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## Operator RECU\_FONCTION

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### 1 Goal

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To extract in the form of a function the evolution from a size according to another.

If the retrieval is carried out starting from a structure of data `result`, or of a field of size `cham_gd`, or of one `resu_gene`, the produced function corresponds to the temporal evolution of a component in a node or a point of Gauss of the grid.

Of a structure of data `tran_gene`, one can also extract the evolution from two parameters in a node of shock.

Of one `table`, one can extract the evolution from 2 parameters in the columns of the table or a function contained in a box of the table.

Of one `tablecloth`, one can extract the function corresponding to a value given from the parameter.

Of a structure of data `melasflu` one can extract, the evolution of modal parameters according to the rate of flow of the fluid.

Of a structure of data `interspectre` one can extract, the frequential evolution of the interspectre associated with  $i$  - ième line  $j$  - ième column of the matrix interspectrale or the temporal evolution of the interspectre with  $n$  - ième component of the diagonal.

Product a structure of data of the type `function` or `fonction_c`.

At exit of the order, the function is reordered by increasing X-coordinates. On the other hand, it is interdict to have several identical X-coordinates (it would not be any more one function).

## 2 Syntax

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Fr [function]= RECU_FONCTION (
  ♦ / RESULT = resu, / [dyna_harmo]
                                     / [evol_elas]
                                     / [dyna_trans]
                                     / [evol_ther]
                                     / [evol_noli]

  # See extraction and localization of the field
  / CHAM_GD = ch_gd, / [cham_no]
                                     / [cham_elem]

  # See operands of localization of the field
  / RESU_GENE = embarrassment, / [tran_gene]

  # Evolution youmporelle of a physical component
  ♦ / NOM_CHAM =/'DEPL',
                                     /'QUICKLY',
                                     /'ACCE',
                                     /'PTM',
  ♦ NOM_CMP = cmp, [K]
  / NODE = No, [node]
  / GROUP_NO = grno, [gr_noeud]
  / NUME_CMP_GENE = val_n [I]
  ◊ / MULT_APPUI = 'YES',
    / | CORR_STAT = 'YES',
    | ACCE_MONO_APPUI = frap, [function]
  / NOEUD_CHOC = nd_choc, [node]
  / GROUP_NO_CHOC= no_choc, [gr_noeud]
  ♦ PARA_X = nparax, [KN]
  ♦ PARA_Y = nparay, [KN]
  ◊ ENTITLE = name, [KN]
  ◊ LIST_PARA = will li_para, [listr8]
  ◊ SOUS_STRUC = nom_str, [KN]
  / RESU_GENE = embarrassment, / [harm_gene]

  # Evolution frequentielle of a generalized or physical component
  ♦ NOM_CHAM = nomsymb, [K16]
  ♦ / NUME_CMP_GENE = numcmp, [K8]
    / NOM_CMP = cmp, [K]
  ♦ / NODE = No, [node]
    / GROUP_NO = grno, [gr_noeud]
  / RESU_GENE = embarrassment, / [mode_gene]

  # Evolution fréquentielle of a generalized or physical component
  ♦ / NOM_PARA_RESU = parameter, [K8]
    / NOM_CHAM = nomsymb, [K16]
  ♦ / NUME_CMP_GENE = numcmp, [K8]
    / NOM_CMP = cmp, [K]
  ♦ / NODE = No, [node]
    / GROUP_NO = grno, [gr_noeud]
  ♦ / SKELETON = squ, [skeleton]
    / SOUS_STRUC = sstru, [K]

```

```

~
TABLE = tabl, / [table]
  ◆ PARA_X = nparax, [KN]
  ◆ PARA_Y = nparay, [KN]
  ◇ NOM_PARA_TABL = / 'FUNCTION', [KN]
                    / 'FONCTION_C'

