1 Goal

To write a grid and/or results of a calculation on a file with the format ‘CASTEM’. Currently this procedure makes it possible to write with the choice:

- a grid,
- fields with the nodes (of displacements, temperatures, clean modes, static modes,…),
- fields by elements with the nodes (of constraints, generalized efforts, internal variables…), if these fields by elements do not have under points.

For the concepts of the type result, one can print only part of information, by selecting the fields and the sequence numbers which one wishes to exploit.
2 Syntax

IMPR_RESU (  
  ◊ MODELE= MO, [model]  
    ◊ FORMAT = / 'CASTEM',  
    ◊ UNIT = / links, [I]  
       / 37 [DEFECT]  
    ◊ NIVE_GIBI = / 3,  
       / 10, [DEFECT]  
  
  ◊ RESU = (_F (  
    ◊ | GRID = MY, / [grid]  
      / [skeleton]  
      | / CHAM_GD = CH_GD,  
      / RESULT = RESU,  

# Extraction of a field of size of resu
  ◊ / TOUT_CHAM = /'YES', [DEFECT]  
     /'NOT',  
     / NOM_CHAM = l_nomsymb, [l_K16]  
  
  ◊ / TOUT_ORDRE = 'YES', [DEFECT]  
     / NUME_ORDRE = lordre, [l_I]  
     / LIST_ORDRE = lenti, [listis]  
     / NUME_MODE = lmode, [l_I]  
     / NOEUD_CMP = lnoecmp, [l_K16]  
     / NOM_CAS = ncas, [l_K16]  
     /ANGLE = langl, [l_K16]  
     / FREQ = lfreq, [l_R]  
     / LIST_FREQ = lreel, [listr8]  
     / INST = linst, [l_R]  
     / LIST_INST = lreel, [listr8]  
    ◊ | PRECISION =/ prec, [R]  
      / 1.0D-3, [DEFECT]  
      | CRITERION =/ 'RELATIVE', [DEFECT]  
      / 'ABSOLUTE',  

# Selection of the components
  ◊ / TOUT_CMP = 'YES', [DEFECT]  
     / NOM_CMP = l_nomcmp, [l_K8]  
       ) , ) , )

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.

Copyright 2017 EDF R&D - Licensed under the terms of the GNU FDL (http://www.gnu.org/copyleft/fdl.html)
3 Formats of writing and logical unit

Procedure `IMPR_RESU` allows to write a grid and/or values of results to the format of software CASTEM 2000 developed by the ECA for a graphic visualization by GIBI. Software GIBI (operators of postprocessing of CASTEM 2000) is usable free with `Code_Aster`.

One asks for the creation of an ASCII file, which could be read again by GIBI. In GIBI, the second reading of the file is made by orders OPTI REST FORMS `***.cast'; and REST FORMS; (them *** replace the name of the file of the type `cast' given by the user in astk).

UNIT by default 37 is worth and corresponds to the type `cast' in astk.

◊ NIVE_GIBI = / 3,
    / 10, [DEFECT]

The operand NIVE_GIBI allows to choose level GIBI of impression of the grid and/or results. Level 10 (by default) corresponds to version GIBI-98, but the files thus generated can be read again by the more recent versions of GIBI. Version GIBI installed in the environment Aster is version GIBI-2000.

4 Keyword RESU

This keyword factor makes it possible to specify the results to print and the format according to which one wants to print them.

See [U4.91.01].

5 Impression of the grid: operands GRID / MODEL

This argument makes it possible to print the grid with the format `CASTEM`. The impression of the grid can be required only once and before any other result.

The concept of the type `model` is optional in the majority of the impressions.

It is however obligatory, with the format `CASTEM`, during the impression of a field per element (it is transferred as an object CASTEM of type grid).

With the format `CASTEM`, one prints:

• for each group of meshes Aster an object CASTEM of type grid and of the same name,
• an object CASTEM of type grid containing all the meshes of the grid and accessible by the name from the grid Aster,
• and, if the operand `MODEL` was specified, an object CASTEM of type grid containing all the meshes affected in the model Aster and accessible by the name from the model Aster.

Note:

If the grid were generated with Ideas or GMSH, Ideas classification or GMSH is not retranscribed with format CASTEM. The classification of the nodes in CASTEM is identical to the classification of the nodes in Aster.

6 Operands CHAM_GD and RESULT

The values of the computed fields are stored in structures of data called fields of size. These fields of size can be directly accessible (concept `CHAM_GD`) where to be in a structure of data gathering several fields of size (concept `RESULT`).

• a field of size is a structure of data which makes it possible to store fields defined in the nodes (`cham_no_*`) or of the fields defined by elements (`cham_elem_*`). For the fields by elements, one distinguishes the fields defined in the nodes from the elements and the fields defined in the points of GAUSS of the elements (the latter are not displayable with GIBI). To visualize fields by
elements at the points of GAUSS, the user can however use MACR_ECLA_PG who allows to build a new grid by bursting each mesh of the old grid out of N smaller meshes and a field with the nodes with identical values in each node top of the mesh.

- a concept result is composed of one or more fields of size. For example, with each step of calculation one stores in the structure of data result, the field of size displacement. This structure is indexed by a matric structure of order 2, whose index is, for example, the list of the moments of calculation and the other the whole of the computed fields (displacements, constraints, deformations,...).

