SuperB: Geant4 backgrounds simulation

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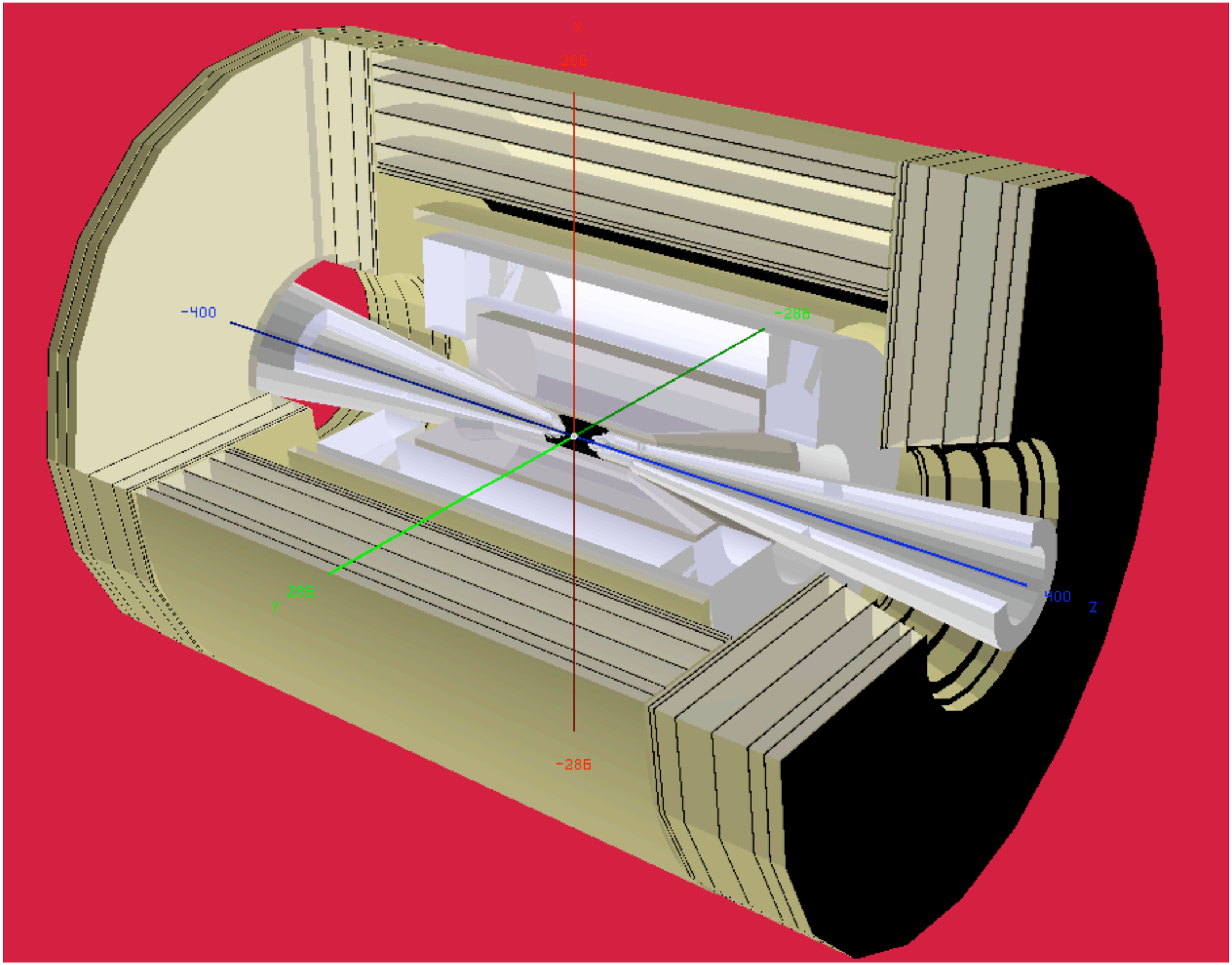
Present status

- GDML interface implemented in Sim4Sup.
  Yes we can!
  - write the “simple detector” geometry
  - rebuild the “simple detector” geometry

