
Operator DEPL_INTERNE

1 Drank

Compute the field inside a macro-element. Two cases can exist: the macro-element was obtained by *static substructuring*, or the macro-element was obtained by condensation of measurement for a computation of *structural modification* (see U4.62.01).

In the case of substructure static : result of the command is a field of displacement (`cham_no`) on the mesh associated with the macro-element (i.e. mesh of lower level). One can reiterate this operation until the meshes moreover low level (those which contain the finite elements).

This stage can be regarded as a postprocessing on the macro-element. It can be carried out only after the total resolution. The field thus calculated can be then used by the operator `CALC_CHAMP` (or other operators) to compute: the stresses,....

When a macro-element gave rise to several substructures, the fields of displacements in these substructures are restored on the mesh subjacent with the macro - element. There is thus change of reference of the field of displacement if under - structure were turned.

If substructure were turned of $+\alpha$, the field of displacement is turned of $-\alpha$.

This field of displacement is then coherent with the mesh and one can connect the post - processing: computation of the stresses,...

If the macro-element is obtained by condensation of measurement for a computation of structural modification, result of the command is a data structure of the type `result` (`evol_elas`, `dyna_trans`, `dyna_harmo`, `mode_meca`) on the mesh sensor (points of measurement). In this data structure are calculated the fields of displacement corresponding to `NOM_CHAM = "DEPL"`

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2 Syntax

```
U ( * ) =DEPL_INTERN (
    ◆ DEPL_GLOBAL=ug , / [cham_no]
    / [evol_elas]
    / [dyna_trans]
    / [dyna_harmo]
    / [mode_meca]
    / [mode_meca_c]
    ◆SUPER_MAILLE=mail , [mesh]
    ◇NOM_CAS=/nocas / "" , [K8]
    [DEFAULT]
)
```

If ug of the cham_no_DEPL_Ralors type (*) =cham_no_DEPL_R
If ug of the evol_elasalors type (*) =evol_elas
If ug of the dyna_transalors type (*) =dyna_trans
If ug of the dyna_harmocalors type (*) =dyna_harmo
If ug of the mode_mecalors type (*) =mode_meca
If ug of the mode_meca_calors type (*) =mode_meca_c

3 Operands

3.1 Operand DEPL_GLOBAL

◆DEPL_GLOBAL = ug

If the macro-element is obtained by static substructuring:

ug is the name of the field of displacement obtained during the resolution at the total level on the macro-element.

If the macro-element is obtained by condensation of measurement for a computation of structural modification:

ug is the name of data structure of the type `result` obtained during a computation on the model coupled (total level). In this data structure, one uses, for each number D" order the field (of displacement) corresponding with `NOM_CHAM=" DEPL"`.

3.2 Operand SUPER_MAILLE

◆SUPER_MAILLE = mail

One gives here the name of the super-mesh which supports substructure (cf operator `DEFI_MAILLAGE [U4.23.01]`).

3.3 Operand NOM_CAS

◆NOM_CAS = nocas

`nocas` is the name of the loading case corresponding to `ug`. This data is essential if there exists a distributed loading on substructure. It is to the user to make sure that the field `ug` corresponds well to the `nocas` loading case.

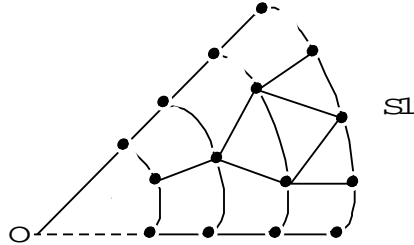
The names of case charges possible are those defined in the macro-element; i.e. those given via key word `CAS_CHARGE/NOM_CAS` of commands `MACR_ELEM_STAT` and `MACR_ELEM_DYNA`.

If `nocas = ' '`, the field of displacement were calculated without distributed loading on under - structure.

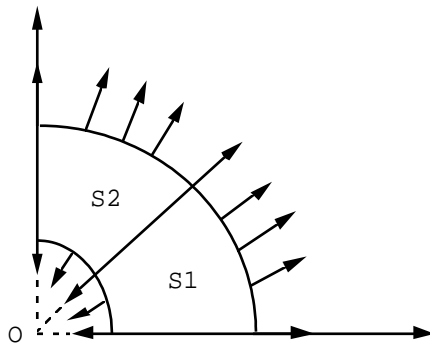
This operand is not used if the macro-element is obtained by condensation of measurement.

4 Mesh

- example of level 1: my , macro-element: S1

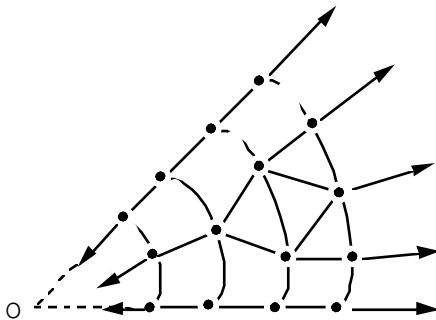


- Maillage of level 2: 2 substructures: S1 and S2 (obtained by rotation of S1).



U_g displacement :

- known on the external nodes of substructures,
 - one supposes it radial (compared to O).
- $u2 = \text{DEPL_INTERNE} (\text{DEPL_GLOBAL} = u_g, \text{SUPER_MAILLE} = S2)$



$u2$ Displacement :

- known on all the nodes of my ,
- there remains radial because the field was turned of -45° to be coherent with the mesh.