

Data format sd_courbe and sd_surface

Summarized:

This document described:

- curved data structure produced by the operator `INTE_MAIL_2D` . A curve is either a set of meshes segment, or a meeting of line segments and/or arcs of a circle;
- the data structure surfaces produced `INTE_MAIL_3D` by the operator . Currently, an object of the surface type can contain only line segments among meshes of a mesh `3D` .

Curved

contents 1 SD: general information.....	3
2 Relation between the SD and the curves other SD.....	3
3 Tree structure of the SD curves.....	3
4 Contents of the objects of the SD curves.....	4.4.1
common Articles.....	Substructure
4.4.2 SD.....	courbe_LM
4.4.3 SD.....	
courbe_SA 5.4.3.1 of description of the segments and arcs concerned.....	
5.4.3.2 Substructure of location on curves.....	
6.4.3.3 Substructure of location in	
6.4.3.4 Substructure of connexity.....	
7.4.3.5 Length of the collections and objects of collection of courbe_SA.....	7
5 Examples of SD curves.....	8
6 SD Surfaces: general information.....	12
7 Relations between the SD and the surfaces other SD	12
8 Tree structure of the SD 3D	surfaces
12 9 Location of a segment in a mesh.....	12.9.1
Location of a point on S.....	13.9.2
Decomposition of	13.9.3
Location of an elementary segment in	13
10 Contents of the object of the SD surface.....	14
11 Example of SD surfaces.....	16

1 Curved SD: general information

object of a curved type 2D follows a curve on a geometry . This curve is one of the two following types:

a meeting of line segments and/or arcs of a circle,

a set of meshes SEG2 or SEG3 preexistent.

This concept is produced by the operator INTE_MAIL_2D .

2 Relation between the SD other SD curve and the

No if it is not that a curve is located compared to a mesh.

3 Tree structure of the SD curves

```
C ourbe (K8)      :: = record
    ".NOMMAIL"    :          SEK8
    ".TYPCOURBE"  :          SEK8/
"LISTMAIL": courbe_LM

                /"SGTDARCC": courbe_SA
courbe_LM      :: = record
    ".CHEMIN"     :          XCVInumérotée
    ".MAIL1"      :          XCVInumérotée
    ".MAIL2"      :          XCVInumérotée

courbe_SA     :: = record
    ".XYASGT"     :          SVR8
    ".XYBSGT"     :          SVR8
    ".XYCARC"     :          SVR8
    ".XSARC"      :          SVR8
    ".XRARC"      :          SVR8
    ".EXSGT"      :          XCVR8
    ".ORSGT"      :          XCVR8
    ".MAIL1"      :          XCVI
    ".MAIL2"      :          XCVI
    ".CNXEX"      :          XCVI
    ".CNXOR"      :          XCVI
    ".FACEX"      :          XCVI
    ".FACOR"      :          XCVI
    ".PAREX"      :          XCVR8
    ".PAROR"      :          XCVR8
```

4 Contained of the objects of the SD curves

4.1 Articles common

".NOMMAIL": S.E. K8 : the name of the concept contains of mesh type .

4.2 SD courbe_LM

collections PATH , MAIL1 and MAIL2 have the same number of objects of collection. This number is the number of disjointed paths subjacent with the list of meshes obtained starting from the operands of the key word factor DEFI_CHEMIN .

Structure of the objects of collection:

One is interested in $I^{ème} OC$ and one notes:

CHM=CHEMIN (I)
M1= MAIL1 (I)
M2= MAIL2 (I)

If CHM consists of N meshes 1-D , then:

length (CHM) = N + 1
CHM (J), J= 1, ..., N gives the numbers of meshes 1D describing path
CHM (N+1) $\in \{0, CHM (1)\}$

If CHM (N+1) =0

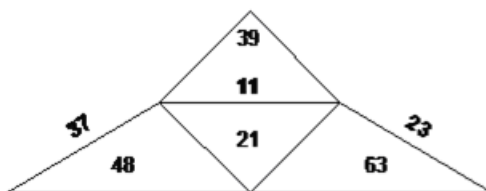
- then the path is simple
- if not the path is cyclic

