Update on LUXE GEANT4 Simulation

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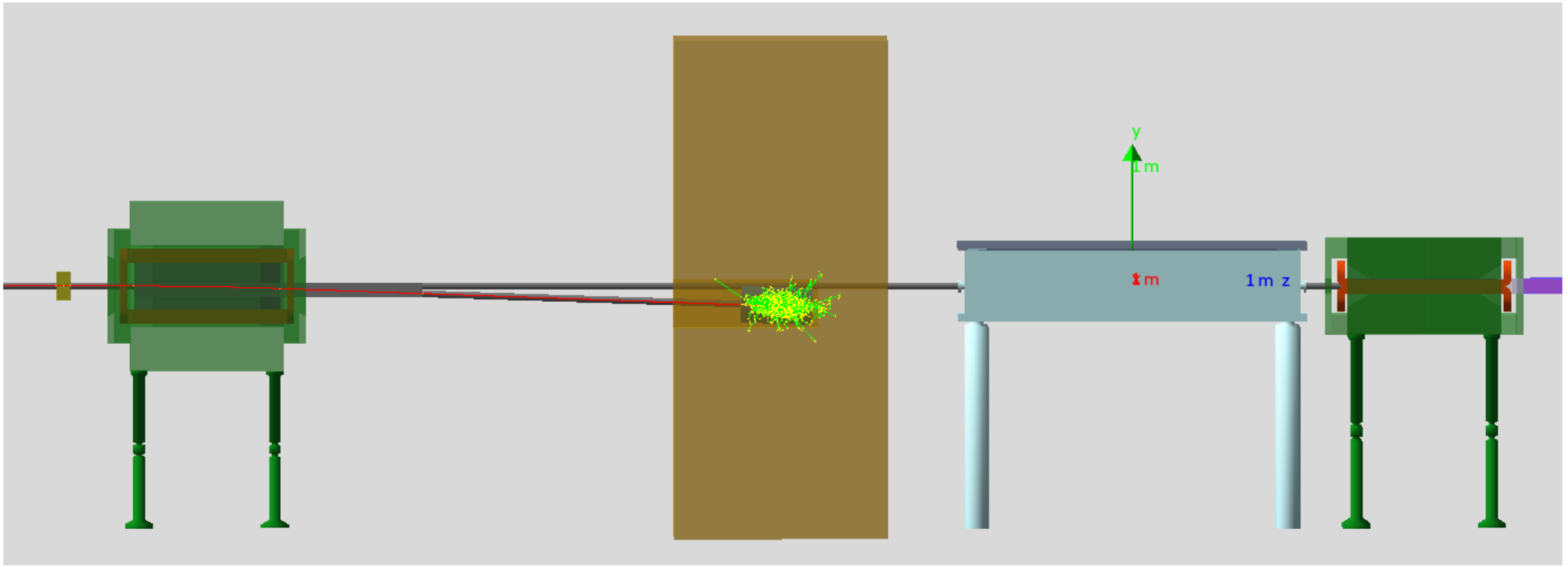
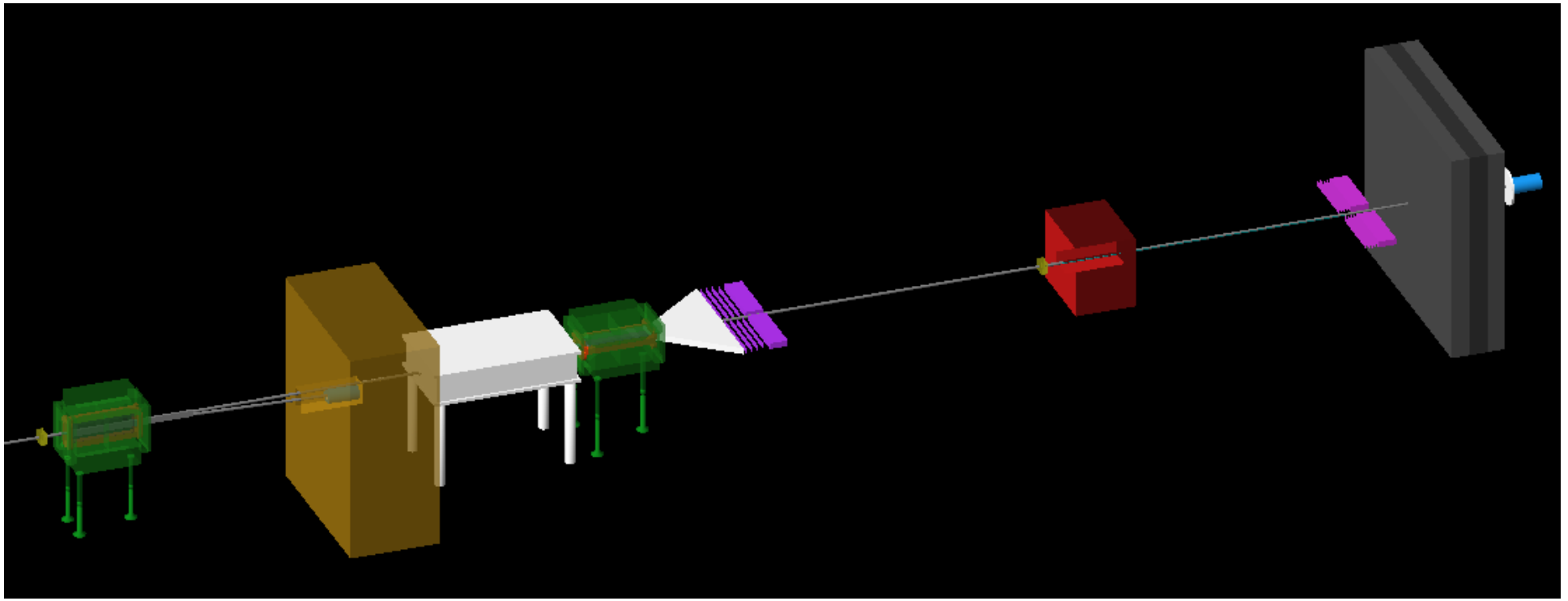
LUXE Meeting
August 4, 2020

