SDLX201 - Test of not-regression: clean modes

Summary:

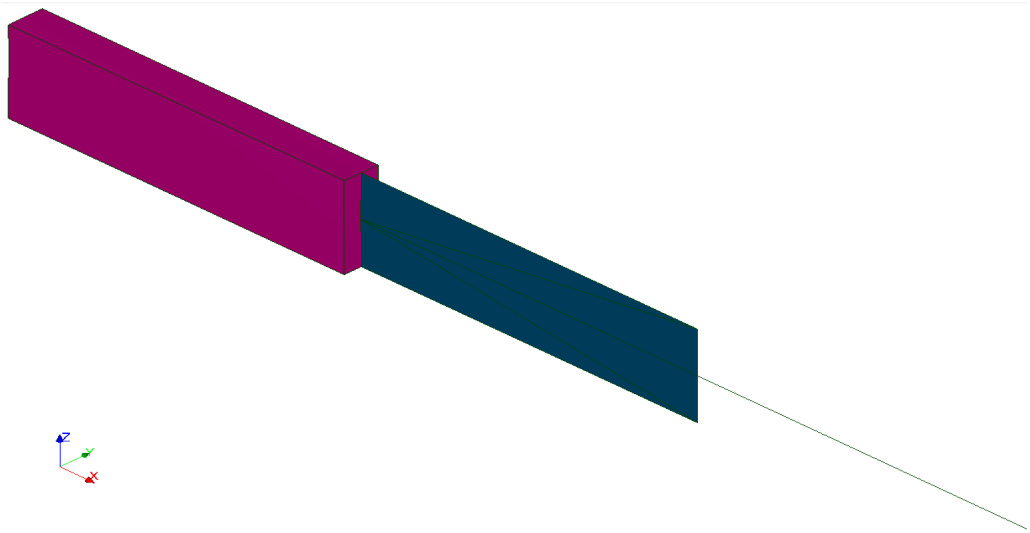
It is about a test of not-regression to validate:
- Various modal solveurs in GEP and QEP with symmetrical real;
- Their interworking with the direct linear solveurs;
- Certain modal orders the pre one and postprocessing (INFO_MODE, NORM_MODE,…).

1 Problem of reference

1.1 Geometry

It is about an assembly:

- of a parallelepiped length $10.m$, of width $3.m$ and of depth $1.m$,
- of a rectangular plate length $10.m$, of width $3.m$ and thickness $1.m$,
- of a beam length $10.m$ and of rectangular section $3.m\,X\,1.m$.



1.2 Material properties

- $E=2.0\,E5\,N/m^2$
- $\nu=0.3$
- $\rho=8000.\,Kg/m^3$
- $\alpha=0.$

1.3 Boundary conditions

Imposed displacements are:

- on the group *'GRNO1'* DX = DY = DZ = 0
- on the nodes N10, N11, N26, N23 DZ = 0

2 Solution

2.1 Sizes and results of reference

The reference variables used are the number of modes by wavebands, the Eigen frequencies and the modal deformations.

3 Modeling A

3.1 Characteristics of modeling

Modeling 3D, DKT and POU_D_E:

Many nodes 28
Many meshs 7 That is to say:

SEG2	2
TRIA3	4
HEXA20	1

3.2 Pre and modal postprocessings

A set of tests is carried out with the operator NORM_MODE according to several criteria.

3.3 Configurations of solveurs tested

Problem GEP:

- LDLT for CALC_MODES
  - by using the standard option 'BAND' ;
  - by using the standard option 'PLUS_PETITE' ;
  - by using the standard option 'CENTER' ;
  - by using the standard option 'NEAR' ;
  - by using the standard option 'SEPARATE' ;
  - by using the standard option 'ADJUSTS'.
- MULT_FRONT for CALC_MODES
  - by using the standard option 'BAND' ;
  - by using the standard option 'PLUS_PETITE' ;
  - by using the standard option 'CENTER' ;
  - by using the standard option 'NEAR' ;
  - by using the standard option 'SEPARATE' ;
  - by using the standard option 'ADJUSTS'.
- MUMPS for CALC_MODES
  - by using the standard option 'BAND' ;
  - by using the standard option 'PLUS_PETITE' ;
  - by using the standard option 'CENTER' ;
  - by using the standard option 'NEAR' ;
  - by using the standard option 'SEPARATE' ;
  - by using the standard option 'ADJUSTS'.

Problem QEP:

- LDLT for CALC_MODES
  - by using the standard option 'CENTER' ;
  - by using the standard parameter setting MODE_RIGIDE=' NON' ;
  - by using the standard option 'NEAR'.
- MULT_FRONT for CALC_MODES
  - by using the standard option 'CENTER' ;
  - by using the standard parameter setting MODE_RIGIDE=' NON' ;
  - by using the standard option 'NEAR'.
- MUMPS for CALC_MODES
  - by using the standard option 'CENTER' ;
  - by using the standard parameter setting MODE_RIGIDE=' NON' ;
  - by using the standard option 'NEAR'.

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 modal solveurs in the various studied cases.