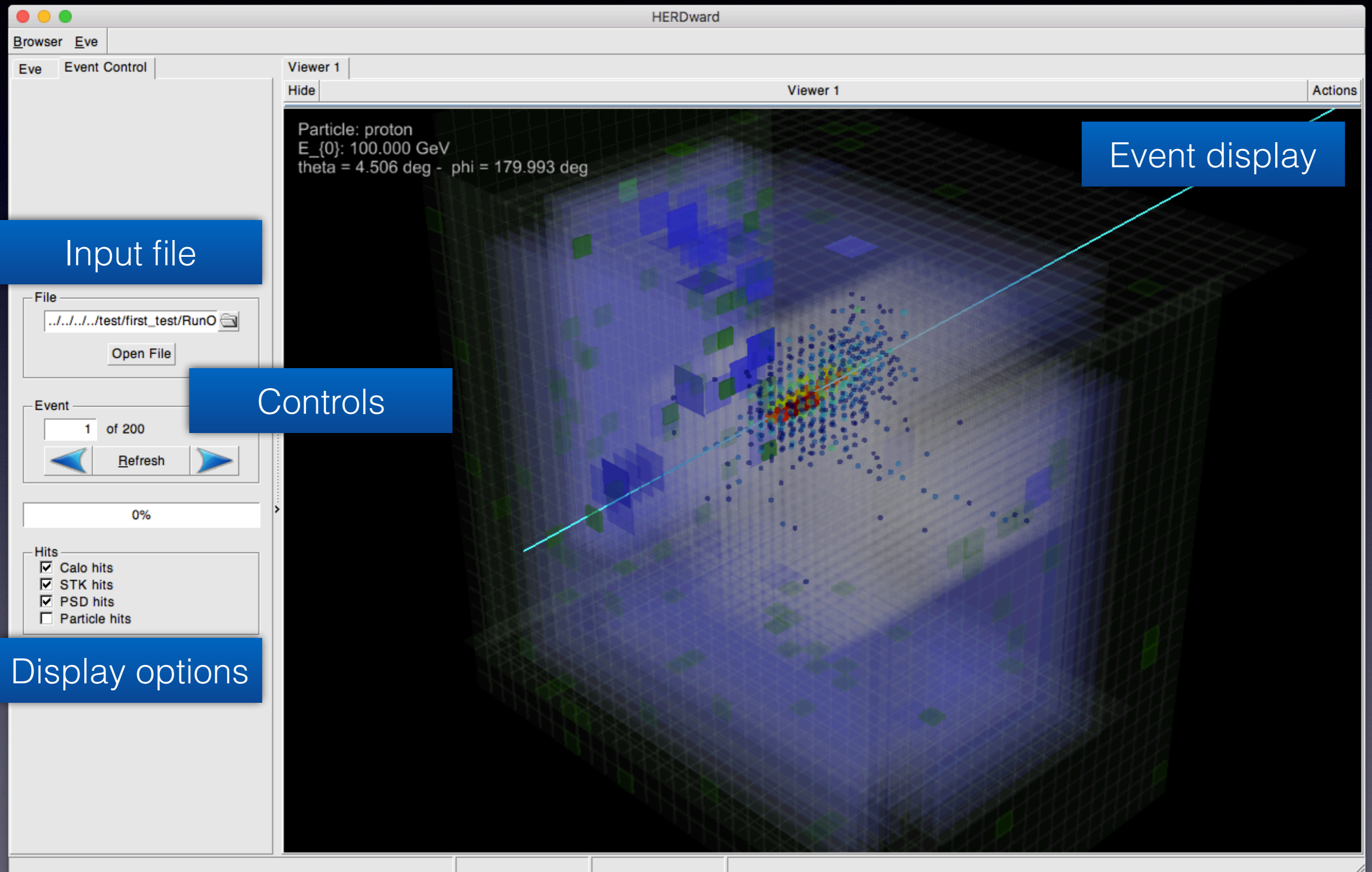
HERDward: GUI

HERDward: GUI

Particle: proton
E_{0}: 100.000 GeV
theta = 4.506 deg - phi = 179.993 deg

Event display

Calorimeter display:
- Each cell color and size proportional to energy released.

HERDward: GUI

HERDward: GUI

HERDward: DEMO