



# Model Ansys 318711-JLAB-V111-Simplified

## Revision and Abstract

Description	Revision	Date
Creation	A	08/07/2013-AS
update	B	09/07/2013-AS

### ABSTRACT

This report presents calculation made by Sigmaphi.

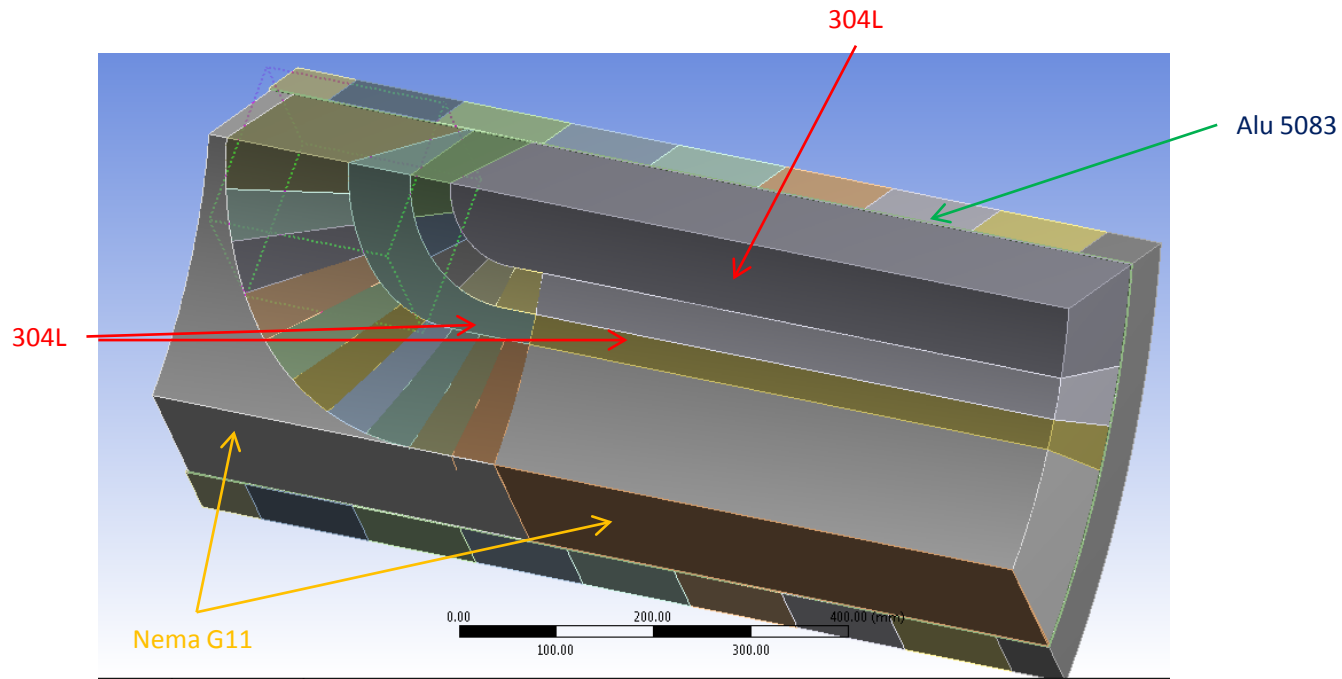
This simulation was carried out with the following parameters:

- Coil mesh 20mm
- Spacer mesh size 20 mm
- Temperature 90°C (Collar temperature 90°C- ambient temperature 22°C= preload temperature 68°C)
- Spacer 2 and 3 Stainless Steel
- Orientation for conductor material + CTE

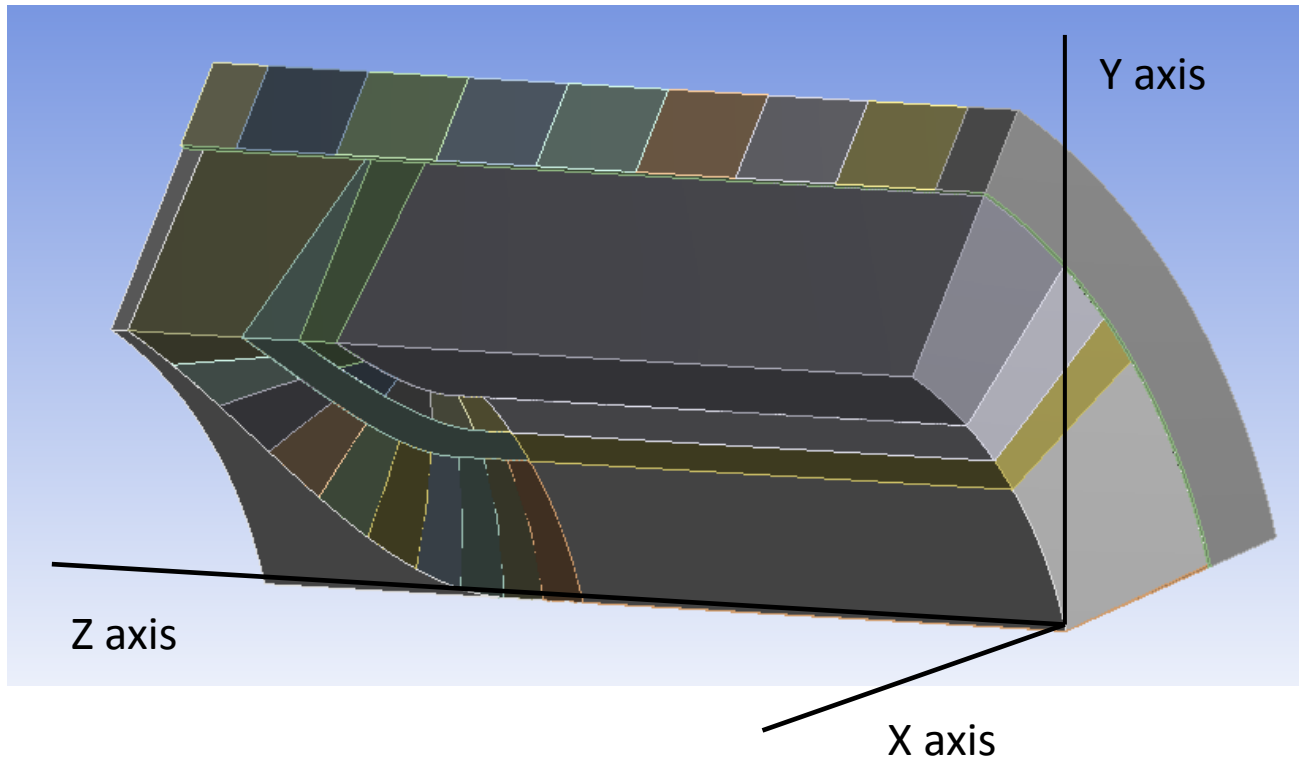
## Data input of the model

- Collar temperature 90°C (interference fit 90-22=68 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



