Code_Aster

Version default

Titre : Descriptif du format des fichiers GIBI
Responsable : Mathieu COURTOIS

Date : 25/04/2013 Page : 1/6
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Description of the format of files GIBI

Summarized:

The first part of the document describes the way in which well informed is mesh file produced by GIBI by the operator `TO SAVE`, option `FORMAT`. It corresponds to version 2000 of GIBI (located by level 11 in the output file). On a simple example of a mesh, one describes the lines of the file one by one.

The second part describes the contents of the stack of the fields by elements such as must write it `IMPR_RESU` with format "CASTEM".

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1   File mesh

1.1   Example used

the description of mesh file produced by GIBI is made from the following example:

```
opti tithe 2 elem qua4;
Pa = 0 0; Pb = 1 0; liab = Pa droi 3 Pb;
known = trans liab 2 (0 1);
ens= liab and known;
opti sauv format "mon.fic"; sauv
format liab ens; end
; In
```

the results file, one inserts comments to explain what contain the lines **of the file right** afterwards. Description

1.2   of each line Beginning

of the file "mon.fic" First
package of which the number of lines does not vary. One finds there indications general. RECORD
OF TYPE 4 NIVEAU
11 NIVEAU   ERREUR 0 DIMENSION   2 DENSITY
.00000   E+00 RECORD
OF TYPE 7 NOMBRE
INFO CASTEM2000 8 IFOUR
-1 NIFOUR 0 IFOMOD   -1 IECHO 1 IIMPI 0 IOSPI   0 ISOTYP   1 NSDPGE
0 Second

package which defines all the stacks (a stack by type of object and certain stacks in more). A record of the type 2 prevents writing of a new stack, that of type 5 prevents end. RECORD
OF TYPE 2 CRUSHES
NUMERO 1NBRE   OBJECTS NAME 3NBRE   OBJECTS 6   the stack
number 1 is that of the objects of mesh type. The line following one gives the name of saved the meshes objects. LIAB
KNOWN ENS   the line
following one gives the sequence numbers, in the stack, of the named objects quoted previously. In our case LIAB is the first, SU is the third and ENS is the second. (valid
for all the lines which follows to the next stack) 1 3
**   2   Transition**

with the description of the objects ones after the others. Description
of the first object: The first
record of each object is composed of 5 numbers representing: ITYPEL
: type of the element 1=point, 2=segment with two nodes? NBSOUS
: number of under parts in this object, under part by type of elements the component. NBREF
: number of under references. A reference is for example contour NBNOEL
: many nodes per element NBEL
: many elements If ITYPEL
=0 then NBSOUS different from zero. In this case one will read the list of the positions, in the stack of the objects, of under parts the component. If NBSOUS
=0, NBNOEL and NBEL are different from zero, one finds, if need be, the list of the references, numbers of the colors then connectivities. Here 3
elements with 2 nodes of segment to 2 nodes 2 0
**   0   2   3   As**
NBREF=0 one passes to the record giving the number of the color of the elements. 0 0

Code_Aster

Version default

Titre : Descriptif du format des fichiers GIBI
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Date : 25/04/2013 Page : 3/6
Clé : D9.07.03   Révision : 10977

```
        0          Table
```

of connectivities. Description of the first element then second… CAUTION
it is not true classification, it is necessary to make it pass by the filter of the last table of the stack
number 32. Thus element 1 is formed by nodes 1 and, 3 element 2 is made of 3 and 4 and element 3 is
formed by nodes 4 and 2. 1 2

```
        2        3        3        4         Description
```

of the second object mesh ITYPEL
=0 thus mesh complexes made up of 2 pennies left 0 2

```
        0        0        0         These        under
```

- parts are represented by the objects mesh 1 and 3 of this stack 1 3

```
        Description
```

of the third object of stack ITYPEL
=8 NBSOUS=0 thus mesh of 6 element with 4 nodes. There are 4 references (here sides of the
KNOWN rectangle). 8 0

```
        4        4        6         Follows
```

the list of the meshes objects representing references 1 4

```
        5        6         Follows
```

the list of the numbers of the colors 0 0

```
        0        0        0        0         Follows
```

the list of connectivities (numbers of nodes per element) not to forget stack 32 to pass it to the filter of
the last list from. the 1 2

```
        5        6        2        3        7        5        3        4        8        7
        6        5        9       10        5        7       11        9        7        8
       12       11         Description
```

of the fourth object: It is the second reference of the third object of the stack 2 0

```
        0        2        2        0        0
        4        8
        8       12        Fifth
```

object 2 0

```
        0        2        3        0        0
        0       12       11
       11        9        9       10        Sixth
```

object 2 0

```
        0        2        2        0        0
       10        6
        6        1        End        of
```

the stack number 1 and beginning of stack 32 (that of the points) the RECORD

```
 OF TYPE 2 CRUSHES
 NUMERO 32NBRE   OBJECTS NAME 2NBRE        OBJECTS 12 Lists
```

names of points PA PB

```
Follows
```

the list of the numbers of the items named PA = 1 PB = 4 1 4

```
        follows
```

the number of nodes 12

```
        the following
```

table gives the filter to have the true number of the nodes belonging with the described elements. For
example, if an element, described in stack 1, refers to a number of node equal to 5 it should be put
equal to 12 1 3

```
        4        2       12       10       13       11        7        6        8        9
        End        of
```

stack 32, beginning of stack 33 (that of the configurations (coordinated)) RECORD

```
 OF TYPE 2 CRUSHES
 NUMERO 33NBRE   OBJECTS NAME 0NBRE        OBJECTS 1 Follows
```

the number of points which one gives the coordinates the 39

```
        coordinates
```