  ◇ FILTER = _F (
    ◆ NOM_PARA = [KN]
    ◇ CRIT_COMP= / 'EQ', [DEFECT]
                  / 'LT',
                  / 'WP',
                  / '',
                  / 'IT',
                  / 'GE',
                  / 'VACUUM',
                  / 'NON_VIDE',
                  / 'MAXIMUM',
                  / 'MAXI_ABS',
                  / 'MINI',
                  / 'MINI_ABS',

    ◆ / VALE = val_r, [R]
      / VALE_I = val_n, [I]
      / VALE_C = val_c, [C]
      / VALE_K = val_k, [KN]
    ◇ | CRITERION = / 'RELATIVE', [DEFECT]
      / 'ABSOLUTE',
      | PRECISION = / prec,
                    / 0,001, [DEFECT]

    ),

/ BASE_ELAS_FLUI = flui, [melasflu]
  ◆ / TOUT_ORDRE = 'YES', [DEFECT]
    / NUME_ORDRE = is, [I]
  ◆ NUME_MODE = im, [I]
  ◆ PARA_X = 'VITE_FLU', [KN]
  ◆ PARA_Y =/ 'FREQ', [KN]
            / 'AMOR',

/ INTE_SPEC = intespec, [interspectre]
# Evolution frequential of a component of the matrix interspectrale
  ◇ NOM_CHAM = nomsymb, [K16]
  ◆ / ◆ NUME_ORDRE_I = numei, [I]
    ◇ NUME_ORDRE_J = numej, [I]
  / ◆ NUME_ORDRE = numei, [I]
    / ◆ NOEUD_I = noei, [node]
      ◆ NOM_CMP_I = cmpi, [KN]
      ◇ NOEUD_J = noej, [node]
      ◇ NOM_CMP_J = cmpj, [KN]

/ TABLECLOTH = nap, [tablecloth]
  ◆ VALE_PARA_FONC = Np, [KN]
  ◇ | CRITERION = / 'RELATIVE', [DEFECT]
    / 'ABSOLUTE',
    | PRECISION = / prec,
                  / 0,001, [DEFECT]

# Operands of extraction of the field or the parameter if one
handle one SD_resultat or RESU_GENE or one cham_gd
  ◆ / NOM_CHAM = nomsymb, [K16]
    / NOM_PARA_RESU = parameter,
  ◇ / TOUT_ORDRE = 'YES', [DEFECT]

```

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/ TOUT_INST      = 'YES',
/ NUME_ORDRE     = l_ume,           [l_I]
/ LIST_ORDRE     = l_ord,          [listis]
/ / INST         = l_inst,         [l_R]
/ LIST_INST      = li_inst,        [listr8]
/ FREQ           = l_freq,         [l_R]
/ LIST_FREQ      = li_freq,        [listr8]
◇ | PRECISION    = / prec,         [R]
/ 1.0D-3,         [DEFECT]
| CRITERION      = / 'RELATIVE',   [DEFECT]
/ 'ABSOLUTE',
◇ INTERP_NUME    = / 'NOT',        [DEFECT]
/ 'FLAX',

# Operands of localization of the field if one is handled SD_resultat
or one cham_gd
◇ / NODE         = No,             [node]
/ GROUP_NO      = grno,           [gr_noeud]
/ ◇ / MESH        = my,            [mesh]
/ GROUP_MA      = grma,           [gr_maille]
◇ / NODE         = No,             [node]
/ GROUP_NO      = grno,           [gr_noeud]
/ NOT           = nupoint, [I]
◇ SOUS_POINT    = nusp,           [I]
◇ NOM_CMP       = cmp,            [K]

# Overload of the attributes of the function created
◇ NOM_PARA      = nom_pa,          [KN]
◇ NOM_RESU      = nom_res,         [KN]
◇ Interpol      = / 'NOT',         [KN]
/ | 'FLAX',
| 'LOG',
◇ PROL_DROITE   = / 'CONSTANT',
/ 'LINEAR',
/ 'EXCLUDED',
◇ PROL_GAUCHE   = / 'CONSTANT',
/ 'LINEAR',
/ 'EXCLUDED',

◇ TITLE        = T,                [l_K]
◇ INFORMATION   = / 1,              [DEFECT]
/ 2,

)

If RESULT is one [dyna_harmo] then Fr is [fonction_c],
If RESU_GENE is one [harm_gene] then Fr is [fonction_c],
If INTE_SPEC and NUME_ORDRE_J or NOEU_J then Fr is [fonction_c],
If NOM_PARA_TABL = 'FONCTION_C' then Fr is [fonction_c],
In the other cases, Fr is [function].

