Operator PROD_MATR_CHAM

1 Goal

To carry out the product of a matrix by a vector.

The matrix is a structure of data of the type matr_asse: it is with actual values or complex, symmetrical or not symmetrical. The vector is a structure of data of the type cham_no. It is with actual values or complex. One imposes who matrix and vector are both to actual values or both with complex values (if not to use the orders before COMB_MATR_ASSE [U4.72.01] or CREA_CHAMP [U4.72.04]) and that they divide same classification (see order NUME_DDL [U4.61.11]).

Product a concept of the type cham_no.
2 Syntax

\[
\text{uass} \ [\text{cham\_no}] = \text{PROD\_MATR\_CHAM} (\)
\]

\[
\begin{align*}
\ast & \text{MATR\_ASSE} = m, \quad / \ [\text{matr\_asse\_DEPL\_R}] \\
\ast & \ [\text{matr\_asse\_TEMP\_R}] \\
\ast & \ [\text{matr\_asse\_DEPL\_C}] \\
\ast & \ [\text{matr\_asse\_PRES\_C}] \\
\ast & \text{CHAM\_NO} = U, \quad [\text{cham\_no}] \\
\ast & \text{TITLE} = \text{titr}, \quad [l\_Kn] \\
\end{align*}
\]

Size associated with the cham_no result with the order (uass) is the same one as that of U.
3 Operands

3.1 Keyword MATR_ASSE

♦ MATR_ASSE = m

Name of the matrix (concept matr_asse_*) to multiply.

3.2 Keyword CHAM_NO

♦ CHAM_NO = U

Name of the vector (concept cham_no) to multiply.

3.3 Keyword TITLE

◊ TITLE = titr

Title which one wants to give to the result

4 Checks

• Checking that the matrix and the vector to be multiplied are both to actual values or both with complex values.

• Checking of coherence: operands of the type matr_asse_* and of type cham_no must share same classification.

5 Example of use

Product stamps vector:

\[
\text{u_mv_1} = \text{PROD_MATR_CHAM} \quad (\text{MATR_ASSE} = \text{mat_1},
\text{CHAM_NO} = \text{u_1})
\]

For example, one can use this order to create a vector second member resulting from the product of the matrix of mass and a vector acceleration obtained by the order DYNA_LINE_TRAN. This vector second member can be used as loading for a static calculation.