Experimental Techniques in Particle Physics

Geant4: Evaluation Test Geometry and Materials

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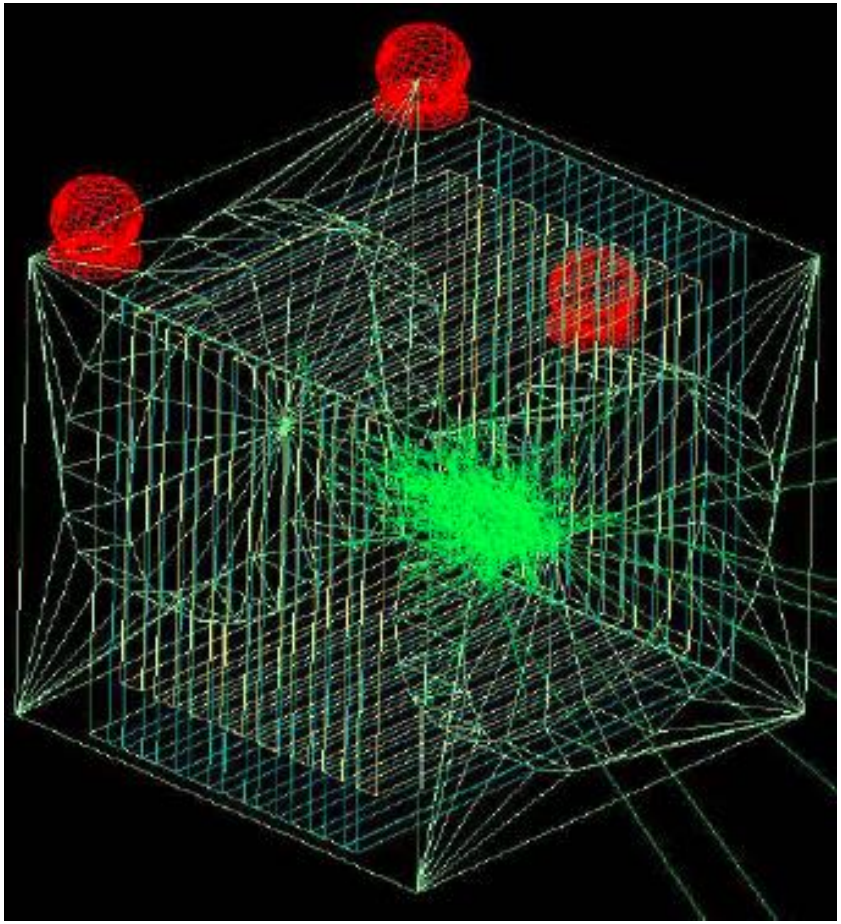
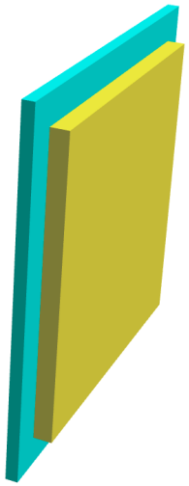
Example of a Detector

- all necessary steps known in order to build a detector
- try to build a sandwich calorimeter
  - do it in small steps
  - use Geant4 documentation, our past tutorials, Google, …
- submit your solution
- get feedback before Christmas or after New Year
  - any preferences?
  - Who will be here on December 17th?