```

## 3 Operands

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### 3.1 Operand RESULT

- ◆ `RESULT = resu`  
Name of the concept of the type `result` to which the extraction relates.  
For the operands allowing to extract the field, to refer to [§3.7].  
For the operands allowing to locate the field, to refer to [§3.8].

### 3.2 Operand CHAM\_GD

- ◆ `CHAM_GD = ch_gd`  
Name of the concept of a field to which the extraction relates. For the operands allowing to locate the field, to refer to [§3.7].  
  
The field provided to the keyword `CHAM_GD` is:
  - that is to say a field with the nodes of size: `DEPL_R`, `TEMP_R` or `PRES_R` ;
  - that is to say a field by elements (with the nodes or the points of Gauss) of size: `VARI_R`, `EPSI_R`, `FLUX_R`, or `PRES_R`.

### 3.3 Operand RESU\_GENE

#### 3.3.1 Temporal evolution of a physical or generalized, standard component `tran_gene`

- ◆ `RESU_GENE = embarrassment`  
Name of the concept of the type `resu_gene` product by `DYNA_TRAN_MODAL` [U4.53.21] to which the extraction relates.  
  
The recovered function is expressed
  - according to the physical variables: one specified `GROUP_NO = grno` or `NODE = Noah` .
  - according to the generalized variables: one specified `NUME_CMP_GENE = n_val`.  
`NOM_CHAM` give the name of the field which one wants to recover (`'DEPL'`, `'QUICKLY'`, `'ACCE'`, or `'PTEM'`). The option `'PTEM'` allows to extract, for each moment (or sequence number) of recovery, the step values of computing time.

**Note:**

*To make this restitution on physical basis is the role of the order `REST_GENE_PHYS`. In the later versions, this functionality will be withdrawn from `RECU_FONCTION`, it will be necessary to make the restitution then extract the function.*

#### 3.3.1.1 Operands `MULT_APPUI` and `ACCE_MONO_APPUI`

- ◆ `MULT_APPUI`  
If this keyword is `'YES'`, one in the case of restores the evolution of the variables in physical space by dealing with the problem moving absolute an excitation multi-support. In the contrary case, the restitution in physical space is done by supposing that with the problem is dealt moving relative. This keyword is not usable if the keyword `CORR_STAT` is used.
- ◆ `ACCE_MONO_APPUI`

In the case of an acceleration mono-support, one must indicate here the acceleration imposed on all the supports in the direction considered in order to calculate the absolute acceleration of the point.

If the keyword is not indicated, one obtains relative acceleration as a result of the order.

## Note:

*The name of the concept must be same as that well informed under `FONC_MULT` of `DYNA_TRAN_MODAL`.*

### 3.3.1.2 Operands `CORR_STAT`

◇ `CORR_STAT`

If this keyword is 'YES', the evolution of the variables in physical space is obtained by taking account of the correction due to the catch in consideration of static modes (cf [R4.05.03]). This keyword is not usable if the keyword `MULT_APPUI` is used.

### 3.3.1.3 Information concerning the nodes of shock

◆ `RESU_GENE = embarrasment`

Concept of the type `tran_gene` containing for the various nodes of shock: local displacements, normal and tangential speeds and normal and tangential forces of shock.

