

## Revision and Abstract

Description	Revision	Date
Creation	A	14/04/2013-AS

### ABSTRACT

This report presents calculation made by Sigmaphi.

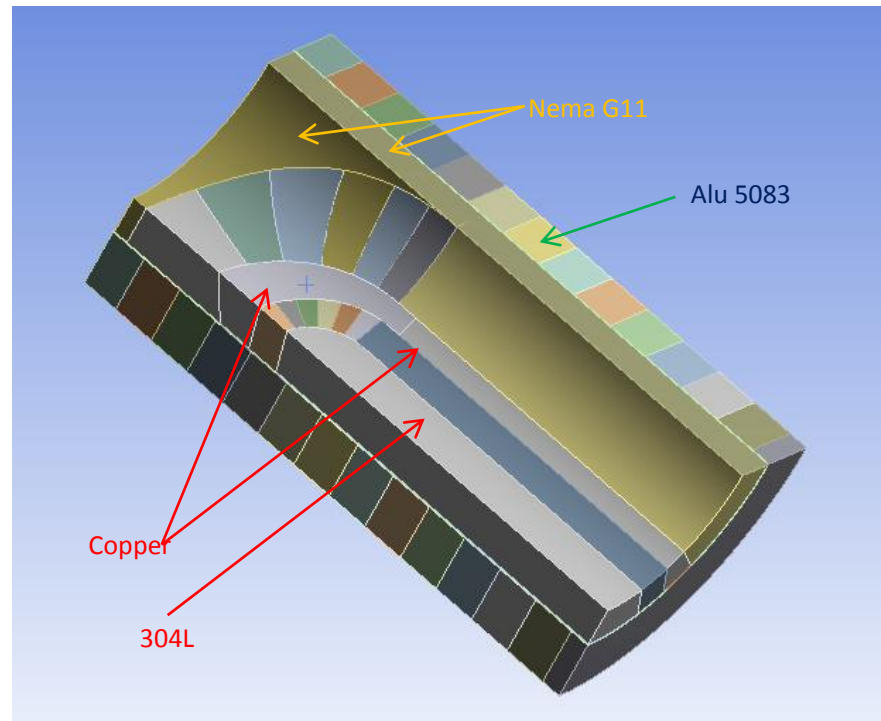
This simulation was carried out with the following parameters:

- Coil mesh 25mm
- Spacer mesh size 25 mm and Increase in the number of mesh in the fine part in G11

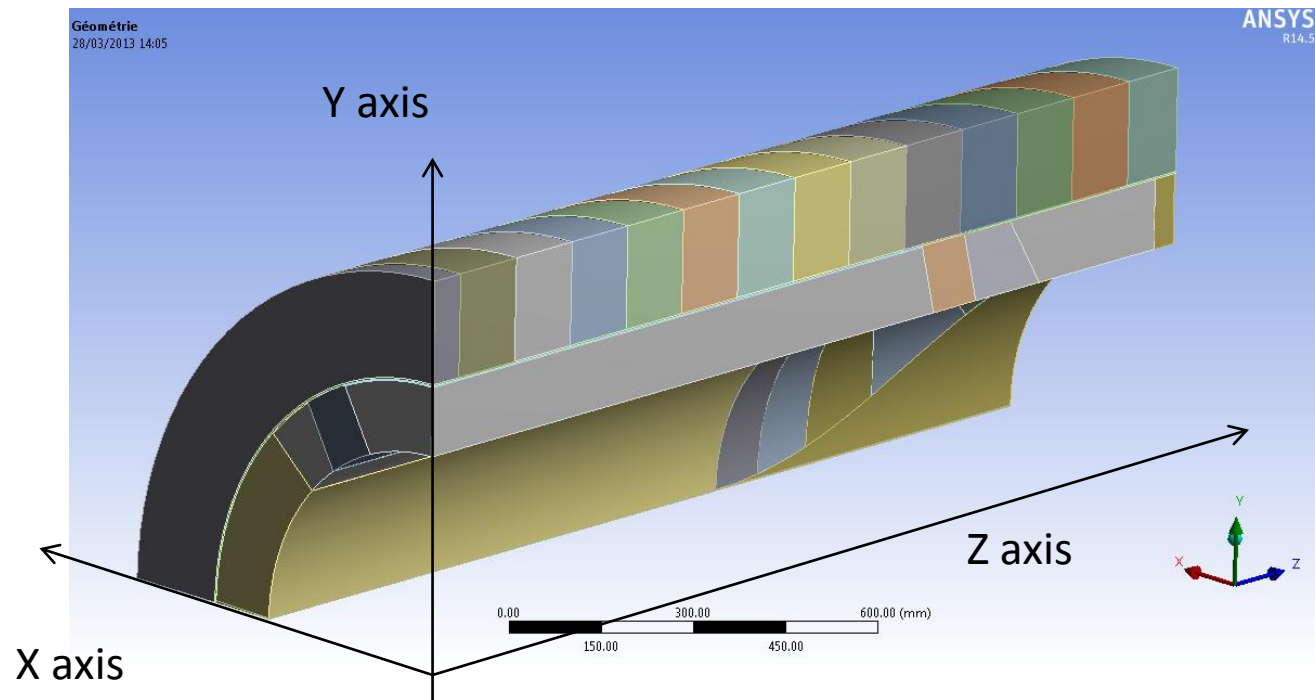
## Data input of the model

- Collar temperature 120°C (interference fit 120-22=98 K)
- Coil material :
  - Young Modulus X axis : 20Gpa / Poisson ratio 0.31
  - Young Modulus Y axis : 20Gpa / Poisson ratio 0.31
  - Young Modulus Z axis : 100Gpa / Poisson ratio 0.31
- Forces density imported from opera
- Cooldown to 4K