By convention: length (M1) = long (m2) = long (CHM)

As follows:

- $M1 (N+1) = M2 (N+1) = 0$
- $M1 (J), J=1, \dots, N$ gives the number of the first nets 2D which admits 1D mesh CHM (J) for face. Thus $M1 (J) \neq 0$ for $J = 1, \dots, N$
- If $m2 (J) = 0$, then mesh 1D CHM (J) is face of only one mesh 2D , if not $m2 (J)$ contains the number of the 2nd mesh 2D admitting mesh 1D CHM (J) for face.

Example 1:



CHM :

37	11	23	0
----	----	----	---

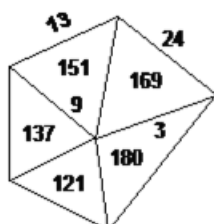
M1 :

48	21	63	0
----	----	----	---

M2 :

0	39	0	0
---	----	---	---

Example 2:



CHM :

3	24	13	9	3
---	----	----	---	---

M1 :

169	169	151	137	0
-----	-----	-----	-----	---

M2 :

180	0	0	151	0
-----	---	---	-----	---

4.3 SD courbe_SA

4.3.1 Substructure of description of the segments and concerned arcs

One notes:

- Nb_sgt the number of line segments,
- Nb_arc the number of arcs of a circle.

XYASGT S V R8 : S contains the coordinates of the points origin of line segments
XYBSGT V R8 : contains the coordinates of the points end of the line segments

length (XYASGT) = long (XYBSGT) = 2 * (Nb_sgt + 1)



XYASGT:	0	0	x_A^1	x_A^1	x_A^2	x_A^2	
XYBSGT:	0	0	x_B^1	x_B^1	x_B^2	x_B^2	...

One represents the absence of segments in the curve by a vector XYASGT (and thus XYBSGT) length 2 initialized to 0.

If there exists at least a segment, then coordinates of the point origin A_i segment i of the point extrémité B_i segments i :

$$\begin{aligned} XYASGT(2*I+1) &<-- x_A^i \\ XYASGT(2*I+2) &<-- y_A^i \end{aligned}$$

idem for B (with XYBSGT)

XYCARC, XSARC, XRARC: S V R8

Contiennent, respectively, coordinates of the centres, limits of the angular sectors and value of.

- $long(XYCARC) = long(XSARC) = 2 * (Nb_arc + 1)$
- $long(XRARC) = Nb_arc + 1$

If no arc is used at the time of the call, then:

- $long(XYCARC) = long(XSARC) = 2$
- $long(XRARC) = 1$

and the 3 vectors are initialized to 0.

If not:

- $XYCARC(2*I+1) <-- x_C^i$
- $XYCARC(2*I+2) <-- y_C^i$
- $XRARC(I+1) <-- R^i$
- $XSARC(2*I+1) <-- a_{inf}^i$

- $XSARC(2*I+2) < -- a_{sup}^i$

4.3.2 Substructure of location on the curves

Collections ORSGT and EXSGT

the curve (segment or arc) is parameterized according to:

$$C(a,b) = \{M(S) : s \in [a,b]\} \text{ où } M(s) \begin{cases} x(s) \\ y(s) \end{cases}$$

then:

$$\Omega \cap C = \bigcup_{i=1}^{i=N} C(s_i^{or}, s_i^{ex})$$

où est N the number of meshes intersected by the curve:

$$C(s_i^{or}, s_i^{ex}) = \{M(S) \in C ; s \in [s_i^{or}, s_i^{ex}]\}$$

Then $long(ORSGT) = long(EXSGT) = N$

- $ORSGT(I) < -- s_i^{or}$
- $EXSGT(I) < -- s_i^{ex}$

4.3.3 Substructure of location in Ω

Collections MAIL1, MAIL2, FACOR, FACEX, PAROR and PAREX

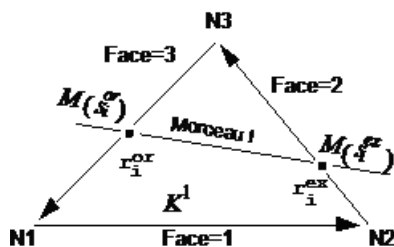
if $C(s_i^{or}, s_i^{ex})$ is the contribution of a mesh K_i to the intersection $\Omega \cap C$, then:

