

Building Geometry using DD4hep Plugin

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Geometry building procedure (old)

ACTSTrackingProc.cxx
ACTSProcBase.cxx

trackinggeometry() is used to find **surface** in the **main tracking code**.

Then, **surface** (containing **geometryID**) is used to:

- Convert LCIO hits to ACTS hits
- Create sourcelinks between measurement and hit
- Get track parameters once seeds are found
- (hits & tracks back to LCIO collection)

trackingGeometry() is build through **buildDetector()** in the **base code**.

trackingGeometryBuilder::Config tgConfig → cylinderGeometryBuilder

- materialDecorator (_matFile.json)
- trackingVolumeBuilders
 - CylinderVolumeBuilder ← layerBuilder ← Acts::TGeoLayerBuilder ← **TGeoManager**

TGeoManager reads from _tgeoFile (ROOT).

Geometry building procedure (new)

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dd4hep::Detector& **dd4hepDetector** = dd4hep::Detector::getInstance();

- DD4hep description (xml)
- Detector constructor (cxx)

_trackingGeometry = **geometryService**->trackingGeometry(); ← **DD4hepPlugin**

Modified code

- DD4hep description xml and detector constructor
 - Dd4hep plugin
 - geoID
- TGeoLayerBuilder
 - Detector elements can be provided by DD4hep now.
- Magnetic field (not an issue for LUXE but need to be checked)
- Material (only silicon – but funny thing happens if I play with it; not reading json file correctly in v32?)

ongoing

- Material
- Seeding/Tracking efficiency comparison: **v13** vs. **Tgeo v32** vs. **DD4hep plugin v32**
 - 365 hits, 275 spacepoints, 18 surfaces, 72 layers

Back up