

Interaction Chamber in GEANT4

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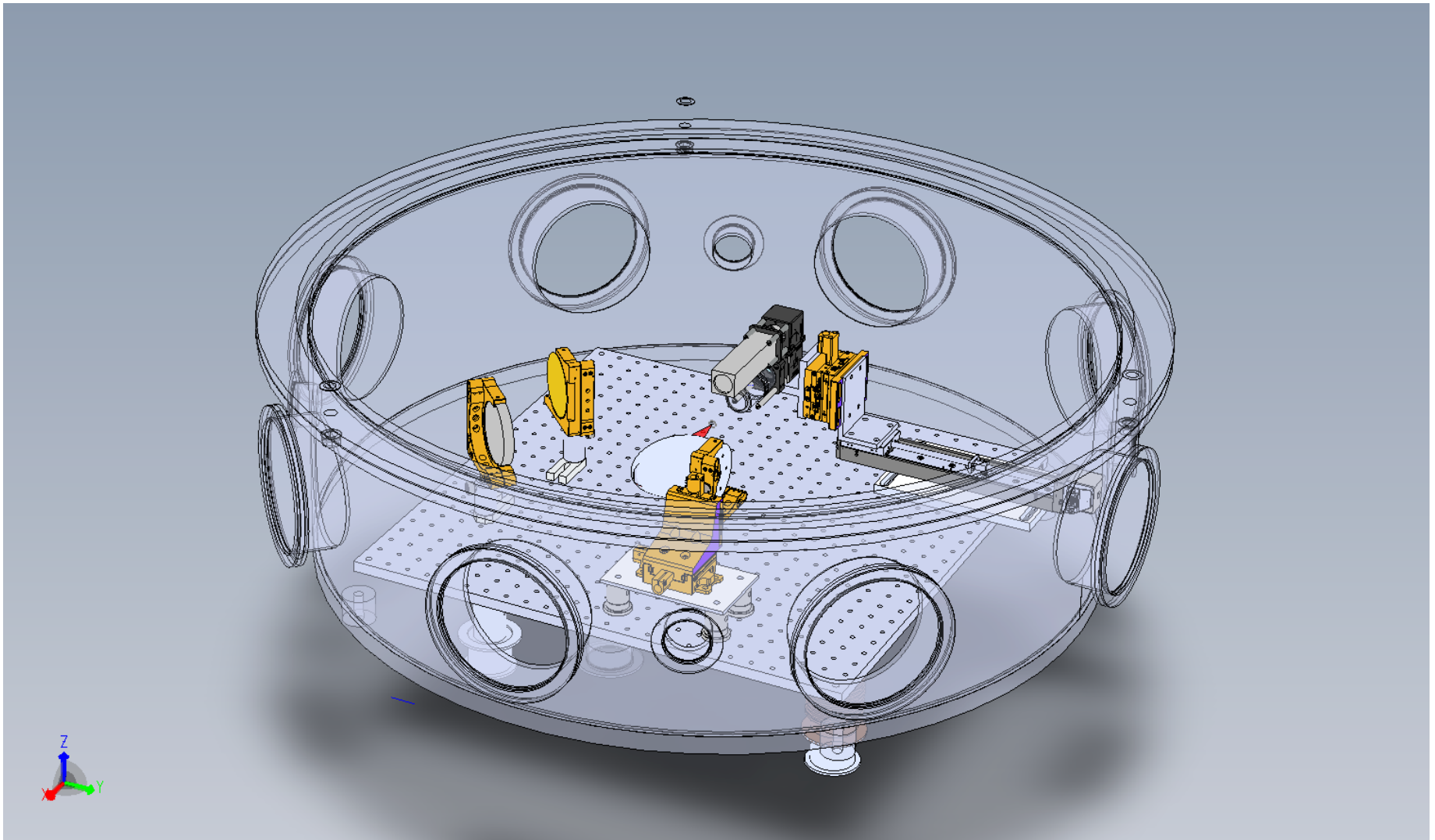
LUXE meeting
January 23, 2020