◆ `NOEUD_CHOC = nd_choc,`  
`GROUP_NO_CHOC = no_choc,`

Name of the node or the group of nodes (which contains one node) shock where the function is recovered.

This node of shock is defined in the order `DYNA_TRAN_MODAL` [U4.53.21].

◆ `PARAM_X = nparax`

Name of the parameter defining the X-coordinates (argument taken among the list: 'INST', 'FN', 'FT1', 'FT2', 'DXLOC', 'DYLOC', 'DZLOC', 'VN', 'VT1', 'VT2').

◆ `PARAM_Y = nparay`

Name of the parameter defining the ordinates (argument taken among the list: 'INST', 'FN', 'FT1', 'FT2', 'DXLOC', 'DYLOC', 'DZLOC', 'VN', 'VT1', 'VT2').

◇ `LIST_PARA = will li_para`

List of the values of the parameter in X-coordinate defining the function.

Caution: It is possible to have problems of interpolation of the result on this parameter list (because except for the precision machine, the values can be slightly out of terminals of the produced functions). In this case, it is enough not to use this keyword here. The function will then be created over every moment of calculation. One can then interpolate this function with `CALC_FONC_INTERP` on the list of the parameters of its choice by controlling the prolongations on the left and on the right.

◇ `ENTITLE = name`

This name defines the connection of shock (this name if it is used, is defined in the order `DYNA_TRAN_MODAL` [U4.53.21]).

◇ `SOUS_STRUC = nom_str`

During a calculation in dynamic under-structuring, name of the substructure which contains the node of shock (cf orders `DEFI_MODELE_GENE` [U4.65.02]). In this case the keyword `ENTITLE` must be also well informed.

## 3.3.2 Frequential evolution of a generalized or physical, standard component harm\_gene

- ◆ RESU\_GENE = embarrassment

Name of the concept of the harm\_gene type produces by DYNA\_LINE\_HARM [U4.53.11].

The recovered function is expressed

- according to the physical variables: one specified GROUP\_NO = grno or NODE = Noah.
- according to the generalized variables: one specified NUME\_CMP\_GENE = n\_val.

NOM\_CHAM gives the name of the field which one wants to recover ('DEPL', 'QUICKLY' or 'ACCE').

**Note:**

*To make this restitution on physical basis is the role of the order REST\_GENE\_PHYS. In the later versions, this functionality will be withdrawn from RECU\_FONCTION, it will be necessary to make the restitution then extract the function.*

## 3.3.3 Frequential evolution of a generalized or physical, standard component mode\_gene

- ◆ RESU\_GENE = embarrassment

Name of the concept of the type mode\_gene product by CALC\_MODES [U4.53.02].

The recovered function is expressed with the physical variables if NOM\_CMP is present, with the generalized variables if NUME\_CMP\_GENE is present.

- ◆ NOM\_PARA\_RESU/NOM\_CHAMP See paragraph 3.8.
- ◆ NOM\_CMP/NODE/GROUP\_NO See paragraph 3.9.

◆ SKELETON Name of the grid skeleton of the total structure on which the result will be restored: to see the operator DEFI\_SQUELETTE [U4.24.01].

- ◆ SOUS\_STRUC See above.

## 3.4 Operand TABLE

One can recover:

- 1) that is to say a function defined starting from two columns of the table,
- 2) that is to say a function whose name is indicated in a box of the table.

- ◆ TABLE = tabl Name of the table result in which one carries out an extraction.

### 3.4.1 Function defined starting from two columns of the table

#### 3.4.1.1 Operands PARA\_X / PARA\_Y

- ◆ PARA\_X = nparax

Name of the column of the table defining the X-coordinates.

- ◆ PARA\_Y = nparay

Name of the column of the table defining the ordinates.

### 3.4.2 Function whose name is indicated in a box of the table

#### 3.4.2.1 Operand NOM\_PARA\_TABL

- ◆ `NOM_PARA_TABL= 'FUNCTION' or 'FONCTION_C'`

The presence of this keyword indicates that one recovers a function whose name is stored in a box of the table. The real functions are stored in the column 'FUNCTION', complex functions in the column 'FONCTION\_C'.