$$\partial K \cap C \supset \{M(s_i^{or}), M(s_i^{ex})\}$$

The 2 points $M(s_i^{or})$ and $M(s_i^{ex})$ can be located in the mesh K_i^1 by the data of the sides containing each point and by the curvilinear abscisse (variable between 0 and 1) on the sides.

Moreover, one 2nd mesh K_i^2 can give $C(s_i^{or}, s_i^{ex})$.

Example:



- MAIL1 (I) ← number of the mesh K^1
- MAIL2 (I) ← 0 if the piece $|$ is obtained only for the mesh 2D K^1 K^2 if K^2

is the second nets 2D giving piece $|$

- FACOR (I) ← 3 (as a face of K^1)
- FACEX (I) ← 2 (as a face of K^1)
- PAROR (I) ← r_i^{or}
- PAREX (I) ← r_i^{ex}

4.3.4 Substructure of connexity

Collections CNXOR and CNXEX

a OC of collections CNXOR and CNXEX is a vector of integers dimensioned with the related numbers of components of $C \cap \Omega$.

For the curve c corresponding with L "OC", if $C \cap \Omega$ is composed of N elementary pieces, then: the related component number I of $C \cap \Omega$ is made up by the meeting of the new numbers: $CNXOR(I), CNXOR(I)+1, \dots, CNXEX(I)$

4.3.5 Length of the collections and objects of collection of courbe_SA

ORSGT	} $Nb_OC = Nb_sgt + Nb_arc$ longueur d'un OC : inconnue à priori mais toutes identiques
EXSGT	
PAROR	
PAREX	
FACOR	
FAXE	
MAIL1	
MAIL2	
}	
CNXOR	} $Nb_OC = Nb_sgt + Nb_arc$ longueur d'un OC : inconnue à priori mais toutes identiques
CNXEX	

5 Examples of SD curves

```

debut ();
m = LIRE_MALLAGE ();

%
%
%CREATION Of a COURBE OF TYPE SEGMENT
%
segment=INTE_MAIL_2D (Mesh: m
                     DEFI_SEGMENT: (ORIGINE : (0. , 0.)
                                     ENDING: (10. , 0.)));
IMPR_CO (CO: segment);

%
%
%CREATION Of a COURBE OF TYPE PATH (LISTE OF MESHES)
%
chemin=INTE_MAIL_2D (Mesh: m
                    DEFI_CHEMIN: (GROUP_MA: GRMA2));
IMPR_CO (CO: path);

%
%
%CREATION Of a COURBE OF TYPE ARC
%

arc =INTE_MAIL_2D (Mesh: m
                  DEFI_ARC: (CENTER: (0. 0.) RADIUS: 1. SECTEUR: (0. 90.)));
IMPR_CO (CO: arc);

end ()

```

====> IMPR_CO OF Data structure: SEGMENT????????????????????

ATTRIBUT: F CONTENU: T BASE: >G<
MANY OBJECTS (OR COLLECTIONS) FIND: 17

PRINTING OF THE CONTENU OF THE OBJECTS FIND:

PRINTING OF THE COLLECTION: SEGMENT .CNXEX
PRINTING OBJET OF COLLECTION >SEGMENT .CNXEX < OC: 1
1 - 14

PRINTING OF THE COLLECTION: SEGMENT .CNXOR
PRINTING OBJET OF COLLECTION >SEGMENT .CNXOR < OC: 1
1 - 1

PRINTING OF THE COLLECTION: SEGMENT .EXSGT
PRINTING OBJET OF COLLECTION >SEGMENT .EXSGT < OC: 1
1 - 1.90901E-02 5.39950E-02 9.91951E-02 1.52721E-01 2.13434E-01
6 - 2.80566E-01 3.53553E-01 4.31959E-01 5.15432E-01 6.03682E-01
11 - 6.96461E-01 7.93560E-01 8.94794E-01 1.00000E+00

