Structure of data sd_interspectre

Summary:

The structure of data sd_interspectre contains the components of a matrix interspectrale or temporal functions produced by GENE_FONC_ALEA. Each term of this matrix is a function which depends on the frequency or the moment. This function is real if it is of a autospectre (diagonal term of the matrix) or about a temporal function, it is complex if it is about a interspectre (extra-diagonal term).

That structure of data is used by the following operators: CALC_INTE_SPEC, DYNA_ALEA_MODAL, PROJ_SPEC_BASE, REST_SPEC_PHYS, DEFI_SPEC_TURB, DYNA_SPEC_MODAL, GENE_FONC_ALEA, POST_DYNA_ALEA, CALC_ESSAI, CALC_SPEC, DEFI_INTE_SPEC, DYNA_ISS_VARI and LIRE_INTE_SPEC.

Contents

1 General information

A matrix interspectrale is a square matrix. The structure of data sd_interspectre contains the components of this matrix interspectrale. Each term of this matrix is a function which depends on the frequency. One also stores, in this structure of data, the temporal functions produced by GENE_FONC_ALEA.

Each term of the matrix is localised either by a sequence number, or by the couple (node, component). One can store only the diagonal terms or the higher triangular part of the matrix. The diagonal terms of the matrix are pure realities and the extradiagonaux terms are complexes.

This structure of data is used by the following operators: CALC_INTE_SPEC , DYNA_ALEA_MODAL , PROJ_SPEC_BASE , REST_SPEC_PHYS , DEFI_SPEC_TURB , DYNA_SPEC_MODAL , GENE_FONC_ALEA , POST_DYNA_ALEA , CALC_ESSAI , CALC_SPEC , DEFI_INTE_SPEC , DYNA_ISS_VARI and LIRE_INTE_SPEC .

2 Tree structure of the Structure of Data

```
sd_interspectre (K8):: = record

      ♦  '.REFE'       :  OJB    S  V  K16
      ♦  '.DISC'       :  OJB    S  V  R
      ◊  '.NUMÉRIQUE_ORDRE'  :  OJB    S  V  I
      ◊  '.NUMI'       :  OJB    S  V  I
      ◊  '.NUMJ'       :  OJB    S  V  I
      ◊  '.NOEI'       :  OJB    S  V  K8
      ◊  '.CMPI'       :  OJB    S  V  K8
      ◊  '.NOEJ'       :  OJB    S  V  K8
      ◊  '.CMPJ'       :  OJB    S  V  K8
      ♦  '.VALE'       :  OJB    XD V  R  NAKED
```

3 Contents of the objects

3.1 Object .REFE

```
'.REFE'       :  OJB    S  V  K16    length = 3
```

REFE (1) : name of the field
REFE (2) : option of calculation
REFE (3) : type of data (FREQ/INST)

3.2 Object .DISC

```
'.DISC'       :  OJB    S  V  R      length = nbfreq
```

This object contains the list of the frequencies or the moments when the spectra are defined.

3.3 Object .NUMÉRIQUE_ORDRE

```
'.NUMÉRIQUE_ORDRE'      :  OJB    S  V  I      length = nbspec
```

NUME_ORDRE (K) the sequence number associated with the temporal function contains which is in VALE (K).

3.4 Object .NUMI

```
'.NUMI'      :  OJB    S  V  I      length = nbspec
```

NUMI (K) contains the sequence number associated with the line with the matrix interspectrale whose spectrum is in VALE (K).

3.5 Object .NUMJ

```
'.NUMJ'      :  OJB    S  V  I      length = nbspec
```

NUMJ (K) contains the sequence number associated with the column with the matrix interspectrale whose spectrum is in VALE (K).

3.6 Object .NOEI

```
'.NOEI'      :  OJB    S  V  K8     length = nbspec
```

NOEI (K) contains the name of the node associated with the line with the matrix interspectrale whose spectrum is in VALE (K).

3.7 Object .CMPI

```
'.CMPI'      :  OJB    S  V  K8     length = nbspec
```

CMPI (K) contains the name of the component associated with the line with the matrix interspectrale whose spectrum is in VALE (K).

3.8 Object .NOEJ

```
'.NOEJ'      :  OJB    S  V  K8     length = nbspec
```

NOEJ (K) contains the name of the node associated with the column with the matrix interspectrale whose spectrum is in VALE (K).

3.9 Object .CMPJ

```
'.CMPJ'      :  OJB    S  V  K8     length = nbspec
```

CMPJ (K) contains the name of the component associated with the column with the matrix interspectrale whose spectrum is in VALE (K).

3.10 Object .VALE

```
'.VALE'      :  OJB    XD V  R  NAKED
```

This collection contains nbspec objects.

In the case of a matrix interspectrale, each object is located by the number of the line and the number of the column in the matrix. This number of line or column is defined either by a sequence number, or by the couple (node, component).

If the number of the line or the column of the matrix is described by a sequence number:

VALE (K) the spectrum contains corresponding to the line associated with NUMI (K) and with the column associated with NUMJ (K).

If the number of line or the column is described by the couple (node, component):
VALE (K) the spectrum contains corresponding to the line associated with (NOEI (K), CMPI (K)) and with the column associated with (NOEJ (K), CMPJ (K)).

The size of the diagonal terms of this matrix is equal to nbfreq. The autospectres are arranged according to the list DISC.

The size of the extra-diagonal terms of this matrix is equal to 2*nbfreq. The interspectres are arranged partly real – imaginary part according to the list DISC.

In the case as of temporal functions, each object is located by its sequence number (NUME_ORDRE (K)). The temporal data are arranged according to the list DISC.