### 3.4.2.2 Keyword `FILTER`

- ◇ `FILTER`

The operands of extraction are different from those used for the preceding cases. To carry out the extraction, the keyword should be used `FILTER` and operands `NOM_PARA`, `CRIT_COMP`, `VALE_X`, `CRITERION`, `PRECISION`.

This keyword factor makes it possible to filter the information stored in the table. For the use of this keyword to see the order `IMPR_TABLE` [U4.91.03].

To recover a function whose name is indicated in a box of the table, the keyword factor should be used at least twice `FILTER` to select only the useful box.

## 3.5 Operand `BASE_ELAS_FLUI`

One recovers in a structure of data of the type `melasflu` produced by the operator `CALC_FLUI_STRU` [U4.66.02], evolutions of the frequency or damping, for a given mode, according to various speeds of excitation of the fluid.

- ◆ `BASE_ELAS_FLUI = flui`

Concept of the type `melasflu` product by the order `CALC_FLUI_STRU`.

### 3.5.1 Operands `NUME_ORDRE` / `TOUT_ORDRE`

- ◆ `/ NUME_ORDRE = is,`  
`/ TOUT_ORDRE = 'YES',`

The evolution of the frequency or that of damping is given for all speeds of the fluid (`TOUT_ORDRE`) or for some sequence numbers speeds of the fluid (`NUME_ORDRE`).

### 3.5.2 Operand `NUME_MODE`

- ◆ `NUME_MODE = im`

Number of the mode for which the extraction of the frequency or damping according to the speed of the fluid is carried out.

### 3.5.3 Operands `PARA_X` / `PARA_Y`

- ◆ `PARA_X = 'VITE_FLU'`

In X-coordinate, the parameter is the speed of excitation of the fluid, of name 'VITE\_FLU'.

- ◆ `PARA_Y = / 'FREQ',`  
`/ 'AMOR',`

In ordinate, one has the choice between the frequency (name of the parameter: 'FREQ') or damping (name of the parameter 'AMOR').

## 3.6 Operand `INTE_SPEC`

One extracts in a structure of data of the type `interspectre`, frequential evolution of the `interspectre` associated with the 2nd line j-ième column of the matrix `interspectrale intespec`. One can also extract the temporal evolution from one of the functions generated by `GENE_FONC_ALEA` [U4.36.05] by specifying its sequence number.

- ◆ `INTE_SPEC = intespec`

## 3.6.1 Operand NOM\_CHAM

◇ NOM\_CHAM = nomsymb

Reference symbol of the field to which the extraction relates.

## 3.6.2 Operands NUME\_ORDRE\_I, NUME\_ORDRE\_J

◆ NUME\_ORDRE\_I = numei

◇ NUME\_ORDRE\_J = numej

Indication of the couple of indices (line  $i$ , column  $j$ ) to extract from the matrix interspectrale `intespec`.

These operands are excluded with the operands `NUME_ORDRE` `NOEUD_I` `NOM_CMP_I` `NOEUD_J` `NOM_CMP_J`.

### Note:

*One does not inform `NUME_ORDRE_J` if one wants to extract a term from the diagonal of the matrix.*

## 3.6.3 Operands NUME\_ORDRE

◆ NUME\_ORDRE = digital

Indication of the sequence number of the temporal function generated by the operator `GENE_FONC_ALEA` [U4.36.05].

These operands are excluded with the operands `NUME_ORDRE_I` `NUME_ORDRE_J` `NOEUD_I` `NOM_CMP_I` `NOEUD_J` `NOM_CMP_J`.

