

Operator POST_CHAMP

1 Drank

specific Postprocessings for the structural elements (shells, beams,...):

- extraction of a field for a subpoint
- computation of the maximum minimum/on all the subpoints of a point
- taken into account of the eccentricing of the plates for the computation of the forces

2 Syntax

```
resu2 [*] = POST_CHAMP (

  ◆RESULTAT=resu          ,          [evol_elas, evol_noli, dyna_harmo, mult_elas]

  ◇#Sélection          of the sequence numbers:
    /TOUT_ORDRE          =          ' OUI',          [DEFAULT]
    /NUME_ORDRE          =l_nuor          ,          [l_I]
    /NUME_MODE           =l_numode        ,          [l_I]
    /LIST_ORDRE          =l_nuor          ,          [listis]
    /NOEUD_CMP           =          l_nocmp,          [l_K16]
    /NOM_CAS             =nocas          ,          [K16]
    /◆/INST              =l_inst         ,          [l_R]
      /LIST_INST         = l_inst,          [listr8]
      /FREQ              = l_inst,          [listr8]
      /LIST_FREQ        = l_freq,          [listr8]
    ◇ | accuracy = prec,
      /1.0E-6,          [DEFAULT]
      | CRITERE = "RELATIF",          [DEFAULT]
      /"ABSOLU",

  ◇#Sélection          of the geometrical zone:
    /TOUT                =          ' OUI',          [DEFAULT]
    /GROUP_MA            =l_grma         ,          [l_group_ma]
    /MAILLE              =l_maille      ,          [l_maille]

  ◆/EXTR_COQUE=_F      (
    ◆ NOM_CHAM           =lnosym        ,          [l_Kn]
    ◆ NUMÉRIQUE_COUCHE  =nucou         ,          [I]
    ◆ NIVE_COUCHE       =          "INF",
      / "SUP",
      / "MOY",
    ),

  /EXTR_TUYAU           =_F      (
    ◆ NOM_CHAM           =lnosym        ,          [l_Kn]
    ◆ ANGLE              =delta         ,          [I]
    ◆ NUMÉRIQUE_COUCHE  =nucou         ,          [I]
    ◆ NIVE_COUCHE       =          "INF",
      / "SUP",
      / "MOY",
    ),

  /EXTR_PMF             =_F      (
    ◆ NOM_CHAM           =lnosym        ,          [l_Kn]
    ◆ NUMÉRIQUE_FIBER   =nufib         ,          [I]
    ),

  /MIN_MAX_SP          = ( _F (
    ◆ NOM_CHAM           =nomsym        ,          [kN]
    ◆ NOM_CMP            =nocmp         ,          [kN]
    ◆ TYPE_MAXI          =          "MAXI",
      / "MINI",
      / "MAXI_ABS",
      / "MINI_ABS",
    ◆ NUME_CHAM_RESU     =nuch         ,          [I]
  )
)
```

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.

```
    ) ) ,  
  
    /COQU_EXCENT = ( _F (  
        ♦ NOM_CHAM = "EFGE_ELNO" ,  
        / "EFGE_ELGA" ,  
        ♦ MODI_PLAN = ' OUI' ,  
    ) ) ,  
)
```

[*] the type of `resu2` is the same one as that of `resu`

3 General information

3.1 Extraction of a field for a subpoint

When that a `sd_resultat (resu)` contains fields "at subpoints" (case of the multi-layer shells, pipe sections or beam elements multifibre), command `POST_CHAMP` makes it possible to create another `sd_resultat (resu2)` which will contain the restriction of the fields on subpoints on only one subpoint.

4 Operands

4.1 Operand `RESULTAT`

◆ `RESULTAT =resu`

Name of a result concept of the type `result`.

4.2 Selection of the sequence numbers

the use of key words `TOUT_ORDRE`, `NUME_ORDRE`, `INST`,... is described in the document [U4.71.00].

4.3 Selection of the elements concerned

Thanks to key keys `TOUT=' OUI '`, `GROUP_MA` and `MESH`, the user can select the elements on which computations will take place.

Note: if the user selects elements which are not structural elements, those are ignored.

4.4 Key word `EXTR_COQUE`

This key word is used to extract a field on only one subpoint for shell elements.

4.4.1 Operand `NOM_CHAM`

key word `NOM_CHAM` makes it possible to indicate the fields to be extracted as a result the `resu`.
Are authorized:

<code>SIGM_ELGA</code>	<code>SIGM_ELNO</code>	<code>SIEQ_ELGA</code>	<code>SIEQ_ELNO</code>
<code>EPSI_ELGA</code>	<code>EPSI_ELNO</code>	<code>EPEQ_ELGA</code>	<code>EPEQ_ELNO</code>
<code>SIEF_ELGA</code>	<code>SIEF_ELNO</code>	<code>VARI_ELGA</code>	<code>VARI_ELNO</code>

4.4.2 Operand `NUME_COU`

◆ `NUME_COU = nucou, [I]`

Number of the layer containing the subpoint to be extracted.

By convention, the layer `1` is the sub-base (in the meaning of the norm) of the shell elements.

4.4.3 Operand `NIVE_COU`

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◆NIVE_COUCHE =

For the `nucou` layer defined by `NUME_COU`, makes it possible to specify the Y-coordinate of under-point:

"INF"	ordered lower of the layer	(skin interns),
"SUP"	ordered higher of the layer	(external skin),
"MOY"	ordered average of the layer	(average average).

4.5 Key word EXTR_TUYAU

This key word is used to extract a field on only one subpoint for pipe sections.