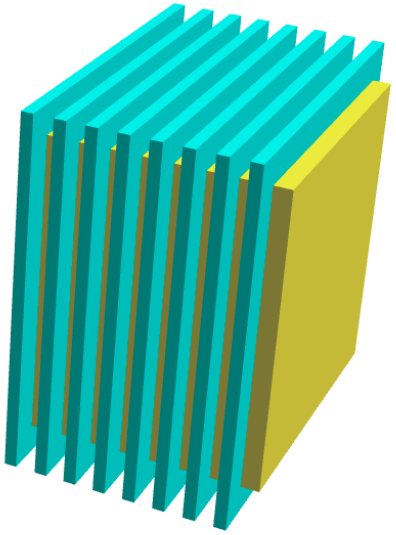


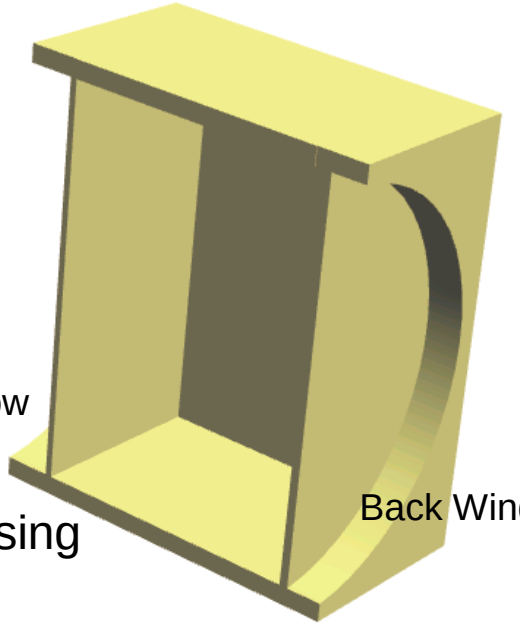
Building a Sandwich Calorimeter

Single Lead/Scintillator Layer



Eight Layers of Lead/Scintillator





Front Window

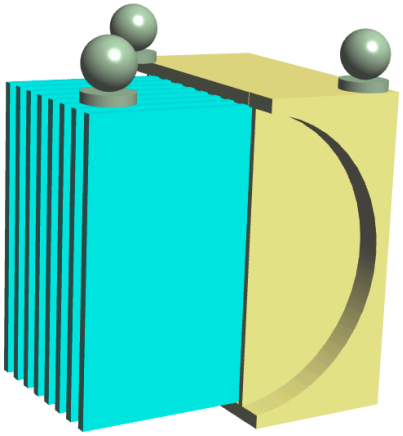
Back Window

Brass Housing
(cut)

Tooling Ball

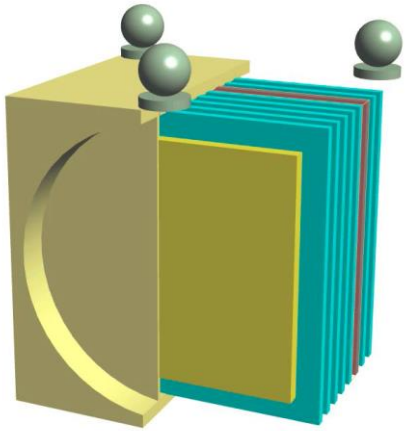
Missing: Photodetector and Readout Electronics