## 3.6.4 Operands NOEUD\_I, NOM\_CMP\_I, NOEUD\_J, NOM\_CMP\_J

◆ NOEUD\_I = noei

◆ NOM\_CMP\_I = cmpi

◇ NOEUD\_J = noej

◇ NOM\_CMP\_J = cmpj

These operands correspond to the names of the nodes and the components (line I, column J) of the matrix of the matrix interspectrale `intespec`.

These operands are excluded with the operands `NUME_ORDRE_I` `NUME_ORDRE_J` `NUME_ORDRE`.

### Note:

*One does not inform `NOEUD_J` and `NOM_CMP_J` if one wants to extract a term from the diagonal of the matrix.*

## 3.7 Operand TABLECLOTH

One recovers in a structure of data of the type `tablecloth` the function corresponding to a given value of the parameter of the tablecloth.

◆ VALE\_PARA\_FONC =  $Np$

$np$  is the value of the parameter of the tablecloth for which one wishes to extract the function.

There is no interpolation on the parameter of the tablecloth. CRITERION and PRECISION allow to provide  $np$  with a given precision.

## 3.8 Operands of extraction of the field or the parameter

### 3.8.1 Operand NOM\_CHAM

- ◆ NOM\_CHAM = nomsymb

Reference symbol of the field to which the extraction relates.

### 3.8.2 Operand NOM\_PARA\_RESU

- ◆ NOM\_PARA\_RESU = parameter

Reference symbol of the structural parameter of data which one wants to extract (for example: ETA\_PILOTAGE, MASSE\_EFFE\_DX, MASSE\_GENE ...).

The extracted function will then have as a X-coordinate the variable of access (INST, FREQ...) and for ordinate the value of parameter.

### 3.8.3 Operands TOUT\_ORDRE/NUME\_ORDRE/TOUT\_INST/LIST\_ORDRE

- ◆ / TOUT\_ORDRE = 'YES' (value by default)

This keyword indicates that one wants to extract for all the already calculated sequence numbers.

Example: every moment for a result of the type `evol_*`.

- / NUME\_ORDRE = l\_num

The extraction will be done for the values of sequence number `l_num` provided.

- / TOUT\_INST = 'YES'

This keyword indicates that one wants to extract for every moment.

- / LIST\_ORDRE = l\_ord

This keyword indicates that one wants to extract with the sequence numbers described in the concept `l_ord` of type `listis`.

### 3.8.4 Operands INST/LIST\_INST/FREQ/LIST\_FREQ

- ◆ / INST = l\_inst

This keyword indicates that one wants to extract at the moments `l_inst`.

- / LIST\_INST = li\_inst

This keyword indicates that one wants to extract at the moments described in the concept `li_inst` of type `listr8`.

- / FREQ = l\_freq

This keyword indicates that one wants to extract at the frequencies `l_freq`.

- / LIST\_FREQ = li\_freq

This keyword indicates that one wants to extract at the frequencies described in the concept `li_freq` of type `listr8`.

### 3.8.5 Operands PRECISION/CRITERION

◇ PRECISION = prec

This operand makes it possible to indicate that one searches the value of the field whose moment or frequency is in an interval defined by the absolute or relative position: "inst ± prec"(Cf. CRITERION).

By default prec = 1.0D-3

◇ CRITERION =

'RELATIVE' the interval of research is  
[inst (1-prec), inst (1+prec)]

'ABSOLUTE' the interval of research is  
[inst-prec, inst+prec]

### 3.8.6 Operand INTERP\_NUME

◇ INTERP\_NUME

This keyword defines the type of interpolation between two sequence numbers. It is valid only if the user defined a list of moments or frequencies. It is possible to prohibit the interpolation 'NOT' or to admit a linear interpolation 'FLAX'.

The interpolation cannot be used when one extracts the value from a parameter (keyword NOM\_PARA\_RESU).

## 3.9 Operands of localization of the field

### 3.9.1 Operands NODE/GROUP\_NO

◆ / NODE = No

Name of the node to which the extraction relates.

/ GROUP\_NO = grno

Name of the group of nodes, containing 1 only node, to which the extraction relates.