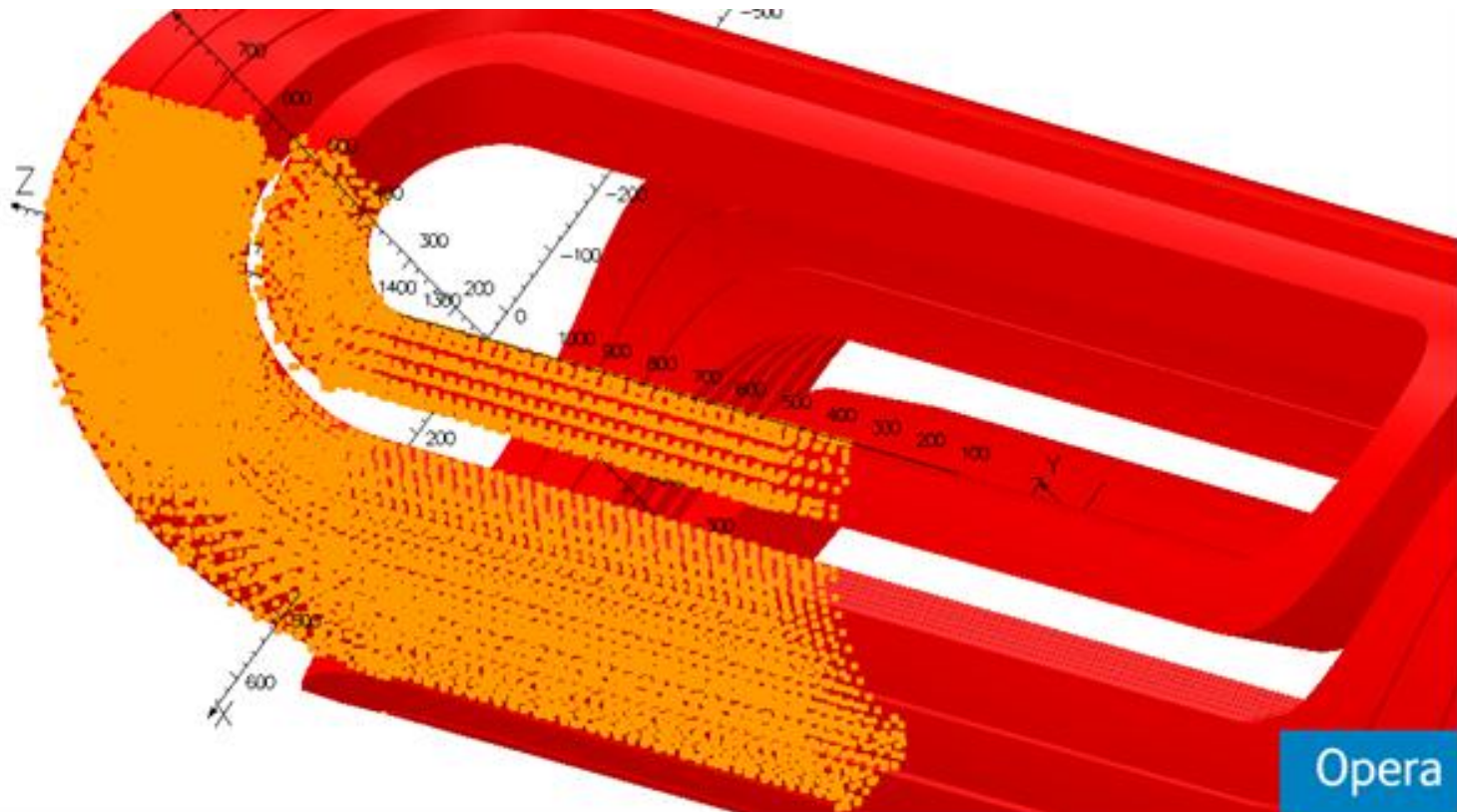
## Material



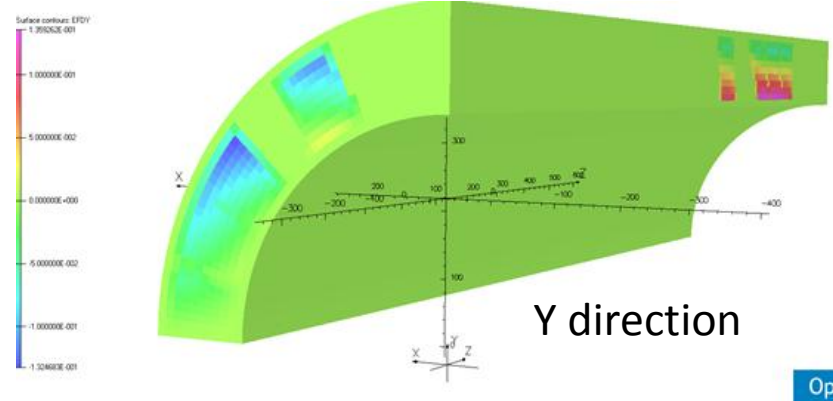
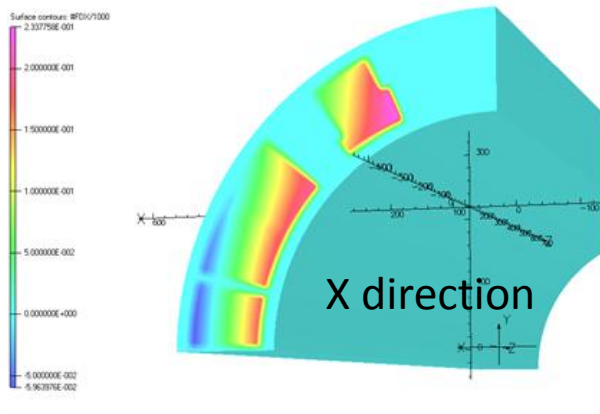
## Opera and Ansys axis (Orientation of the model)



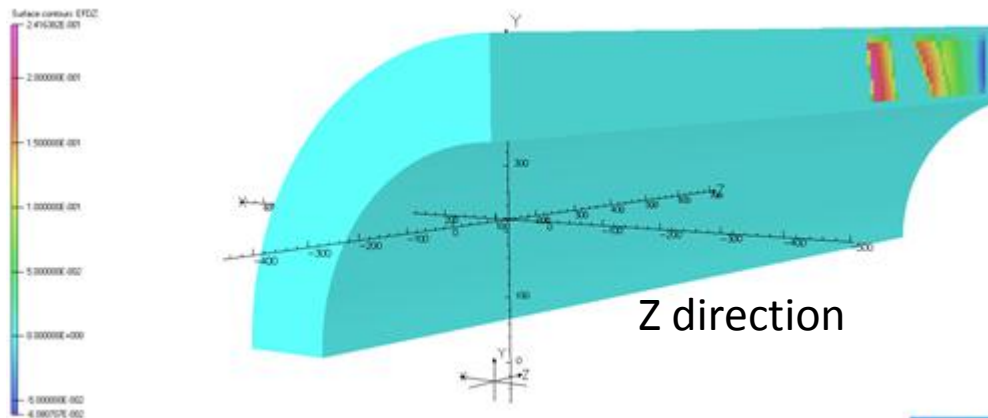
## Localization of the forces density centroids



## Density distribution of forces in the Opera model

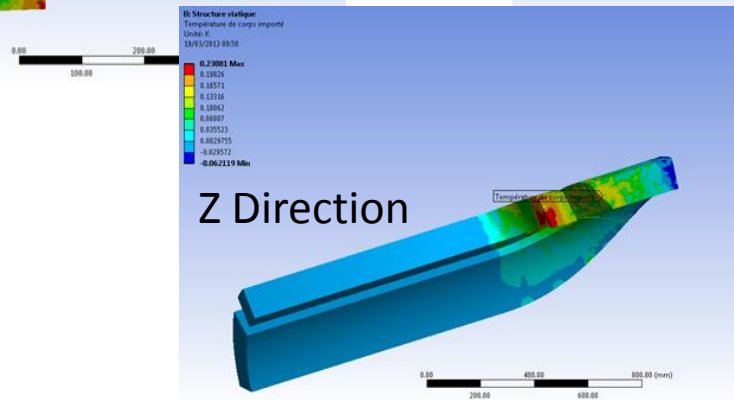
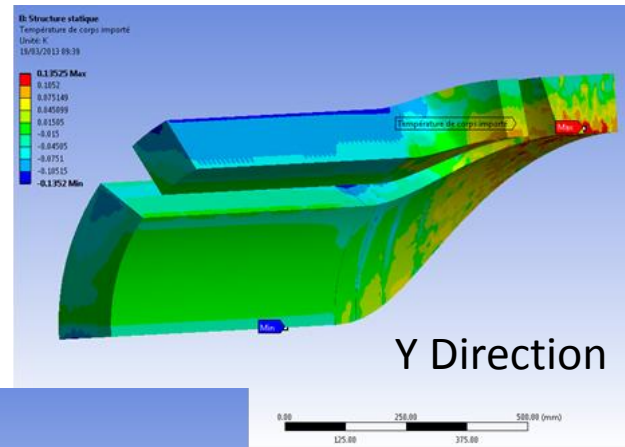
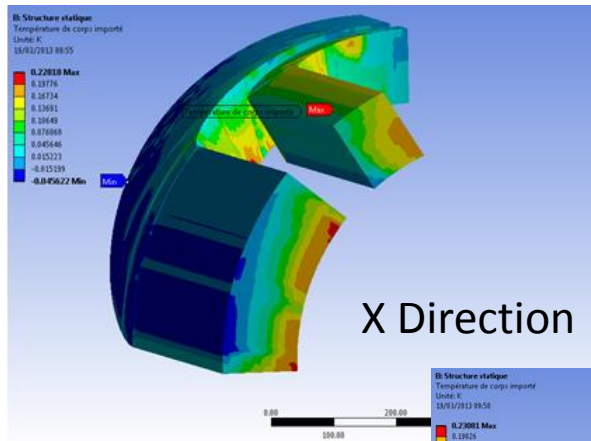