Perspective Views

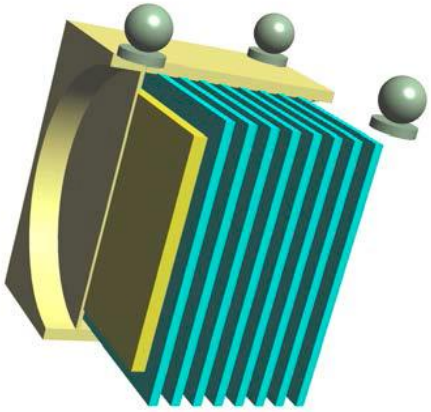


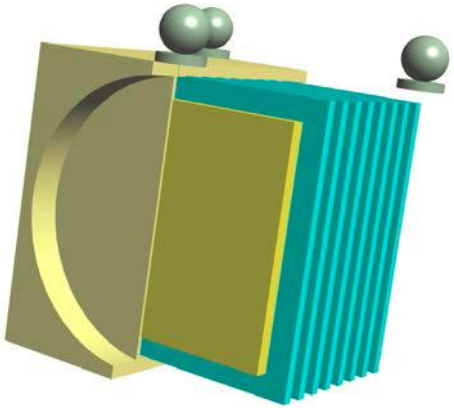
Front View

Side View

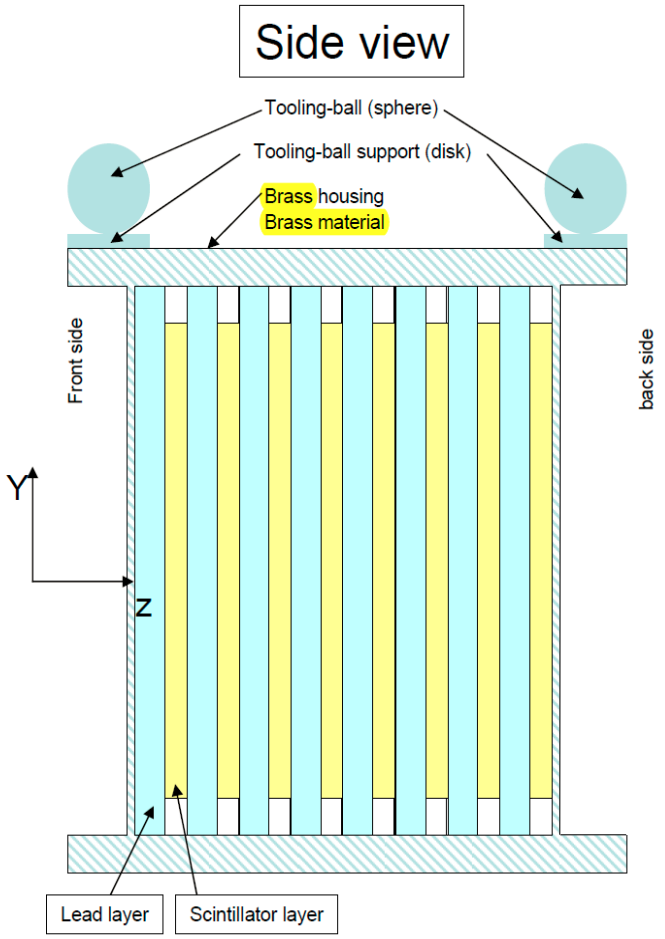


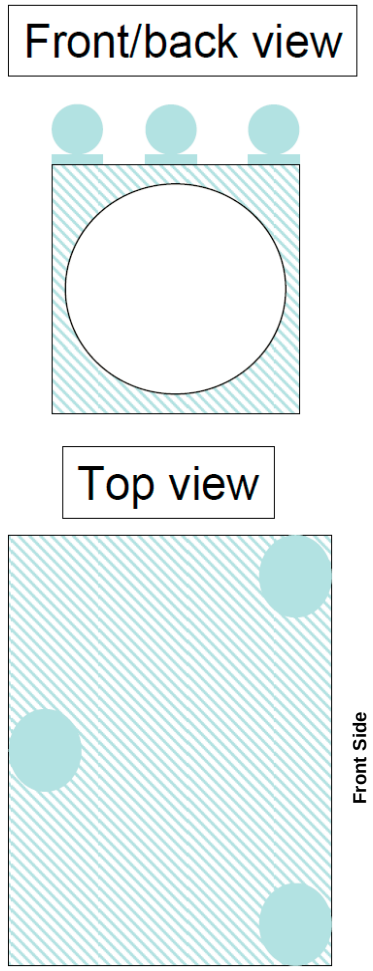
Back View



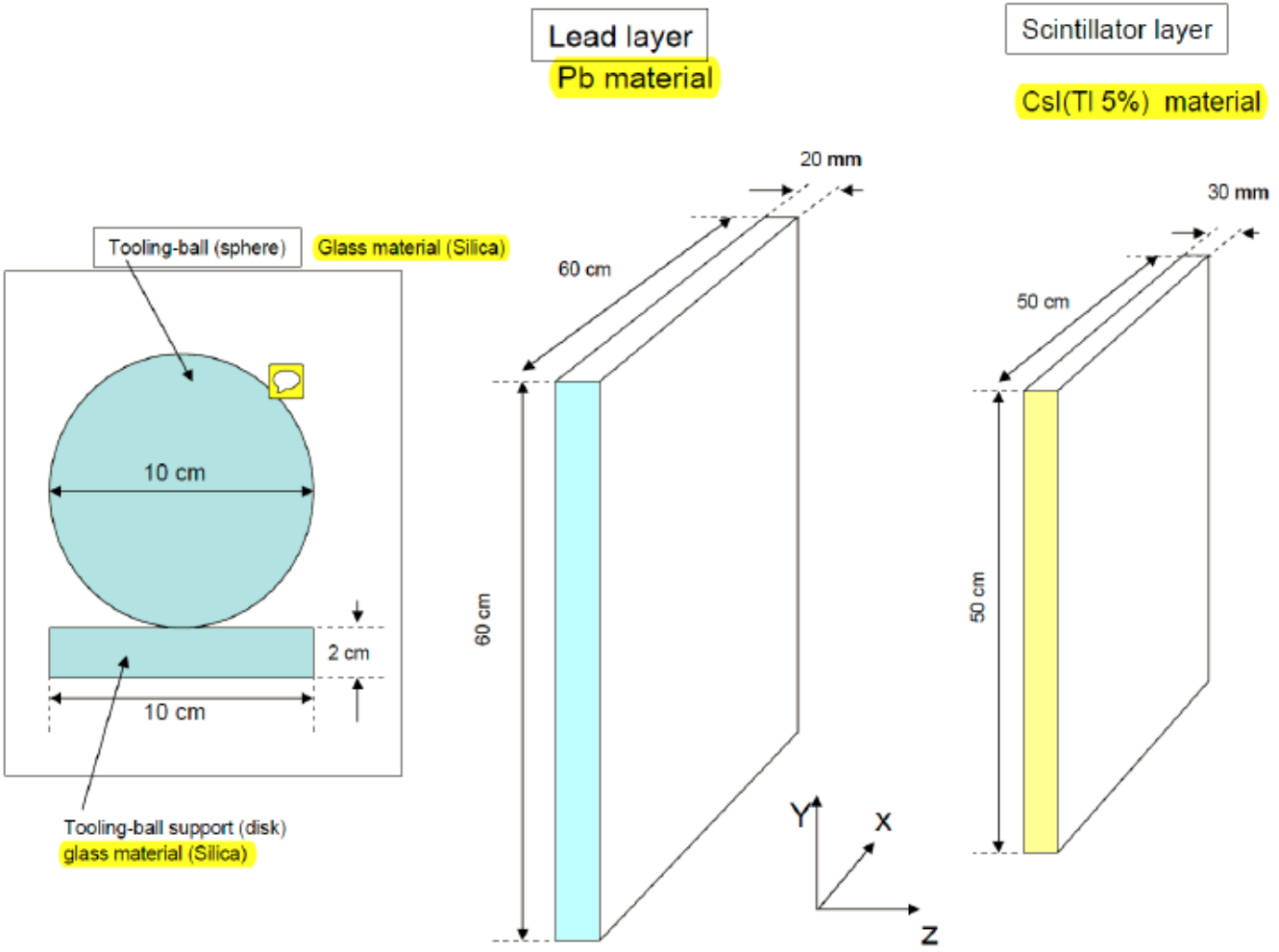


Technical Drawings: Overview

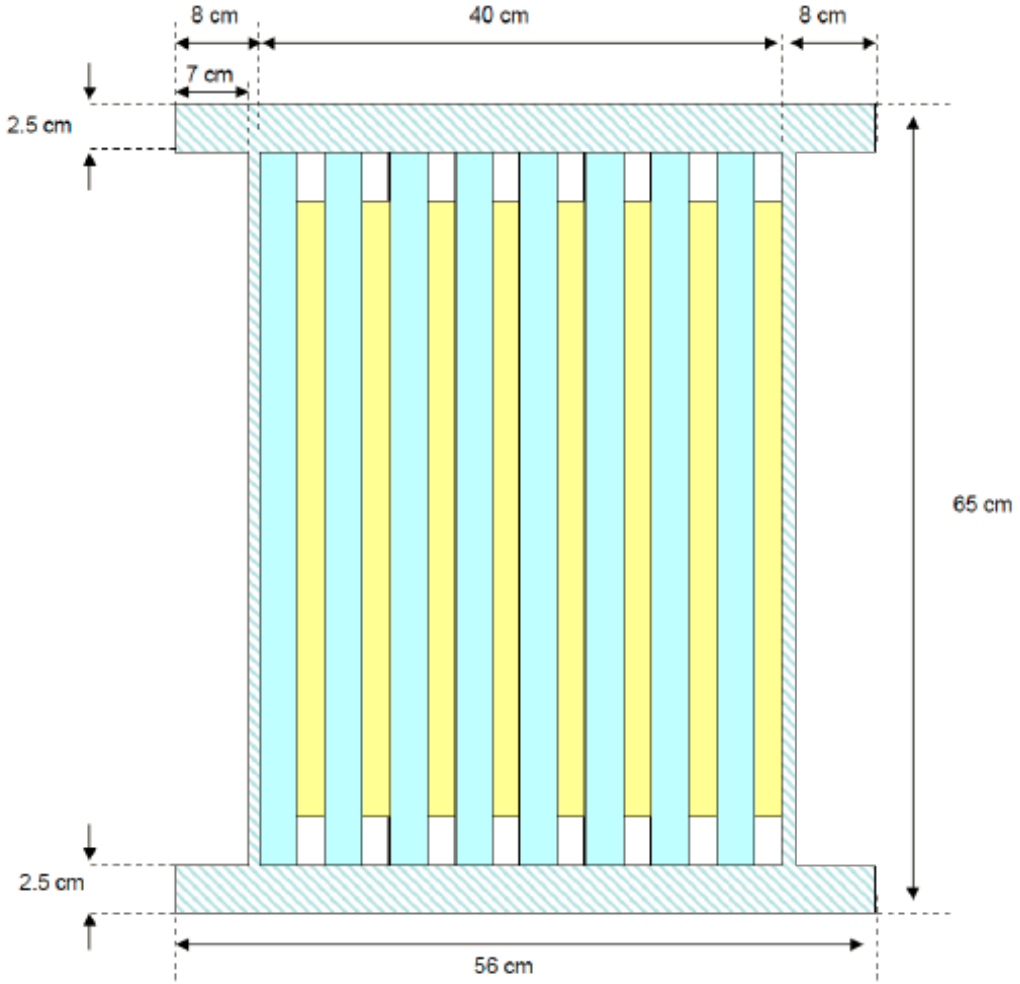