### 3.9.2 Operands MESH/GROUP\_MA/NODE/GROUP\_NO/NOT

◆ / MESH = my  
/ GROUP\_MA = grma

Name of the mesh (my) or name of a group of meshes (grma), containing only one nets, to which the extraction relates. These keywords relate to only them cham\_elem.

◆ / NODE = No

Name of a node of the mesh to which the extraction (case relates of cham\_elem with the nodes).

/ GROUP\_NO = grno

Indicate the name of the group of nodes, container only one name of node, to which the extraction (case relates of cham\_elem with the nodes).

/ NOT = nupoint

Entirety nupoint specify the local number with the element of the point of GAUSS of which one wishes to obtain the value (case of cham\_elem at the points of GAUSS).

◇ SOUS\_POINT = nusp

Entirety nusp specify the number of the under-point of which one wishes to obtain the value (case of cham\_elem under-points, used by the elements of structure: beam, pipes, hulls).

In the case of the plates and of the multi-layer hulls, the number of the under-point corresponds to the level in the whole of the layers. Each layer is described by a lower, average and higher skin. By convention, for  $N$  layers, this number varies between 1 and  $3N$  where the first point is at level of the lower skin of the first layer and it  $3N$  ième point on the level of the higher skin of the last layer (cf. [R3.07.03] and [R3.07.04] for the numeration of the layers).

In the case of the multifibre beams, this entirety is the number of the fibre whose classification is described in documentation [U4.26.01] and [R3.08.08]. In the case of the pipes, it is necessary to refer to the description made in the document [R3.08.06].

### 3.9.3 Operand NOM\_CMP

- ◆ NOM\_CMP = cmp

Name of the component of the size to which the extraction relates.

## 3.10 Attributes of the concept function created by RECU\_FONCTION

### 3.10.1 Values by default

By default attributes of the concept function created by the order RECU\_FONCTION are:

Interpolation: 'NOT'  
Left prolongation: 'EXCLUDED'  
Right prolongation: 'EXCLUDED'  
NOM\_PARA : given as starter  
NOM\_RESU : given as starter

### 3.10.2 Overload of the attributes

The user can overload the attributes given by default by using the following keywords:

#### 3.10.2.1 Operand NOM\_PARA

- ◇ NOM\_PARA = para

It indicates the name of the parameter (variable or X-coordinate) of the function. Values currently authorized for will lpara are:

/ 'TEMP'	/ 'INST'	/ 'EPSI'
/ 'X'	/ 'Y'	/ 'Z'
/ 'FREQ'	/ 'SWEATERS'	/ 'AMOR'
/ 'DX'	/ 'DY'	/ 'DZ'
/ 'DRX'	/ 'DRY MARTINI'	/ 'DRZ'

more those specific to the nodes of shock (cf [§ 3.3.2.2]).

#### 3.10.2.2 Operand NOM\_RESU

- ◇ NOM\_RESU = resu

It indicates the name of the result, the function thus created is a function whose value is of name lresu (8 characters).

#### 3.10.2.3 Operand Interpol

- ◇ Interpol

Type of interpolation of the function enters the values of the parameter of the field of definition. Behind this keyword one expects a parameter list (two at the most) among 'NOT', 'FLAX', 'LOG'. If only one value is given the interpolation will be identical for the X-

coordinates and the ordinates. If two values are given, the first corresponds to the interpolation of the X-coordinates and the second with the interpolation of the ordinates.

### 3.10.2.4 Operands PROL\_DROITE/ PROL\_GAUCHE

◇ PROL\_DROITE and PROL\_GAUCHE

They define the type of prolongation on the right (on the left) of the field of definition of the variable:

- 'CONSTANT' for a prolongation with the last (or first) value of the function,
- 'LINEAR' for a prolongation along the first definite segment (PROL\_GAUCHE) or of the last definite segment (PROL\_DROITE),
- 'EXCLUDED' if the extrapolation of the values apart from the field of definition of the parameter is prohibited.