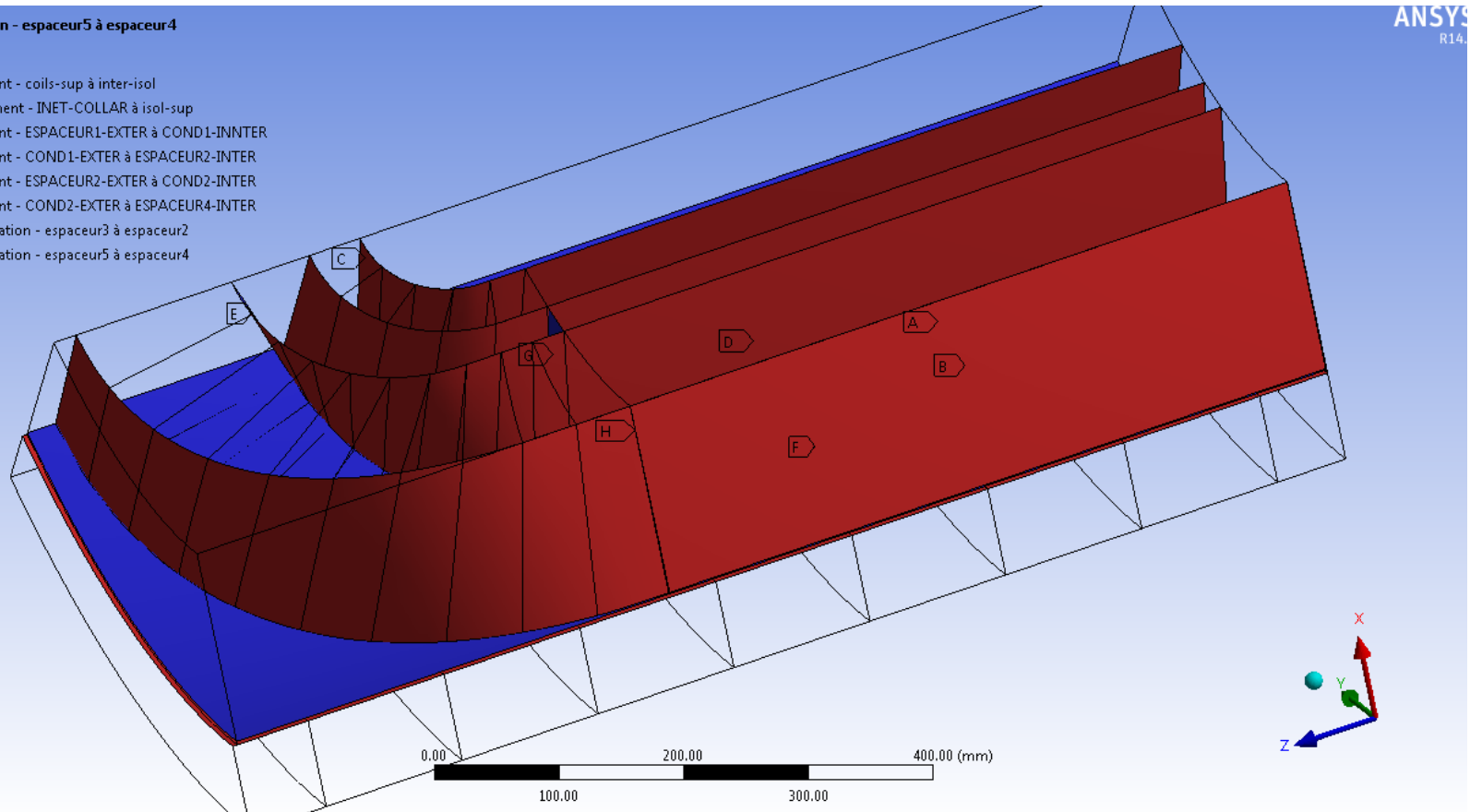
## Opera and Ansys axis (Orientation of the model)