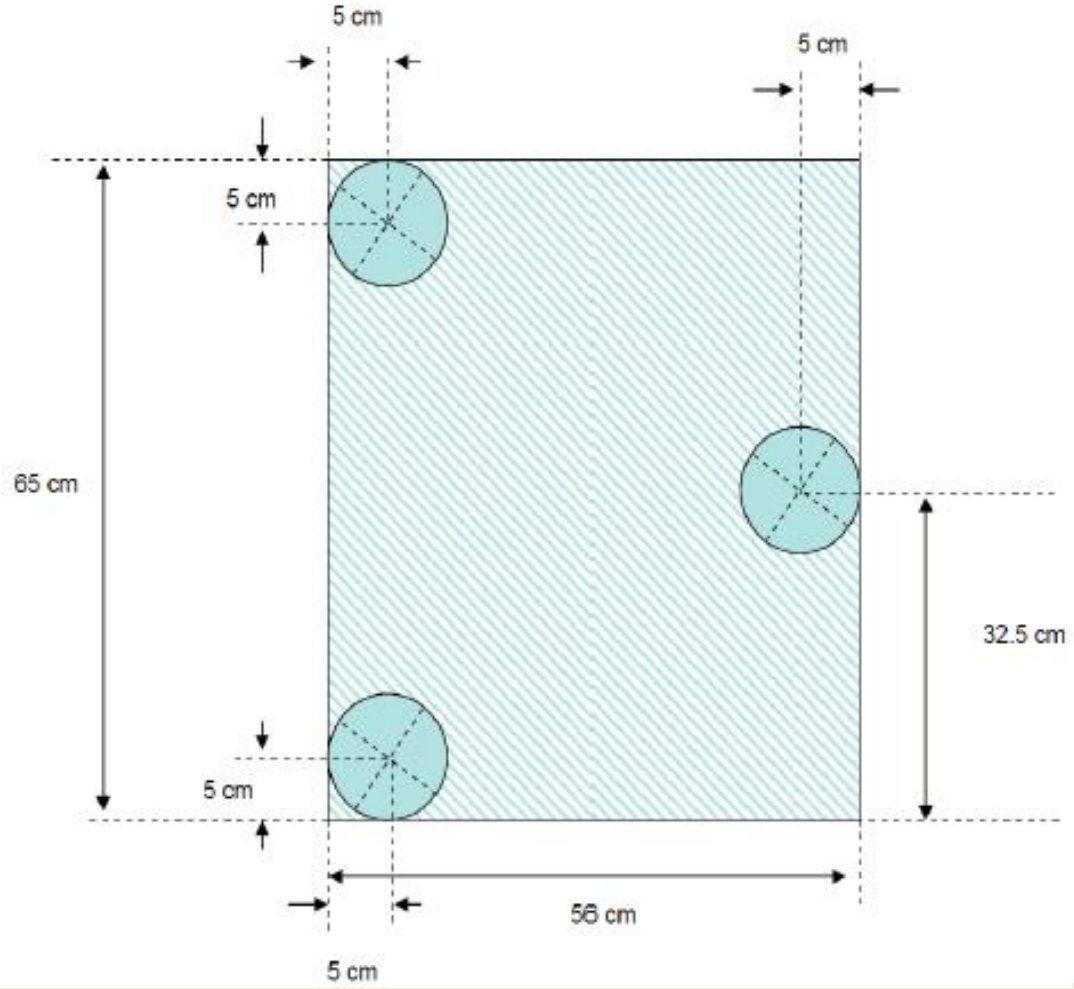
Technical Drawings: Parts



Technical Drawings: Side View



Technical Drawings: Top View



Exercise

1. Download DetectorPhys_T6.tar.gz and decompress it.
2. Define the materials and construct the geometry of the sandwich calorimeter in DetectorPhysDetectorConstruction.cc.
3. Check your geometry with:
   `/geometry/test/run`
4. Test the effect of a particle beam:
   `/run/beamOn 1`
5. Send your solution within one week to nowack@physik.rwth-aachen.de
   - include your name in the files
   - attach only DetectorPhysDetectorConstruction.cc and DetectorPhysDetectorConstruction.hh