Code_Aster

Titre : Opérateur CALC_PRESSION
Responsable : YU Ting

Version default

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484b4b4d38be

Operator CALC_PRESSION

1   Goal

To supplement one result by calculating a nodal field corresponding to the normal constraints of interface on a definite zone. The name of the produced field is PRES_NOEU on the size PRES_R with the name of component NEAR.

This field is calculated starting from the tensor of the constraints of Cauchy and the field of normalS on surface considered. The stress field calculated corresponds then to:

$$p = (\boldsymbol{\sigma} . \boldsymbol{n}) . \boldsymbol{n} \tag{1}$$

where $\boldsymbol{n}$ is the normal on the surface considered and $\boldsymbol{\sigma}$ the tensor of the constraints of Cauchy. This field can be useful to reach the state of stress for the interface in various problems of mechanics (contact, breaking process…).

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2   Syntax

```
near   [cham_no] = CALC_PRESSION

            ( ♦   reuse     = resu,                        sd_resultat
              ♦   GRID  = e-mail,                      [grid]
              ♦   GROUP_MA  = l_grma,                  [l_gr_maille]
              ◊   # Selection of the sequence numbers
                  / TOUT_ORDRE = 'YES',
                  / INST        = l_inst,              [l_R]
              ◊   |  CRITERION =  / 'RELATIVE',
[DEFECT]
                                 / 'ABSOLUTE',
                  |  PRECISION =  / prec,
                                 / 1.0E-6,             [DEFECT]
              ◊   GEOMETRY  =  /  'DEFORMED',          [DEFECT]
                              /  'INITIAL',
              ◊   INFORMATION   =  / 1,
[DEFECT]
                                 / 2,
            )
```

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3 Operands

3.1 Operand RESULT

♦ reuse = resu

One informs the structure of data result to enrich. It is resulting from the resolution of the mechanical problem considered.

3.2 Operand GRID

♦ GRID = e-mail

One informs the grid with the format aster associated with the model considered. This grid is used to calculate the field of normalS with the interface.

3.3 Operand GROUP_MA

♦ GROUP_MA = l_grma

One informs the list of the groups of meshs defining the interfaces considered.
In the case of facets plunged in volume, the user has the possibility thanks to the order MODI_MAILLAGE/ORIE_PEAU_3D/GROUP_MA_VOLU or MODI_MAILLAGE/ORIE_PEAU_2D/GROUP_MA_SURF to reorientate correctly the normal.

3.4 Operands TOUT_ORDRE/INST

♦ TOUT_ORDRE = ' YES ',
This keyword makes it possible to calculate the field of pressure for all the sequence numbers.

♦ INST = l_inst,
One informs a list Dbe urgent of calculation consideredS for postprocessing.

3.5 Operands PRECISION/CRITERION

The use of these two keywords is described in the document [U4.71.00].

3.6 Operands GEOMETRY

♦ GEOMETRY = / 'DEFORMED',   [DEFECT]
              / 'INITIAL'
One informs the configuration about which the field of normal is calculated, this keyword is obligatory.

3.7 Operand INFORMATION

◊ INFORMATION =/ 1 ,   [DEFECT]
              / 2 ,

Level of impression.