

ZZZZ325 – CALC_CHAMP / 'SIRO_ELEM'

Summary:

This test validates the programming utilized by the functionality:

- CALC_CHAMP / CONSTRAINT = 'SIRO_ELEM'

Modeling a:

Hexahedrons

1 Principle of the test

In this test, one imposes on all the edge of the model a linear displacement according to the coordinates.

The deformation is then homogeneous in all the structure (and known in advance).

The material being elastic with a null Poisson's ratio, the tensor of constraints is worth:

```
# SIXX   SIYY   SIZZ   SIXY   SIXZ   SIYZ
# 1.E+02  2.E+02  1E+03  0.     5.E+01  1.E+02
```

One can then easily calculate the various components of the field `SIRO_ELEM` on facets whose normals are respectively the vectors $(0., 0., 1.)$ and $(0., 0., -1.)$:

Normal $(0., 0., 1.)$		Normal $(0., 0., -1.)$	
# SIG_NX	0.	# SIG_NX	0.
# SIG_NY	0.	# SIG_NY	0.
# SIG_NZ	1.E+03	# SIG_NZ	-1.E+03
# SIG_N	1.E+03	# SIG_N	1.E+03
# SIG_TX	5.E+01	# SIG_TX	-5.E+01
# SIG_TY	1.E+02	# SIG_TY	-1.E+02
# SIG_TZ	0.	# SIG_TZ	0.
# SIG_T1X	-1.E+02	# SIG_T1X	-1.E+02
# SIG_T1Y	0.	# SIG_T1Y	0.
# SIG_T1Z	0.	# SIG_T1Z	0.
# SIG_T1	1.E+02	# SIG_T1	1.E+02
# SIG_T2X	0.	# SIG_T2X	0.
# SIG_T2Y	-2.E+02	# SIG_T2Y	2.E+02
# SIG_T2Z	0.	# SIG_T2Z	0.
# SIG_T2	2.E+02	# SIG_T2	2.E+02

2 Validation

In this test, one checks the 15 components above.

The results are precise ($1.e-8$ into relative and $1.e-3$ in absolute for the theoretically worthless components).

Note:

The test validates the two following cases:

- an "external" facet (skin);
- an "internal" facet wedged between two voluminal elements.