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*Responsable : LEFEBVRE Jean-Pierre*

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# Selection of one or more fields in a Structure of Data RESULT

## 1    Goal

Description of the keywords of access to the fields of sizes of a structure of data of the type result.

To extract a field from sizes in a concept result one has two types of indicators: the reference symbols and variables of access.

This document describes the whole of the keywords giving access the fields of size contained in a structure of data result and used in the orders CALC_CHAMP [U4.81.04], CALC_G [U4.82.03], COMB_SISM_MODAL [U4.84.01], EXTR_MODE [U4.52.12], IMPR_GENE [U4.91.02], IMPR_RESU [U4.91.01], LIRE_RESU [U7.02.01], POST_ELEM [U4.81.22], POST_RCCM [U4.83.11], POST_RELEVE_T [U4.81.21], RECU_FONCTION [U4.32.03], TEST_RESU [U4.92.01].

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## 2    Syntax

```
                    #  Extraction of a field of size of resu


        ◊   /       TOUT_CHAM    =  /'YES',              [DEFECT]
                                    /'NOT',
            /       NOM_CHAM     =  L_NOMSYMB,           [l_K16]
        ◊   /       TOUT_ORDRE   =  'YES',              [DEFECT]

            / /     NUME_ORDRE   =  LORDRE,              [l_I]
              /     LIST_ORDRE   =  LENTI,               [listis]
            /       TOUT_MODE    =  'YES',
            / /     NUME_MODE    =  LMODE,               [l_I]
              /     LIST_MODE    =  LENTI,               [listis]
            /       NOEUD_CMP    =  LNOECMP,             [l_K16]
            /       NOM_CAS      =  NCAS,                [K16]
            /       ANGLE        =  LANGL,               [l_R]
            / /     FREQ         =  LFREQ,               [l_R]
              /     LIST_FREQ    =  LREEL,               [listr8]
            / /     TOUT_INST    =  'YES',
            /       INST         =  LINST,               [l_R]
              /     LIST_INST    =  LREEL,               [listr8]
        ◊   /   CRITERION =   'RELATIVE'
  [DEFECT]
                ◊   PRECISION =  /  prec               [R]
                                 /  1.0E-3  or 1.0D-6, *   [DEFECT]
            /   CRITERION =   'ABSOLUTE'
                ♦   PRECISION =  prec                  [R]
```

* This value by default depends on the structure of data of type result which is exploited.

- PREC = $10^{-3}$ for the following orders: TEST_RESU,    EXTR_MODE, COMB_SISM_MODAL,

- PREC = $10^{-6}$ for the following orders *:* CALC_CHAMP, CALC_G, IMPR_GENE, IMPR_RESU, LIRE_RESU, POST_ELEM, POST_RCCM, POST_RELEVE_T, POST_RCCM.

The value by default of $1.0D-6$ for the relative precision was selected very small to avoid selecting very close values obtained for example during the automatic recutting of the step of time.
The keyword PRECISION becomes obligatory (not value by default) if CRITERE=' ABSOLU'.

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# 3 Extraction of a field of size

## 3.1 Choice of the reference symbols: Operands `TOUT_CHAM` / `NOM_CHAM`

```
/   TOUT_CHAM    =  /'YES'    [DEFECT]
```

This keyword indicates that one wants to reach (X) the field (S) of sizes actually calculated (S) for the concept result `RESU`. If the operand is not used `NOM_CHAM`, this operand is taken by default with 'YES'.

The possible fields are described in specific documentations of the concepts `result`.

Example: the possible fields are for a result of the type `evol_elas` [U4.51.01]:

```
DEPL
SIGM_ELNO
EPSI_ELNO
…   …   …
```

```
/   NOM_CHAM     =   L_NOMSYMB [l_K16]
```

A concept `result` can be composed of several fields of sizes of type field to the nodes or field by element. This keyword makes it possible to confer choose a list of reference symbols of field among the whole of possible ( `TOUT_CHAM`).

**Note:**

*Keywords* `TOUT_CHAM` *and* `NOM_CHAM` *cannot be used simultaneously.*

## 3.2 Choice of the sequence numbers: Operands `TOUT_ORDRE`/`NUMÉRIQUE_ORDRE`/`LISTE_ORDRE`

```
/   TOUT_ORDRE   =  'YES'       [DEFECT]
```

This keyword gives access (X) the field (S) for all the already calculated sequence numbers.

Example:

- every moment for a result of the type `evol_…`
- all clean modes for a result of the type `mode_meca`.

```
/   NUME_ORDRE   :   LORDRE       [l_I]
```

This keyword makes it possible to reach only (X) the field (S) correspondent a list of sequence numbers `LORDRE` (plural is employed here for the case where one chose `TOUT_CHAM = 'YES'`).

Example: `RESU = (_F (RESULTAT= RESU, TOUT_CHAM = 'YES', NUME_ORDRE= (3.6))`

One will reach all the computed fields with the third and the sixth sequence number.

```
/   LIST_ORDRE   :   LENTI     [listis]
```

The keyword `LIST_ORDRE` indicate that one wants to reach (X) the field (S) correspondent with a list of sequence numbers `LENTI`, defined by the operator `DEFI_LIST_ENTI` [U4.34.02] (`LENTI` is thus a concept of the type `listis`).

Example:

```
        LIST   =   DEFI_LIST_ENTI (    VALE = (3.6))
```

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```
RESU = (_F (RESULTAT= RESU, TOUT_CHAM = 'YES',LIST_ORDRE= LISTS)
```

One will reach all the computed fields with the third and the sixth sequence number.

## 3.3 Other ways of choosing the sequence numbers: variables of access

### 3.3.1 Operands TOUT_MODE/NUMÉRIQUE_MODE/LISTE_MODE/NOEUD_CMP

```
/    TOUT_MODE    =    'YES'
```

This keyword indicates that one wants to reach all the fields for all the already calculated numbers of mode.

It is licit only for the types of concept `result` (mode statics or dynamic) having for variable of access NUME_MODE.