Side view. First magnet rotated and the dump moved accordingly



Importing gdml to GEANT4



Running geometry overlaps check...
Checking overlaps for volume av_1_impr_1_logicTAUICSupport (G4Polycone) ... OK!
Checking overlaps for volume av_1_impr_1_logicTAUICSupport (G4Polycone) ... OK!
Checking overlaps for volume av_1_impr_1_logicTAUICSupport (G4Polycone) ... OK!

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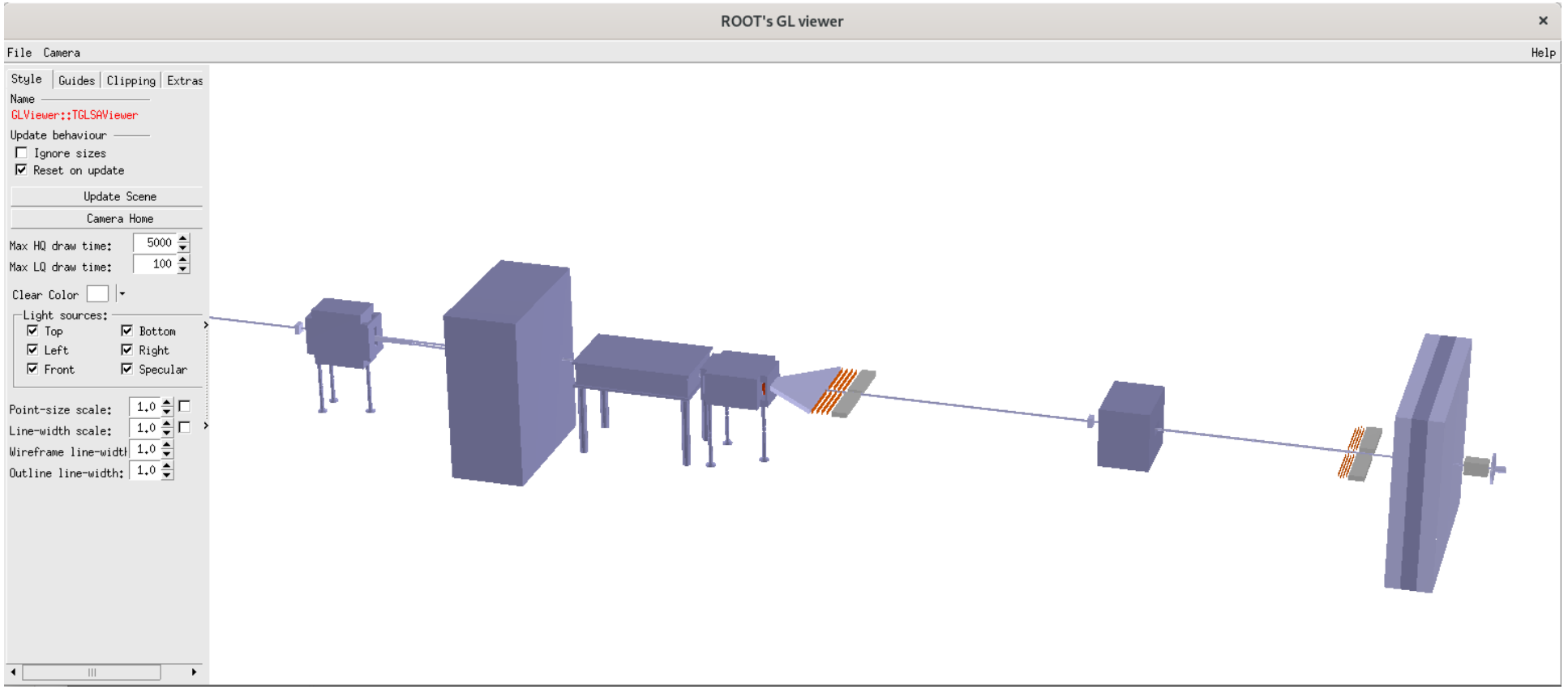
Checking overlaps for volume ComptShieldingFe (G4SubtractionSolid) ... OK!
Checking overlaps for volume ComptShielding1Al (G4SubtractionSolid) ... OK!
Checking overlaps for volume ComptShielding2Al (G4SubtractionSolid) ... OK!
Geometry overlaps check completed !

