

## Operator ELIM\_LAGR

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### 1 Goal

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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 a physical ddl 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`.

## 2 Syntax

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```
M2 [matr_asse_DEPL_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

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### 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 Example

### 4.1 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:
#-----

model = 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),))
```