PRINTING OF THE COLLECTION: SEGMENT .FACEX
PRINTING OBJET OF COLLECTION >SEGMENT .FACEX < OC: 1
1 - 1 1 1 1 1 1
6 - 1 1 1 1 1 1
11 - 1 1 1 1 1 1

PRINTING OF THE COLLECTION: SEGMENT .FACOR
PRINTING OBJET OF COLLECTION >SEGMENT .FACOR < OC: 1

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.

Code Aster

Version
default

Titre : Structures de données sd_courbe et sd_surface
Responsable : Mathieu COURTOIS

Date : 14/10/2010 Page : 9/18
Clé : D4.02.03 Révision : 4439

1 -	1	1	1	1	1
6 -	1	1	1	1	1
11 -	1	1	1	1	1

PRINTING OF THE COLLECTION: SEGMENT .MAIL1
PRINTING OBJET OF COLLECTION >SEGMENT .MAIL1 < OC: 1
1 - 1 9 17 25 33
6 - 41 49 57 65 73
11 - 81 89 97 105

PRINTING OF THE COLLECTION: SEGMENT .MAIL2
PRINTING OBJET OF COLLECTION >SEGMENT .MAIL2 < OC: 1
1 - 113 121 129 137 145
6 - 153 161 169 177 185
11 - 193 201 209 217

PRINTING SEGMENT OF VALUES >SEGMENT .NOMMAIL <
1 - >M <

PRINTING OF THE COLLECTION: SEGMENT .ORSGT
PRINTING OBJET OF COLLECTION >SEGMENT .ORSGT < OC: 1
1 - 0.00000E+00 1.90901E-02 5.39950E-02 9.91951E-02 1.52721E-01
6 - 2.13434E-01 2.80566E-01 3.53553E-01 4.31959E-01 5.15432E-01
11 - 6.03682E-01 6.96461E-01 7.93560E-01 8.94794E-01

PRINTING OF THE COLLECTION: SEGMENT .PAREX
PRINTING OBJET OF COLLECTION >SEGMENT .PAREX < OC: 1
1 - 1.00000E+00 1.00000E+00 1.00000E+00 1.00000E+00 1.00000E+00
6 - 1.00000E+00 1.00000E+00 1.00000E+00 1.00000E+00 1.00000E+00
11 - 1.00000E+00 1.00000E+00 1.00000E+00 1.00000E+00

PRINTING OF THE COLLECTION: SEGMENT .PAROR
PRINTING OBJET OF COLLECTION >SEGMENT .PAROR < OC: 1
1 - 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
6 - 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
11 - 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00

PRINTING SEGMENT OF VALUES >SEGMENT .TYPCOURBE <
1 - >SGTDARCC<

PRINTING SEGMENT OF VALUES >SEGMENT .XRARC <
1 - 0.00000E+00

PRINTING SEGMENT OF VALUES >SEGMENT .XSARC <
1 - 0.00000E+00 0.00000E+00

PRINTING SEGMENT OF VALUES >SEGMENT .XYASGT <
1 - 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00

PRINTING SEGMENT OF VALUES >SEGMENT .XYBSGT <
1 - 0.00000E+00 0.00000E+00 1.00000E+01 0.00000E+00

PRINTING SEGMENT OF VALUES >SEGMENT .XYCARC <
1 - 0.00000E+00 0.00000E+00
====> FIN IMPR_CO OF Data structure: SEGMENT?????????????????
====> IMPR_CO OF DATA STRUCTURE: PATH ??????????????????
ATTRIBUT: F CONTENU: T BASE: >G<
MANY OBJECTS (OR COLLECTIONS) FIND: 5
=====

PRINTING OF THE CONTENU OF THE OBJECTS FIND:

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.

```
PRINTING OF THE COLLECTION: PATH .CHEMIN
PRINTING OBJET OF COLLECTION >CHEMIN .CHEMIN < OC: 1
  1 - 483 482 481 480 516
  6 - 517 518 520 0
PRINTING OBJET OF COLLECTION >CHEMIN .CHEMIN < OC: 2
  1 - 556 554 553 552 588
  6 - 589 590 591 0
```

```
PRINTING OF THE COLLECTION: PATH .MAIL1
PRINTING OBJET OF COLLECTION >CHEMIN .MAIL1 < OC: 1
  1 - 112 110 108 106 218
  6 - 220 222 224 0
PRINTING OBJET OF COLLECTION >CHEMIN .MAIL1 < OC: 2
  1 - 336 334 332 330 442
  6 - 444 446 448 0
```

```
PRINTING OF THE COLLECTION: PATH .MAIL2
PRINTING OBJET OF COLLECTION >CHEMIN .MAIL2 < OC: 1
  1 - 0 0 0 0 0
  6 - 0 0 0 0
PRINTING OBJET OF COLLECTION >CHEMIN .MAIL2 < OC: 2
  1 - 0 0 0 0 0
  6 - 0 0 0 0
```

```
PRINTING SEGMENT OF VALUES >CHEMIN .NOMMAIL <
  1 - >M <
```

```
PRINTING SEGMENT OF VALUES >CHEMIN .TYPCOURBE <
  1 - >LISTMAIL<
====> FIN IMPR_CO OF DATA STRUCTURE: PATH ??????????????????
====> IMPR_CO OF DATA STRUCTURE: ARC ??????????????????
ATTRIBUT: F CONTENU: T BASE: >G<
MANY OBJECTS (OR COLLECTIONS) FIND: 17
```

PRINTING OF THE CONTENU OF THE OBJECTS FIND:

```
PRINTING OF THE COLLECTION: ARC .CNXEX
PRINTING OBJET OF COLLECTION >ARC .CNXEX < OC: 1
  1 - 10
```

```
PRINTING OF THE COLLECTION: ARC .CNXOR
PRINTING OBJET OF COLLECTION >ARC .CNXOR < OC: 1
  1 - 1
```

```
PRINTING OF THE COLLECTION: ARC .EXSGT
PRINTING OBJET OF COLLECTION >ARC .EXSGT < OC: 1
  1 - 1.26966E-01 2.52680E-01 2.68597E-01 5.23599E-01 6.56873E-01
  6 - 8.48061E-01 1.00042E+00 1.34127E+00 1.37872E+00 1.57080E+00
```

```
PRINTING OF THE COLLECTION: ARC .FACEX
PRINTING OBJET OF COLLECTION >ARC .FACEX < OC: 1
  1 - 3 2 2 2 2
  6 - 2 3 3 3 2
```

```
PRINTING OF THE COLLECTION: ARC .FACOR
PRINTING OBJET OF COLLECTION >ARC .FACOR < OC: 1
  1 - 1 1 1 3 1
  6 - 3 1 1 2 1
```