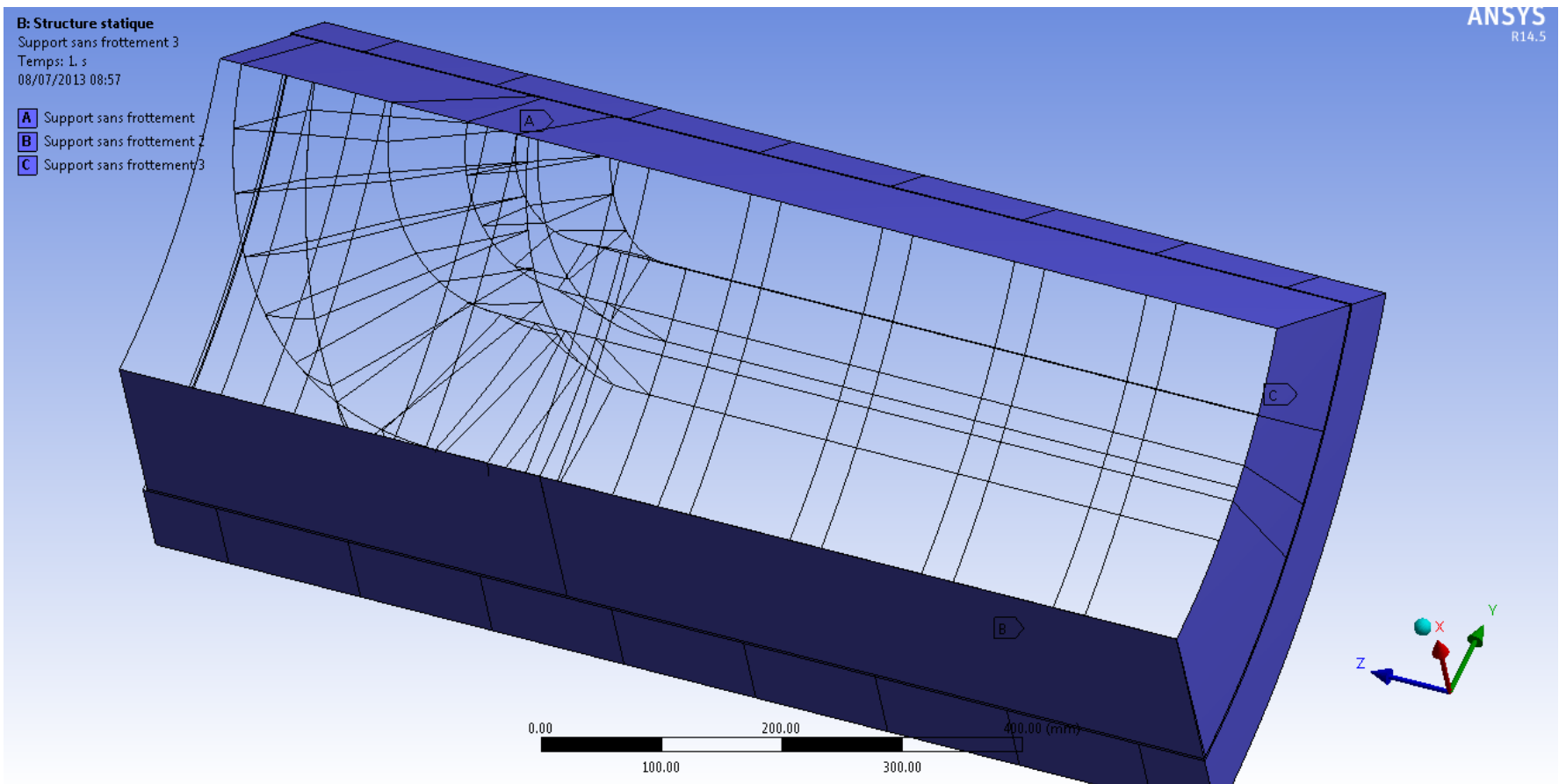
## Contacts

Pas de séparation - espaceur5 à espaceur4  
08/07/2013 08:56

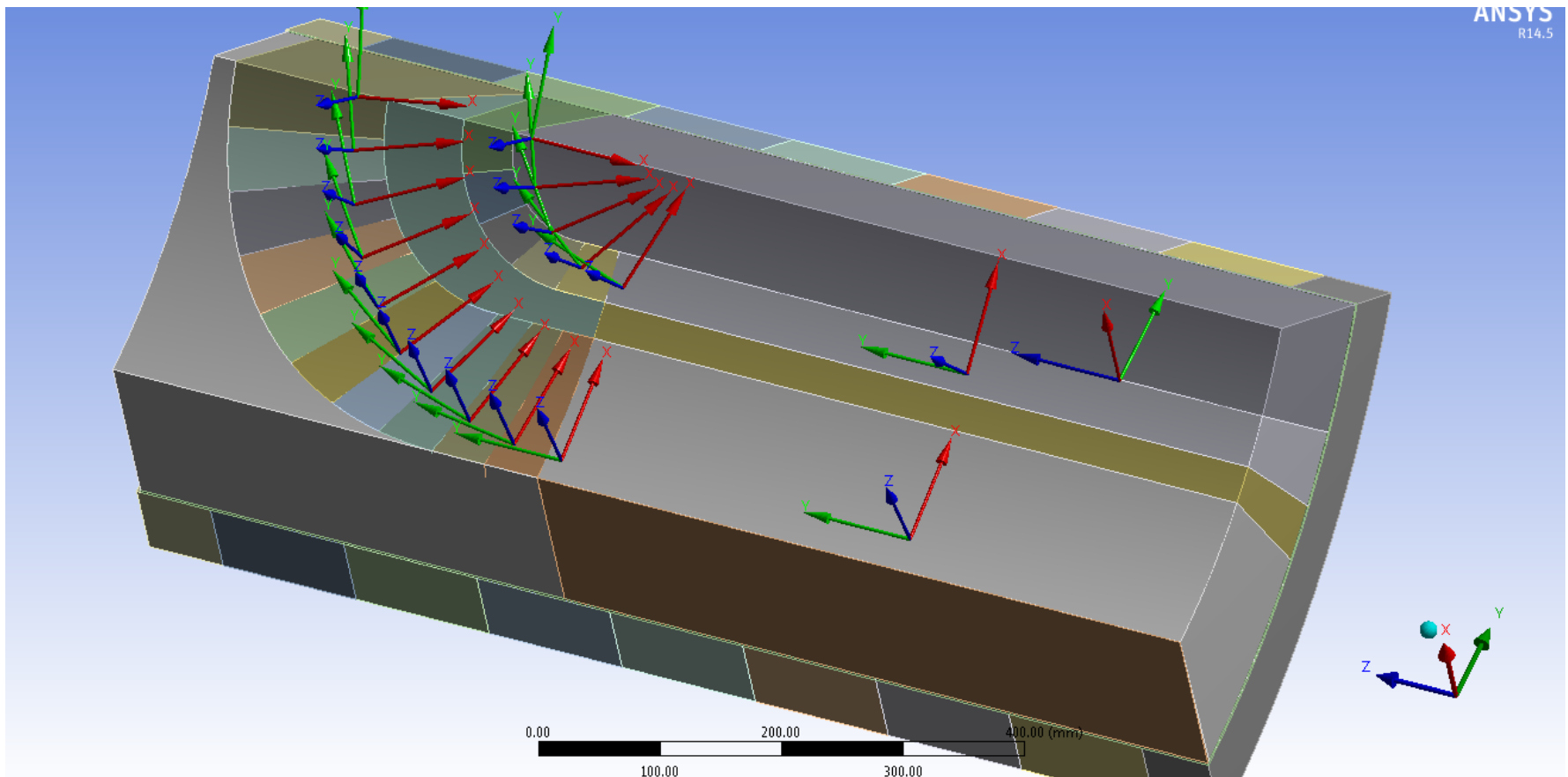
- A** Lié totalement - coils-sup à inter-isol
- B** Avec frottement - INET-COLLAR à isol-sup
- C** Lié totalement - ESPACEUR1-EXTER à COND1-ININTER
- D** Lié totalement - COND1-EXTER à ESPACEUR2-INTER
- E** Lié totalement - ESPACEUR2-EXTER à COND2-INTER
- F** Lié totalement - COND2-EXTER à ESPACEUR4-INTER
- G** Pas de séparation - espaceur3 à espaceur2
- H** Pas de séparation - espaceur5 à espaceur4



