Code_Aster

Titre : Opérateur INTE_MAIL_3D
Responsable : Isabelle FOURNIER

Version default

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Clé : U4.81.12 Révision : 9297

Operator INTE_MAIL_3D

1 Drank

To 3D define a path of type line segment in a mesh. At the points of intersection of the curve thus defined with the mesh could be carried out, using operator POST_RELEVE_T [U4.81.21] of the statements of values and/or computations of average.
These postprocessings do not operate with the structural elements (shells, plates, beams).

The product concept is of type surfaces (although the only possible path is a line segment).

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2   Syntax

```
srfc [surface] = INTE_MAIL_3D
              ( ♦MAILLAGE  = my ,                              [mesh]

                  ◊/TOUT          = ' OUI'   ,
                    /GROUP_MA  =lgrma        ,                 [l_group_ma]
                    /MAILLE     =lma         ,
[l_maille]

                  ♦DEFI_SEGMENT = _F

                        (  ♦/ORIGINE           = (xA, there is, zA),
[l_R]
                             /NOEUD_ORIG     = node,         [node]
                             /GROUP_NO_ORIG   = grno,         [group_no]

                           ♦ /EXTREMITE        = (xB,  yB, zB),  [l_R]
                             /NOEUD_EXTR     = node,         [node]
                             /GROUP_NO_EXTR   = grno   ,
[group_no]

                        )

                  ◊ accuracy =/epsi          ,                 [R]
                             /10 ⁻⁶         ,                 [DEFAULT]

                  ◊ INFO =/1            ,
[DEFAULT]
                                /2 ,
              )
```

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3 Operands

3.1 Operand MAILLAGE

MAILLAGE =

Name of the concept of mesh type in which the location is carried out.

3.2 Operands TOUT / GROUP_MA / MESH

These operands make it possible to possibly specify the place where the location of the segment will be carried out.

TOUT = "OUI'

the location is carried out on all the mesh.

GROUP_MA = lgrma

the location is carried out on the list of lgrma mesh groups.

NET = lma

the location is carried out on the list of meshes lma.

3.3 Key word DEFI_SEGMENT

Key word factor whose each occurrence defines a line segment by the data of its points origin and end (in the form of coordinates or of names of node or group_no).

The point origin of the arc is specified by one of the keywords:

ORIGINE   = (X $_A$, there $_A$, Z $_{A)}$,
NOEUD_ORIG   = node,
GROUP_NO_ORIG = grno,

the point end of the arc is specified by one of the key keys:

ENDING   = (X $_B$, there $_B$, Z $_{B)}$,
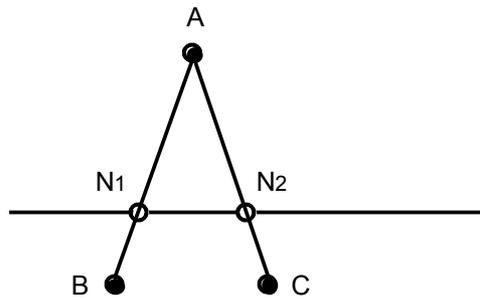NOEUD_EXTR   = node,
GROUP_NO_EXTR = grno,

If the origin (or the end) of the arc is located inside an element 3D, then the under-segment including the origin (or the end) will be excluded from the path; an alarm message will appear and the post-processing will continue. The path should comprise only under-segments uniting 2 sides (or edges).

3.4 Operand accuracy

accuracy = epsi

Fixes by the value of epsi the accuracy used like criterion of statement of the coordinates.

One considers a triangle which meets a line segment according to the diagram:

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One poses $\quad r_1 = \dfrac{AN_1}{\|AB\|}$ and $\quad r_2 = \dfrac{AN_2}{\|AC\|}$ one supposes $\quad r_1 = r_2 = r$

If R < epsi, INTE_MAIL_3D considers that the ABC triangle point: meets the segment considered in only one point A. the ABC triangle does not contribute to the location.

Whereas if the user chooses a epsi such as epsi < R then the triangle contributes to the location within the meaning of INTE_MAIL_3D.

The Council of use: It is possible to increase the value of epsi if the path indicated in DEFI_SEGMENT does not intersect meshes with the default value.

3.5 Operand INFO

Defines the printing
- INFO = 1 step of printing

- INFO = 2 for each segment are printed:

    - the number of components related,
    - the interval of elementary segments of each related component,
    - the interval of curvilinear abscisse of each related component.

and for each elementary segment:

    - the type of the elementary segment (interior, of face or edge),
    - the number of the mesh 3D the container,
    - numbers of face and edge which contain its points ends,
    - the interval of curvilinear abscisse (according to the segment) which it covers,
    - the value of the coordinates of reference of its points ends in their face,
    - the value of the coordinates of reference of its points ends in the mesh 3D.

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4   Example of use

One defines 2 segments seg1 and seg2 by INTE_MAIL_3D on which, one will extract the temperatures by POST_RELEVE_T:

```
seg1 = INTE_MAIL_3D  ( MAILLAGE = mail,
                          DEFI_SEGMENT =_F (  ORIGINE = (.015, .02,0.),
                                                ENDING = (.055, .05,0.),),
                                                INFO = 1)
seg2 = INTE_MAIL_3D  ( MAILLAGE= mail,
                          DEFI_SEGMENT=_F (   ORIGINE = (.015, .02,0.001),
                                              ENDING = (.055, .05,0.001),),
                                              INFO = 1)
POST_RELEVE_T (ACTION = (_F ( PATH  = seg1,  CHAM_GD = t2,
                              NOM_CMP = "temp", OPERATION = '
extraction'),
                              - F (  PATH  = seg2,  CHAM_GD = t2,
                                 NOM_CMP = "temp", OPERATION='
                              extraction')))

POST_RELEVE_T (ACTION= (_F (  PATH = seg1, RESULTAT = temple,
NOM_CHAM= "temp", TOUT_ORDRE=' OUI', NOM_CMP=' temp', OPERATION=
"extraction")))
```