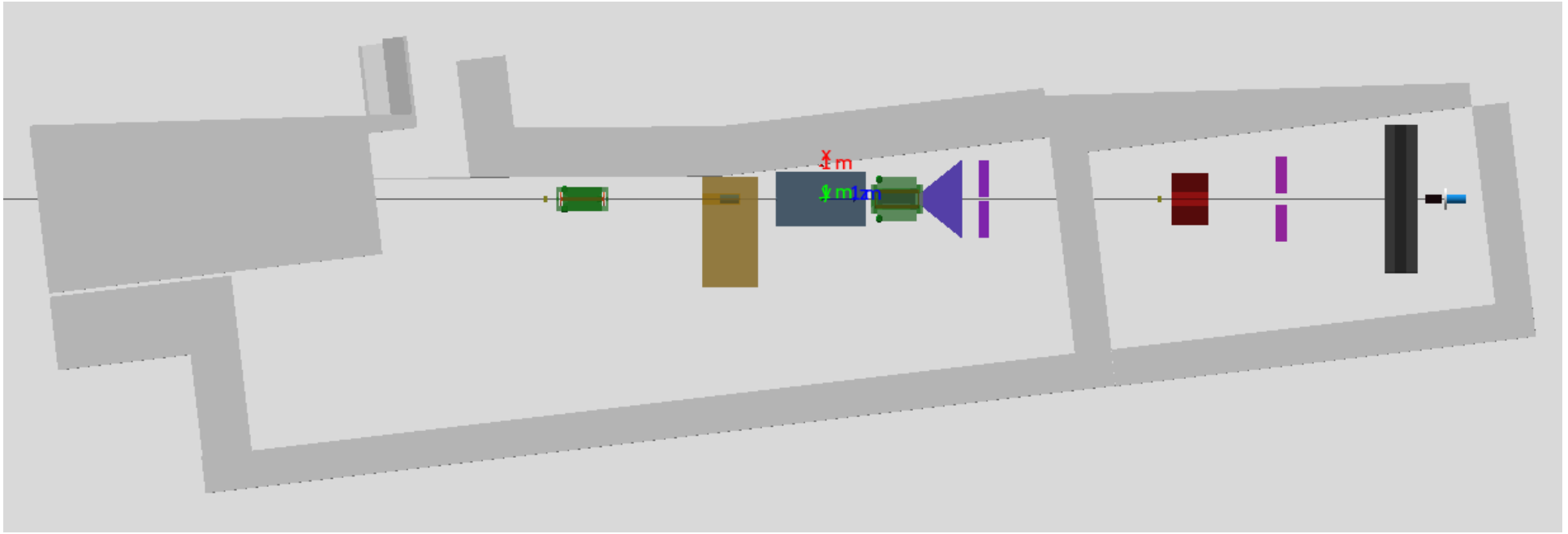
Viewing with root

```
root [0] TGeoManager::Import("lxgeomdump_lx1.gdml");
Info in <TGeoManager::Import>: Reading geometry from file: lxgeomdump_lx1.gdml
Info in <TGeoManager::TGeoManager>: Geometry GDMLImport, Geometry imported from GDML created
Info in <TGeoManager::SetTopVolume>: Top volume is World. Master volume is World
Info in <TGeoNavigator::BuildCache>: --- Maximum geometry depth set to 100
Info in <TGeoManager::CheckGeometry>: Fixing runtime shapes...
Info in <TGeoManager::CheckGeometry>: ...Nothing to fix
Info in <TGeoManager::CloseGeometry>: Counting nodes...
Info in <TGeoManager::Voxelize>: Voxelizing...
Info in <TGeoManager::CloseGeometry>: Building cache...
Info in <TGeoManager::CountLevels>: max level = 3, max placements = 52
Info in <TGeoManager::CloseGeometry>: 314 nodes/ 97 volume UID's in Geometry imported from GDML
Info in <TGeoManager::CloseGeometry>: ----------------modeler ready----------------
root [1] gGeoManager->GetTopVolume()->Draw("ogl");
Info in <TCanvas::MakeDefCanvas>:  created default TCanvas with name c1
```

