

## ERREU03 - Simple detection of singularity in MECA\_STATIQUE

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### Summary:

This test validates the emission of an error message when a simple singularity is detected (blocking absent or superabundant) by the direct linear solveurs (MUMPS, LDLT and MULT\_FRONT) in MECA\_STATIQUE.

## 1 Principle of the test

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This test is used to validate the emission of some messages by MECA\_STATIQUE in the case of a symmetrical matrix:

- First case: it misses a blocking. In this case one obtains FACTOR\_20/77 for LDLT, MULT\_FRONT and MUMPS when  $NPREC > 0$  and FACTOR\_57 for MUMPS when  $NPREC < 0$ .
- Second case: there is a superabundant blocking. One obtains FACTOR\_41/83 for LDLT, MULT\_FRONT and MUMPS when  $NPREC > 0$  and FACTOR\_42 for MUMPS when  $NPREC < 0$ .
- Last case: it is checked that the message is transmitted FACTOR\_84 when the parameter is used TYPE\_RESOL=' SYMDEF' of the solver MUMPS whereas the matrix to be reversed is not symmetrical definite positive.