

## Operator AFFE\_CHAR\_ACOU

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### 1 Goal

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To affect boundary conditions acoustic constant. The affected values do not depend on any parameter and are complex values.

Product a structure of data of the type `char_acou`.

## 2 Syntax

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```
CH [char_acou] = AFFE_CHAR_ACOU(  
  ◆ MODEL = Mo [model]  
  ◇ INFORMATION = [1, 2]  
[defect]  
  ◇ DOUBLE_LAGRANGE =/'YES', [defect]  
  / 'NOT'  
  ◆ | PRES_IMPO = _F ( ◆ | ALL = 'YES'  
  | GROUP_NO = lgno [l_gr_noeud]  
  | GROUP_MA = lgma [l_gr_maille]  
  ◇ SANS_GROUP_NO = L gno 1  
[l_gr_noeud]  
  ◇ SANS_GROUP_MA = lgma 1  
[l_gr_maille]  
  ◆ NEAR = pre [C]  
  )  
  | VITE_FACE = _F ( ◆ | ALL = 'YES'  
  | GROUP_MA = lgma [l_gr_maille]  
  ◆ VNOR = V NOR [ C ]  
  )  
  | IMPE_FACE = _F ( ◆ | ALL = 'YES'  
  | GROUP_MA = lgma [l_gr_maille]  
  ◆ IMPE = Z [C]  
  )  
  | LIAISON_UNIF = _F ( ◆/ GROUP_NO = lgno [l_gr_noeud]  
  / GROUP_MA = lgma [l_gr_maille]  
  ◆ DDL = 'CLOSE' [TXM]  
  )  
)
```

## 3 Operands

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### 3.1 Operand MODEL

- ◆ MODEL = Mo  
Name of the model whose grid supports the elements of acoustic calculation.

### 3.2 Operand DOUBLE\_LAGRANGE

- ◇ DOUBLE\_LAGRANGE = 'YES' / 'NOT'  
This keyword makes it possible to say if the user or not wishes to duplicate the multipliers of Lagrange used to define dualiser the boundary conditions in the assembled matrix. Concretely, to duplicate the multipliers of Lagrange makes it possible to use linear solveurs not allowing the swivelling. Not to duplicate Lagrange makes it possible to reduce the number of degree of freedom of the problem (and thus size of the problem to be solved) but its use is limited to solveurs MUMPS and Petsc.

### 3.3 Keywords PRES\_IMPO / IMPE\_FACE

#### 3.3.1 Goal

Keywords factors giving it natural of the conditions imposed on the specified elements (nodes or meshes).

- ◆ | PRES\_IMPO  
Allows to impose the degree of freedom of pressure.
- | VITE\_FACE  
Allows to specify the field speed vibratory imposed in loading on elements of border.
- | IMPE\_FACE  
Allows to specify the map of impedance imposed in boundary condition on elements of border.

#### 3.3.2 Operands ALL / GROUP\_NO / GROUP\_MA / SANS\_GROUP\_NO / SANS\_GROUP\_MA

Declaration of the topological entities to which the loadings are applied, boundary conditions.

Those are imposed on the nodes or meshes given by the keywords ALL, GROUP\_MA, GROUP\_NO Tout while possibly excluding thanks to the keywords SANS\_\*.

Attention keywords SANS\_\* are available only for the keyword PRES\_IMPO.

#### 3.3.3 Operands NEAR / IMPE

CLOSE = pre

Value (complex) of the degree of acoustic freedom of pressure (only degree of freedom in acoustic modeling) imposed on the specified nodes.

IMPE = Z

Value (complex) of the acoustic impedance imposed on the meshes specifiedES.

## 3.4 Keyword LIAISON\_UNIF

### 3.4.1 Goal

Keyword factor allowing to impose the same value (unknown) on degrees of freedom of a set of nodes.

### 3.4.2 Operands GROUP\_MA / GROUP\_NO

These operands make it possible to define a list of  $n$  nodes  $N_i$  from which one eliminated the redundancies (for GROUP\_MA, it is connectivities of the meshes).

### 3.4.3 Keyword DDL

This operand can be worth in acoustic modeling, only the text 'CLOSE', defining the only degree of freedom allowed, the acoustic pressure  $p$ .

The resulting imposed conditions are:

$$p(N_1) = p(N_i) \text{ for } i \in \{2, \dots, n\}$$

## 4 Example

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```
cha = AFFE_CHAR_ACOU ( MODEL = Mo,  
                       VITE_FACE = _F ( GROUP_MA = Gm4,  
                                         VNOR = ( 'IH' , 0.0135, 0. ) ),  
                       IMPE_FACE = _F ( GROUP_MA = Gm5,  
                                         IMPE = ( 'IH' , 442. , 0. ) ) )
```

#### Note:

*The complex values are provided under one of the two forms IH (real part, imaginary part) or MP (module, phase in degrees).*