Opera



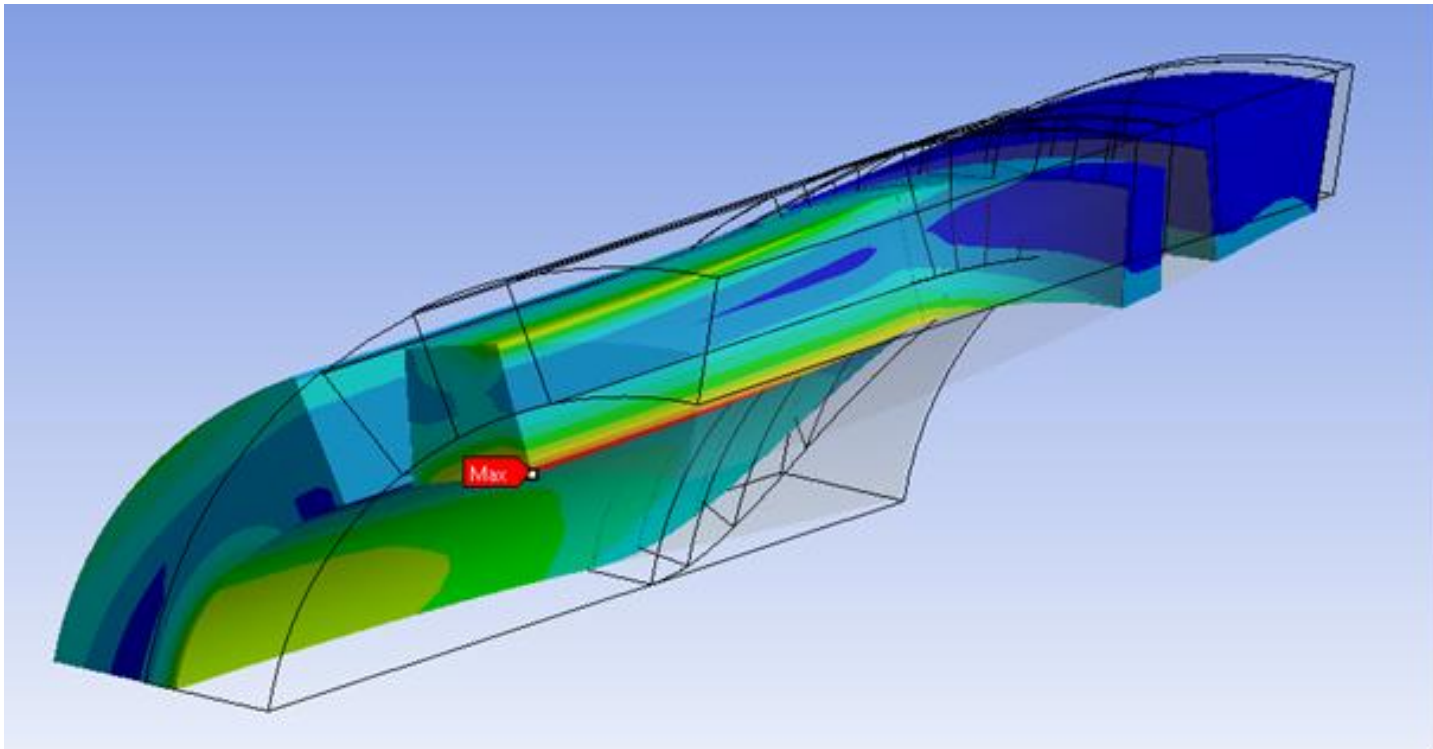
Opera

## Density distribution of forces in the Ansys model

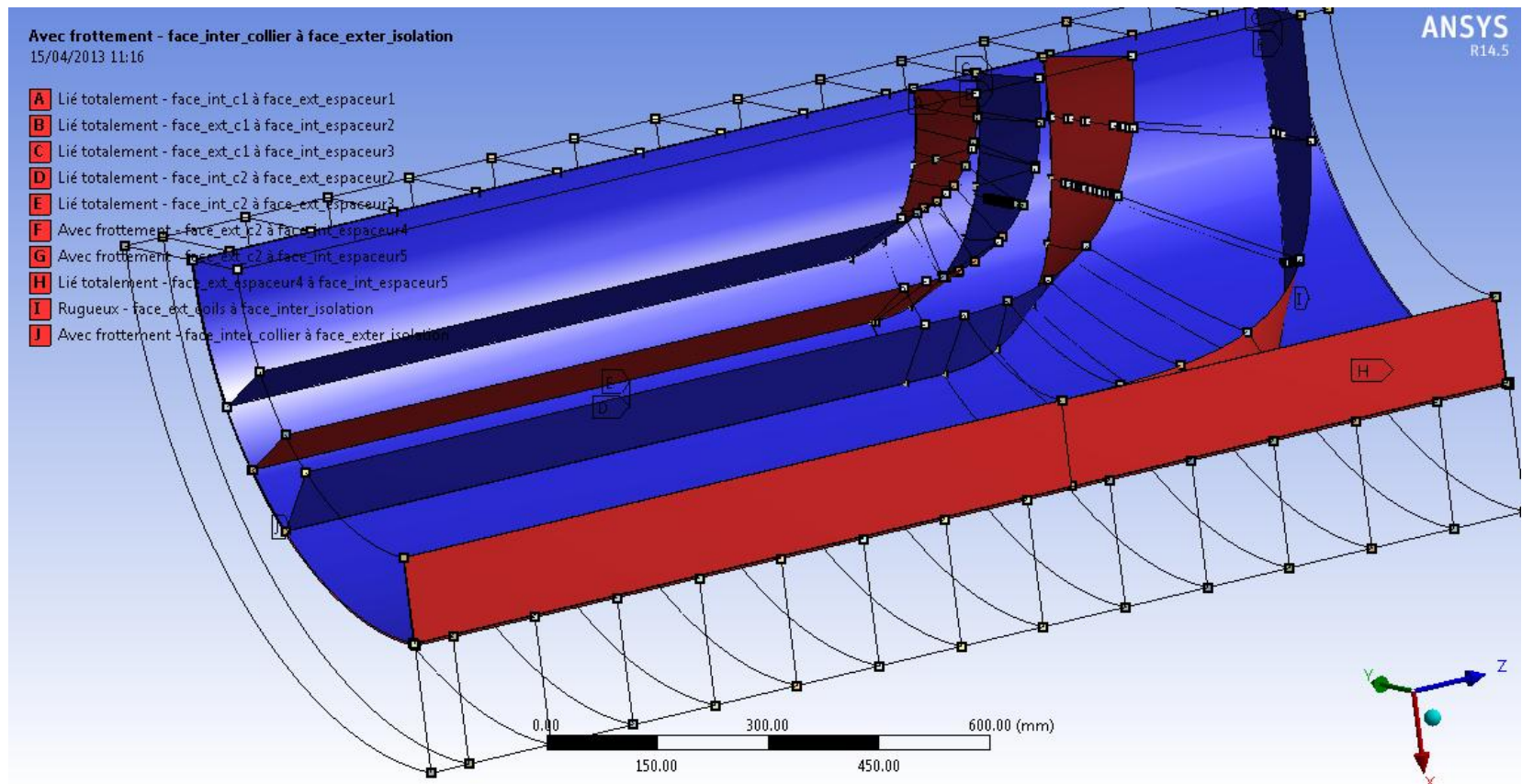




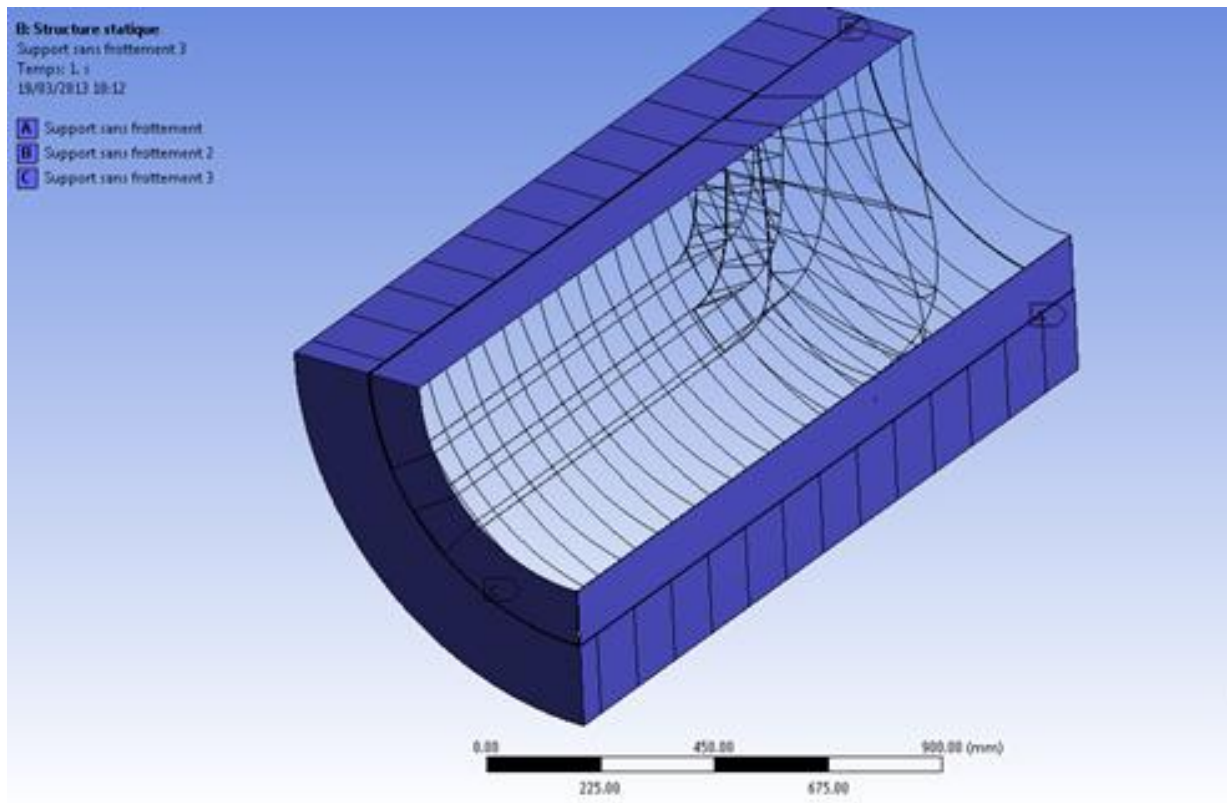
Distorted views of the coil (wired original geometry)