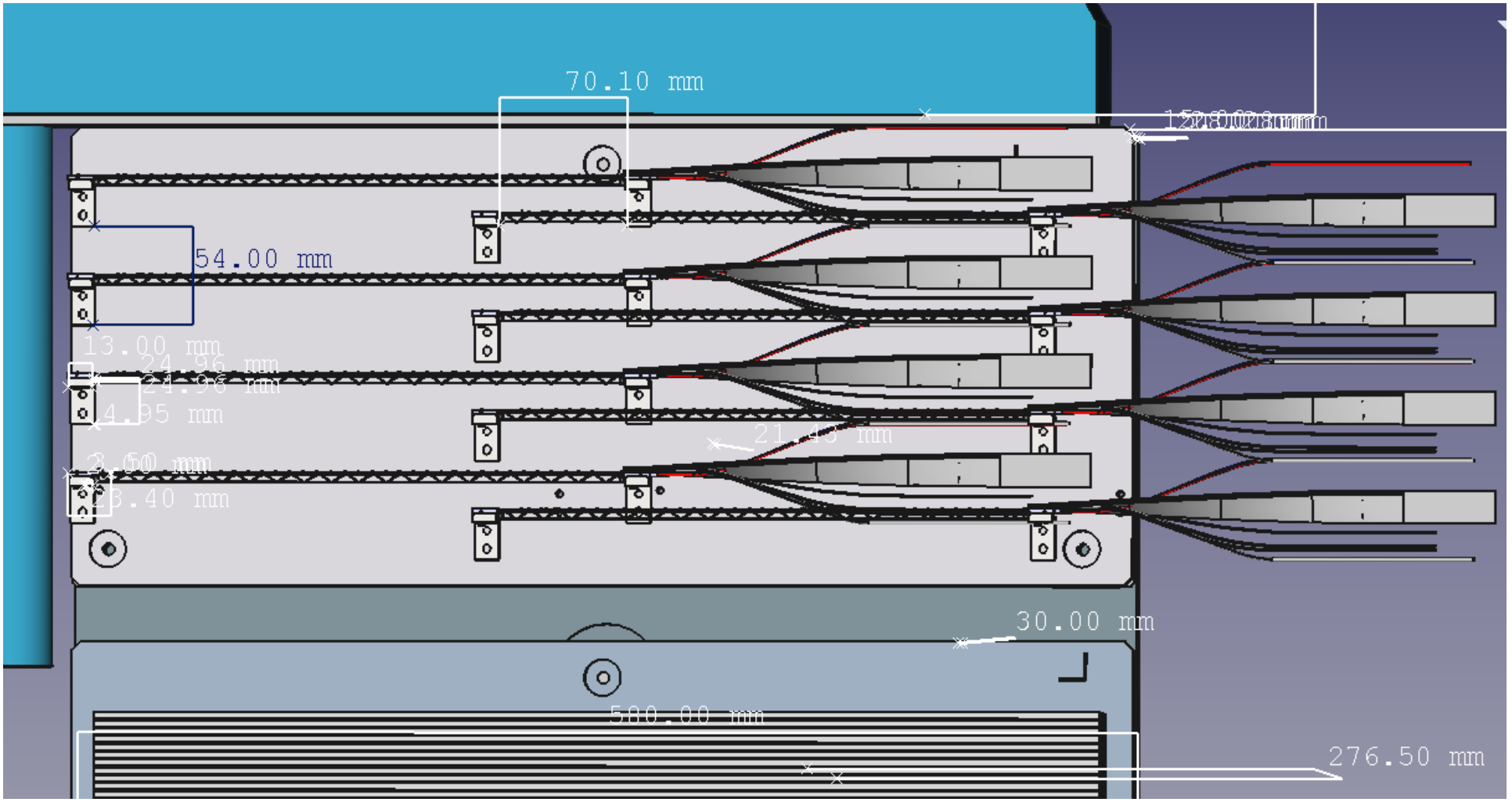


Geant4 top view, floor and ceiling are not shown

Compton detector moved close to the magnet

