

ZZZZ271 - Validation of PROJ_CHAMP in 2D and 3D for fields with Gauss points

Summarized:

This test validates the projection of stress fields and local variables using command PROJ_CHAMP ("ECLA_PG") for a mesh 2D and a mesh 3D .

1 Principle of the test

Two fields are studied.

First field

the first studied field is a square $[-1,1] \times [-1,1]$

It is with a grid in two different ways:

MA1 : One cuts out the square in 76 TRIA6

MA2 : One cuts out the square in 25 QUAD4

On mesh MA1, one defines the first component of the stress field and the first component of the field of local variables, on each Gauss point, by the formula $1+x+y$ where x and y the coordinates of the Gauss point represent.

One projects then these fields on mesh MA2.

One tests the value obtained by projection on two Gauss points unspecified.

Second field

the second studied field is a cube $[0,1] \times [0,1] \times [0,1]$

It is with a grid in two different ways:

MA3 : One cuts out the cube in 38 TETRA4

MA4 : One cuts out the square in 64 HEXA8

On mesh MA3, one defines the first component of the stress field and the first component of the field of local variables, on each Gauss point, by the formula $1+x$ where x the X-coordinate of the Gauss point represents.

One projects then these fields on mesh MA4.

One tests the value obtained by projection on an unspecified Gauss point.

2 Modelization A

2.1 got Results

	Value of reference	Error (%)
Mesh 2 Second Gauss point of the mesh 69	2,830 940	2
Mesh 2 Fourth Gauss point of the mesh 77	1,169 060.1,8	1.8
Mesh 4 Eighth Gauss point of the mesh 272	1,197 169.6,3	6.3

Table 2.1-1