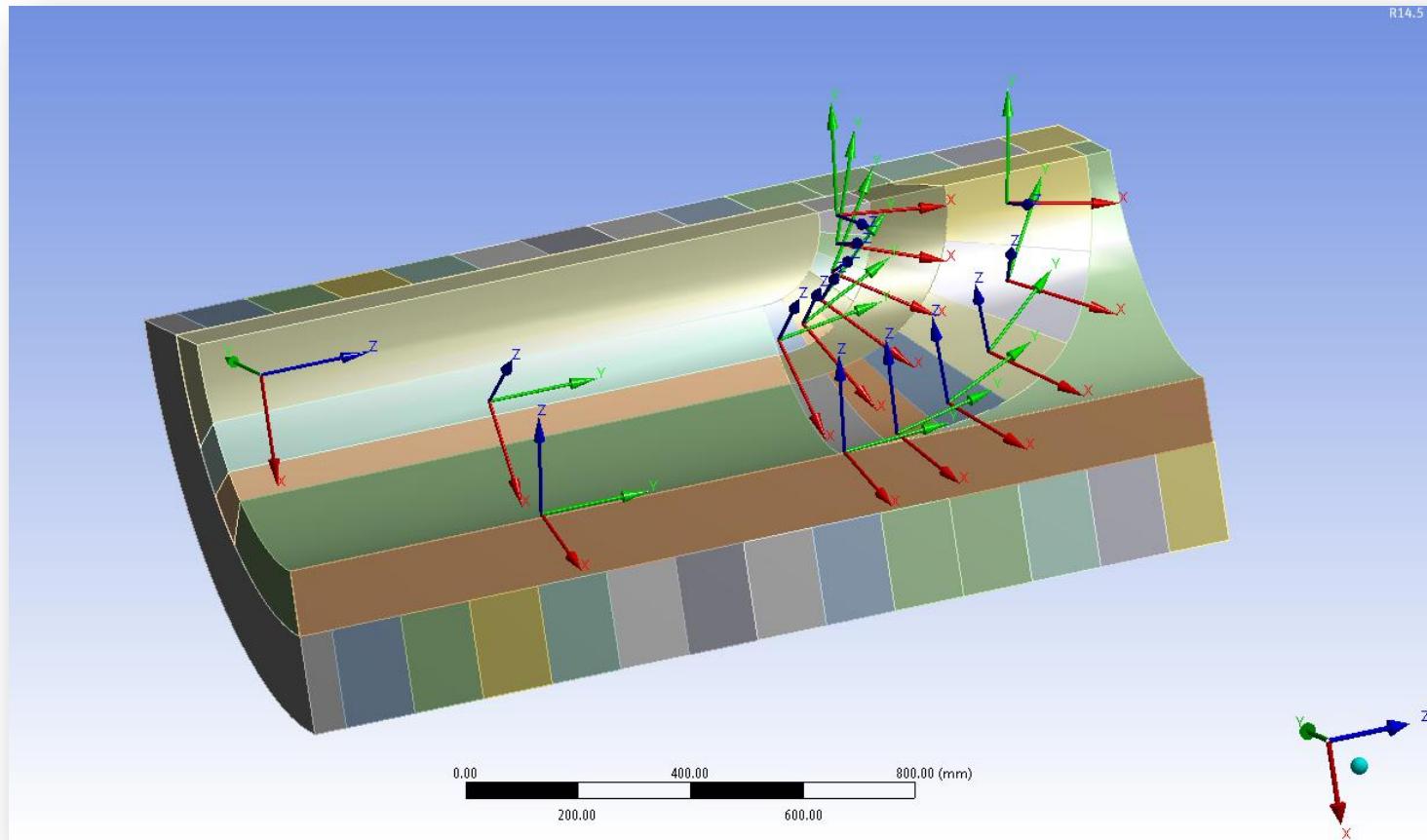
## Contacts



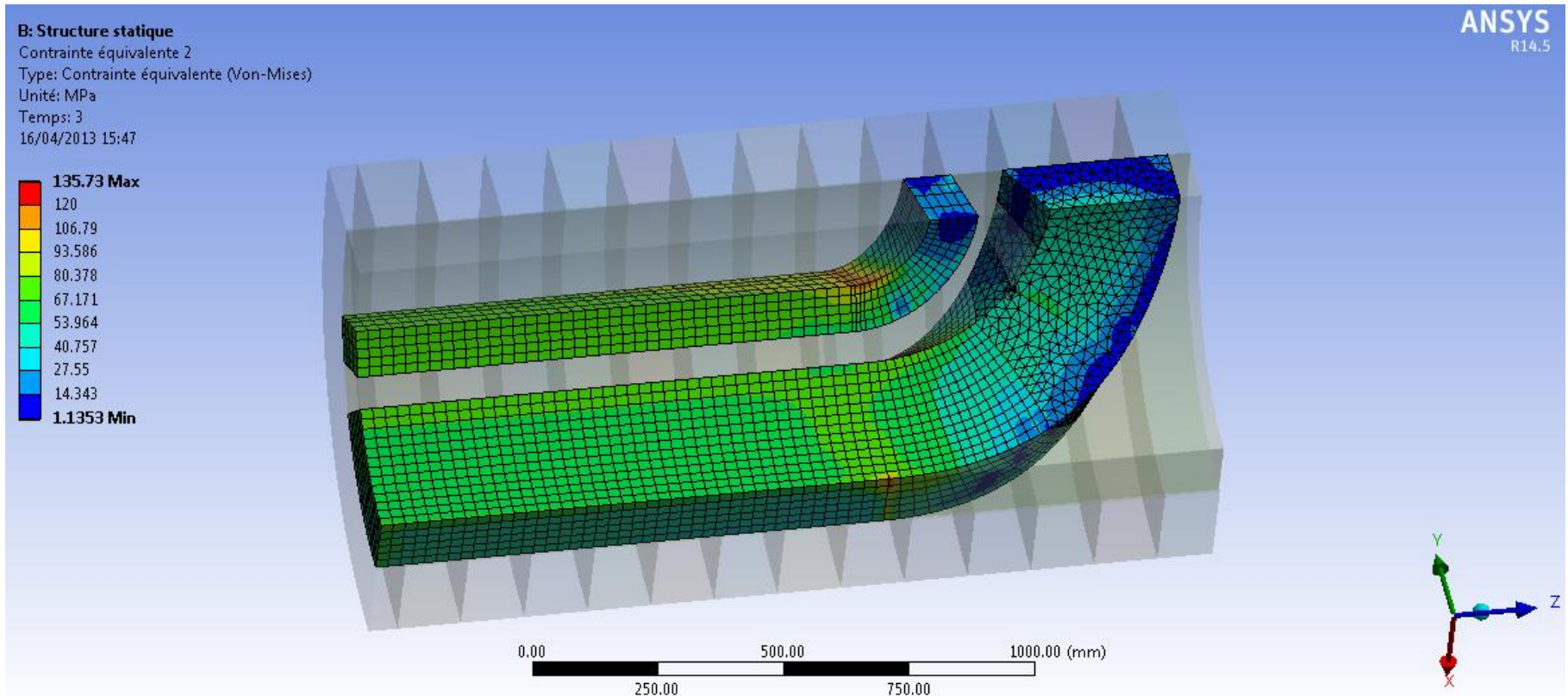