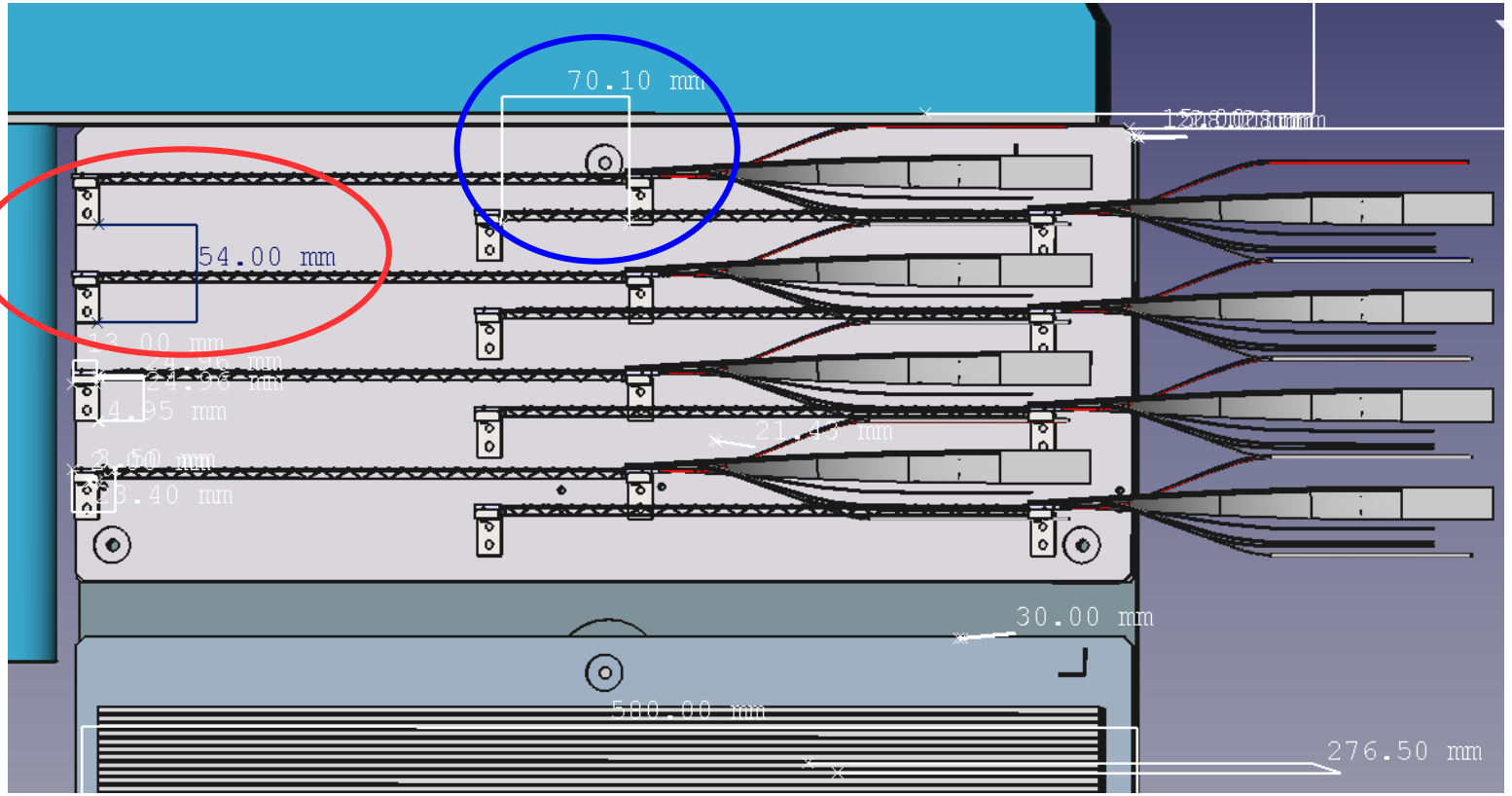


Tracker staves, 3D CAD top view



For another arm staves are rotated around Z (up side down) ?