## 3.11 Operand TITLE

◇ TITLE

Title attached to the concept produced by this operator [U4.03.01].

## 3.12 Operand INFORMATION

◇ INFORMATION

Specify the options of impression on the file MESSAGE.

- 1 pas d' impression (by default)
- 2 impression of the descriptor of the function and the list of the first 10 values of the function in the order ascending of the first 10 parameters

## 4 Examples

### 4.1 Extractions of function on the dynamic response of a network of piping

```
tran_gen = DYNA_TRAN_MODAL (...)  
  
l_inst = DEFI_LIST_REEL (BEGINNING = 0. ,  
                        INTERVAL = _F (JUSQU_A = 3. , NOT = 0,005))  
  
dyn_tran = REST_GENE_PHYS (RESU_GENE = tran_gen, NOM_CHAM = 'DEPL',  
                          LIST_INST = l_inst, INTERPOL = 'FLAX')  
  
dyn_tran = CALC_CHAMP (...,  
                      CONSTRAINT = 'SIEF_ELGA' )  
  
tab_rele = POST_RELEVE_T (ACTION=_F (ENTITLES = 'sixx_254',  
                                     WAY = line,  
                                     RESULT = dyn_tran,  
                                     NOM_CHAM = 'SIEF_ELGA',  
                                     INST = 2.54,  
                                     TOUT_CMP = 'YES',  
                                     OPERATION = 'EXTRACTION' ) )
```

#### 4.1.1 Evolution of the displacement of the node NO01 component 'DX' at every moment of calculation

```
f1 = RECU_FONCTION (RESU_GENE = tran_gen, NOM_CHAM = 'DEPL',  
                  NODE = 'NO01' , NOM_CMP = 'DX' )
```

#### 4.1.2 Evolution of the size 'SIXX' on the mesh MA01 with the node NO01 at every moment of calculation

```
f2 = RECU_FONCTION (RESULTAT= dyn_tran, NOM_CHAM= 'SIEF_ELGA',  
                  MESH = 'MA01' , NODE = 'NO01', NOM_CMP=' SIXX')
```

#### 4.1.3 Evolution of the size 'SIXX' along the line of piping at the moment of calcul 2.54 S

```
f3 = RECU_FONCTION (TABLE = tab_rele,  
                  PARA_X = 'ABSC_CURV' , PARA_Y = 'SIXX')
```

#### 4.1.4 Evolution of the size 'SIXX' along the line of piping (curvilinear X-coordinate higher than 10) at the moment of calbottom 2.54 S

```
f4 = RECU_FONCTION (TABLE = tab_rele,  
                  FILTER = _F (NOM_PARA = 'ABSC_CURV',  
                              CRIT_COMP = 'GE',  
                              VALE = 10. , ),  
                  PARA_X = 'ABSC_CURV' , PARA_Y = 'SIXX')
```

### 4.2 Extraction of function in a structure of data melasflu

```
meles1 = CALC_FLUI_STRU ( ... )
```

```
f_freq = RECU_FONCTION ( BASE_ELAS_FLUI = meles1,  
                          PARA_X       = 'VITE_FLU',  
                          PARA_Y       = 'FREQ',  
                          TOUT_ORDRE   = 'YES',  
                          NUME_MODE    = 2  
                        )
```

## 4.3 Extraction of function in a structure of data interspectre

```
reppx_ac = REST_SPEC_PHYS (...)  
  
statx_ac = POST_DYNA_ALEA (INTERSPECTRE = _F (INTE_SPEC = reppx_ac,  
                                              OPTION      = 'DIAG',  
                                              )  
                        )  
  
f_freq = RECU_FONCTION ( INTE_SPEC    = statx_ac,  
                          NOEUD_I     = 'N_TUB_01',  
                          NOM_CMP_I    = 'DX',  
                        )
```