## Supports



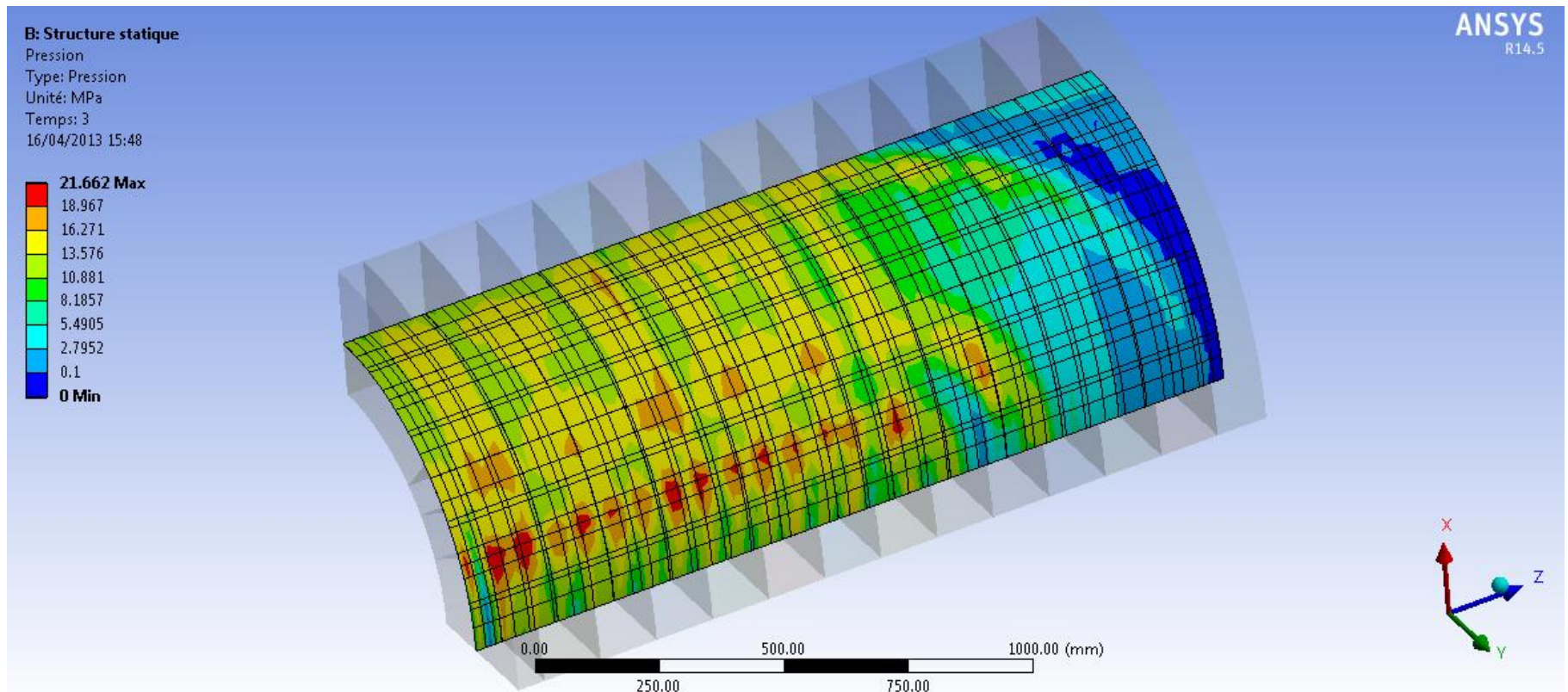
## Orientation axis for the orthotropic material. (Coils)