Outline

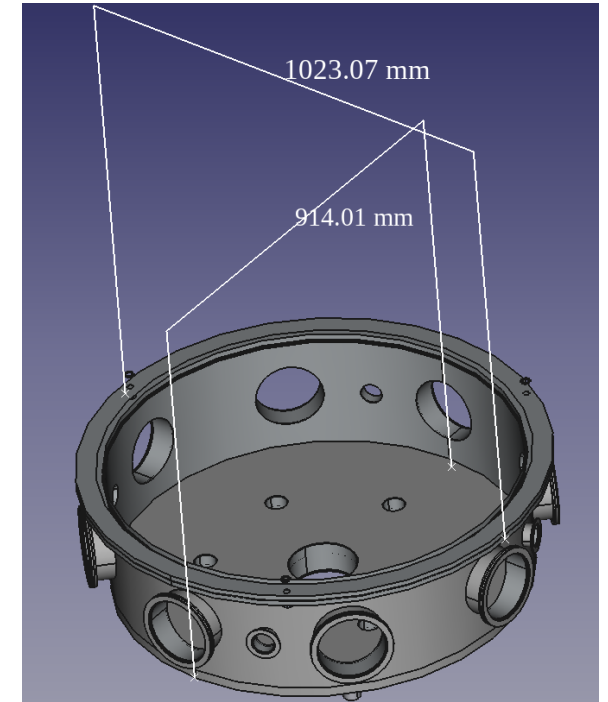
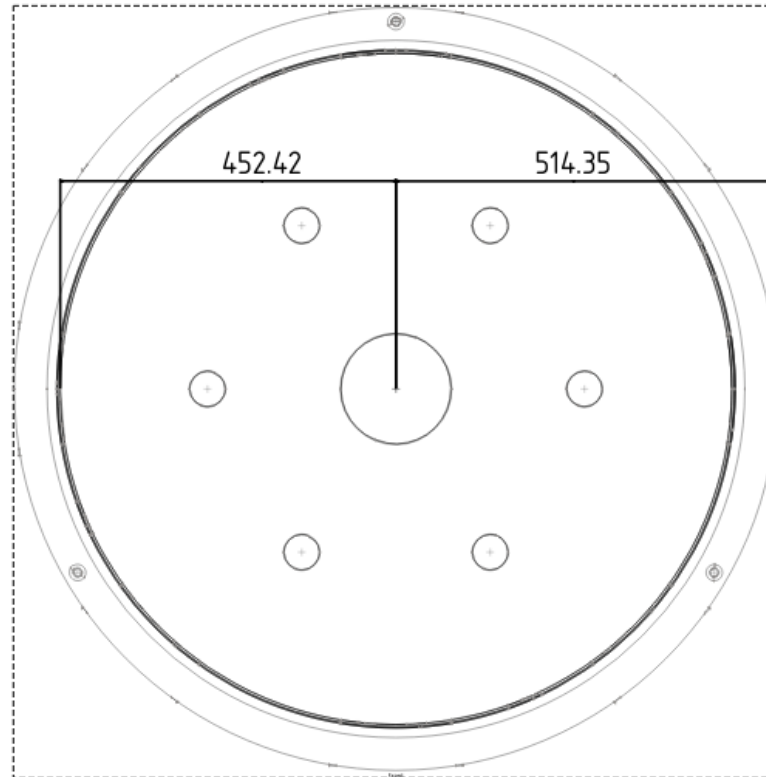
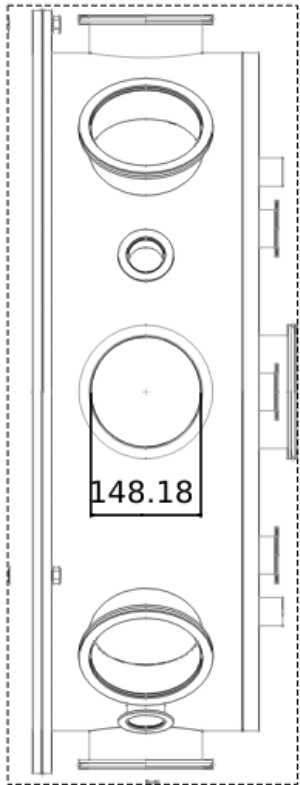
- 3D CAD model of interaction chamber
- Importing interaction chamber 3D CAD model to GEANT4 geometry

Interaction Chamber

- Exported from SOLIDWORKS 3D CAD;
- Assembly contains more than 50 components.



