

## Operator POST\_MAIL\_XFEM

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### 1 Drank

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To create the cracked mesh of a structure according to the method X-FEM.

This operator meshes produces a new mesh while adding in order to follow the place of crack described by the level sets. One "nets" crack thus. This mesh will be used only with ends as visualization and does not have to be used for a computation.

Product a concept of the maillage\_sdaster type.

This concept is essential to operator POST\_CHAM\_XFEM [U4.82.22].

## 2 Syntax

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```
ma2 [maillage_sdaster] _=POST_MAIL_XFEM (
    ◆MODELE=mo
    [modele_sdaster]
    ◇ PREF_NOEUD_X=/pref_nx
    / "NX" [DEFAULT]
    ◇ PREF_NOEUD_M=/pref_nm
    / "Nm" [DEFAULT]
    ◇ PREF_NOEUD_P=/pref_np
    / "NP" [DEFAULT]
    ◇PREF_MAILLE_X=/pref_mx
    / "MX" [DEFAULT]
    ◇PREF_GROUP_CO=/pref_mx
    / "NFISSU" [DEFAULT]
    ◇TITER=titer [see U4.03.01]
    ◇INFO=1 [DEFAULT]
    2
```

## 3 Operands

### 3.1 Operand MODELS

◆MODELE=mo ,

Name of the model X-FEM generated by the command MODI\_MODELE\_XFEM .

### 3.2 Operands PREF\_NOEUD\_X, PREF\_NOEUD\_M, PREF\_NOEUD\_P, PREF\_MAILLE\_X, PREF\_GROUP\_CO

◆PREF\_NOEUD\_X=pref\_nx ,  
◆PREF\_NOEUD\_M=pref\_nm ,  
◆PREF\_NOEUD\_P=pref\_np ,  
◆PREF\_MAILLE\_X=pref\_mx ,  
◆PREF\_GROUP\_CO=pref\_gc ,

pref\_nx : name of the new simple nodes prefixes (not located on the lips).  
pref\_nm : name of the new double nodes located on the lip prefixes "less".  
pref\_nm : name of the new double nodes located on the lip prefixes "more".  
pref\_mx : name of the news prefixes meshes.  
pref\_gc : name of the group created with the nodes located on the lip "less".

The names by default can cause errors if these names already exist in the initial mesh (what can be the case with a mesh coming from Salomé, because Salomé does not name the nodes  $N1$  ,  $N2$  ...).

Nodes group PREF\_GROUP\_CO is intended to be used for postprocessing of the contact. It contains exactly the nodes on the side slave of crack which will carry ddls of contact (after call to POST\_CHAM\_XFEM).

### 3.3 Remarks

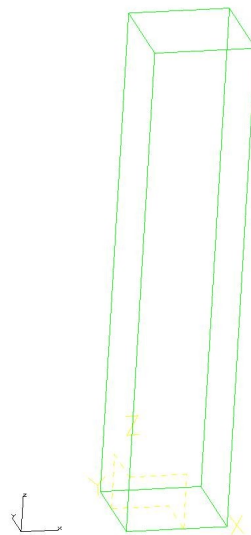
- 1) the product concept by this command is only reserved for postprocessing of the elements X-FEM. To in no case, it will not have to be used for computation.
  - 2) To allow the opening of crack, the nodes tops of the initial mesh pertaining to crack were doubled and of new nodes of the plane of crack were added to carry out the under-cutting of the X-FEMs meshes.
  - 3) The GROUP\_MA groups of the sane mesh are preserved in the mesh post-treaty:
    - if a mesh of a GROUP\_MA is classical, it is copied such as it is in the GROUP\_MA of the mesh post-treaty,
    - if a mesh of a GROUP\_MA is X-FEM, it is replaced by its subelements in the GROUP\_MA of the mesh post-treaty, provided the mesh is quite affected of a model.It may be thus that certain GROUP\_MA disappear, if they only contain meshes without modelization.
- 1) To allow the visualization of the crack tips, of the nodes and meshes are built in these points. The prefix of the built nodes is  $NF$  and that of meshes is  $MF$  . Meshes are of type PO11 in 2D and SEG2 in 3D.  
Nodes groups and meshes are also built. The nodes groups are named  $NF_{xx_{yy}}$  where  $xx$  indicates  $xx$  ième crack and  $yy$   $yy$  the ième bottom. The mesh groups are named  $MF_{xx_{yy}}$  or  $xx$  indicates  $xx$  ième crack and  $yy$   $yy$  the ième bottom.

## 4 Example of Bar

### 4.1 use fissured with X-FEM (treated by test SSNV173A)

#### 4.1.1 voluminal Mesh initial (not fissured)

Mesh made up of only one mesh of the type HEXA8



#### 4.1.2 Extracted the command file

```
debut ();

# Definition of model
MODELEIN=AFFE_MODELE ( MAILLAGE=MAILLAG2,
                        AFFE=_F ( GROUP_MA=' VOL',
                                  PHENOMENE=' MECANIQUE',
                                  MODELISATION=' 3D',),),);

# Definition of crack (planes)
LN=FORMULE (NOM_PARA= ("X", "Y", "Z"), VALE=' Z-12.5 ');
LT=FORMULE (NOM_PARA= ("X", "Y", "Z"), VALE=' X-10. ');

FISS=DEFI_FISS_XFEM ( MODELE=MODELEIN,
                      DEFI_FISS=_F ( FONC_LT=LT,
                                       FONC_LN=LN,),
                      GROUP_MA_ENRI=' VOL',);

# Taken into account of crack in the model
MODELEK=MODI_MODELE_XFEM ( MODELE_IN=MODELEIN,
                           FISSURE=FISS,
                           INFO=2,);

# Design of cracked mesh
MA_XFEM=POST_MAIL_XFEM ( MODELE=MODELEK,);
```

*Warning : The translation process used on this website is a "Machine Translation". It may be imprecise and inaccurate in whole or in part and is provided as a convenience.*

FIN ();

## 4.1.3 Cracked mesh