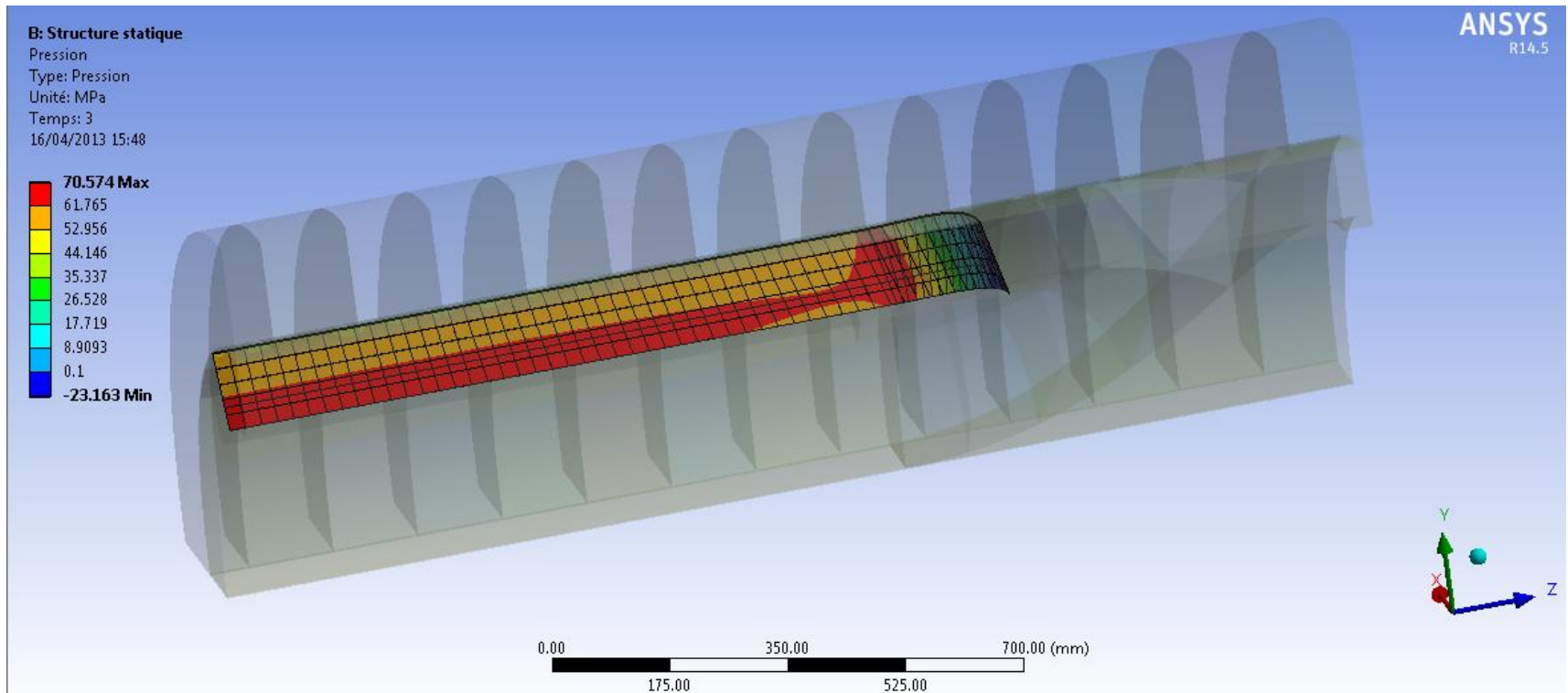
## Cooldown 4K– VON MISES STRESS



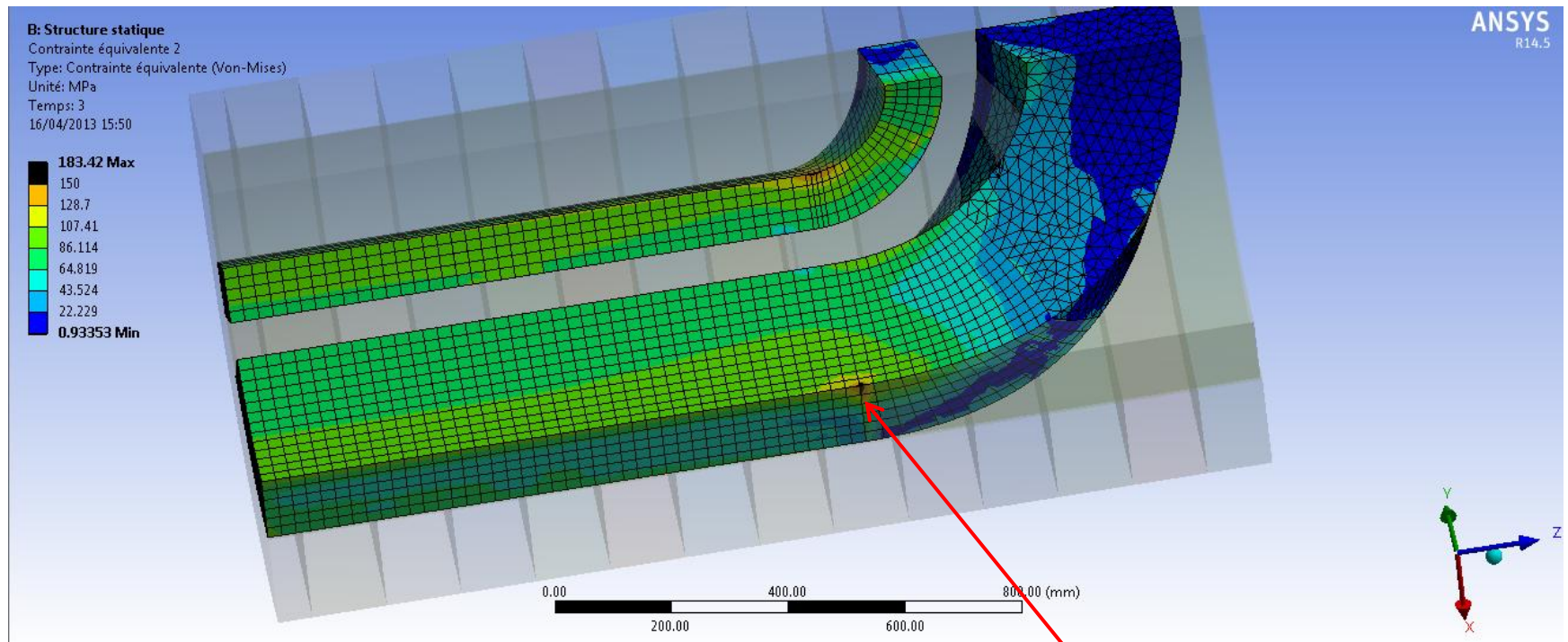
## Cooldown 4K– CONTACT PRESSURE BETWEEN COLLARS AND COIL