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```
PRINTING OF THE COLLECTION: ARC      .MAIL1
PRINTING OBJET OF COLLECTION >ARC    .MAIL1      < OC:      1
  1 -          25          18          19          20          21
  6 -          22          23          16          15          8
-----
PRINTING OF THE COLLECTION: ARC      .MAIL2
PRINTING OBJET OF COLLECTION >ARC    .MAIL2      < OC:      1
  1 -          0          0          0          0          0
  6 -          0          0          0          0          0
-----
PRINTING SEGMENT OF VALUES >ARC     .NOMMAIL      <
  1 - >M      <
-----
PRINTING OF THE COLLECTION: ARC      .ORSGT
PRINTING OBJET OF COLLECTION >ARC    .ORSGT      < OC:      1
  1 - 0.00000E+00 1.26966E-01 2.52680E-01 2.68597E-01 5.23599E-01
  6 - 6.56873E-01 8.48061E-01 1.00042E+00 1.34127E+00 1.37872E+00
-----
PRINTING OF THE COLLECTION: ARC      .PAREX
PRINTING OBJET OF COLLECTION >ARC    .PAREX      < OC:      1
  1 - 4.93501E-01 5.24427E-02 6.15174E-02 2.78594E-01 4.42575E-01
  6 - 7.31218E-01 6.33209E-01 1.04904E-01 7.35628E-02 1.00000E+00
-----
PRINTING OF THE COLLECTION: ARC      .PAROR
PRINTING OBJET OF COLLECTION >ARC    .PAROR      < OC:      1
  1 - 1.50369E-02 5.06499E-01 9.47557E-01 9.38483E-01 7.21406E-01
  6 - 5.57425E-01 2.68782E-01 3.66791E-01 8.95096E-01 9.26437E-01
-----
PRINTING SEGMENT OF VALUES >ARC     .TYPCOURBE      <
  1 - >SGTDARCC<
-----
PRINTING SEGMENT OF VALUES >ARC     .XRARC      <
  1 - 0.00000E+00 1.00000E+00
-----
PRINTING SEGMENT OF VALUES >ARC     .XSARC      <
  1 - 0.00000E+00 0.00000E+00 0.00000E+00 1.57080E+00
-----
PRINTING SEGMENT OF VALUES >ARC     .XYASGT      <
  1 - 0.00000E+00 0.00000E+00
-----
PRINTING SEGMENT OF VALUES >ARC     .XYBSGT      <
  1 - 0.00000E+00 0.00000E+00
-----
PRINTING SEGMENT OF VALUES >ARC     .XYCARC      <
  1 - 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
====> FIN IMPR_CO OF Data structure: ARC      ??????????????????
```

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6 SD Surfaces: general information

an object of the surface type contains line segments among meshes 3D D" a mesh.

This concept is produced by the operator INTE_MAIL_3D .

7 Relations between the SD surfaces other SD and the

No if it is not that a surface is located compared to a mesh.

8 Tree structure of the SD surfaces

```

Surface (K8)      :: =record
                    \".NOMA"  :      OBJIndirect          (1)
SEK24
                    (1) : MAILLAGE
                    \".NSDS"  :      OBJIndirect          (*)
SVK24DOCU          ("SGT3")
                    (*      (1:13)
:      SURFACE_1D
                    /*dimension
:      many segments :      Nbseg*/
                    /*NSDS  (I)
: =nom_surface//    "K1s" //Codent (K4Segi)  *
                    K8                      (with
more the 9999 segments)

```

