Operator DEFI_BASE_MODALE

1 Drank

the goal of the operator is to define the base of a dynamic substructuring or a modal recombination.

The modal base obtained by this operator is of the type: "CLASSIQUE" if modal base is made up of dynamic eigen modes and of the static deformed shapes calculated by the operator from a concept of the type interf_dyna_clas produces by DEFI_INTERF_DYNA [U4.64.01]. Option DIAG_MASS makes it possible to recompute a classification for static modes so that the mass matrix is diagonal. The base is RITZ in the other cases.

The operator produces a concept of the mode_meca type.

Contents

2 Syntax

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bamo [mode_meca] = DEFI_BASE_MODALE (

♦/CLASSIQUE       =_F    ( ♦INTERF_DYNA= intdyn,          [interf_dyna_clas]
                          ♦MODE_MECA     = modes,             [l_mode_meca]
                          ◊NMAX_MODE     = nbmode,          [I]
                                           /10,             [DEFAULT]
                          ),

   /RITZ          =_F  ( ♦  |   MODE_MECA  = modes,         [l_mode_meca]
                            |   MODE_INTF  = modeintf,      [mode_meca]
                            |   BASE_MODALE= bamo,          [mode_meca]

                          ◊NMAX_MODE     =   nbmode,        [l_I]
                          )
   /DIAG_MASS      =_F   ( ♦  |   MODE_MECA  = modes,         [l_mode_meca]
                            |   MODE_STAT  = modesta,       [mode_meca]
                          ),
   /ORTHO_BASE     =_F    ( ♦BASE    = modes,                [l_mode_meca]
                          ♦MATRICE    = matrix,            [matr_asse_*]
                          ),


◊INTERF_DYNA=intdyn       ,                                 [interf_dyna_clas]

◊  NUME_REF=numddl        ,                                 [nume_ddl]

◊  LIST_AMOR=listamor         ,                                [l_R8]

◊  ORTHO=/             "OUI'
                    /"NON"                                [DEFAULT]
   ♦MATRICE     = matrix,                                    [matr_asse_*]

◊SOLVEUR    =_F (see document [U4.50.01])

◊TITER  = title,                                            [l_Kn]

◊INFO   =/1          ,                                          [DEFAULT]
             /2  ,

)
```

3 Operands

3.1 Key word CLASSIQUE

♦/CLASSIQUE

Key word factor for the definition of a modal base of the type "CLASSIQUE".

3.1.1 Operand INTERF_DYNA

♦INTERF_DYNA = intdyn

Name of the concept of the interf_dyna_clas type produces by DEFI_INTERF_DYNA [U4.64.01].

The operator calculates the static deformed shapes corresponding to the various defined interfaces, by leaning on the classification used for the computation of the eigen modes.

3.1.2 Operands MODE_MECA/NMAX_MODE

◊MODE_MECA = modes

Lists concepts of the mode_meca type containing the eigen modes of structure.

◊NMAX_MODE = nbmode (10 [DEFAULT])

maximum Number of the modes to retain each one of the base modal the list modes. The eigen modes corresponding to the nbmode the lowest frequencies of each modal base are then taken into account. By default, nbmode = 10.

3.2 Key word RITZ

♦/RITZ

Key word factor allowing to build a modal base of substructure of type "RITZ". They is made up from 2 occurrences of key word RITZ.

3.2.1 Key word MODE_MECA

1st occurrence of key word RITZ. Name of the concept of the mode_meca type containing the dynamic eigen modes of the substructure treated. One can give a list of mode_meca obtained for same structure (with different boundary conditions for example)

3.2.2 Key word MODE_INTF

2nd occurrence of key word RITZ. Name of the concept of the mode_meca type (produced by MODE_ITER_SIMULT [U4.52.03], MODE_ITER_INV [U4.52.04] or by MODE_STATIQUE [U4.52.14]) or mult_elas (produced by MACRO_ELAS_MULT [U4.51.02]) containing modes which one wants to use as modes of interface of under - structure.

3.2.3 Key word BASE_MODALE

Name of concept of the mode_meca type produces by a preceding call of the operator of DEFI_BASE_MODALE [U4.64.02]. It can be entered only at the time of the first occurrence of key word RITZ. The second occurrence of key word RITZ will then contain obligatorily key word MODE_INTF. Concept name mode_meca result of the operator can be different from this one or identical (it is then reentrant).

3.2.4 Operand NMAX_MODE

Many modes to be retained in the dynamic modes (or statics) given by one of the preceding key keys under the occurrence of key word RITZ. If a list of mode_meca is informed, it is necessary to give a list of the same size for the numbers of modes to retain.

3.2.5 Operand INTERF_DYNA

Interfaces dynamic of the substructure (with being informed if required and only if one uses "RITZ").

3.2.6 Operand NUME_REF

Classification of reference on which all the fields of displacement (dynamic modes and statics) constituting the base of "RITZ" will be reordered.

3.2.7 Operand LIST_AMOR

Lists modal dampings which the user can provide to enrich the modes declare under key word MODE_MECA. That amounts reduced dampings adding for these same modes if in the beginning they are real modes. This option is useful to simulate experimental results.

3.2.8 Operand ORTHO

Operand allowing to make an orthonormalization of the base of Ritz (with being informed if this D-orthonormalization is wished and only if one uses "RITZ"). This orthonormalization is made with an algorithm of the type iterative Graam-Schmidt (IGS) according to the version of Kahan-Parlett.

3.2.9 Key word MATRICE

Name of the concept of the matr_asse_* type which contains will be taken into account for the scalar products at the time of the reorthonormalisation of the base of RITZ. It is a compulsory key word if ORTHO=' OUI'.

3.3 Key word DIAG_MASS

♦/DIAG_MASS

Key word allowing to recompute the static modes by eliminating the dynamic contribution and while proceeding to an orthogonalization of Graam-Schmidt.

3.3.1 Key word MODE_MECA

Name of the concept of the mode_meca type containing the dynamic eigen modes of the substructure treated.

3.3.2 Key word MODE_STAT

Name of the concept of the mode_meca type by the operator produces MODE_STATIQUE [U4.52.14] which contains the static modes.

3.4 Key word ORTHO_BASE

♦/ORTHO_BASE

Key word allowing of orthonormaliser the modes of a base This orthonormalization is made with an algorithm of the type iterative Graam-Schmidt (IGS) according to the version of Kahan-Parlett.

3.4.1 Key word BASE

Name of the concept of the mode_meca type containing dynamic eigen modes.

3.4.2 Key word MATRICE

Name of the concept of the matr_asse_* type which contains will be taken into account for the scalar products at the time of the reorthogonalisation.

3.5 Key word solver

◊ solver = _F (...)

This key word factor is optional: it makes it possible to choose another solver of resolution of system. In the case of this command, the syntax of the key word is restricted with two methods: one can choose between the method by default, MULT_FRONT, and the methods LDLT or MUMPS. Syntax being common to several commands, please consult the handbook [U4.50.01].

3.6 Operand TITER

◊TITER = title

Titrates concept created.

3.7 Operand INFO

◊INFO =

Level of the information provided in the file "MESSAGE":

1 step of printing,
2 writing of the general information (concepts upstream, base type),

4 Example

an example of use of the command is given in the documentation of operator DEFI_SQUELETTE [U4.24.01].