

Operator CALC_FORC_NONL

1 Drank

To create new result complementary nodal forces to use in operators DYNALINE_HARM and DYNALINE_TRAN under key word EXCIT_RESU.

2 Syntax

```
resu      [dyna_trans]      = CALC_FORC_NONL

(
  ◆RESULTAT=resu      ,      [dyna_trans]

  ◇OPTION      = "FONL_NOEU",      [DEFAULT]
  ◆MODELE      = model,      [model]
  ◆CHAM_MATER  = chmater,      [cham_mater]
  ◇CARA_ELEM   =carac,      [cara_elem]
  ◇COMP_INCR   =_F (
    ◆RELATION   =/cf relations [U4.51.11]

    ◇DEFORMATION =      "PETIT",      [DEFAULT]
                    /      "PETIT_REAC",
                    /      "SIMO_MIEHE",

    /TOUT      = "OUI",      [DEFAULT]
    /  | GROUP_MA = lgrma,      [l_gr_maille]
      | NET = lma,      [l_maille]
      ),

    ◇/TOUT_ORDRE=' OUI' ,      [DEFAULT]
  /NUME_ORDRE  =l_nuor      ,      [l_I]
  /LIST_ORDRE  =l_ordr      ,      [listis]
  /NOEUD_CMP   =l_mode      ,      [l_Kn]
  /NUME_MODE   =l_numo      ,      [l_I]
  /NOM_CAS     =nomcas      ,      [kN]
  //INST       =l_inst      ,      [l_R]
  /LIST_INST   =l_inst      ,      [listr8]
  /FREQ        =      l_freq,      [l_R]
  /LIST_FREQ   =l_freq      ,      [listr8]
  /CRITERE     = "RELATIF",      [DEFAULT]
    ◇ PRECISION=/prec      ,      [R]
                    /1.0D-6      ,      [DEFAULT]
  /CRITERE     = "ABSOLU",
    ◆ PRECISION=prec      ,      [R]
)

```

3 Operands

3.1 Operands TOUT_ORDRE / NUME_ORDRE / LIST_ORDRE / NUME_MODE / NOEUD_CMP / NOM_CAS / INST / LIST_INST / FREQ / LIST_FREQ / accuracy / CRITERE

See [U4.71.00] for the description of these operands.

3.2 Operand OPTION: "FONL_NOEU"

◇ OPTION = ' FONL_NOEU '

Computation option of the complement of internal forces due to nonthe linearities of behavior. This option relates to the constitutive laws where the internal forces depend primarily on the kinematical fields (displacements, velocities, accelerations); it thus relates to especially nonthe linearities located such as for example the contact penalized between discrete elements. The terms calculated with the nodes are obtained by the difference between the integrated residue in internal forces (depending at the same time on the kinematical fields and the parameters of constitutive law) and the internal force which would be obtained starting from the same kinematical fields by considering a linear behavior for structure.

Note:

In the precise case of the computation of this option, the name of the result concept created of `dyna_trans` type is obligatorily different from the name of result concept of the `dyna_trans` type used in entry under operand `RESULTAT` and constitutes an evolution of fields of the type "DEPL". This new result of complementary nodal forces is used in operators `DYNA_LINE_HARM` (in this case after transformation by the operator `REST_SPEC_TEMP` [U4.63.34]) and `DYNA_LINE_TRAN` under key word `EXCIT_RESU`. An example is provided in the case test `SDLL119A`.

3.2.1 MODEL operand

◆MODELE = Mo,

Name of the model, necessary to enter, on which option "FONL_NOEU" is calculated".

3.2.2 Operand CHAM_MATER

◇CHAM_MATER = chmater,

Name of the material field where the characteristics of material of the elements are defined. This argument is necessary for the computation of option "FONL_NOEU" because the constitutive laws defined in key keys `COMP_INCR` always require a material field.

3.2.3 Operand CARA_ELEM

◇CARA_ELEM = carac,

the concept of the elementary characteristics of `cara_elem` type is necessary for the computation of option "FONL_NOEU" if there exists in the model structural elements.

3.2.4 Operand COMP_INCR

◇COMP_INCR = _F

Key word factor allowing to assign constitutive laws to meshes or mesh groups of the mesh.

One defines an assignment by occurrence of key word COMP_INCR.

3.2.4.1 Operand RELATION

◇RELATION ,

Name of a relation of constitutive law under format text. The allowed relations are those where the internal forces depend primarily on the kinematical fields (displacements, velocities, accelerations); in addition to relation "ELAS", the first relation planned for L `option "FONL_NOEU" is a relation "DIS_CHOC" assigned to discrete elements.

3.2.4.2 Operand DEFORMATION

◇DEFORMATION ,

Name of the type of strain under format text compatible with the type of the elements affected by the constitutive law.

3.2.4.3 Operands TOUT/GROUP_MA/MAILLE

◇ TOUT = "OUI" ,

the relation is affected on all the mesh.

◇ GROUP_MA = l_{gma} ,

the relation is affected on the mesh groups contained in the list l_{gma}.

◇ MESH = l_{ma} ,

the relation affected on is meshes contained in the list l_{ma}.