4.5.1 Operand NOM_CHAM

key word `NOM_CHAM` makes it possible to indicate the fields to be extracted as a result `the resu.`
Are authorized: (see 4)

4.5.2 Operand NUME_COU

◆ `NUME_COU = nucou, [I]`

Number of the layer containing the subpoint to be extracted.

By convention, the layer 1 is the internal layer of an element `PIPE`.

4.5.3 Operand NIVE_COU

◆NIVE_COUCHE =

For the `nucou` layer defined by `NUME_COU`, makes it possible to specify the Y-coordinate of under-point:

"INF"	ordered lower of the layer	(skin interns),
"SUP"	ordered higher of the layer	(external skin),
"MOY"	ordered average of the layer	(average average).

4.5.4 Operand ANGLE

◆ `ANGLE =delta , [I]`

`delta` : angle in degrees (whole value), counted from the position of the generator of the element pipe.

Note: The subpoints of the pipes are spaced regularly in the thickness of the pipe like in azimuth. When the user indicates an angle which does not correspond geometrically with a subpoint (in azimuth), one carries out a linear interpolation between the 2 subpoints which "frame" the specified angle.

4.6 Key word EXTR_PMF

This key word is used to extract a field on only one subpoint for multifibre beam elements.

4.6.1 Operand NOM_CHAM

key word `NOM_CHAM` makes it possible to indicate the fields to be extracted as a result `the resu.`
Are authorized: (see 4)

4.6.2 Operand NUME_FIBRE

◆ NUME_FIBRE = nufib, [I]

Number of fiber corresponding to the subpoint to extract.

4.7 Key word MIN_MAX_SP

This key word is used to calculate the value "maximum" (or minimal) of a component of a field. The "max" being taken on all the subpoints.

If the inputted field is for example a stress field `ELGA` on the subpoints of a multi-layer shell, the output field will be a field `ELGA` (without subpoints) containing for each Gauss point the value "max" of the stress.

Besides the value "max", one extracts also information making it possible to locate the subpoint having reached the "max". At the end of the day, on each "point", one calculates 6 components:

VAL	the value of "max"
NUCOU	Number of the layer if the element is a multi-layer shell or a pipe
NUSECT	Number of the angular sector if the element is a pipe
NUFIBR	Number of fiber if the element is a multifibre beam
POSIC	"Position" in the layer: -1. : position "INF" 0. : position "MOY" +1. : position "SUP"
POSIS	"Position" in the sector: -1. : "beginning" of the sector (in the meaning of the increasing azimuths) 0. : "medium" of the sector (in the meaning of the increasing azimuths) +1. : "fine" of the sector (in the meaning of the increasing azimuths)

4.7.1 Operand NOM_CHAM

key words `NOM_CHAM` makes it possible to indicate the field to be extracted as a result `the resu`.
Are authorized: (see 4)

4.7.2 Operand NOM_CMP

◆ `NOM_CMP = nocmp,` [kN]

Name of the component which one wishes to calculate the "max".

4.7.3 Operand TYPE_MAXI

This key word is used to choose the "type" of sought maximum:

"MAXI"	One extracts the maximum value from the component by taking account of its sign
"MINI"	One extracts the minimal value from the component by taking account of its sign
"MAXI_ABS"	One extracts the maximum value from the absolute value of component
"MINI_ABS"	One extracts the minimal value from the absolute value of the component

4.7.4 Operand NUME_CHAM_RESU

◆ `NUME_CHAM_RESU = nuch,` [I]

the `nuch number` is used to name the produced field.

If for example, `NOM_CHAM = "SIEF_ELGA"` and `NUME_CHAM_RESU = 7`, in structure of data result produced, the field will be accessible by `NOM_CHAM = "UT07_ELGA"`. It is 7th field ELGA "User" in data structure.

Note: `nuch` is restricted to 20.

4.8 Key word `COQU_EXCENT`

This key word is used to modify the "plane" of computation of the forces generalized in the offset plates.

The field found under name `NOM_CHAM` in the `sd_resultat` of entry (`resu`) contains forces calculated in the "plane" of the mesh.

One takes account of the eccentricing of the elements to modify the computation of the moments (one calculates them in the average "plan" of the offset plate).

4.8.1 Operand `NOM_CHAM`

key words `NOM_CHAM` makes it possible to indicate the field to be extracted as a result the `resu`.
Are authorized: `"EFGE_ELNO"` and `"EFGE_ELGA"`.

4.8.2 Operand `MODI_PLAN = "OUI"`

This key word is used to confirm that one wants to modify the "plane" of computation for the forces in the offset plates.

5 Extraction

5.1 examples of the stresses on 1 subpoint for pipe sections

```
U2=POST_CHAMP      (RESULTAT = U1,  
                    TOUT_ORDRE = "OUI",  
                    TOUT = "OUI",  
                    EXTR_TUYAU = _F (NOM_CHAM      = "SIGM_ELGA",  
                                       NUME_COUCHE = 3,  
                                       NIVE_COUCHE  = "SUP",  
                                       ANGLE        = 90),);
```

5.2 Extraction of the stress of Von-Put maximum (and minimum) for pipe sections

```
U2=POST_CHAMP      (RESULTAT = U1, TOUT_ORDRE = "OUI", GROUP_MA = "PIPE",  
                    MIN_MAX_SP = (  
                        _F (NOM_CHAM = "SIEQ_ELGA", NOM_CMP=' VMIS',  
                            TYPE_MAXI = "MAXI", NUME_CHAM_RESU=1),  
                        _F (NOM_CHAM = "SIEQ_ELGA", NOM_CMP=' VMIS',  
                            TYPE_MAXI = "MINI", NUME_CHAM_RESU=2),  
                    ));
```