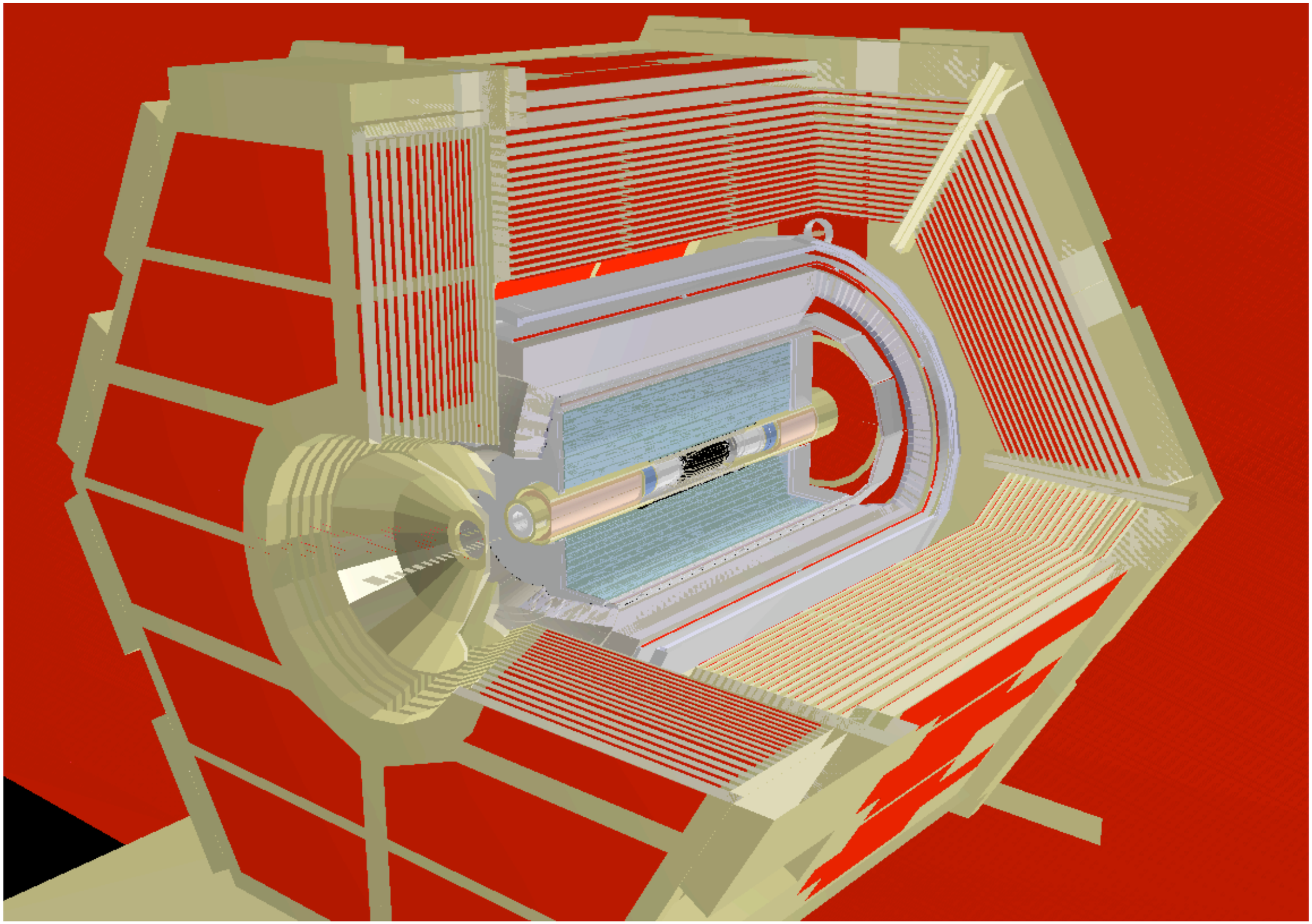
Cut-away view of “Simple det”