View of exported STEP file in FreeCAD



Geant4 model imported from GDML

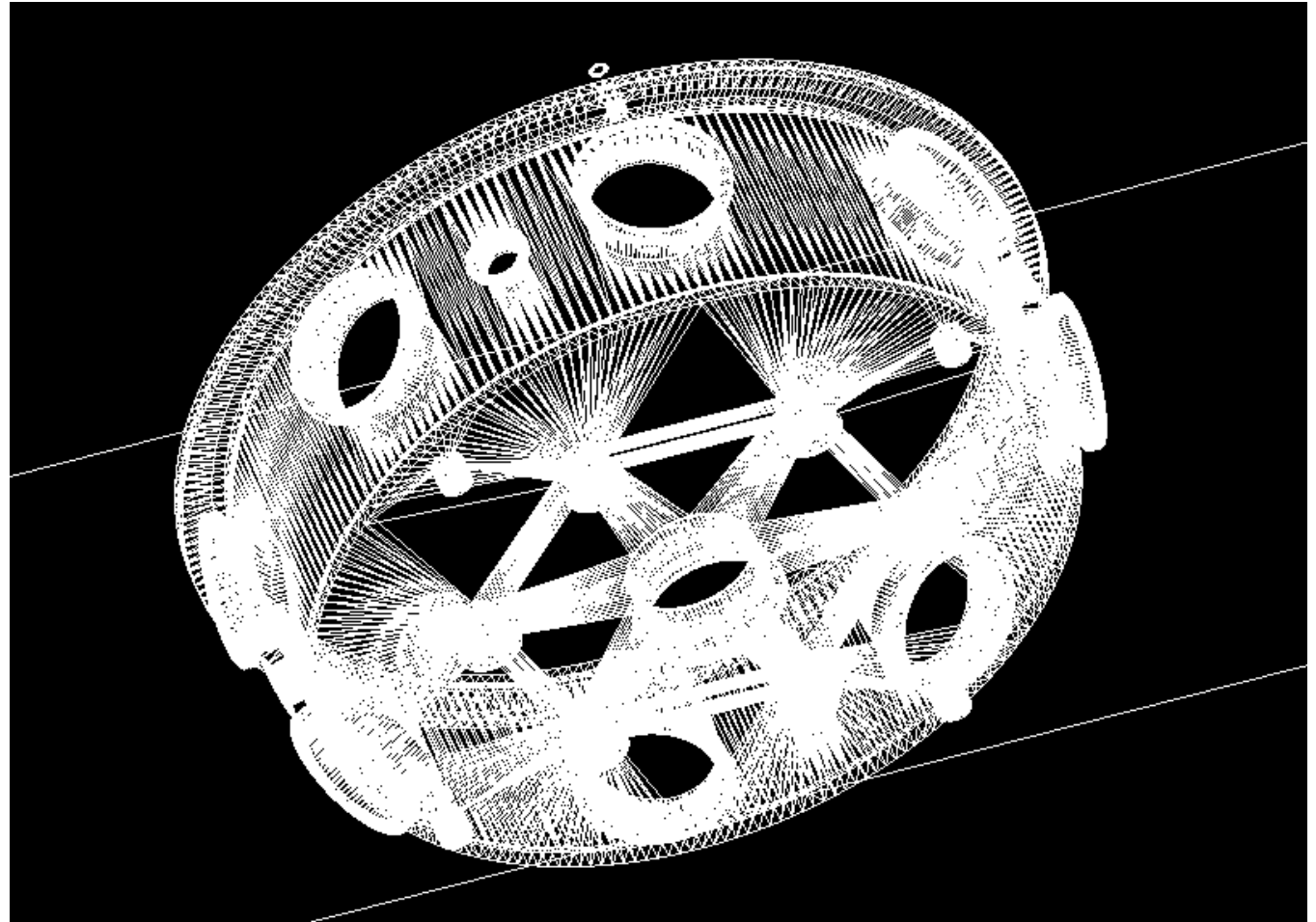
Geant4 documentation suggests a chain:
3D CAD -> STL -> GDML;

The first step is simple, almost all 3D CAD can export a model to STL (for 3D printing);

STL file format encodes the surface geometry of a 3D object approximated with triangles;

There are some tools to convert STL to GDML, but those which are relatively simple did not work for me...

FreeCAD could export to html and then several pipes with sed could convert it to GDML.



For the chamber:

- 80047 vertexes;
- 152299 tessellated triangles.

Geant4 model imported from GDML

Surface view