## Cooldown 4K– CONTACT PRESSURE BETWEEN CENTRAL SPACER AND COIL



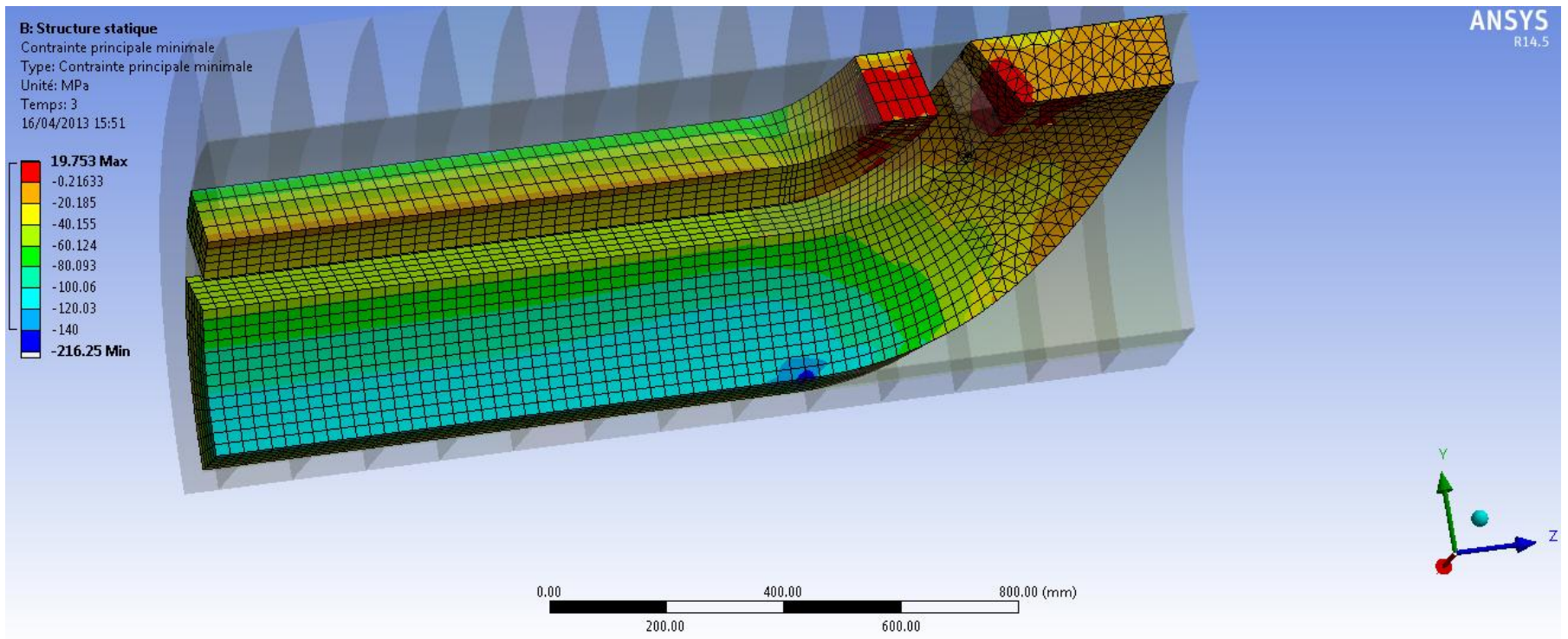
## Cooldown 4K + forces– VON MISES STRESS



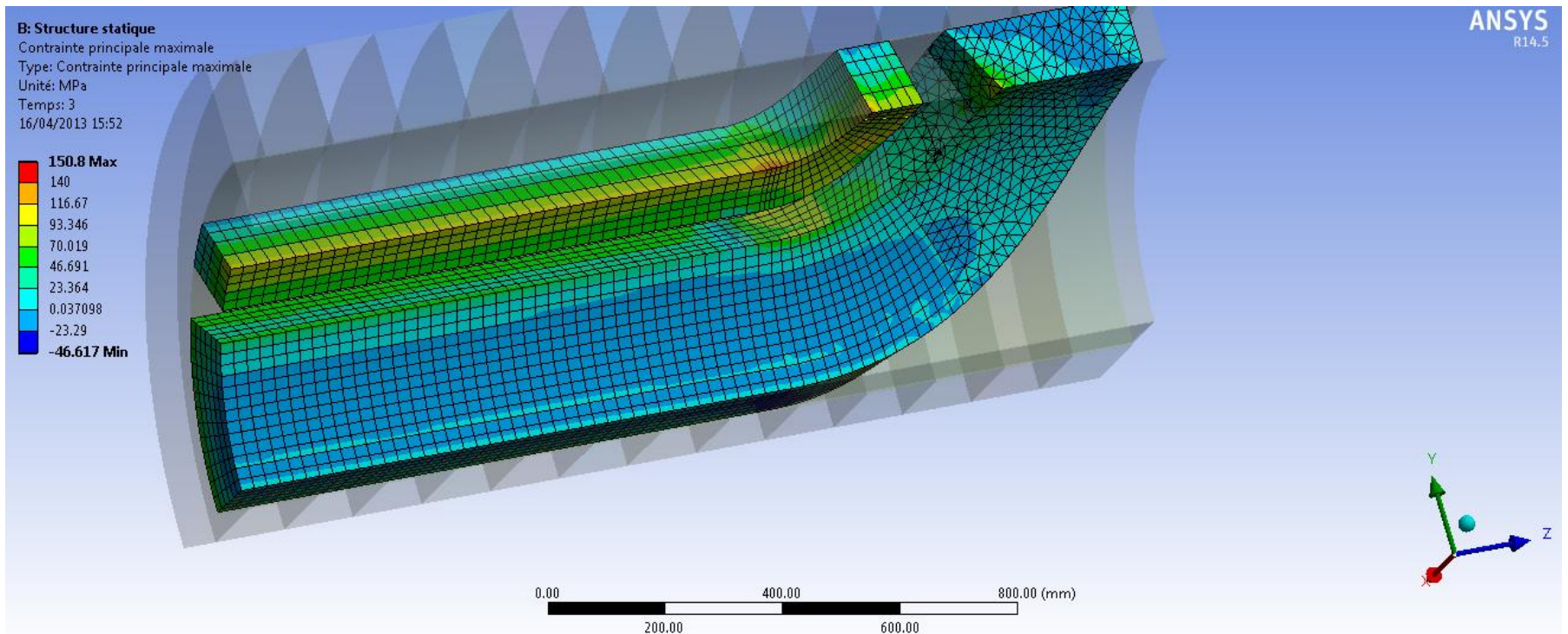
This area is a junction of the G11 spacer 4 and spacer5 and coil



