Running the CHANCE SteelDrum Example

The introduction to the chance simulation package is given in the leadblock example. This example builds on that work to show loading in slightly more complex geometry trees.

1. Making a drum geometry table

The large steel drum object is already setup to match a drum that we might expect to probe with the muon tomography system. It can be loaded at runtime by specifying the JSON table below.

steeldrum_tables.geo

```
{
 name: "GEO",
 index: "drum"
 type: "largesteeldrum"
 mother: "world"
 rotation: [90.0, 0.0, 0.0]
}
```

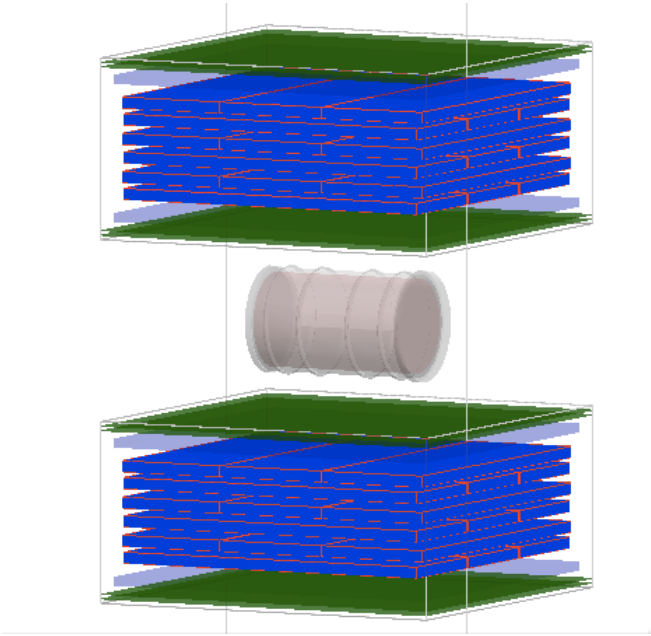
If no position is given then the drum will be placed at the origin of the world volume. Other object types that can be loaded are found inside *src/geo/GeoManager.cc*

The source file for the drum itself is given in *src/geo/nuclearwaste/LargeSteelDrum.cc*

2. Load the drum geometry table

The drum can be loaded by specifying the table with the "-g" flag at runtime.

$ chance_g4sim -g steeldrum_tables.geo -i



3. Adding materials inside the drum

The concrete fill of the drum is added as a logical with the name corresponding to the index field in the table. Therefore if we want to add materials inside the drum concrete matrix, we just specify "drum" as the mother.

Our set of JSON tables then becomes

```
{
  name: "GEO",
  index: "drum"
  type: "largesteeldrum"
  mother: "world"
  rotation: [90.0, 0.0, 0.0]
}
{
  name: "GEO",
  index: "leadblock"
  type: "box",
  size: ["10*cm","10*cm","10*cm"]
  position: ["0.0*m","0.0*m","0.0*m"]
  rotation: [0.0, 0.0, 0.0]
  material: "G4_Pb"
  mother: "drum"
}
```

Loading this in at run time produces the following geometry. Events for required exposures can be generated using the methods discussed in the leadblock example.