Operator **INTE_MAIL_3D**

1. **Goal**

To define a way of type segment of right-hand side in a grid 3D. At the points of intersection of the curve thus defined with the grid could be carried out, using the operator `POST_RELEVE_T [U4.81.21]` of the statements of values and/or calculations of average.

These postprocessings do not function with the elements of structure (hulls, plates, beams).

The produced concept is of type `surface` (although the only possible way is a segment of right-hand side).

**Note:**
- This order will be removed soon.
- It is advised to replace it by the order `MACR_LIGN_COUPE`
2 Syntax

```
srfc [surface] = INTE_MAIL_3D
   ( * GRID = my , [grid]
      * / ALL = 'YES' ,
         / GROUP_MA = lgrma , [l_group_ma]
         / MESH = lma , [l_maille]
      *
      * DEFI_SEGMENT = _F
         ( * / ORIGIN = (xA, there is, zA),
            [l_R]
            / NOEUD_ORIG = node , [node]
            / GROUP_NO_ORIG = grno , [group_no]
         *
         * / END = (xB, yB, zB), [l_R]
            / NOEUD_EXTR = node , [node]
            / GROUP_NO_EXTR= grno , [group_no]
         )
      *
      * PRECISION = / epsi , [R]
                    / 10^-6 , [DEFECT]
      *
      * INFORMATION = / 1,
                    [DEFECT]
                    / 2,
   )
```

Warning: The translation process used on this website is a "Machine Translation". It may be imprecise and inaccurate in whole or in part and is provided as a convenience.
Copyright 2017 EDF R&D - Licensed under the terms of the GNU FDL (http://www.gnu.org/copyleft/fdl.html)
3 Operands

3.1 Operand GRID

GRID = Name of the concept of the type grid in which the location is carried out.

3.2 Operands ALL / GROUP_MA / MESH

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

ALL = ‘YES’
The location is carried out on all the grid.

GROUP_MA = lgrma
The location is carried out on the list of groups of meshs lgrma.

MESH = lma
The location is carried out on the list of meshs lma.

3.3 Keyword DEFI_SEGMENT

Keyword factor whose each occurrence defines a segment of right-hand side 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:

ORIGIN = (X_with, there with, Z_with),
NOEUD_ORIG = node,
GROUP_NO_ORIG = grno,

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

END = (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 way; a message of alarm will appear and postprocessing will continue. The way should comprise only under-segments uniting 2 faces (or edges).

3.4 Operand PRECISION

PRECISION = epsi
Fix by the value of epsi precision used as criterion of statement of the coordinates.

One considers a triangle which meets a segment of right-hand side according to the diagram:
One poses \( r_1 = \frac{AN_1}{\|AB\|} \) and \( r_2 = \frac{AN_2}{\|AC\|} \) and one supposes \( r_1 = r_2 = r \).

If \( R < \epsilon_i \), INTE_MAIL_3D consider that the ABC triangle meets the segment considered in only one point: point A. the ABC triangle does not contribute to the location.

Whereas if the user chooses one \( \epsilon_i \) such as \( \epsilon_i < R \) 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 \( \epsilon_i \) if the way indicated in DEFI_SEGMENT do not intersect meshes with the value by default.

### 3.5 Operand INFORMATION

The impression defines

- **INFORMATION = 1** pas d’impression
- **INFORMATION = 2** for each segment are printed:
  - the component count related,
  - the interval of elementary segments of each related component,
  - the curvilinear interval of X-coordinate 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 curvilinear interval of X-coordinate (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.
4 Example of use

2 segments are defined `seg1` and `seg2` by `INTE_MAIL_3D` on which, one will extract the temperatures by `POST_RELEVE_T`:

```
seg1 = INTE_MAIL_3D ( GRID = e-mail,
                     DEFI_SEGMENT = _F ( ORIGIN = (.015, .02,0.),
                                        END = (.055, .05,0.),),
                     INFORMATION = 1)

seg2 = INTE_MAIL_3D ( MAILAGE = e-mail,
                     DEFI_SEGMENT = _F ( ORIGIN = (.015, .02,0.001),
                                        END = (.055, .05,0.001),),
                     INFORMATION = 1)

POST_RELEVE_T (ACTION = (_F ( WAY = seg1, CHAM_GD = t2, 
                                      NOM_CMP = ‘temp’, OPERATION = ‘extraction’),
                                      - F ( WAY = seg2, CHAM_GD = t2, 
                                             NOM_CMP = ‘temp’, OPERATION = ‘extraction’)))

POST_RELEVE_T (ACTION = (_F ( WAY = seg1, RESULT = temple, 
                                      NOM_CHAM = ‘temp’, TOUT_ORDRE = ‘OUI’, NOM_CMP = ‘temp’, OPERATION = ‘extraction’)))
```