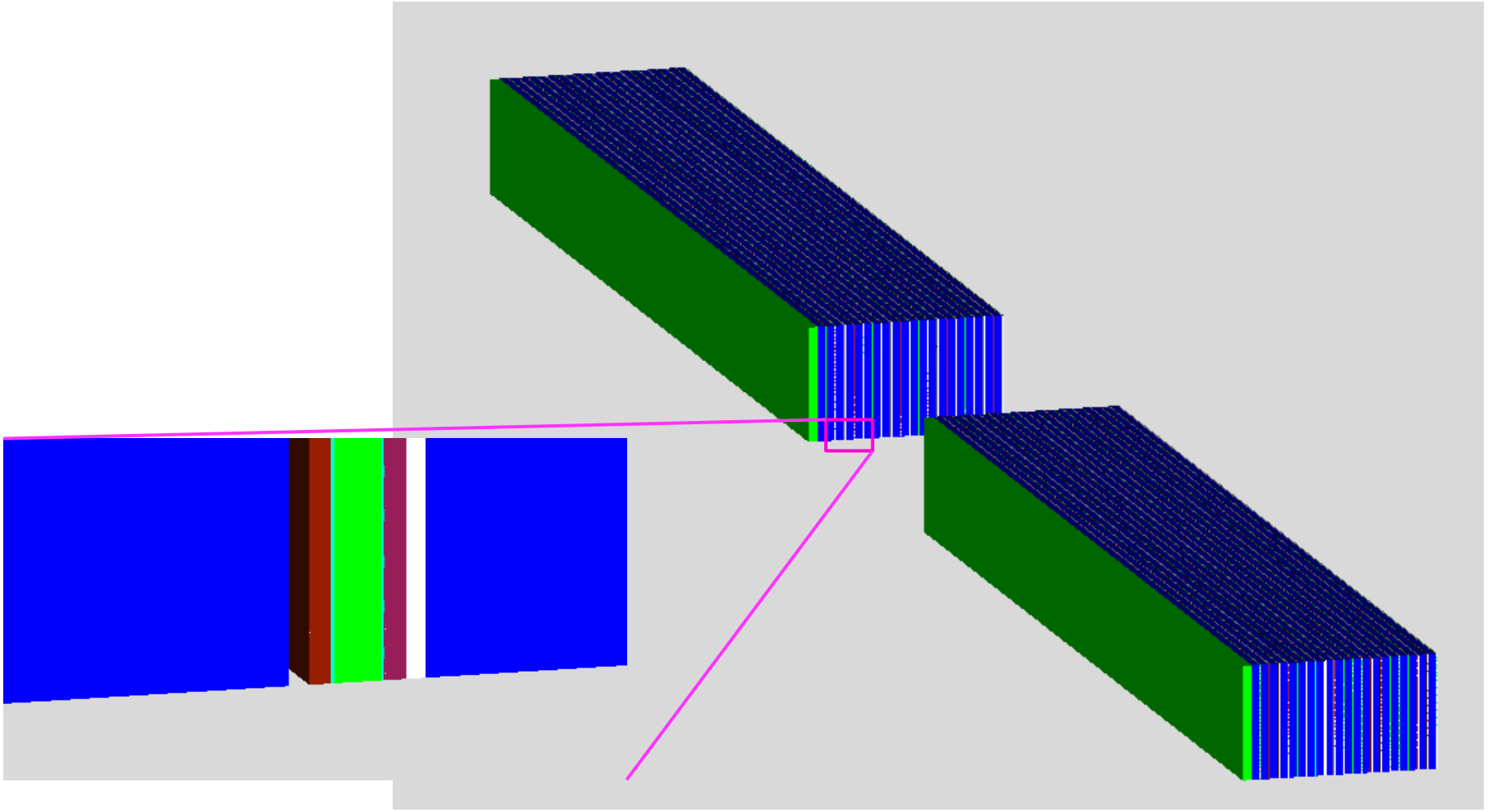
Tracker staves geometry parameters



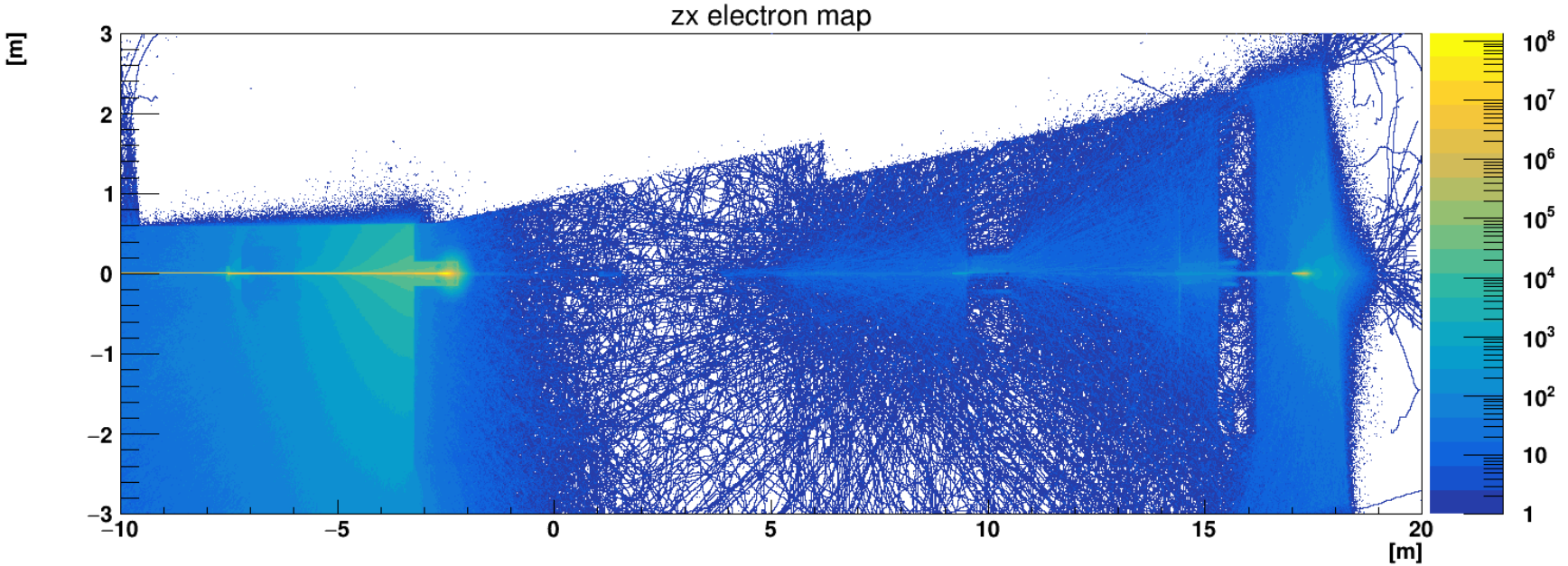
13	Tracker	Gneral geometry	stave height in y	Hstave	15	mm	
14	Tracker	Gneral geometry	stave length in x	Lstave	271.2	mm	equal to StaveActiveLength (see beow)
15	Tracker	Gneral geometry	Overlap between staves of one conceptual layer in x	xOverlapStaves	40	mm	TBC with Oz
16	Tracker	Gneral geometry	Length of one conceptual layer (inner+outer-overlap) in x	Llayer	502.4	mm	
17	Tracker	Gneral geometry	y+laser distance of first chip from beamline reference in x	xStaveOffsetGamLaser	50	mm	TBC after fixing B-field
18	Tracker	Gneral geometry	e+laser distance of first chip from beamline reference in x	xStaveOffsetEleLaser	140	mm	TBC after fixing B-field
19	Tracker	Gneral geometry	Distance between conceptual layers in z	zStavesInterLayerGap	10	cm	
20	Tracker	Gneral geometry	Distance between inner and outer staves within one layer in z	zStavesInraLayerGap	2	cm	TBC with Oz
21	Tracker	Gneral geometry	1st inner layer in z	zInnerLayer1	300	cm	
22	Tracker	Gneral geometry	1st outer layer in z	zOuterLayer1	302	cm	TBC with Oz
23	Tracker	Gneral geometry	2nd inner layer in z	zLayer2	310	cm	
24	Tracker	Gneral geometry	2nd outer layer in z	zOuterLayer2	312	cm	TBC with Oz
25	Tracker	Gneral geometry	3rd inner layer in z	zLayer3	320	cm	
26	Tracker	Gneral geometry	3rd outer layer in z	zOuterLayer3	322	cm	TBC with Oz
27	Tracker	Gneral geometry	4th inner layer in z	zLayer4	330	cm	
28	Tracker	Gneral geometry	4th outer layer in z	zOuterLayer4	332	cm	TBC with Oz

