
Operator MODI_MODELE_XFEM

1 Drank

To modify a model by the introduction of specific finite elements which can be crossed by a crack of the X-FEM type.

This operator allows to modify certain conventional finite elements in finite elements nouveau riches; the elements to be modified were as a preliminary given by the operator `DEFI_FISS_XFEM` [U4.82.08].

The new model thus defined could be used in the continuation of computations like data as entry:

- to operators `MECA_STATIQUE` [U4.51.01] or `STAT_NON_LINE` [U4.51.03] so the model initial is a mechanical model
- with operator `THER_LINEAIRE` [U4.54.01] so the model initial is a thermal model

the operator produces concept of a model `type`.

2 Syntax

```
[model]      =MODI_MODELE_XFEM  (

    ◆MODELE_IN      =mo ,                               [model]

    ◆FISSURE        =  ( fiss1, fiss2)

[l_fiss_xfem]

    ◇ CRITERE=/      1.68E-8,                            [DEFAULT]
                    / crit,                               [R]

    ◇CONTACT=/      "NON",                               [DEFAULT]
                    / "P1P1",
                    / "P2P1",

    ◇INFO=/1        ,
[DEFAULT]

                    /2,

    )
```

3 Operands

3.1 Operand MODELE_IN

◆MODELE_IN=mo

Mo : name of the initial model on which one defined crack as a preliminary by the operator DEFI_FISS_XFEM [U4.82.08].

This initial model is used as a basis for creation of the new model. It is advised to choose a different name for the new model.

3.2 Operand FISSURES

◆ CRACK = (fiss1,...)

(fiss1,...) : list by the operator names of as a preliminary definite cracks DEFI_FISS_XFEM [U4.82.08]. The number of cracks in a model is not restricted.

3.3 Operand CRITERE

◆CRITERE=crit

crit : actual value of the criterion allowing the cancellation of the degrees of freedom nouveaux riches when the crack passes close to a node. When the crack 3D cuts an element in two volumes, the relationship between smallest volume and greatest volume should not exceed this criterion, if not, that can cause problems of conditioning in the stiffness matrix, and lead to null pivots. Thus, if the criterion is exceeded, the degrees of freedom being able to lead to null pivots are eliminated automatically. The value by default of the criterion is based on simple tests [R7.02.12].

3.4 Operand CONTACT

◆CONTACT=/ "NON"
/ "P1P1"
/ "P2P1"

This operand makes it possible to announce if the contact must be taken into account on the lips of crack.

If it is the case, a contact load must be then introduced by the command AFFE_CHAR_MECA.

The option:

/ "P1P1" : is activated if the elements of crack are linear.
/ "P1P2" : is activated if the elements of crack are quadratic.

3.5 Operand INFO

/1 : printing on the file "MESSAGE"
1) Of the stages of computation
2) Amongst finite elements of the /2

model : even printing + printing for each mesh of the type of mesh enriched and its number of the type of finite element.

4 Example

```
FISS_ELL=DEFI_FISS_XFEM      ( MODELE=MOD_INIT      ,  
  
                              .....  
  
                              )  
  
MOD_ENRI=MODI_MODELE_XFEM    (      MODELE_IN=MOD_INIT  ,  
                              FISSURE=FISS_ELL      ,  
                              INFO=2                , )
```