

Code Aster

Version
default

Titre : ZZZZ306 – Vérification de PROJ_CHAMP / ECLA_PG
Responsable : PELLET Jacques

Date : 21/07/2015 Page : 1/3
Clé : V1.01.306 Révision :
af5d826c70ff

-
-
-
-
-
-
-
-
-

1.1 :
1.2 :

-
-
-

ZZZZ306 – Checking of PROJ_CHAMP/ECLA_PG

Summary:

This test validates the programming of the routines `ecla2d.f` and `ecla3d.f`

This programming is used by the features:

- MACR_ECLA_PG
- PROJ_CHAMP / METHOD = 'ECLA_PG'

- Modeling a:
 - Tetrahedron/ FPG15
 - Hexahedron / FPG27
 - Pentahedron/ FPG21
- Modeling b:
 - Tetrahedron/ FPG1
 - Hexahedron / FPG8
 - Pentahedron/ FPG6
- Modeling C:
 - Tetrahedron/ FPG4
- Modeling D:
 - SORTED / FPG3
 - SORTED / FPG6
 - QUAD / FPG4
 - QUAD / FPG9
- Modeling E:
 - Pyramid/ FPG5
 - Pyramid / FPG27
- Modeling F (projection of a field of an element FEM towards an element X-FEM):
 - Tetrahedron/FPG1 → XFEM90

2 Principle of the test

For each modeling, the grid is very simple: formed by 1 to 4 elements.

One creates an analytical field (CH1) on the points of Gauss of the elements using a formula depending on the coordinates (X, Y, Z) .

One projects then the field (CH1) on the same grid. What produces the field (CH2).

3 Validation

3.1 Modelings A with E

For each modeling, one tests the value of ALL the points of Gauss of the diagrams of integration.

Values of CH1 are tested in 'NON_REGRESSION'

Values of CH2 are tested in 'ANALYTICAL'

3.2 Modeling F

This modeling carries out the projection of a field since a mesh tetrahedron FEM towards a mesh Ttetrahedron X-FEM. The field CH1 is thus stored on a single point of Gauss, while the field CH2 is stored on a family of 90 points of Gauss. Moreover, the interface considered corresponds to cutting of the element tetrahedron in 4 under-tetrahedrons, which implies that only 60 points of Gauss on the 90 available ones store really a value.

That is to say C the value stored by the single point of Gauss of the field CH1. The first 60 points of Gauss field CH2 store the value C , while the last 30 points of Gauss store value 0, The sum of caeurs of CH2 is thus equal to $60C$ and the greatest stored value is C .

In order not to weigh down the command file by using 90 tests of analytical values:

- The single value of CH1 is tested in 'NON_REGRESSION',
- The sum of the values of CH2 and the greatest value of CH2 are tested in 'ANALYTICAL'.