

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:

$$p = (\boldsymbol{\sigma} \cdot \boldsymbol{n}) \cdot \boldsymbol{n} \quad (1)$$

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...).

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',
  ♦ MODEL = modi, [model]
  ♦ INFORMATION = / 1,
[DEFECT]
    / 2,
)
```

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 meshes 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 Operands MODEL

♦ MODEL = modi ,

One informs the model considered, this keyword is optional if Lhas structure of data result contains already it model.

3.8 Operand INFORMATION

♦ INFORMATION = / 1 , [DEFECT]
/ 2 ,

Level of impression.