One reaches in this case a field of size by specifying a value of a variable of access (sequence number, moment, frequency, number of mode...) and a field name ('DEPL','SIGM_ELMNO',...). There exist several types of concept result : evol_elas, evol_noli, mode_meca,... With each one corresponds a list of fields and a list of licit variables of access.

Taking into account the structure of data result, one understands easily that the possibilities of impression which one lays out are those of the fields of size, supplemented by specific possibilities.

Note:

With the format 'CASTEM' one can treat only the fields with the nodes or the fields by element defined in the nodes (in this case one must obligatorily specify the name of a model Aster by the operand MODEL).

Operand CHAM_GD

A field with the nodes Aster of name U is retranscribed with the format 'CASTEM' in a champoint of the same name. In CASTEM 2000, one can thus reach this field by the name U and one can carry out on this field all the operations allowed on champoints. It will be noted however that the components of the fields of size DEPL who are in Aster DX, DY, DZ, DRX, DRY, MARTINI, DRZ will be in CASTEM UX, UY, UZ, X-ray, RY, RZ. For all the other components the name of the component in CASTEM will be defined by the first four characters of the name of the component in Aster. All the champoints are defined compared to the grid Aster.

Some possible operations in GIBI on an object of the champoint type and named U :

- Creation and visualization of an object of the type deformed
  DEF1 = DEFORMS GRID U AMPLIFIER COLOR ;
  EXAM NERVES DEF1 ;

- Creation of an object of type vector
  VEC1 = VECTOR UX UY UZ AMPLIFIER COLOR ;
  EXAM NERVES VEC1 GRID ;

- Creation of an object of the champoint type by extraction on a champoint
  DEPX = EXCO UX U ;
  EXAM NERVES DEPX GRID ;

A field by element with the nodes of name CHAM in Aster is written with the format 'CASTEM' in a chamelem of the same name. In CASTEM 2000, one can thus reach this field by the name cham and one can carry out on this field all the operations allowed on chamelem the nodes. It will be noted however that the components of the fields of size SIGM who are in Aster SIXX, SIYY, SIZZ, SIXY, SIYZ, SIXZ will be in CASTEM SMXX, SMYY, SMZZ, SMXY, SMYZ, SMXZ. Components of the size VARI will be named V1, V2,... For all the other components the name of the component in CASTEM will be obtained by concatenation of the two first and two last letters of the name of the component in Aster. All the chamelem with the nodes are defined compared to the model Aster.

Some possible operations in GIBI on an object of the type cham_elem and named CHAM :

- All the treatments on chamelem require the preliminary creation of object CASTEM of a model type (nothing to see with the model Aster) what can be made by the order:
MODCAST = MODE MODEL MECHANICS RUBBER BAND ;

- Creation of an object of the chamelem type by extraction on a chamelem
SIGXX = EXCO SMXX CHAM ;
EXAM NERVES EYE SIGXX MODCAST GRID ;

- Creation of an object of the chamelem type by operation on a chamelem
TRE1 = TRESCA CHAM MODCAST ; (constraints of Tresca)

**Operand RESULT**

The operand RESULT allows to print the fields contained in a concept result. One can for example choose to print only certain fields (cf the following keyword: NOM_CHAM).

With the format 'CASTEM', the concept result of name TITI is written in the form of an object CASTEM of the type counts (table) of the same name than the concept result Aster.

The first index of the table is an entirety I which can take the value of the sequence numbers Aster (TITI. 1 is also a table).

The second table is subscripted by a chain made up of the reference symbol Aster U = TITI. 1. DEPL (field of displacements to the sequence number 1), SIG = TITI. 2. SIGM_ELNO (stress field to the sequence number 2).

Example:

In Aster:
IMPR_RESU (RESU = (_F (RESULT = TITI,
   NUME_ORDRE = (1.2),
   NOM_CHAM= ('DEPL', 'SIGM_ELNO'))))

In CASTEM:
U   = TITI. 1. DEPL  ; (object CASTEM of the champoint type)
SIG = TITI. 2. SIGM_ELNO; (object CASTEM of the chamelem type)

7 **Extraction of a field of size**

**Operands** TOUT_CHAM/NOM_CHAM

Cf document [U4.71.00].

**Operands**
TOUT_ORDRE/NUME_ORDRE/LIST_ORDRE/NUME_MODE/INST/LIST_INST/FREQ/LIST_FREQ/NOEUD_CMP/NOM_CAS/ANGLE/PRECISION/CITERION

Cf document [U4.71.00].

8 **Selection on the components**

Another manner of reducing the volume of the impressions is to print only the values of certain components (for example that displacement following the axis X : component DX).
One cannot print complex fields with format CASTEM, it is thus necessary, for such fields, to select \textsc{PART REALITY} or \textsc{IMAGinaire} to be printed.

**Operand TOUT\_CMP**

This keyword makes it possible to indicate that one wishes to print all the components of the field. It is the value by default.

**Operand NOM\_CMP**

This keyword makes it possible to choose the list of the components of \textsc{CHAM\_GD} (\texttt{cham\_no} and/or \texttt{cham\_elem}) or of all the fields of the concept result which one wishes to print.

Keywords \textsc{TOUT\_CMP} and \textsc{NOM\_CMP} cannot be used simultaneously.

These components are described in the specific documentation of the elements.

9 **Notice**

In Aster, there exist fields by elements with under points (as well for fields by elements with the nodes as for fields by elements at the points of Gauss).

With the format ‘\textsc{CASTEM}', \texttt{IMPR\_RESU} the impression of these fields by elements with under points does not allow.