Modelings 3D and PLAN phenomenon ACOUSTICS

Summary:

This document describes for modelings 3D and PLAN :

- degrees of freedom carried by the finite elements which support modeling,
- the related meshs supports,
- supported materials and loadings,
- options of calculations for the elementary matrices and the post treatments,
- nonlinear possibilities as well as the options of the breaking process if they exist.

Modelings 3D and PLAN (Phenomenon: ACOUSTICS) correspond to finite elements acoustic in formulation pressure (cf [R4.02.01]). Modeling 3D has voluminal meshs supports, modeling PLAN has plane meshs supports.

1 Discretization

1.1 Degrees of freedom

Finite element	Degrees of freedom (with each node top)
ACOU_… (3D)	NEAR : pressure
ACOU_FACE… (3D)	NEAR : pressure
ACPL… (PLAN)	NEAR : pressure

1.2 Mesh support of the matrices of rigidity

Modeling	Mesh	Finite element	Remarks
3D	TETRA4	ACOU_TETRA4	
	TETRA10	ACOU_TETRA10	
	PENTA6	ACOU_PENTA6	
	PENTA15	ACOU_PENTA15	
	HEXA8	ACOU_HEXA8	
	HEXA20	ACOU_HEXA20	
	HEXA27	ACOU_HEXA27	
PLAN	TRIA3	ACPLTR3	
	TRIA6	ACPLTR6	
	QUAD4	ACPLQU4	
	QUAD8	ACPLQU8	
	QUAD9	ACPLQU9	

1.3 Mesh support of the loadings

Modeling	Mesh	Finite element	Remarks
3D	TRIA3	ACOU_FACE3	
	TRIA6	ACOU_FACE6	
	QUAD4	ACOU_FACE4	
	QUAD8	ACOU_FACE8	
	QUAD9	ACOU_FACE9	
PLAN	SEG2	ACPLSE2	
	SEG3	ACPLSE3	

2 Significance of the symbols

•	corresponds to a functionality available
	corresponds to a functionality which could exist but noncurrently available
Name of CAS-test	corresponds to test implementing the functionality.
////	corresponds to a functionality without significance for the element or asking a major reconsideration of the code

3 Supported materials

DEFI_MATERIAU	3D	PLAN	Remarks
ELAS	/////	/////	
ELAS_FO	/////	/////	
ELAS_ORTHO	/////	/////	
TRACTION	/////	/////	
ECRO_LINE	/////	/////	
ECRO_LINE_FO	/////	/////	
CHABOCHE	/////	/////	
FLUID	AHLV100A	AHLV100F	complex speed of sound
THER	/////	/////	
THER_FO	/////	/////	
THER_ORTHO	/////	/////	
META_REFR	/////	/////	

4 Supported loadings

AFFE_CHAR_ACOU	3D	PLAN	Remarks
PRES_IMPO	•	•	
VITE_FACE	AHLV100A	AHLV100F	
IMPE_FACE	AHLV100A	AHLV100F	
LIAISON_UNIF	•	•	

5 Non-linear possibilities

None.

6 Elementary calculations of matrices

OPTIONS	3D	PLAN	Remarks
'RIGI_MECA'	/////	/////	
'RIGI_GEOM'	/////	/////	
'RIGI_ROTA'	/////	/////	
'RIGI_MECA_HYST'	/////	/////	
'MASS_MECA'	/////	/////	
'MASS_MECA_DIAG'	/////	/////	
'AMOR_MECA'	/////	/////	
'IMPE_MECA'	/////	/////	
'RIGI_THER'	/////	/////	
'MASS_THER'	/////	/////	
'RIGI_ACOU'	AHLV100A	AHLV100F	
'MASS_ACOU'	AHLV100A	AHLV100F	
'AMOR_ACOU'	AHLV100A	AHLV100F	
MODE_FOURIER	/////	/////	

7 Postprocessing of calculation

7.1 Option CALC_FIELD

	3D	PLAN	Remarks
'PRAC_ELNO'	AHLV100A	•	
'INTE_ELNO'	AHLV100A	•	
'PRAC_NOEU'	•	•	
'INTE_NOEU'	•	•	