## Supports



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





## Cooldown 4K– VON MISES STRESS

B: Structure statique

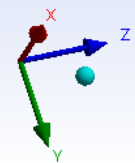
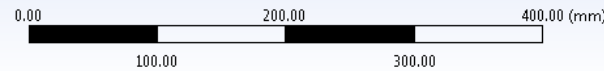
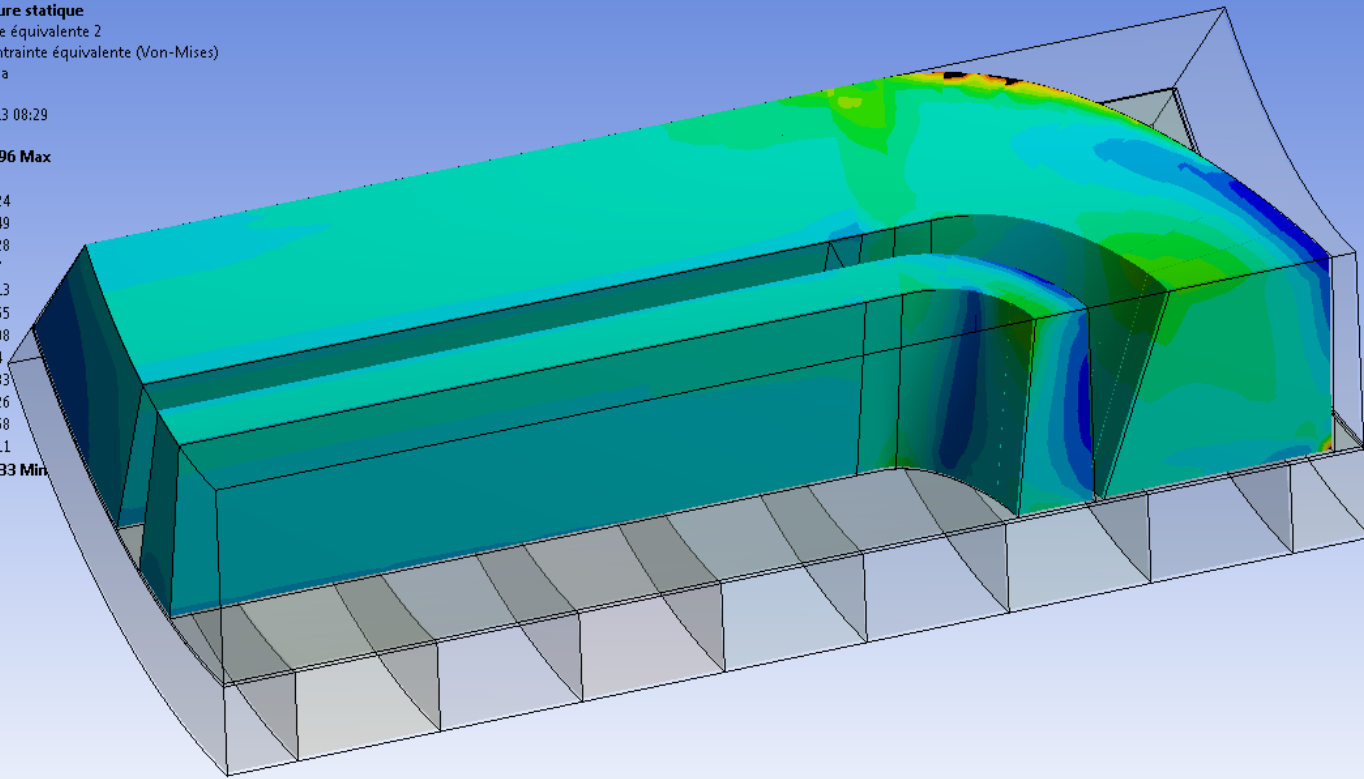
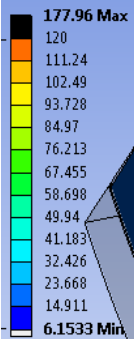
Contrainte équivalente 2

Type: Contrainte équivalente (Von-Mises)