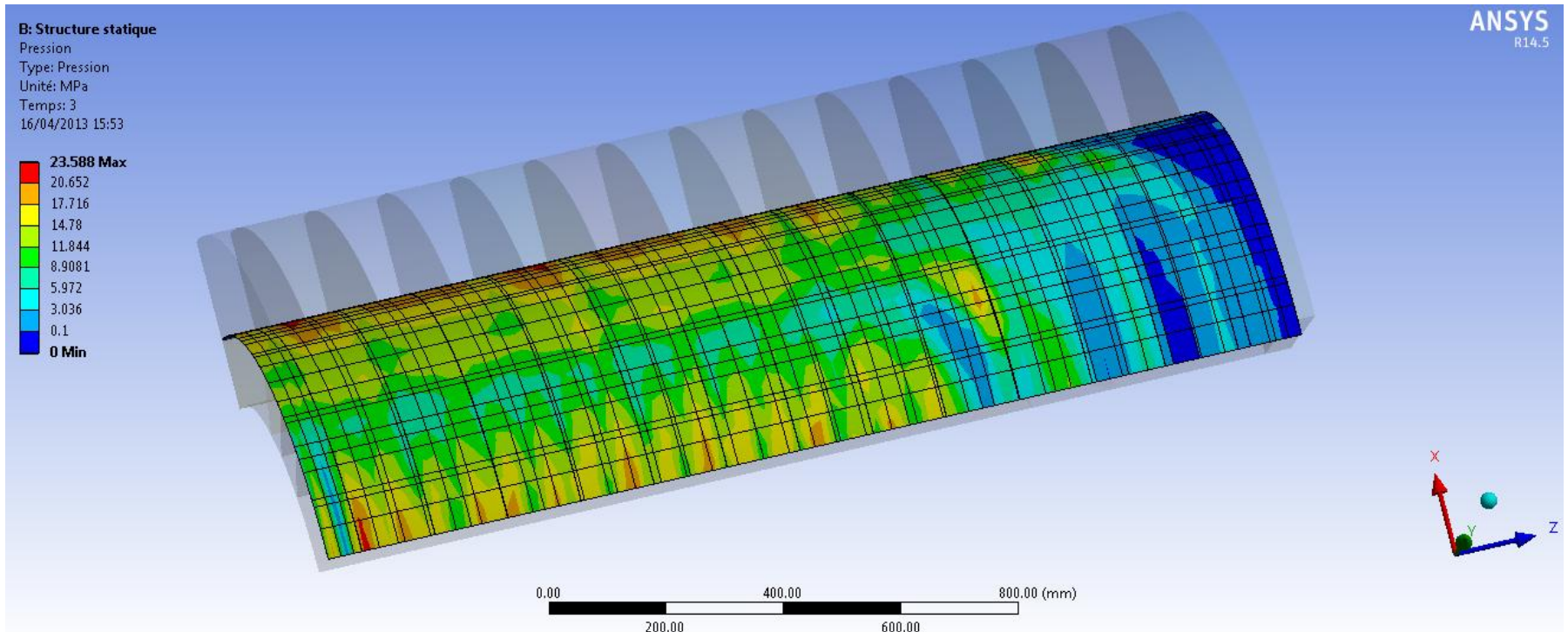
## Cooldown 4K + forces– Minimum principal stress



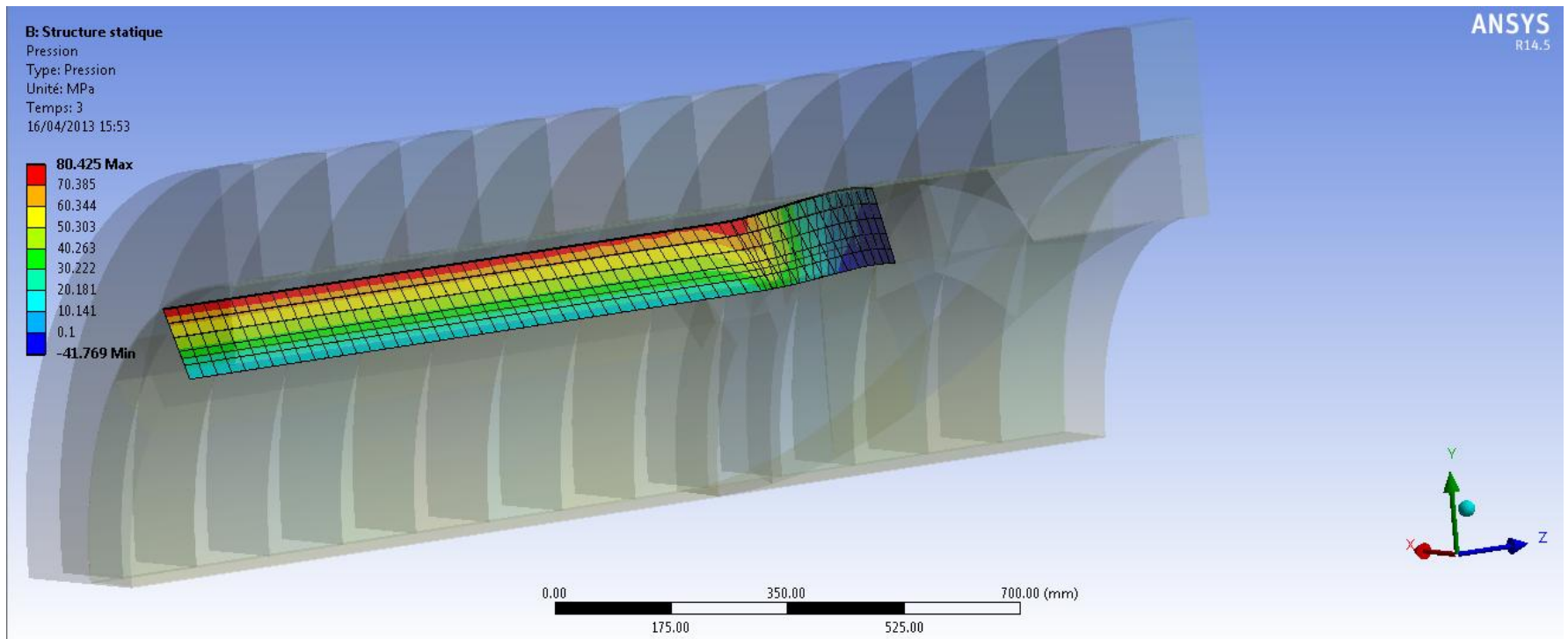
## Cooldown 4K + forces– Maximum principal stress



## Cooldown 4K + forces– CONTACT PRESSURE BETWEEN COLLARS AND COIL



## Cooldown 4K + forces– CONTACT PRESSURE BETWEEN CENTRAL SPACER AND COIL



## Cooldown 4K + forces– Stress (Von Mises) assembly

