



# Support and cool down to -30 degrees of a new high granularity calorimeter for the CMS detector

Code	EP4022
Programme	FCT
Department	EP
Responsible	Hubert Gerwick

## Title

Support and cool down to -30 degrees of a new high granularity calorimeter for the CMS detector

## Description

For the High Luminosity operation of the LHC, CMS will replace the end cap calorimeters, which cover the region  $1.5 < \eta < 3.0$ , with a new high-granularity sampling calorimeter. The proposed design includes a silicon/tungsten electromagnetic section followed by two hadronic sections, corresponding to specific requirements. A set of different absorber materials are used, the read-out is partly based on silicon sensors and partly on scintillators. The front part of the detector is cooled down to -30 degree Celsius in order to limit the radiation damage of the silicon sensors. The object weighs more than 200 tons and represents a volume of roughly  $50 \text{ m}^3$ .

The trainee will be involved in structural and thermal calculations made by finite element analysis (ANSYS program). There might be some CAD with CATIA but this should not be the main task.

Contact person: Hubert Gerwig (EP-CMX group)

## Skills

Mechanical Engineering: Heat Transfer, Numerical techniques and software (e.g. ANSYS, Abaqus...), Structural mechanics and machine development

Mechanical engineering: the trainee should be excellent in numerical mechanics and software analysis (ANSYS, Abaqus or others), having a good knowledge in structural mechanics and heat transfer, some CAD knowledge is a plus but not mandatory.

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## Disciplines

Mechanical Engineering