Operator ELIM_LAGR

1 Goal

To remove the equations of Lagrange in a matrix which has some.

This order is experimental. It before is very intended to produce matrices “without Lagrange” for the operator of modal calculation (CALC_MODES).

Note:

- To eliminate the equations from Lagrange, one is led to eliminate certain physical degrees of freedom (one eliminates one degree of freedom physics for each linear relation if the relations are not redundant).
- If one does a modal calculation with “reduced” matrices, the calculated modes do not have values on the physical degrees of freedom which one eliminated.

Product a structure of data of the type matr_asse_elim, only usable in CALC_MODES.

2 Syntax

```
M2 [matr_asse_elim_R]  =  ELIM_LAGR
              (  ♦  MATR_RIGI = K1,                   [matr_asse_DEPL_R]
                 ◊  MATR_ASSE = M1,                   [matr_asse_DEPL_R]


                 ◊  TITLE  =  titr   ,                [l_K80]
                 ◊  INFORMATION  =  /  1   ,               [DEFECT]
                                    /  2   ,
              )
```

3 Operands

3.1 Operand **MATR_RIGI**

♦ MATR_RIGI = K1,

Name of the assembled matrix of rigidity (with linear relations to eliminate)
If the keyword MATR_ASSE is not used, it is the matrix K1 that one “reduces” to create the matrix result (M2).

3.2 Operand **MATR_ASSE**

◊ MATR_ASSE = M1,

Name of the assembled matrix mass, damping,… (not of rigidity) which one wants to reduce.
If this keyword is used, it is the matrix M1 that one “reduces” to create the matrix result (M2).

3.3 Operand **TITLE**

◊ TITLE = titr,

Title which one wants to give to the produced result [U4.03.01].

3.4 Operand **INFORMATION**

◊ INFORMATION =

1 : no impression.
2 : impressions

4 Calculation on several processors

When several processors are used, itS data of model DOIwind being retorted on all the processors taking part in calculation by using the keyword DISTRIBUTION order AFFE_MODELE

```
MODEL=AFFE_MODELE (…
                     DISTRIBUTION=_F (METHODE=' CENTRALISE'))
```

Calculation can then be carried out on several processors. Attention, all the processors carrying out the same operations, it does not have there profit of calculation for the stage of elimination of the multipliers of Lagrange. The interest is to then carry out a modal calculation on several processors.

5 Example

5.1 Modal calculation on matrices with or without equations of Lagrange

```
K1 = ASSE_MATRICE (NUME_DDL=NU, MATR_ELEM=KEL,)
M1 = ASSE_MATRICE (NUME_DDL=NU, MATR_ELEM=MEL,)


# 1. calculation with the complete matrices:
#--------------------------------------------------------

mode1 = CALC_MODES (MATR_RIGI=K1,
                    MATR_MASS=M1,
                    OPTION=' BANDE',
                    CALC_FREQ=_F (FREQ= (- 2, 30),))


# 2. calculation with the matrices reduced by ELIM_LAGR:
#--------------------------------------------------------

K2=ELIM_LAGR (MATR_RIGI=K1,)
M2=ELIM_LAGR (MATR_RIGI=K1, MATR_ASSE=M1)

mode2 = CALC_MODES (MATR_RIGI=K2,
                    MATR_MASS=M2,
                    OPTION=' BANDE',
                    CALC_FREQ=_F (FREQ= (- 2, 30),))
```