Unité: MPa

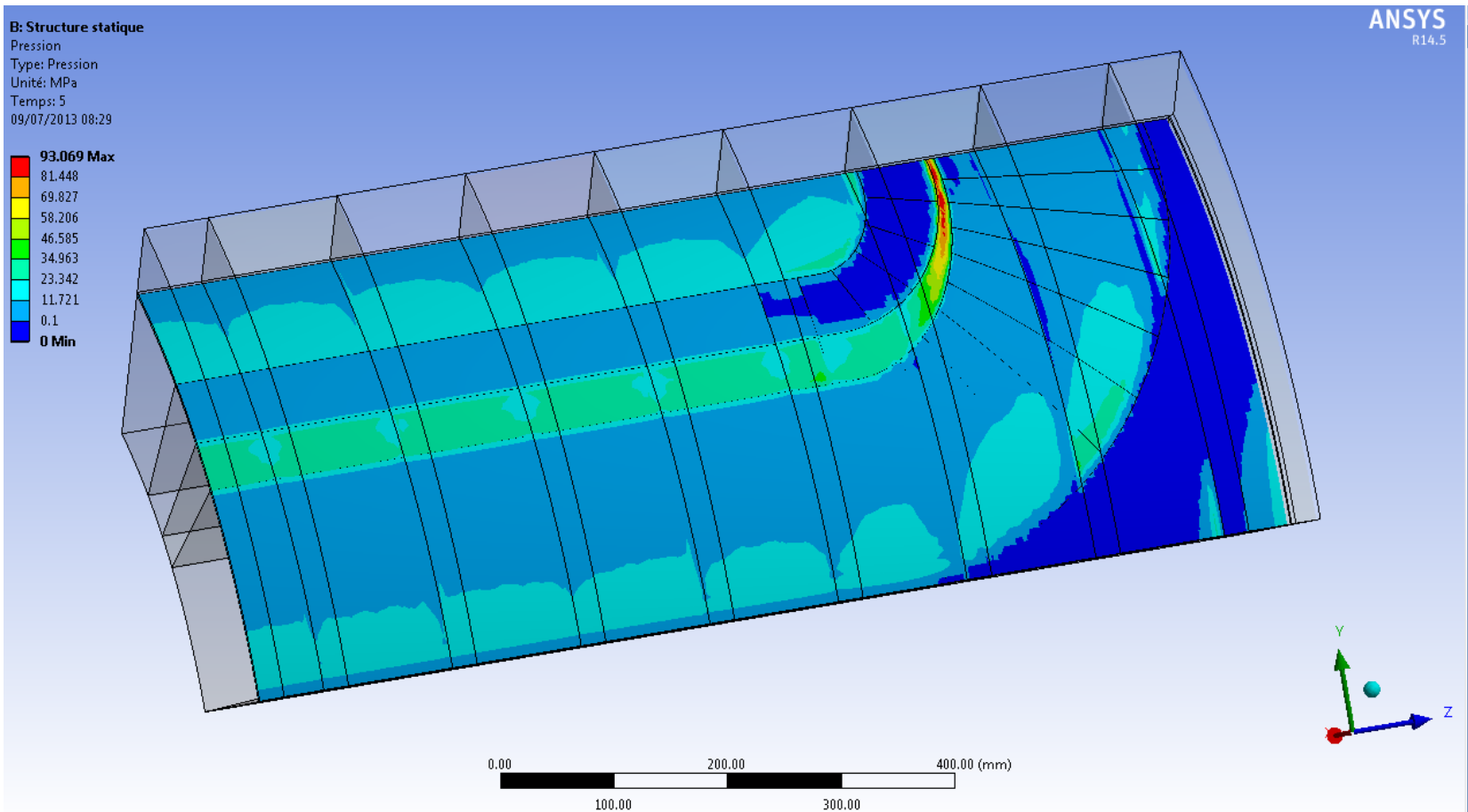
Temps: 5

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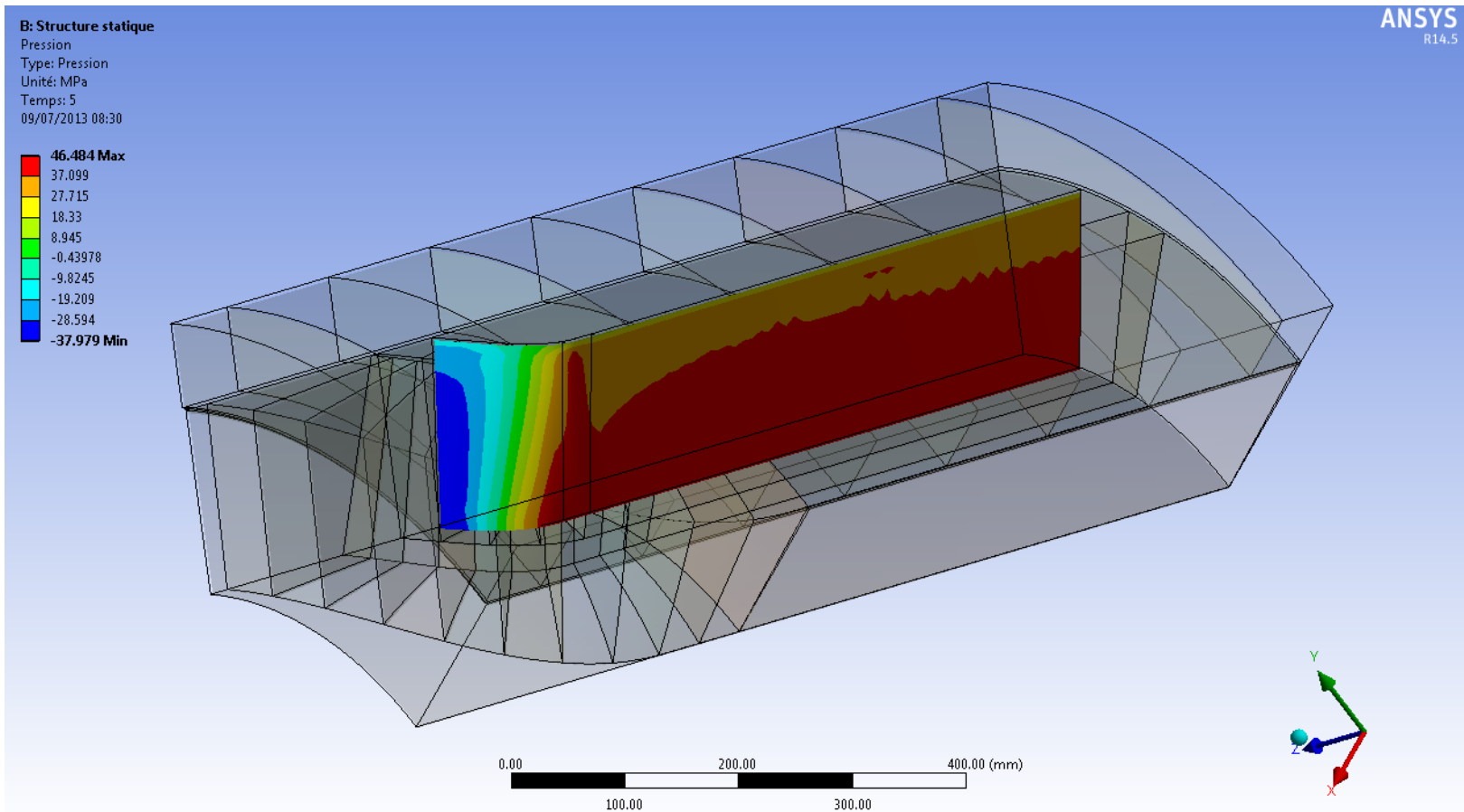