```
/    NUME_MODE    =    LMODE        [l_I]
```

This keyword indicates that one wants to reach (X) the field (S) correspondent with a list of numbers of mode LMODE. These numbers are those affected by the calculation algorithm.

It is licit only for the types of concept `result` (mode statics or dynamic) having for variable of access NUME_MODE.

Example:    RESU = (_F (RESULTAT= RESU, TOUT_CHAM = 'OUI', NUME_MODE= (3.6))

One will reach all the fields corresponding to the third and the sixth mode.

```
/    LIST_MODE    =    LENTI        [listis]
```

The keyword LIST_MODE indicate that one wants to reach (X) the field (S) correspondent with a list of numbers of modes LENTI, defined by the operator DEFI_LIST_ENTI [U4.34.02] (LENTI is thus a concept of the type `listis`). It is valid only for the types of concept result having for variable of access NUME_MODE.

Example:
```
LIST  =  DEFI_LIST_ENTI (    VALE = (3.6))
RESU = (_F (RESULTAT= RESU,   TOUT_CHAM = 'YES',  LIST_MODE= LISTS)
```

One will reach all the fields corresponding to the third and the sixth mode.

```
/    NOEUD_CMP    =    LNOECMP       [l_K16]
```

Results of the type `base_modale` or `mode_stat` have as a variable of access NOEUD_CMP. The value of these variables of access is obtained by concaténant the name of the node and the name of the component. To specify a value of the variable of access, the user will give two names, the name of the followed node by the name of the component. A list of $n$ variables of access will be introduced by the data of N couples (name of the node, name of the component).

A list of values of this variable of access can be provided by the list $(couple1, couple2, …)$.

### 3.3.2 Operand NOM_CAS

```
/    NOM_CAS    =    NCAS          [K16]
```

The keyword NOM_CAS indicate that one wants to reach the field corresponding to a case of loading. It is licit only for the concepts `result` of type `mult_elas` who have as a variable of access NOM_CAS and produced by MACRO_ELAS_MULT [U4.51.02].

### 3.3.3 Operand ANGLE

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/    ANGLE        =   LANGL           [l_R]

The keyword ANGLE indicate that one wants to reach (X) the field (S) recombined (S) for a list of angles. It is licit only for the concepts result of type comb_fourier who have as a variable of access ANGLE and produced by the operator COMB_FOURIER [U4.83.31].

### 3.3.4  Operands FREQ / LIST_FREQ

These operands are licit only for the types of concept result having for variable of access FREQ (mode_meca, dyna_harm,...).

/    FREQ         =   LFREQ           [l_R]

The keyword FREQ indicate that one wants to reach (X) the field (S) correspondent with a list of frequencies LFREQ.

Example:   RESU = (_F (RESULTAT= RESU, TOUT_CHAM = 'OUI', FREQ= (3.52, 7.37))

One will reach all the fields corresponding to the frequencies $3.52$ and $7.37$.

/    LIST_FREQ    =   LREEL           [listr8]

The keyword LIST_FREQ indicate that one wants to reach (X) the field (S) correspondent with a list of frequencies LREEL, defined by the operator DEFI_LIST_REEL (LREEL is thus a concept of the type listr8).

Example:

        LIST   =   DEFI_LIST_REEL (    VALE = (3.52, 7.37))
        RESU = (_F (RESULTAT= RESU,   TOUT_CHAM = 'YES',  LIST_FREQ = LIST)

One will reach all the fields corresponding to the frequencies $3.52$ and $7.37$.

### 3.3.5  Operands TOUT_INST / INST / LIST_INST

These operands are licit only for the types of concept result of temporal evolution having for variables of access INST (evol_noli, evol_ther, dyna_trans,...).

/    TOUT_INST    =   'YES'

This keyword indicates that one wants to reach all the fields for every already calculated moment.

/    INST         =   LINST           [l_R]

The keyword INST indicate that one wants to reach (X) the field (S) correspondent with a list of moments LINST.

Example:   RESU = (_F (RESULTAT= RESU,   TOUT_CHAM = 'YES',  INST= (3. , 7.))

One will reach all the fields corresponding to the moments $3.$ and $7.$.

/    LIST_INST    =   LREEL           [listr8]

The keyword LIST_INST indicate that one wants to reach (X) the field (S) correspondent with a list of moments LREEL, defined by the operator DEFI_LIST_REEL (LREEL is thus a concept of the type listr8).

Example:

        LIST   =   DEFI_LIST_REEL (    VALE = (3. , 7.))
        RESU = (_F (RESULTAT= RESU,   TOUT_CHAM = 'YES',  LIST_INST= LISTS)

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One will reach all the fields corresponding to the moments $3.$ and $7.$.

### 3.3.6 Operands PRECISION / CRITERION

These operands make it possible to refine the access by real variables of access of time or the frequency.

```
PRECISION =  / prec                [R]
             / 1.0D-3 or 1.0D-6     [DEFECT]
```

This keyword makes it possible to indicate that one searches all the fields whose moment (respectively the frequency) is in the interval "inst ± prec"(confer CRITERION).

By default prec = 1.0D-3 or prec = 1.0D-6 (according to the orders).
If CRITERE=' ABSOLU', there is no value by default.

```
CRITERION  = / 'RELATIVE' [DEFECT]
             / 'ABSOLUTE'
```

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