

## Data format sd\_dyna\_gene

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### 1 General information

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the concepts of the dynamic results `tran_gene` (transient computation on generalized basis) and `harm_gene` (harmonic computation on generalized basis) inherit only one and single data structure: `sd_dyna_gene`. This one lodges the needs for storage of the results of a computation on generalized basis, whether it is transitory or harmonic.

The commands of Code\_Aster creating a `sd_dyna_gene` are: `DYNA_TRAN_MODAL`, `DYNA_LINE_HARM` and `DYNA_VIBRA` (when these two last are on generalized basis), but also `PROJ_MESU_MODAL`, `PROJ_RESU_BASE`, `DYNA_ISS_VARI`, `CALC_MISS` and `REST_SPEC_TEMP`.

## 2 Tree structure of Data format

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the sd\_dyna\_gene (K8)

```
"(11) .DESC"      : OJB SVI
"(11) .REFD"      : OJB SVK24

"(11) .DISC"      : OJB SVR
"(11) .ORDR"      : OJB SVI
  "(11) .DEPL"     : OJB SV           R or It
(11) .VITE"       : OJB SVR           or It
(11) .ACCE"       : OJB SVR           or C
```

# if transient computation:

```
"(11) .PTEM"      : OJB SVR
```

# if CHOC:

```
"(11) .DLOC"      : OJB SVR
"(11) .FCHO"      : OJB SVR
"(11) .ICHO"      : OJB SVI
"(11) .INTI"      : OJB SVK8
"(11) .NCHO"      : OJB SVK8
"(11) .VCHO"      : OJB SVR
"(11) .VINT"      : OJB SVR
"(11) .SST"       : OJB SVK8
```

# if EXCIT in the case of a transient computation:

```
"(11) .FACC"      : OJB SVK8
"(11) .FDEP"      : OJB SVK8
"(11) .FVIT"      : OJB SVK8
```

# if MULT\_APPUI or CORR\_STAT:

```
"(11) .IPSD"      : OJB SVR
```

# if RELA\_EFFO\_DEPL:

```
"(11) .REDC"      : OJB SVI
"(11) .REDD"      : OJB SVR
"(11) .REDN"      : OJB SVK24
```

# if produced by PROJ\_MESU\_MODAL :

```
".PROJM"          : sd_resu (confer documentation [D4.08.05])
```

## 3 Contained Definition

### 3.1 JEVEUX objects of some variables

nbmode : many modes (= dimension of the generalized mass matrix)  
nbchoc : many nodes of shocks if key word CHOC, 0 if not  
nbsauv : number of time step saved (key word ARCHIVAGE )  
nbexcit : many excitations (many occurrences of key word EXCIT )  
nbrede : many relations force displacement (occurrences of key word RELA\_EFFO\_DEPL)

### 3.2 Object .DESC

```
"(11) .DESC" : SVILONG=5
```

V (1) : 1, 2, 3 , or 4.  
2 if transient computation with nbchoc > 0  
3 if transient computation with METHODE = "ITMI" or "ADAPT"  
1 if transient computation other than in the preceding cases  
4 if harmonic computation

V (2) : many modes (nbmode)  
V (3) : many nodes of shock ( nbchoc )  
V (4) : many relations force displacement ( nbrede )  
V (5) : many relations force velocity ( nbrevi )

### 3.3 Object .REFD

```
"(11) .REFD" : SVK24LONG=5
```

V (1) : name of the concept of the stiffness matrix generalized  
V (2) : name of the concept of the mass matrix generalized  
V (3) : name of the concept of the generalized damping matrix (or ""if not of damping)  
V (4) : name of the sd\_numérique\_ddl\_gene associated with the stiffness matrix  
V (5) : name of the concept of modal base in the case of a projection on the basis of modal base of the assembled matrixes (concept BASE\_MODAL , MODE\_MECA or MODE\_GENE ) or sd\_ume\_ddl\_gene if the matrixes are from the assembly of generalized elementary matrixes

### 3.4 Object .DEPL

In the case of a transient computation, this object contains realities and is compulsory. For a harmonic computation, on the other hand, it contains complexes and is an optional object.

```
" (11) .DEPL" : SVR/CLONG=nbsauv*nbmode
```

V ((isauv-1) \*nbmod+1 with isauv\*nbmode) : value of the displacement generalized for the " isauv " ième step of discretization (temporal or frequential according to the type of computation)

### 3.5 Object .VITE

In the case of a transient computation, this object contains realities and is compulsory. For a harmonic computation, on the other hand, it contains complexes and is an optional object.

```
"(11) .VITE"      :   SVR/CLONG=nbsauv*nbmode
```

V ((isauv-1) \*nbmod+1 with isauv\*nbmode) : value the velocity generalized for the " isauv " ième step of discretization (temporal or frequential according to the type of computation)

## 3.6 Object .ACCE

In the case of a transient computation, this object contains realities and is compulsory. For a harmonic computation, on the other hand, it contains complexes and is an optional object.

```
"(11) .ACCE"     :   SVRLONG=nbsauv*nbmode
```

V ((isauv-1) \*nbmod+1 with isauv\*nbmode) : value of the acceleration generalized for the " isauv " ième step of discretization (temporal or frequential according to the type of computation)

## 3.7 Object .ORDR

```
"(11) .ORDR"     :   SVILONG=nbsauv
```

V (I) : I ème sequence number filed

## 3.8 Object .DISC

```
"(11) .DISC"     :   SVRLONG=nbsauv
```

V (I) : I ème value of saved time (for a transient computation) or frequency of computation (for the harmonic case).

