**23/11/2018, Università degli Studi di Modena**

# Code-Aster, Why use it…

**Jacopo Verani**

# Code-Aster, Why use it…

- Free Pre and Post processing tools
- Free multiphysics solver
- Available for Linux and Windows platform (For windows with executable file)
- Unlimited licenses

## *Field of applications*

- Aerospace Engineering
- Civil Engineering
- Mechanical Engineering
- Metallurgy
- Acustics and more…

# Code-Aster in the University

- Excellent software for educational purpose
- Tool implementations for academic purpose
- Provide a tool to the students for post-degree activities

# Code-Aster in the Industry

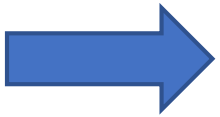
- No money budget to introduce the Code-Aster CAE Tecnology (only manpower)
- Design Optimization
- Test failure reduction
- Failure prediction

code_aster

# Code-Aster Tools

In the comparative tables below you can see the Open source and the corrispective licensed software.

| ***Pre-Processing tool*** | |
|---|---|
| ***Free*** | ***Licensed*** |
| Salome | Hypermesh |
| | Ansa |
| | Patran |
| | Femap |
| | Mentat |



| ***Solver*** | |
|---|---|
| ***Free*** | ***Licensed*** |
| Code-Aster | Abaqus |
| | Ansys |
| | Nastran |
| | Femap |
| | Marc |

| ***Post-Processing tool*** | |
|---|---|
| ***Free*** | ***Licensed*** |
| Salome | Hyperview |
| | Ansys |
| | Patran |
| | Femap Viewer |
| | Mentat |

# Code-Aster case studies

## *Suspension Sytem:*

### *FEM Model:*

Knuckle, Upper arm, Lower arm and steering arm meshes with Open-Source Pre-Processor **Salome** using 2nd order elements.

### *Solution:*

•**Code-Aster**, Open Source FEM solver

### *Post-Processing:*

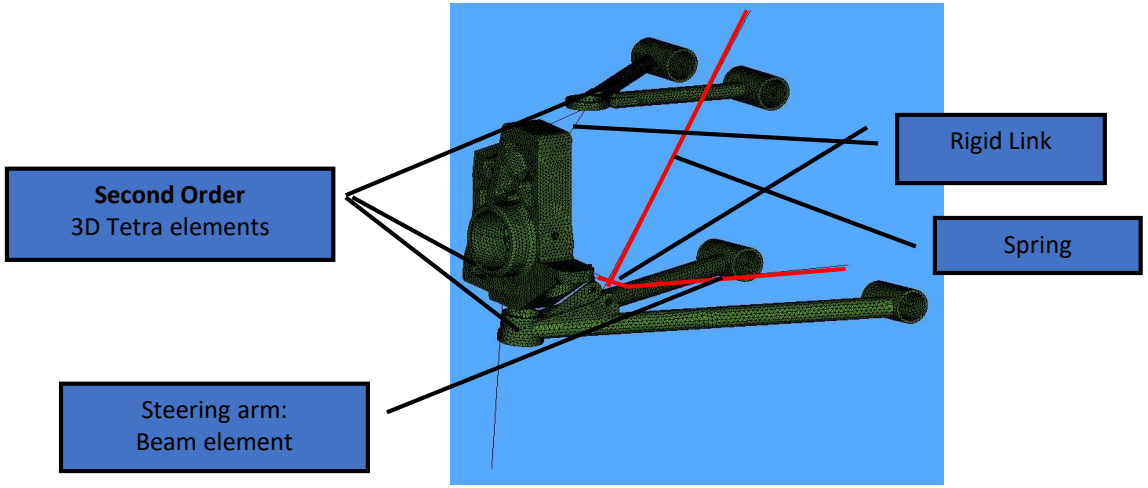
•**Salome**, The Open-Source FEM Post-Processor

