

## ZZZZ289 - Validations of calculations of the elementary matrices of the incompressible elements

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### Summary:

This test is used to validate the calculation of the options `MASS_MECA` and `RIGI_MECA` elements of following incompressible modelings: `INCO_UPG` and `INCO_UP`. Six modelings are used:

- (A) elements `3D` : `3D_INCO_UPG` and `3D_INCO_UP` for a linear and quadratic grid in small deformations,
- (B) elements `D_PLAN` : `D_PLAN_INCO_UPG` and `D_PLAN_INCO_UP` for a linear and quadratic grid in small deformations,
- (C) elements `AXIS` : `AXIS_INCO_UPG` and `AXIS_INCO_UP` for a linear and quadratic grid in small deformations,
- (D) elements `3D` : `3D_INCO_UPG` and `3D_INCO_UP` in great deformations,
- (E) elements `D_PLAN` : `D_PLAN_INCO_UPG` and `D_PLAN_INCO_UP`, in great deformations
- (F) elements `AXIS` : `AXIS_INCO_UPG` and `AXIS_INCO_UP` in great deformations.

## 1 Principle of the test

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The operator is used `CALC_MATR_ELEM` to evaluate the matrices of mass and stiffness of the various incompressible elements.

## 2 Reference solution

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For the checking of the calculation of the matrix of mass, option `MASS_MECA`, the property is used `S_R` matrices calculated with `CALC_MATR_ELEM` that one compares with that obtained for the standard elements (`3D`, `D_PLAN` and `AXIS`). The solution is thus of type `AUTRE_ASTER`.

For the matrices of stiffness, one always uses the property `S_R` matrices calculated with the option `RIGI_MECA` except that in this case the solution is of type not regression.