ZDC detector geometry

Oliver Suranyi
HAD section ratios

- Very different than 2010 data
- 2016 pPb data supports 2010 data, not the simulation (much better resolution)
- Something wrong with the detector geometry?
ZDC detector geometry

Roughly seems ok!
EM section

- “Each tungsten plate in the electromagnetic section has been premachined to 2 mm x 85 mm x 100 mm” (Jeff Wood’s thesis)
- “The EM section is made of 33 layers of 2 mm thick tungsten plates...” (Oleg Grachov et al: Measuring Photons and Neutrons at Zero Degrees in CMS)

In the Geant 4 geometry:

```
<Box name="ZDC_EMLayer" dx="4.8*cm" dy="6.25*cm" dz="1.5*mm"/>
<Box name="ZDC_EMAbsorber" dx="4.8*cm" dy="6.25*cm" dz="1.0*mm"/>
<Tube name="ZDC_EMFiber" rMin="0.*mum" rMax="350.0*mum" dz="6.25*cm"/>
```

Seems ok (but transverse size is a bit different)
HAD section

- “Each tungsten plate in the hadronic section has already been premachined as a right parallelepiped slanted at the shortest dimension to 45° with the dimensions 10 mm x 85 mm x 151 mm.” (Jeff Woods)

- The HAD section consists of 24 layers of 15.5 mm thick tungsten plates (Oleg Grachov)

Contradiction?

Having 10 mm width instead of 15.5 mm, HAD section ratio would change in the good direction (larger contribution in HAD2,3,4)

→ Needs to be checked (jobs are now running)

→ The precise schematic of ZDC could help to check the geometry

```xml
<Box name="ZDC_HadLayer" dx="4.8*cm" dy="6.25*cm" dz="8.2*mm"/>
<Box name="ZDC_HadAbsorber" dx="4.8*cm" dy="6.25*cm" dz="7.75*mm"/>
<Tube name="ZDC_HadFiber" rMin="0.*mum" rMax="350.0*mum" dz="6.25*cm"/>
```