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Date : 25/04/2013 Page : 4/6
Clé : D9.07.03 Révision : 10977

are given by nodes. Initially the first then the second… For

each nodes, one gives the 2 or 3 coordinates plus the current density to the moment of his creation thus here 3 values per node. 0.00000000000000

```
E+00 0.00000000000000   E+00 0.00000000000000   E+00 1.00000000000000
E+00 0.00000000000000   E+00 0.00000000000000   E+00 3.33333333333333
E-01 0.00000000000000   E+00 3.33333333333333   E-01 6.66666666666667
E-01 0.00000000000000   E+00 3.33333333333333   E-01 0.00000000000000
E+00 1.00000000000000   E+00 0.00000000000000   E+00 0.00000000000000
E+00 1.00000000000000   E+00 0.00000000000000   E+00 3.33333333333333
E-01 1.00000000000000   E+00 3.33333333333333   E-01 6.66666666666667
E-01 1.00000000000000   E+00 3.33333333333333   E-01 1.00000000000000
E+00 1.00000000000000   E+00 0.00000000000000   E+00 0.00000000000000
E+00 5.00000000000000   E-01 5.00000000000000   E-01 1.00000000000000
E+00 5.00000000000000   E-01 5.00000000000000   E-01 3.33333333333333
E-01 5.00000000000000   E-01 5.00000000000000   E-01 6.66666666666667
E-01 5.00000000000000   E-01 5.00000000000000   E-01 RECORD
 OF TYPE 5 LABEL
AUTOMATIQUE: 1 End   of
```

the file. Crush

2 fields by elements One describes

here the stack of the fields by elements (stack number 39) such as must produce it command IMPR_RESU . `The stack`

number 39 corresponds to the fields by elements (MCHAML in Castem). CRUSH

NUMERO 39NBRE OBJECTS NAME 0NBRE   OBJET 1 line

This specifies the number of subfields (one by elementary mesh, noted N1), the mode of computation (- 2 plane stresses, -1 plane strains, 0 axisymmetric, 1 Fourier series, 2 three-dimensional), number D" information further provided (noted N3), `length` of the title 5 2

```
     4       16        Title
```

of the field by element FORCED

Block

of N1x (3 `+N3`) whole (here 5x7): pointer towards the mesh support of the subfield, not used, number of components of the field in the subfield, N3 information (dependence with respect to the reference, not used, number of the harmonic of Fourier, values defined in the nodes or elsewhere…). 215

```
   0 6      0       0       0      0      218        0 6      0      0
     0      0      219        0 6      0      0      0      0
220
     0 6      0      0      0      0      221        0 6      0
       0      0      0      Names
```

of the components of each subfield (in general, Aster does not write anything, as the format of reading is 8 (1X, `A8)` and `qu` "with the reading Castem two values to read a name of component, it is thus necessary [(N1*2-1`)` /8 + 1] blank lines!). [blank line
] [blank line
] There are

then N1 blocks , one by subfield: Values

not used: as much of 0 that components in this zone. 0 0

Code_Aster

Titre : Descriptif du format des fichiers GIBI

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Version default

Date : 25/04/2013 Page : 5/6

Clé : D9.07.03   Révision : 10977

```
            0         0         0         0         Name         of the components
```

Code_Aster

Version default

Titre : Descriptif du format des fichiers GIBI
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Date : 25/04/2013 Page : 6/6
Clé : D9.07.03   Révision : 10977

(K8). N VY
```
 VZ          Standard         MT              MFY         MFZ
```

of the components (two K8 per type separated by a blank). REAL*
```
 8 REAL*          8 REAL*          8 REAL*              8 REAL*
 8 REAL*          8 For
```

the component n°1: many points per element, number D" element, used, used. 2 1
```
       0         0        Value
```

with node 1 of element 1, value with node 2 of element 1, etc 3.6379788070917
```
  E-012 3.6379788070917  E-012 Idem
```

for the component 2. 2 1
```
       0         0         -2.1684043449710
 E-018 -2.1684043449710E-018 Idem
```

for the component 3. 2 1
```
       0         0         -1.0658141036402
 E-014 -1.0658141036402E-014 Idem
```

for the component 4. 2 1
```
       0         0          0.0000000000000
  E+000 0.0000000000000  E+000 Idem
```

for the component 5. 2 1
```
       0         0          1.6653345369377
  E-015 -2.2204460492503E-015 Idem
```

for the component 6. 2 1
```
       0         0         -2.7105054312138
 E-020 -3.2526065174565E-019 Block
```

for subfield 2: the names of the components are different, one has 4 values for each of the 59274 elements… 0 0
```
       0        0         0         0       SMXX
 SMYY       SMZZ       SMXY       SMXZ       SMYZ       REAL*
 8 REAL*          8 REAL*          8 REAL*              8 REAL*
 8 REAL*          8 4 59274
        0 0         -5.0599133238301
 E+006 -5.0599133238300E+006 -5.0599133238300E+006 -5.0599133238300
 E+006 -2.6477329870372E+007 -2.6477329870372E+007 -2.6477329870372
 E+007 -2.6477329870372E+007 1.2433887828476  E+005 1.2433887828476
  E+005 1.2433887828476  E+005 1.2433887828476  E+005…
```