```

                    K13
SURFACE_1D (K13) :: =record
                    \".DESC"   :      OJBsvrlong
                    (6)   DOCU ("SGT3")
                    \".SGTEL"  :      REPERAGE_1D
                    $vide      :      REPERAGE_W
                    \".CONEX.ORIG" : OJBsvi
                    \".CONEX.EXTR" : OJBsvi
REPERAGE_1D (K19) :: =record
                    \".ORIG"   :      OJBsvr8
                    \".EXTR"   :      OJBsvr8
                    \".TYPE"   :      OJBsvi
REPERAGE_W (K13) :: = record
                    \".MAIL"   :      OJBxcvi
                    \".FACE.ORIG" : OJBsvi
                    \".FACE.EXTR" : OJBsvi
                    \".CREFM.ORIG" : OJBs
VR8
                    \".CREFM.EXTR" : OJBsvr8
                    \".ARETE.ORIG" : OJBsvi
                    \".ARETE.EXTR" : OJBsvi
                    \".CREFF.ORIG" : OJBsvr8
                    \".CREFF.EXTR" : OJBsvr8

```

9 Location of a segment in a mesh 3D

One notes:

- Ω the mesh area,
- T_h the group of meshes 3D,
- K a mesh 3D
- ∂K the border of K ; ∂K is a union of sides F . A face is a triangle or a quadrangle,
- ∂K the border of F ; ∂K is a union of rectilinear edges,
- $S=[A, B]$ the segment to be located.

In fact, one seeks to locate $\Omega \cap S$ in

$$\bigcup_{K \in T_h} K$$

9.1 Location of a point on S

the line AB admits the parametric representation $\vec{AM} = t \vec{AB} \quad t \in \mathbb{R}$

S the segment corresponds to the interval $t \in [0,1]$

9.2 Decomposition of $\Omega \cap S$

$\Omega \cap S$ is broken up into elementary segments $S_i = \{A_i^1, A_i^2\}$ so that: $\Omega \cap S = \bigcup_{i=1}^n S_i$

The family $(S_i)_{i=1, \dots, n}$ is ordered with the meaning:

$$\vec{AA_i^j} = t_i^j \vec{AB} \quad i=1, \dots, n \quad j=1,2 \quad \text{with} \quad 0 \leq t_1^1 < t_1^2 \leq t_2^1 < t_2^2 \leq \dots \leq t_n^1 < t_n^2 \leq \dots \leq t_n^1 < t_n^2 \leq 1$$

9.3 Location of an elementary segment in Ω

Either $E_i = \{K \in T_h ; S_i \subset K\}$

S_i is located in Ω by the data of E_i

3 situations are possible:

- $S_i \subset K_{i1}$ then $E_i = \{K_{i1}\}$
- $S_i \subset \partial K_{i1}$ and $S_i \subset \partial K_{i2}$ S_i is included in a face of K_{i1} then $E_i = \{K_{(i1)}, K_{(i2)}\}$, K_{i2} is the mesh 3D which admits for face the face of K_{i1} container S_i

- $S_i \subset \partial K_{i1}$ et est $S_i \cap \partial K_{i1} = \emptyset$ S_i included in an edge of K_{i1} alorsest
 $E_i = \{K_{(i1)}, K_{(i2)}, \dots, K_{ip}\}$ the group of meshes $\exists D$ which admits for stops
common, the edge decontenant K_{i1} S_i .

Thus an elementary segment can be obtained from several meshes.

10 Contained object of the SD surface

$$S=[A, B] \quad S \cap \Omega = \bigcup_{i=1}^n [A_i^1, A_i^2] \quad K \cap [A_i^1, A_i^2] \neq \emptyset \Leftrightarrow K \in \{K_1^i, \dots, K_{pi}^i\}$$

SURFACE_1D				
Name S 14	19 OJB 20	24	Standard	Length
Containe d		.DESC V R	6	$x_A, y_A, z_A, x_B, y_B, z_B$, coordinates of the ends of segment

REPERAGE_1D				
Name 14 19	OJB 20 24	Standar d	Length	Contained
parametr ic	.SGTEL	.ORIG S V	R	$t_1^1, t_2^1, \dots, t_i^1, \dots, t_n^1$, N coordinated of the points A_i^1 (origin)
	.EXTR	S V R	N	$t_1^2, t_2^2, \dots, t_i^2, \dots, t_n^2$, coordinated parametric of the points A_i^2 (end)
	.TYPE	S V I	N	=1 → $[A_i^1, A_i^2]$ (is a sgt_arête) =2 → sgt_face =3 → sgt_interne

REPERAGE_Ω				
Name 14 19	OJB 20 24	Standar d	Length	Contained
.MAIL		XC V R	Variable for OC NMAX OC = N	Lists meshes 3D container $[A_i^1; A_i^2]: K_i^1, \dots, K_{pi}^i$
.FACE	.ORIG	S V I	N	S Lists numbers of face K_i^1 A_i^1-1 A_i^1 decontenantsiest interior K_i^1
	to	.EXTR V I	N	Idem .ORIG for A_i^2
.CREFM	.ORIG	S V R	3n	Coordonnées reference inside A_i^1 K_i^1 : $(r_i^1, r_i^2, r_i^3) i=1, \dots, n r_i^j \leq 1$. Siest A_i^1 contained in a face, r_i^3 is not used (see .CREFF)
	.EXTR	S V R	3n	Idem .ORIG for A_i^2
.ARETE	.ORIG	S V I	N	Lists numbers of edge decontenantsi K_i^1 A_i^1-1 A_i^1 is interior with K_i^1
	.EXTR	S V I	N	Idem .ORIG for A_i^2
.CREFF	.ORIG	S V R	2n	Coordonnées reference desur A_i^1 the face of K_i^1 the container: r_i^1, r_i^2 $i=1, \dots, n$

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.

	.EXTR	S V R	2n	Idem .ORIG for A_i^2
--	-------	-------	----	------------------------

REPERAGE_1D				
Name 14 19	OJB 20 24	Standard	Length	Contained
.CONEX	.ORIG	S V I	variable	Pointer of beginning of part related in REPERAGE_1D
	.EXTR	S V I	variable	Pointer of end of part related in REPERAGE_1D

11 Example of SD surfaces