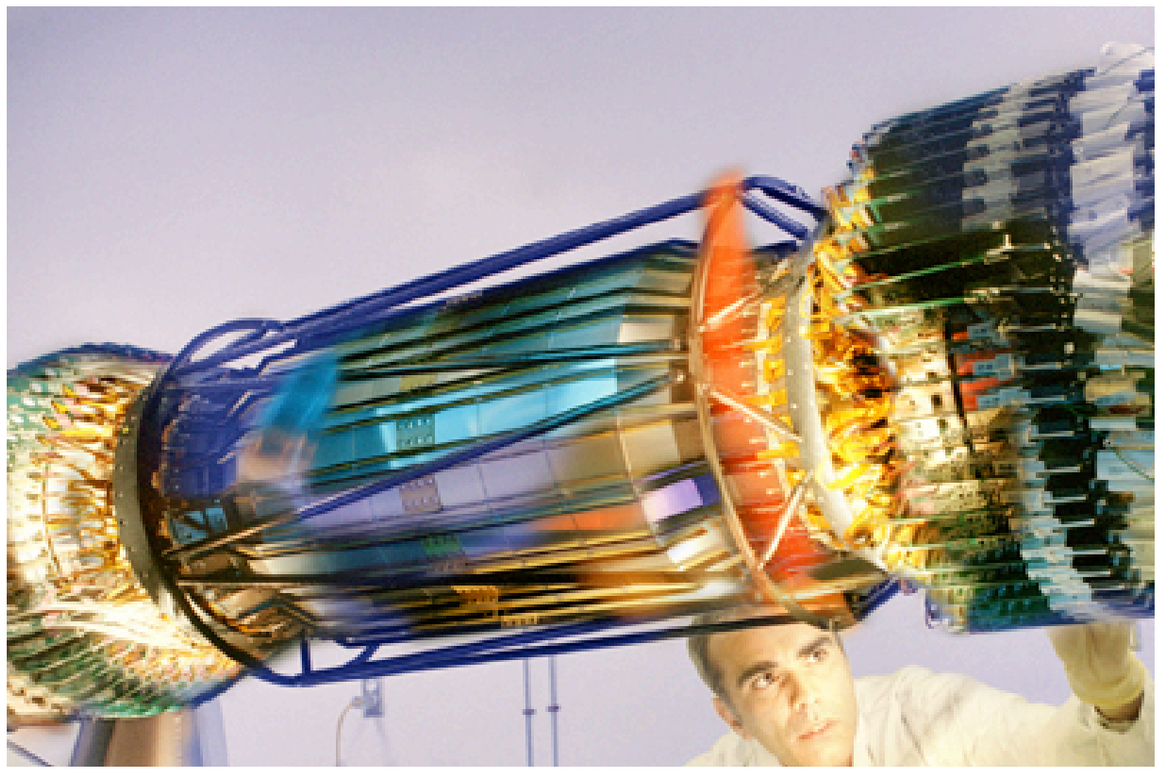
More challenging...

