Igor’s comments (if not online):

Some improvements in GFash simulation was foreseen for this year , see Marc presentation on Generic Process & Materials meeting 29 July 2019. Before starting the code modification we wold like to have tools which allow us make comparison between GFASH simulation and full shower development in Geant4. The same applications can be used for GFASH parameters tuning. Recently i am starting to prepare two applications which cover both use case of GFLASH usage:

A. Shower development in homogeneous media
B. Shower in sampling calorimeter.

The code was based on existing "gflash" example and histogramming part "stolen" from TestEm2 and TestEm3 examples.
The main differences the hits format was changed from "calorimeter" like cumulative hit to "point" like hit format.
The set of histograms was added to the applications.

The first application (A) not so far from final release , but i want to improve Messenger interface and add more histograms to it. This current variant allow longitudinal and radial profiles comparison. We seen a vary good agreement between full shower development in Geant4 and GFLASH simulation.

The second application under development now. The geometry was created , now adding GFSASH related code.

Igor Semeniouk, 20-09-2019

Applications for GFLASH testing

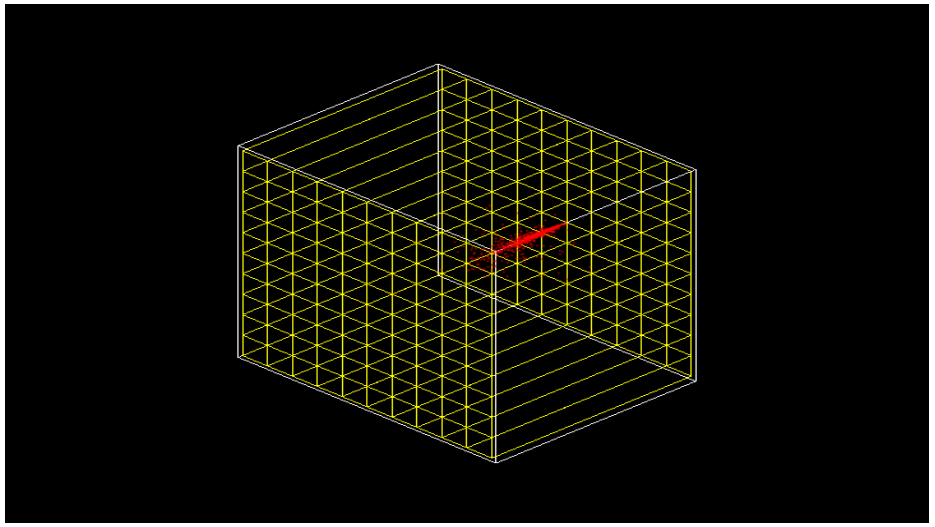
The application with allow compare and tune GFALSH sower parametrization versus full Geant4 shower development.

A. GFlash homogeneous shower parameterization.

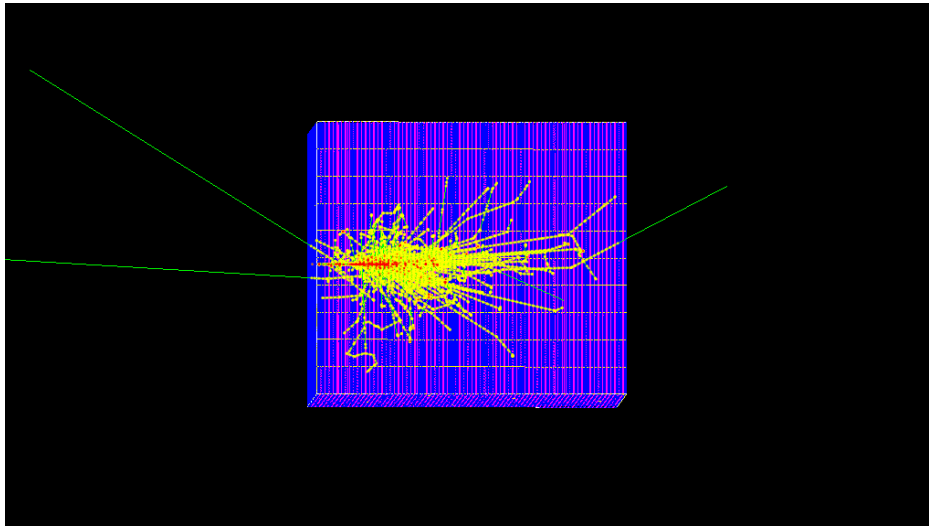
- Some enhancement in Messenger
- More histograms

B. GFlash sampling shower parameterisation.

- GFLASH integration undergoing
- Geometry based scorer



A. GFLASH Hits in homogeneous calorimeter



B. Full MC shower in sampling calorimeter

Homogeneous shower parameterization.

The good agreement between Geant4 and GFLASH shower development.
Example of profiles for 40 GeV e^- shower in $PbWO_4$ crystals