

## Structure of Data sd\_melasflu

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### Summary:

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## 1 General information

The structure of data sd\_melasflu store the relative data with a calculation of fluid interaction - structure.

## 2 Tree structure of the Structure of Data

```
sd_melasflu (K8):
  ◆ ''          : sd_melasflu19
  ◇ \.VEN'      : OJB S V R
    \.VCN'      : OJB S V R
  ◆ ''          : sd_table
  ◇ ''          : sd_l_table

sd_melasflu19 (K19):
  ◆ \.REMF'     : OJB S V K8 long=2
  ◆ \.DESC'     : OJB S V K16 long=1
  ◆ \.FACT'     : OJB S V R
  ◆ \.FREQ'     : OJB S V R
  ◆ \.MASG'     : OJB S V R
  ◆ \.NUMO'     : OJB S V I
  ◆ \.VITE'     : OJB S V R
```

## 3 Contents of the objects JEVEUX

The dimensioning and the presence of the objects depend on:

nbmode	many modes of the modal base (length of . NUMO )
nbvite	many points of discretization of the interval speed fluid (length of . QUICKLY )
typeflu	type of flow pattern ( FAISCEAU_TRANS , FAISCEAU_AXIAL , ... )
coupling	taking into account of the coupling fluid-structure ( YES / NOT )

### 3.1 Object .REMF

\.REMF' : S V K8 long=2

V (1)	name of the concept of the type sd_type_flui_stru used for calculation
V (2)	name of the modal base (standard sd_mode_meca ) used for calculation

### 3.2 Object .NUMO

\.NUMO' : S V I long=nbmode

V (imode)	imode <sup>ème</sup> sequence number of the modal base which takes part in calculation
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## 3.3 Object .VITE

`\.VITE' : S V I long=nbvite`

V (* )	discretization fluid speed
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## 3.4 Object .DESC

`\.DESC' : S V K16 long=1`

V (1)	'DEPL'
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Notice :  
| this object is useless.

## 3.5 Object .FACT

`\.FACT' : S V R`

<b>If FAISCEAU_TRANS: ⇒ long=3*nbvite*nbmode</b>	
V (imode, ipoint, 1)	Pseudonym factor of participation in the direction OX for ipoint <sup>ème</sup> speed and for imode <sup>ème</sup> mode
V (imode, ipoint, 2)	Pseudonym factor of participation in the direction OY for ipoint <sup>ème</sup> speed and for imode <sup>ème</sup> mode
V (imode, ipoint, 3)	Pseudonym factor of participation in the direction OZ for ipoint <sup>ème</sup> speed and for imode <sup>ème</sup> mode

<b>If not: ⇒ long=3*nbmode</b>	
V (imode, 1)	Pseudonym factor of participation in the direction OX for imode <sup>ème</sup> mode
V (imode, 2)	Pseudonym factor of participation in the direction OY for imode <sup>ème</sup> mode
V (imode, 3)	Pseudonym factor of participation in the direction OZ for imode <sup>ème</sup> mode

## 3.6 Object .FREQ

`\.FREQ' : S V R long=2*nbmode*nbpoint`

V (imode, ipoint, 1)	frequency of imode <sup>ème</sup> mode disturbed by the flow for ipoint <sup>ème</sup> speed of the fluid
V (imode, ipoint, 2)	damping of imode <sup>ème</sup> mode disturbed by the flow for ipoint <sup>ème</sup> speed of the fluid

Note:  
| Damping becomes negative at the speed of instability fluid-rubber band.

# Code\_Aster

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## 3.7 Object .MASG

\.MASG' : S V R

<b>If FAISCEAU_TRANS * ⇒ long=nbvite*nbmode</b>	
V (imode, ipoint)	mass generalized of imode <sup>ème</sup> mode for ipoint <sup>ème</sup> speed of the fluid

<b>If not: ⇒ long=nbmode</b>	
V (imode)	mass generalized of imode <sup>ème</sup> mode

## 3.8 Objects .VCN and .VEN

\.VCN' : S V R long=nbmode\*nbconnors  
\.VEN' : S V R long=nbmode

nbconnors corresponds to the number of points of discretization of the value of the constant of Connors cumulated for all the zones.

Objects .VCN and .VENN exist only if:

FAISCEAU\_TRANS + coupling = YES + BASE\_MODELE/AMOR\_REDUI\_CONN

V (imode, iconnors)	value critical velocity calculated for imode <sup>ème</sup> mode and for iconnors <sup>ème</sup> value of the constant of Connors.
V (imode)	value the effective speed of imode <sup>ème</sup> mode

## 3.9 Structure of data sd\_table

Concept of the type sd\_table container only one parameter NOM\_CHAM. It contains the name of all them sd\_cham\_no the modal displacements disturbed by the flow.

## 3.10 Structure of data sd\_l\_table

This structure of data exists only in the case of a configuration FAISCEAU\_AXIAL.

This sd\_l\_table only one contains sd\_table under the name MATR\_GENE.

This sd\_table have the following parameters:

- NUME\_VITE list of enteties describing the list of the numbers the speed of the fluid,
- VITE\_FLUI describing the value the speed of the fluid,
- MATR\_MASS for the various generalized matrices of mass (one by speed of fluid),
- MATR\_AMOR for the various generalized matrices of damping (one by speed of fluid)
- MATR\_RIGI for the various generalized matrices of rigidity (one by speed of fluid)

One stores also one NUME\_DDL\_GENE commun run with all these matrices. It NUME\_DDL\_GENE the form has (K8) .NUXXX where it XXX is determined by GNOMSD. The name of the concept is thus based on the name user of the concept sd\_melasflu but is also stored in the concept of the generalized matrices.

The same remark also applies for `cham_no` stored in the table. They have one `PROF_CHNO` jointly.