```

%
%CONCEPT OF TYPE surfaces
%
debut ();
PRE_GIBI ();
MAIL =LIRE_MAILLAGE ();
&MAIL =DEFI_GROUP (MESH: MAIL CREA_GROUP_NO: (TOUT_GROUP_MA:
"OUI"));
SEG1 = INTE_MAIL_3D (MESH: MAIL
DEFI_SEGMENT: (ORIGINE : (.015 .02 0.)
ENDING: (.055 .05 0.));
impr_co (Co: seg1);
FIN ();

```

```

====> IMPR_CO OF DATA STRUCTURE: SEG1      ??????????????????
ATTRIBUT: F CONTENU: T BASE: >G<
MANY OBJECTS (OR COLLECTIONS) FIND: 17

```

```

=====
PRINTING OF THE CONTENU OF THE OBJECTS FIND:
-----
PRINTING SEGMENT OF VALUES >SEG1      .NOMA      <
1 - >MAIL      <
-----
PRINTING SEGMENT OF VALUES >SEG1      .NSDS      <
1 - >SEG1      S1      <
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .ARETE.EXTR      <
1 -      1      1
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .ARETE.ORIG      <
1 -      1      1
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .CONEX.EXTR      <
1 -      2
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .CONEX.ORIG      <
1 -      1
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .CREFF.EXTR      <
1 - 1.00000E+00 -1.00000E+00 1.00000E+00 -1.00000E+00
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .CREFF.ORIG      <
1 - -1.00000E+00 -1.00000E+00 -1.00000E+00 -1.00000E+00
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .CREFM.EXTR      <
1 - -1.00000E+00 -1.00000E+00 1.00000E+00 -1.00000E+00 -1.00000E+00
6 - 1.00000E+00
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .CREFM.ORIG      <
1 - -1.00000E+00 -1.00000E+00 -1.00000E+00 -1.00000E+00 -1.00000E+00
6 - -1.00000E+00
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .DESC      <
1 - 1.50000E-02 2.00000E-02 0.00000E+00 5.50000E-02 5.00000E-02
6 - 0.00000E+00
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .FACE .EXTR      <

```

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Code_Aster

Version
default

Titre : Structures de données sd_courbe et sd_surface
Responsable : Mathieu COURTOIS

Date : 14/10/2010 Page : 18/18
Clé : D4.02.03 Révision : 4439

```

      1 -          2          2
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .FACE .ORIG      <
      1 -          2          2
-----
PRINTING OF THE COLLECTION: SEG1      S1      .MAIL
PRINTING OBJET OF COLLECTION >SEG1      S1      .MAIL      < OC:      1
      1 -          2          1
PRINTING OBJET OF COLLECTION >SEG1      S1      .MAIL      < OC:      2
      1 -          4          3
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .SGTEL.EXTR      <
      1 - 5.00000E-01 1.00000E+00
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .SGTEL.ORIG      <
      1 - 0.00000E+00 5.00000E-01
-----
PRINTING SEGMENT OF VALUES >SEG1      S1      .SGTEL.TYPE      <
      1 -          1          1
=====> FIN IMPR_CO OF DATA STRUCTURE: SEG1      ??????????????????
```

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