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R14.5

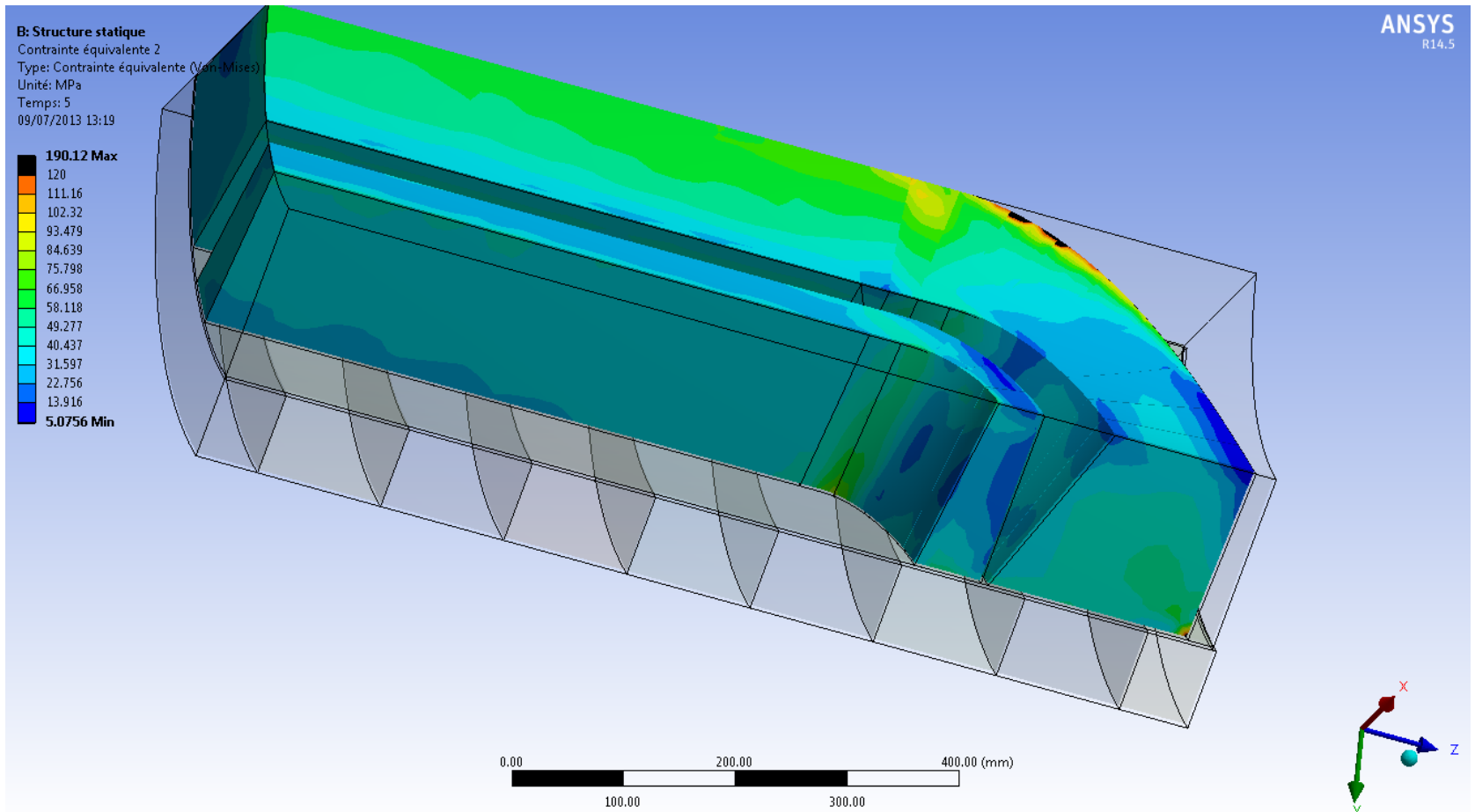
## Cooldown 4K– CONTACT PRESSURE BETWEEN COLLARS AND COIL



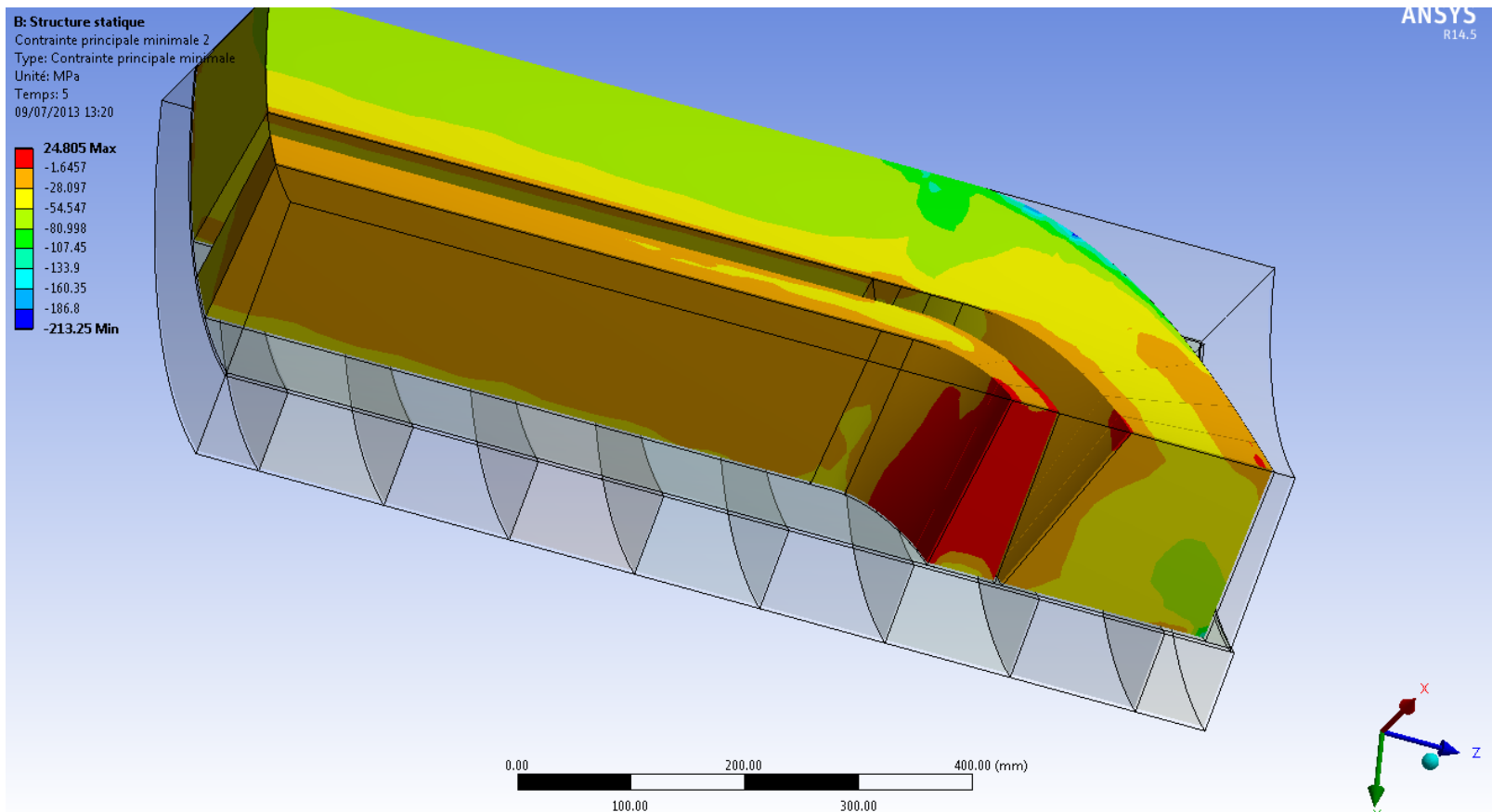
## Cooldown 4K– CONTACT PRESSURE BETWEEN CENTRAL SPACER AND COIL