## 3.9 Object .PTEM

This object exists only for transient computations.

```
"(11) .PTEM"     :   SVRLONG=nbsauv
```

V (I) : value of time step with I ème urgent of saved computation.

## 3.10 Objects related to the presence of the key word CHOC

the objects related to the presence of key word CHOC can exist only in the case of a transient computation .

### 3.10.1 Object .DLOC

```
"(11) .DLOC"     :   SVRLONG=6*nbsauv*nbchoc
```

Displacement of the nodes of shock (local coordinate system).

Convention of storage (table FORTRAN):

V (iddl, ichoc, isauv)

with iddl = 1,2,3: displacement of the node 1  
          = 4,5,6: displacement of node 2

## 3.10.2 Object .VCHO

"(11) .VCHO" : SVRLONG=3\*nbsauv\*nbchoc

Velocity of the nodes of shock (local coordinate system).

Convention of storage (table FORTRAN):

V (iddl, ichoc, isauv)

with iddl = 1: norm

= 2: tangential according to the 1st vector

= 3: tangential according to the 2nd vector

## 3.10.3 Object .FCHO

"(11) .FCHO" : SVRLONG=3\*nbsauv\*nbchoc

Shock forces in the local coordinate system and in modulus.

Convention of storage (table FORTRAN):

V (iddl, ichoc, isauv)

with iddl = 1: norm

= 2: tangential according to the 1st vector

= 3: tangential according to the 2nd vector

## 3.10.4 Object .INTI

"(11) .INTI" : SVK8LONG=nbchoc

V (I) : heading of I<sup>ème</sup> connection of shock

## 3.10.5 Object .ICHO

"(11) .ICHO" : Indicating

SVILONG=nbchoc\*nbsauv of dependancy.

Convention of storage (table FORTRAN):

V (ichoc, isauv)

= 0: so sliding

= 1: if dependancy

## 3.10.6 Object .NCHO

"(11) .NCHO" : SVK8LONG=2\*nbchoc

V (1 with nbchoc) : V list nodes of shock of first

structure (nbchoc+1 with 2\*nbchoc) : list nodes of shock of the second structure

## 3.10.7 Object .VINT

"(11) .VINT" : SVRLONG=nbsauv\*nbchoc

cumulated Crushing.

Convention of storage (table FORTRAN): V (ichoc, isauv)

## 3.10.8 Object .SST

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.

"(11) .SST" : SVK8LONG=2\*nbchoc

V (1 with nbchoc) : name of under structure associated with the node of shock with first structure  
V (nbchoc+1 with 2\*nbchoc) : name of under structure associated with the node of shock with the second structure

## 3.11 Objects related to the presence of the key word factor **EXCIT** in the case of a transient computation

objects .FACC, .FDEP and .FVIT exist only in the case of a transient computation.

### 3.11.1 Object **.FACC**

"(11) .FACC" : SVK8LONG=2\*nbexcit

V (1 with nbexcit) : names of the forcing functions of type acceleration  
V (nbexcit+1 with 2\*nbexcit) : type of the function ( "CONSTANT" , "FONCTION" , "THREE-DIMENSIONS FUNCTION" ,...)

### 3.11.2 Object **.FDEP**

"(11) .FDEP" : SVK8LONG=2\*nbexcit

V (1 with nbexcit) : names of the forcing functions of type displacement  
V (nbexcit+1 with 2\*nbexcit) : type of the function

### 3.11.3 Object **.FVIT**

"(11) .FVIT" : SVK8LONG=2\*nbexcit

V (1 with nbexcit) : names of the forcing functions of type velocity  
V (nbexcit+1 with 2\*nbexcit) : type of the function

## 3.12 Object related to the presence of key keys **MULT\_APPUI** or **CORR\_STAT**

object .IPSD can exist only in the case of a transient computation.

### 3.12.1 Object **.IPSD**

"(11) .IPSD" : SVILONG=nbexcit\*neq

neq corresponds to the numbers of equations (i.e the rank of the stiffness matrix). V (

1+neq\* (iexcit-1) with neq\*iexcit) : Component of the vector PSI \*direction of the seisme in the case of a multisupporté seismic computation (case multiappui) or component of the vector of the corrected eigen modes (case static correction). Objects

## 3.13 related to the presence of the key word factor **RELA\_EFFO\_DEPL** Object

### 3.13.1 **.REDC** "

11) .REDC" : SVILONG=nbsauv\*nbrede V (

nbrede\* (isauv-1) +irede) : 1 is worth if the "irede " ième<sup>relation</sup> with time step the isauv is in nonlinear phase and 0 if it is in linear phase Object

### 3.13.2 .REDD " (

11) .REDD" : SVRLONG=nbsauv\*nbrede V (

nbrede\* (isauv-1) +irede) : value of the component of the physical displacement of the node concerned with the "irede " ième<sup>nonlinear</sup> relation with time step the isauv Object

### 3.13.3 .REDN " (

11) .REDN" : SVK24LONG=nbrede V (

I) : for l ième<sup>connection</sup> : concatenation of the name of the node, the component implied in the connection and the name of the concept function