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## Operator REST\_SPEC\_PHYS

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### 1 Drank

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Compute the response of a structure in physical base. The computation is carried out from an interspectrum of modal response, in some nodes selected mesh.

The operator carries out computation, with four alternatives, of the response spectrums in physical base. The user can choose a response in displacements, velocities, accelerations and under certain conditions in generalized forces, nodal stresses or forces. Result the product is a concept of type interspectrum.

## 2 Syntax

```
tinsp [interspectrum] = REST_SPEC_PHYS (
    ♦ | BASE_ELAS_FLUI=baseflui, [melasflu]
      ♦VITE_FLUI=vitefl [R]
      ◊PRECISION=/ 1.E-3
[DEFAULT]
      /prec [R]
    | MODE_MECA=base ,
[mode_meca]
    ◊/NUMÉRIQUE_ORDRE=l_nuor , [l_I]
      /BANDE = (f1, f2), [l_R]
    ◊/TOUT_ORDRE=/ "NON",
[DEFAULT]
      / "YES",
    ♦INTE_SPEC_GENE=repmoda , [interspectrum]
    ♦NOEUD=l_no_rep ,
[l_noeud]
    ◊MAILLE=l_ma_rep ,
[l_maille]
    ♦NOM_CHAM=/ "DEPL"
      / "QUICKLY"
      / "ACCE"
      / "EFGE_ELNO"
      / "SIPO_ELNO"
      / "SIGM_ELNO"
      / "FORC_NODA",
    ♦NOM_CMP=/ "DX"
      / "DY"
      / "DZ"
      / "SMFY"
      / "SMFZ",
    ◊MODE_STAT=modestat ,
[mode_meca]
    ◊EXCIT=_F (
    ♦NOEUD=l_no ,
[l_noeud]
    ♦NOM_CMP=l_ncmp , [l_TXM]
      )
    ◊MOUVEMENT=/ "ABSOLU",
[DEFAULT]
      / "RELATIF",
      / "DIFFERENTIEL",
    ◊OPTION=/ "DIAG_DIAG",
[DEFAULT]
      / "DIAG_TOUT",
      / "TOUT_DIAG",
```

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```

/  "TOUT_TOUT",

◇TITER=titer                                ,                                [TXM]