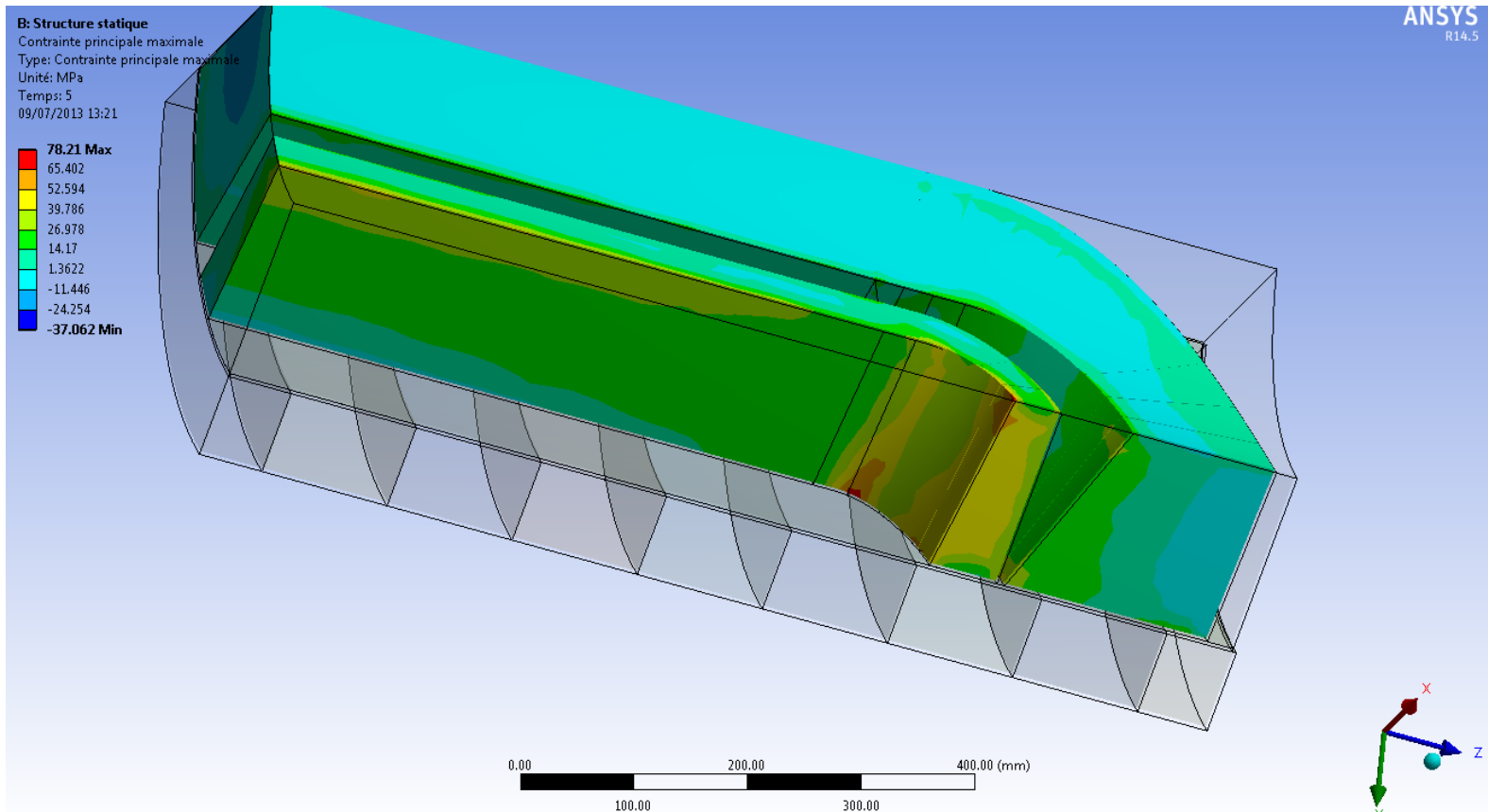
## Cooldown 4K + forces– VON MISES STRESS