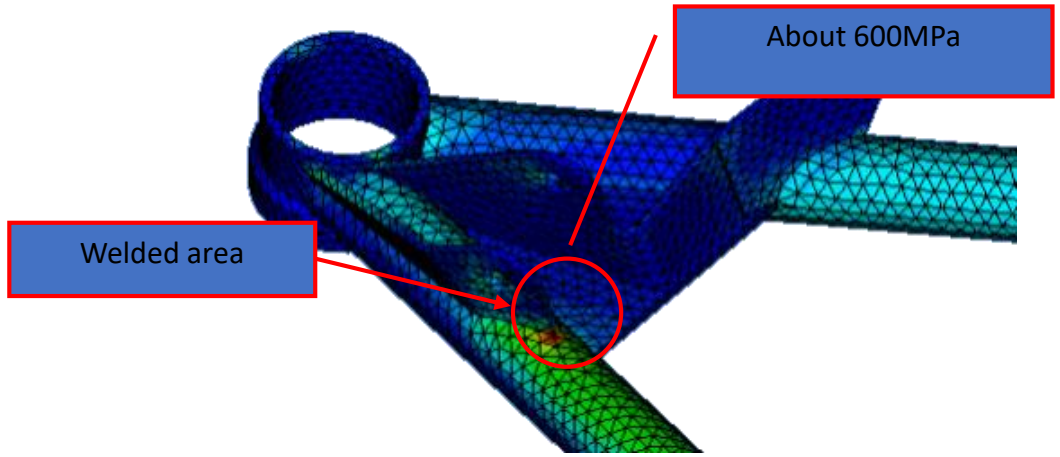
### *Analysis output:*

•Displacement

•Stress

•Reaction Force



# Code-Aster case studies

## *Chassis:*

### *FEM Model:*

Chassis mesh with Open-Source Pre-Processor **Salome** using 2nd order elements.

### *Solution:*

•**Code-Aster**, Open Source FEM solver

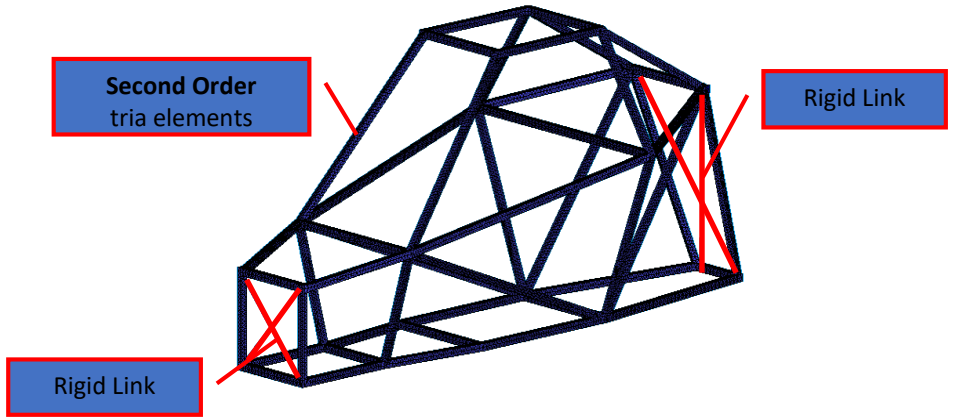
### *Post-Processing:*

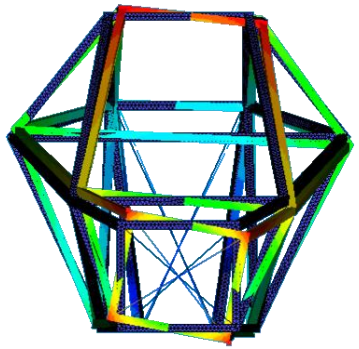
•**Salome**, The Open-Source FEM Post-Processor

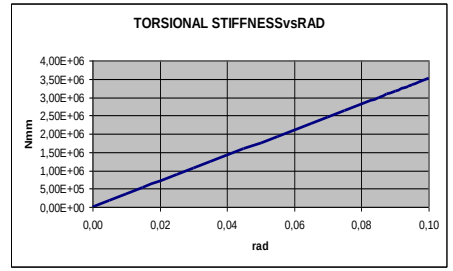
### *Analysis output:*

•Torsional Stiffness

•Reaction Force






The future improvement of the analysis will be the space frame design optimization with DAKOTA.
DAKOTA is an open source optimizator able to improve your design to reach the best compromise between stiffness and weight.

# Code-Aster case studies

## *Hyperelastic seal:*

### *FEM Model:*

Seal mesh with Open-Source Pre-Processor **Salome** using 2nd order elements.

### *Solution:*

- **Code-Aster**, Open Source FEM solver
- Material costitutive low with Mooney-Rivlin fromulation

### *Post-Processing:*

- **Salome**, The Open-Source FEM Post-Processor

### *Analysis output:*

- Reaction Force