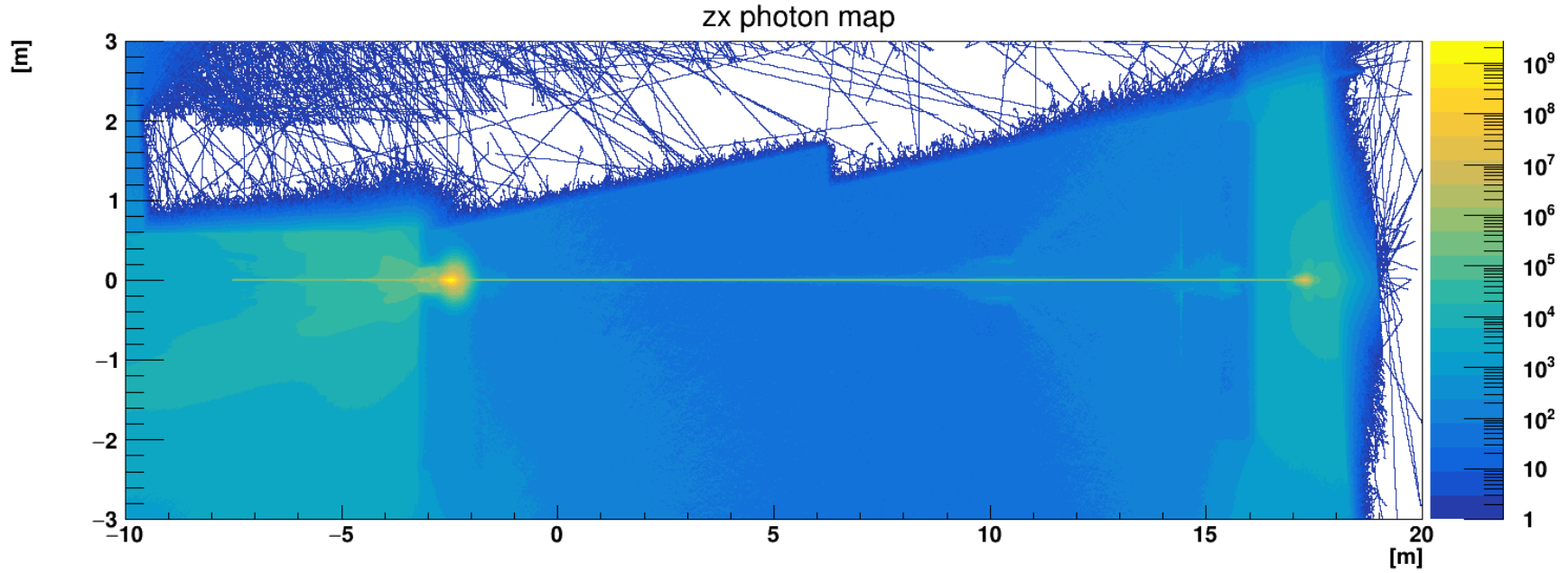
Calorimeter based on FCAL technologies

- Mykyta shared the code he used for simulation;
- Layers and materials are defined according to FCAL technology;



Test runs, map in zx





Test runs, map in zy