MUMPS04 – Validation of MUMPS with a not-symmetrical matrix

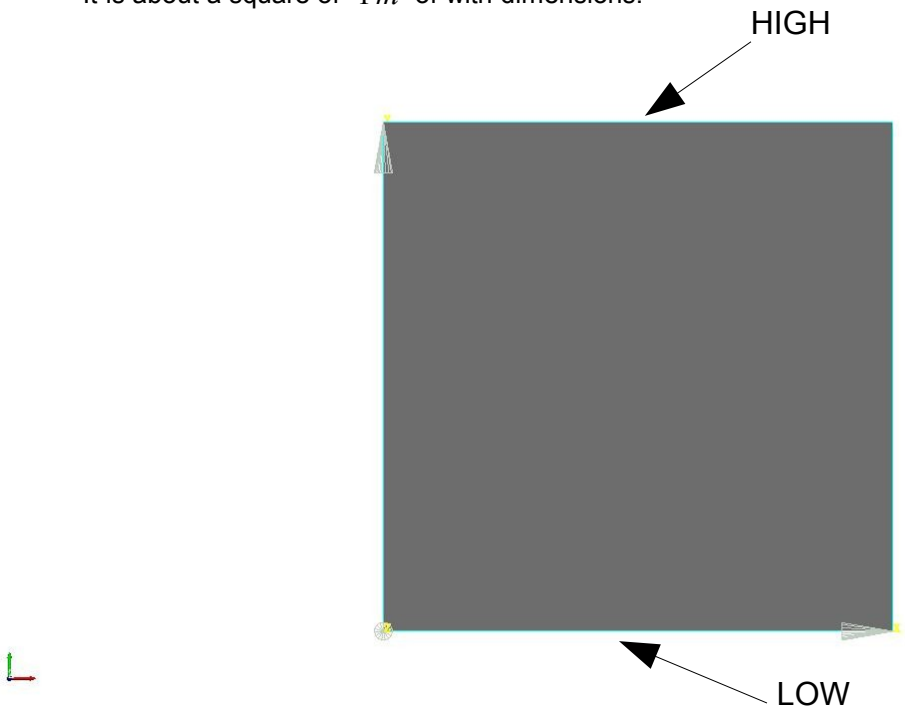
Summary:

This case test validates the solvor MUMPS on a problem where the matrices are nonsymmetrical.

1 Problem of reference

1.1 Geometry

It is about a square of $1\,m$ of with dimensions.



1.2 Material properties

- $E = 1.0\,E5\,N/m^2$
- $\nu = 0.$
- $S_y = 2000.\,N/m^2$
- $D = -50000.\,N/m^2$

1.3 Boundary conditions

Imposed displacements are:

- on the group *'LOW'* $DX = DY = 0$
- on the group '*HAUT*' $DY = 0$

2 Solution

2.1 Sizes and results of reference

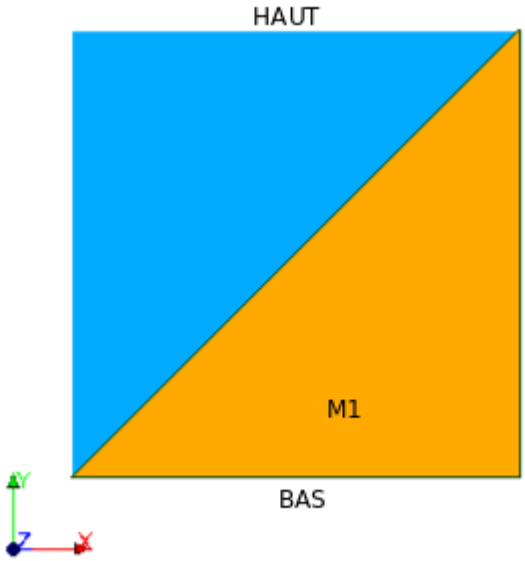
The reference variable used is the internal variables and the deformations of the mesh *'M1'.*

3 Modeling A

3.1 Characteristics of modeling

A modeling is used D_PLAN_GRAD_EPSI :

Many nodes 9
Many meshs 2 TRIA6



3.2 Configurations of solveurs tested

- MULT_FRONT
- MUMPS centralized + MONGREL
- MUMPS centralized + SCOTCH TAPE
- MUMPS centralized + MIXER_PRECISION + FILTERING
- MUMPS distributed by meshs
- Mixing MULTIFRONTAL/MUMPS distributed by mesh
- Mixing MUMPS centralized/distributed by mesh

4 Modeling B

4.1 Characteristics of modeling

Modeling B is identical to the modeling A but launched in parallel.

5 Summary of the results

This CAS-test shows the good performance of the solvor MUMPS in the various studied cases.