) ;
```

## 3 Operands

### 3.1 Operand BASE\_ELAS\_FLUI

BASE\_ELAS\_FLUI = baseflui

Concept of the melasflu type by the operator produces CALC\_FLUI\_STRU [U4.66.02], which defines a set of modal bases associated with the various rates of flow with the fluid. The modal response of structure for a rate of flow considered is broken up on the basis corresponding at this velocity. One must then specify the velocity of the fluid vitefl for which one wants to carry out computation.

#### 3.1.1 Key word VITE\_FLUI

operand VITE\_FLUI must be indicated if one uses a base of the melasflu type.

◆ VITE\_FLUI = vitefl

Rate of flow of the fluid for the computation of response.

#### 3.1.2 Key word accuracy

◇ accuracy = prec

Accuracy on the rate of flow of the fluid (by default 1 E-3).

### 3.2 Operand MODE\_MECA

MODE\_MECA = bases

This operand makes it possible to define the base on which is broken up the modal response. One accepts concepts of the mode\_meca type produces by operators MODE\_ITER\_INV [U4.52.04], MODE\_ITER\_SIMULT [U4.52.03] or DEFI\_BASE\_MODEALE [U4.64.02].

#### Note:

*Operands BASE\_ELAS\_FLUI and MODE\_MECA can be used simultaneously if one wishes to calculate a response in stresses of a telegraphic structure subjected to the action of a flow. This calculation case is determined by the data of a concept of the melasflu type under operand BASE\_ELAS\_FLUI, defining modal bases of structure in the various rates of flow, and the choice of the physical field of response "SIPO\_ELNO" under operand NOM\_CHAM. The data complementary to a concept of the mode\_meca type under operand MODE\_MECA becomes compulsory then, in order to define the field of the modal stresses in the nodes of structure. The modal stresses are calculated upstream by the operator CALC\_CHAMP [U4.81.04], option "SIPO\_ELNO", using the normalized modal deformed shapes. Operator NORM\_MODE [U4.52.11] allows to carry out the standardization of the modal deformed shapes beforehand.*

### 3.3 Operands NUME\_ORDRE, TOUT\_ORDRE and TAPE

These operands should be used only if the base on which is broken up the modal response is defined by a concept of the mode\_meca type.

◇/NUMÉRIQUE\_ORDRE = l\_nuor

List of the sequence numbers of the modes which are actually taken into account for the computation of the physical response.

◇/TOUT\_ORDRE = / "NON", [DEFAULT]

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/ "YES",  
If one wishes to take all the fashions of the base for the computation of the physical response, one can choose TOUT\_ORDRE = ' OUI ' instead of giving the list.

/BANDE = (f1, f2)

the modes which are taken into account for the computation of the physical response are the modes of the concept of the mode\_meca type of which the frequency is in the tape defined by (f1 f2).

## 3.4 Operand INTE\_SPEC\_GENE

◆INTE\_SPEC\_GENE = repmoda

Concept of the tinterspectre type by the operator produces DYNA\_SPEC\_MODAL [U4.53.23] or DYNA\_ALEA\_MODAL [U4.53.22], which defines the interspectrums of modal response, i.e interspectrums of generalized displacements. Operand

## 3.5 NOEUD ◆

NOEUD = l\_no\_rep List

of the nodes of the mesh where the interspectrums of physical response are calculated. Operand

## 3.6 NETS ◇

MESH = l\_ma\_rep List

of meshes of the mesh where the interspectrums of physical response are calculated, if the field of response is one field on the elements. Operand

## 3.7 NOM\_CHAM ◆

NOM\_CHAM = ' DEPL' or " QUICKLY" or " ACCE" or " EFGE\_ELNO" or "  
SIPO\_ELNO" or " SIGM\_ELNO" or " FORC\_NODA" Name

of the physical field of response to calculating. Note:

*The choice of the physical field of response " SIPO\_ELNO" for a telegraphic structure under flow requires the simultaneous use of operands BASE\_ELAS\_FLUI and MODE\_MECA (cf [§3.1]). Operand*

## 3.8 NOM\_CMP ◆

NOM\_CMP = "DX" or " DY" or " DZ" or " SMFY" or " SMFZ" Names

of the components of the physical field of response having to be actually calculated. Note:

*The components "DX ", "DY ", and "DZ " are valid for fields "DEPL ", "QUICKLY " or "ACCE ". Components "SMFY " and "SMFZ " are valid for the field "SIPO\_ELNO ".  
Operand*

## 3.9 MODE\_STAT ◇

MODE\_STAT = modestat Concept

of type\_meca mode by the operator produces MODE\_STATIQUE [U 4.52.14], which defines the static modes taken into account in the case of a seismic computation multi-bearings where the excitation is done on the DDL. Key word

## 3.10 EXCIT ◇

EXCIT Factor key word

allowing to define the DDL to which the excitation is applied, in the case of a seismic computation multi-bearings. ◆

NOEUD = l\_no List

of the nodes where the excitation is applied. ◆

NOM\_CMP = l\_ncmp List

of the components to which the excitation is applied. Note:

### These

*components must correspond to degrees of freedom of the nodes of bearings. Example: "NEAR ", "DRZ ", "PHI ", ... In all the cases, one NOEUD needs as many arguments under the operand under operand NOM\_CMP . For the fluid sources, it is the component "NEAR " which is excited. Operand*

## 3.11 MOTION ◇

MOTION = "ABSOLU" or "RELATIF " or "DIFFERENTIEL " Indicator

characterizing the physical response with calculating, in the case of a seismic computation multi - bearings: absolute response ("ABSOLU") by default, dynamic contribution ("RELATIF") or differential ("DIFFERENTIEL") of the response. Operand

## 3.12 OPTION ◇

OPTION = "DIAG\_DIAG" or "DIAG\_TOUT " or "TOUT\_DIAG " or "TOUT\_TOUT "  
Indicator

specifying the choice of computation to be realized: computation

- of the autospectrums to the nodes by means of the modal autospectrums; computation
- of the autospectrums to the nodes by means of all the modal interspectrums; computation
- of all the interspectrums to the nodes by means of the modal autospectrums; computation
- of all the interspectrums to the nodes by means of all the modal interspectrums. Note:

### If

*the modal response were calculated by DYNA\_SPEC\_MODAL [U 4.53.23], the choice of computation must be coherent with that retained upstream in this operator. Indeed, options "DIAG\_TOUT " or "TOUT\_TOUT " cannot be carried out if one chose "DIAG " in DYNA\_SPEC\_MODAL [U 4.53.23]. The choice by default is thus "DIAG\_DIAG", which corresponds to the calculation case simplest realizable whatever the choice selected upstream. Operand*

## 3.13 TITER ◇

TITER = title Argument

of type text defining the title attached to the concept interspectrum in output.