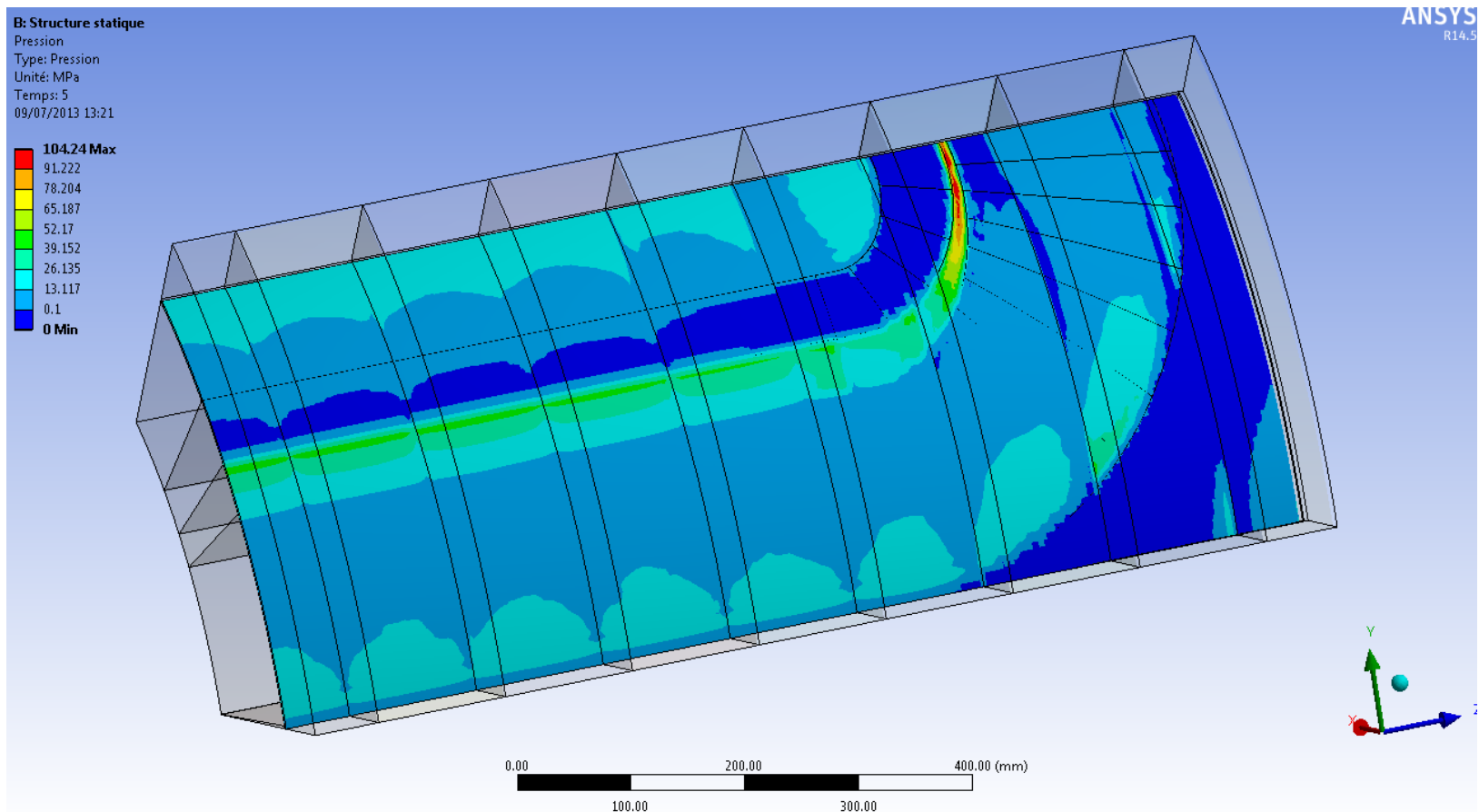
## Cooldown 4K + forces– Minimum principal stress



## Cooldown 4K + forces– Maximum principal stress



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

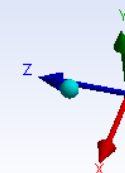
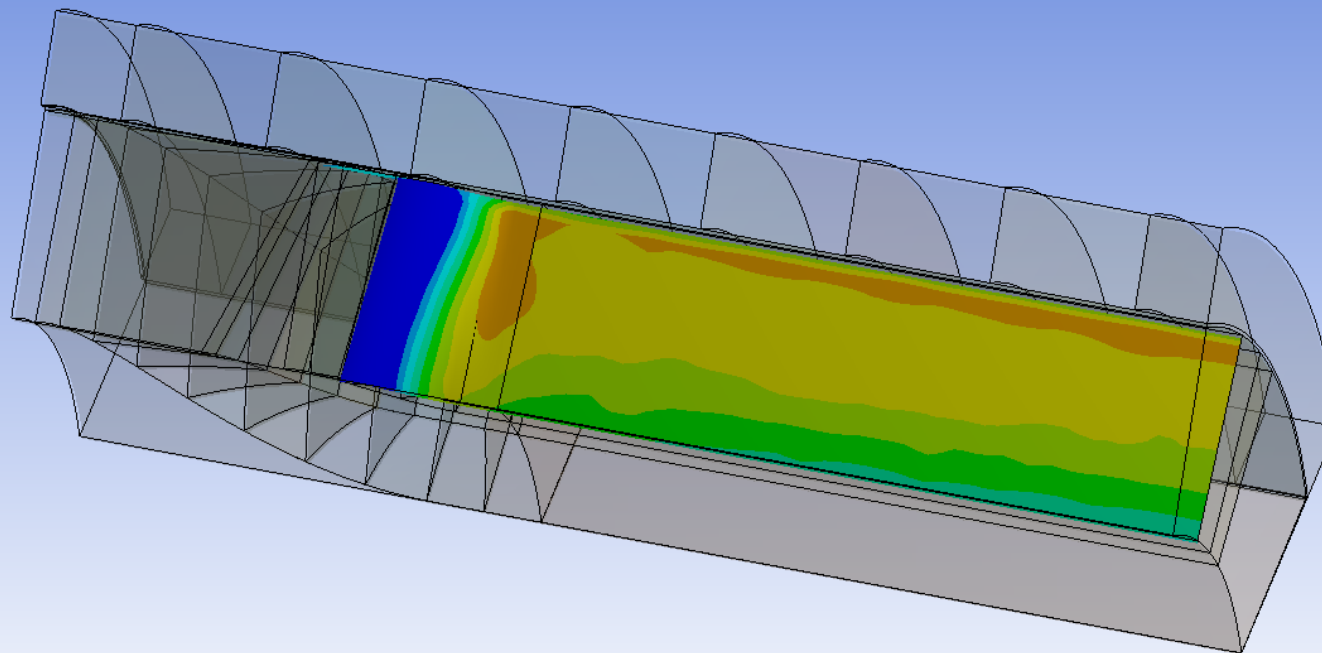
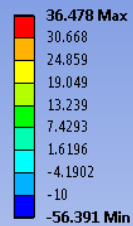


## Cooldown 4K + forces– CONTACT PRESSURE BETWEEN CENTRAL SPACER AND COIL

B: Structure statique

Pression  
Type: Pression  
Unité: MPa  
Temps: 5  
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## Cooldown 4K + forces– Stress (Von Mises) assembly