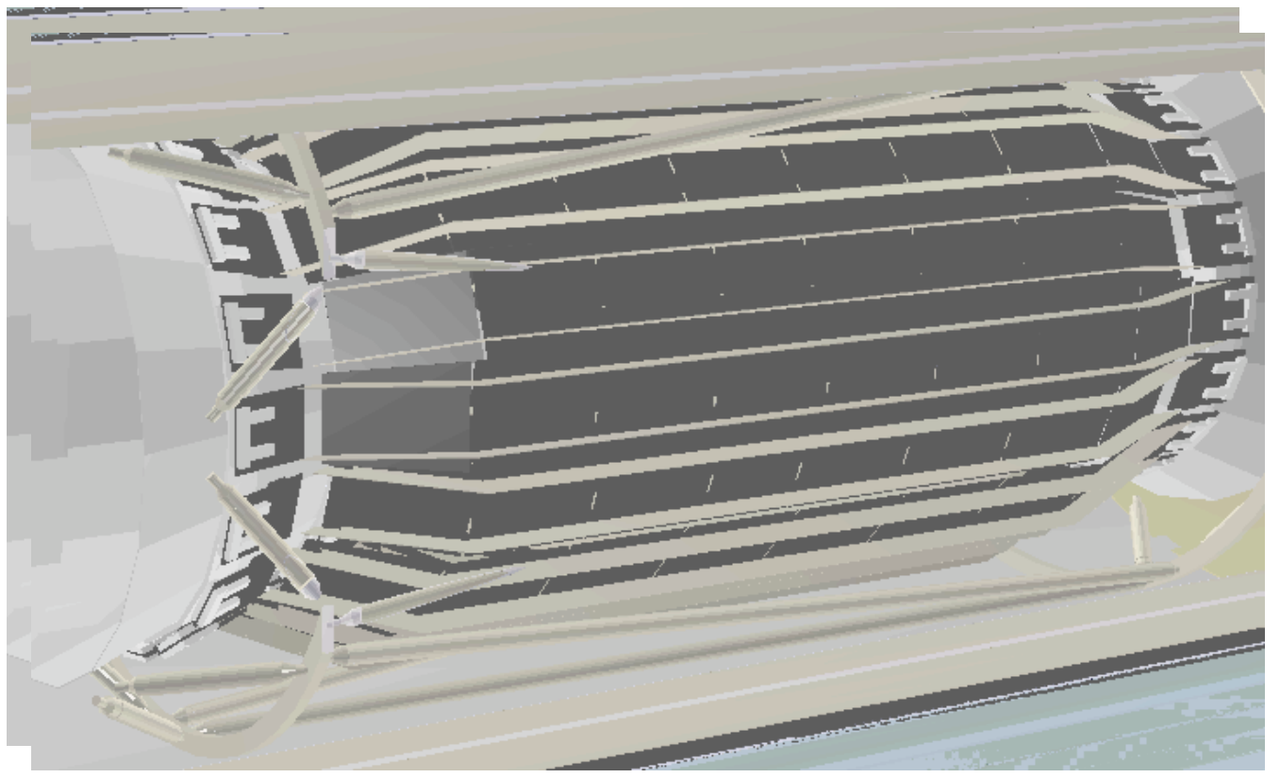
- GDML interface embedded in the official BaBar MooseApp
- Full BaBar geometry written in a single GDML file “human” readable/editable

BaBar rebuilt outside Moose



Reality vs Geant4





BaBar in GDML

- Human readable (although quite big)
  52147 lines, 2 MBytes...
  the berillium beam pipe:

```
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 <solidref ref="PepBePipe0xae7227e8" />
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  <volumeref ref="WACHB0x16363a70" />
  <positionref ref="WACHB0x16363ad0inBePipe0x16361508p" />
 </physvol>
 <physvol>
  <volumeref ref="WACHB0x163636d0" />
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 </physvol>
 <physvol>
  <volumeref ref="WACHB0x16363330" />
  <positionref ref="WACHB0x16363390inBePipe0x16361508p" />
 </physvol>
 <physvol>
  <volumeref ref="WACHB0x16362e38" />
  <positionref ref="WACHB0x16362e98inBePipe0x16361508p" />
 </physvol>
 <physvol>
  <volumeref ref="WACH40x16362b80" />
  <positionref ref="WACH4_phys0x16362be0inBePipe0x16361508p" />
 </physvol>
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  <volumeref ref="WACH30x16362920" />
  <positionref ref="WACH3_phys0x16362980inBePipe0x16361508p" />
 </physvol>
 <physvol>
  <volumeref ref="WACH20x16362668" />
  <positionref ref="WACH2_phys0x163626c8inBePipe0x16361508p" />
 </physvol>
 <physvol>
  <volumeref ref="WACH10xae722af0" />
  <positionref ref="WACH1_phys0xae722b50inBePipe0x16361508p" />
 </physvol>
</volume>
```

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 <zplane rmax="27.853000164032" rmin="24.9760007858276" z="-134.60000038147" />
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 <zplane rmax="27.853000164032" rmin="24.9760007858276" z="207.000007629395" />
</polycone>
```

What do we need?

- Software Release Tool.
- External packages:
  CLHEP, Geant4, GDML, XERCES (bleeding edge)
  ...now is way too early to freeze a production release
- Platform "supported" so far (and in future):
  - OSX (Intel, G4?)
  - Scientifix Linux (Intel)

To Do List

- Release a first version of the code to the proto-collaboration
- Put the magnetic field description in GDML
- Implement a GDML ouput in BSDIM (MAD to Geant4 converter)
- Cross-check of the results obtained from GDML with the Simple Detector