Operator CALC_CHAM_ELEM

1 Drank

Compute an elementary field with Gauss points containing the coordinates and the weight of Gauss points.

To calculate an elementary field of heat flux and acoustic pressure, from already calculated fields of cham_no_* type.

2 Syntax

```
chamel     [cham_elem_*] = CALC_CHAM_ELEM
       (   ♦MODELE           =mo   ,                          [model]
           ◊CARA_ELEM=carac              ,                   [cara_elem]
           ◊ACCE            =acce     ,                     [cham_no]
           ◊INST            =/inst    ,                     [R]
                               /0  . ,                       [DEFAULT]

           #Sélection    of meshes concerned with computation
                        ◊/TOUT=' OUI',                          [DEFAULT]
              /  |   GROUP_MA = l_grma,                       [l_gr_maille]
                 |   NET   = l_mail,                      [l_maille]


           #options   thermal:

           /OPTION    =      "FLUX_ELNO",
                        /   "FLUX_ELGA",
              ♦TEMP   = temp,                               [cham_no_TEMP_R]
              ♦CHAM_MATER=chmater        ,                  [cham_mater]
              ◊MODE_FOURIER =/nh      ,                     [I]
                                 /0  ,                      [DEFAULT]

           #options   acoustic:

           /OPTION       =      "PRAC_ELNO",
              ♦PRES   = near,                               [cham_no_PRAC_R]

           #calcul    of the coordinates and the weights of Gauss points

           /OPTION    =   ' COOR_ELGA',
           );
```

#type of produced field: [cham_elem_*] with:

If OPTION: then [*] - >

thermal #options:

Acoustic
FLUX_ELGAFLUX_R

FLUX_ELNOFLUX_R #options:

PRAC_ELNOPRAC_R

#autres options

COOR_ELGAGEOM_R

3 Operands

3.1 Operands MODELS / CARA_ELEM

♦MODELE = Mo,

Name of the model on which is calculated the option.

◊CARA_ELEM = carac,

elementary Characteristics associated with the model Mo, if it contains structural elements or if the isoparametric elements are affected of a local coordinate system of anisotropy.

3.2 Selection of meshes concerned with computation

the key keys TOUT = "OUI', GROUP_MA and MESH make it possible to the user to meshes choose on whom it wishes to do his elementary computations of postprocessing.

/TOUT all = "OUI'

meshes (carrying finite elements) will be treated. It is the value by default.

/ | GROUP_MA=l_grma
| MAILLE=l_maille

Only meshes included in l_grma and/or l_maille will be treated.

3.3 Operands ACCE / INST

◊ACCE

unutilised Key word which starts the following message d'error:
To take into account the terms of inertia, it is preferable to use command CALC_CHAMP. Key word ACCE is not treated and the results are likely to be false.

◊INST

Value of time allowing to evaluate possible functions in materials parameters for the computation of heat flux.

3.4 Thermal options

the computation options elementary in thermal can be calculated from a field of temperature:

♦TEMP = temp

For these computations one needs the material field associated with the model Mo :

♦CHAM_MATER = chmater,

the options available are:

| ' FLUX_ELGA',
| ' FLUX_ELNO',
Their meaning are given in [U4.81.01].

In the case of modelizations AXIS_FOURIER and PLAN_FOURIER, one can specify the number of harmonic by the key word: MODE_FOURIER.

3.5 Acoustic options

the computation options elementary in acoustics can be calculated from a complex field of pressure:

♦PRES = close

the option available is:

| ' PRAC_ELNO'

Computation of the real and imaginary parts of the field of pressure by element to the nodes.

3.6 Option COOR_ELGA

Computation of the coordinates and the weights of Gauss points of each element.

4 Examples of computations with CALC_CHAM_ELEM

4.1 Flux with the nodes starting from the field of temperature temp as an axisymmetric FOURIER mode 1

```
epsno = CALC_CHAM_ELEM

          (  MODELS =moaxfour ,       TEMP = temp,
             CHAM_MATER=chmater  ,
             OPTION =   ' FLUX_ELNO',    MODE_FOURIER = 1,
          );
```