

## SSNP127 - Test of the method of delocalization per regularization of the deformation GRAD\_EPSI

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### Summary:

One presents a test of uniaxial traction on a variable bar of section for the law of behavior ENDO\_ORTH\_BETON, in the case of the nonlocal model by regularization of the deformation (D\_PLAN\_GRAD\_EPSI).

## 1 Problem of reference

### 1.1 Geometry and boundary conditions

One considers a bar with variable section length  $100\text{ m}$ , thickness  $1\text{ m}$ , of greater section  $10\text{ m}^2$  and of smaller section  $1\text{ m}^2$ .

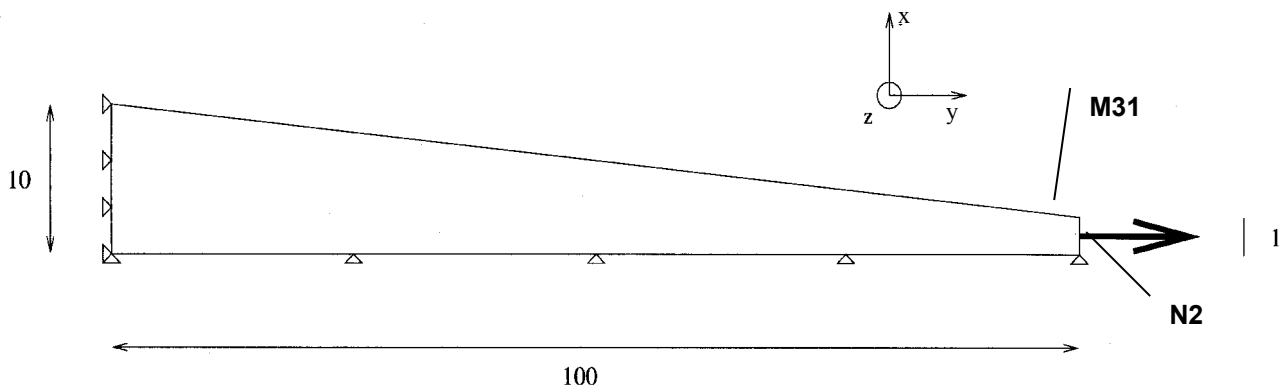


Figure 1.1-a: Geometry and boundary conditions of the uniaxial tests

### 1.2 Properties of materials

Elastic behavior:

$$E = 32000 \text{ MPa} ; \nu = 0.2$$

Length characteristic of the delocalization:  $\sqrt{(3)}\text{ m}$

## 2 Reference solution

This test is a test of nonregression.

## 3 Modeling B

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### 3.1 Parameters of the model/Characteristic of material

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ENDO_ORTH_BETON: ALPHA = 0.87,  
                  K0 = 3.e-4,  
                  K1 = 10.5,  
                  K2 = 6.e-4,  
                  ECROB=1.e-3,  
                  ECROD=0.06
```

### 3.2 Characteristics of modeling

Modeling D\_PLAN\_GRAD\_EPSI

Element MGDPTR6

### 3.3 Characteristics of the grid

Many nodes: 153  
Many meshes and types: 50 TRIA6

### 3.4 Features tested

The law of behavior ENDO\_ORTH\_BETON  
Type of piloting: PRED\_ELAS

### 3.5 Sizes tested and results

Sequence number	Name of the field	Component	Place	Aster
101	DEPL	DY	N2	2.06997E-3
101	VARI_ELGA	V1	M31 , point 2	1.70285E-03
101	VARI_ELGA	V2	M31 , point 2	8.93554E-01

## 4 Synthesis

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This CAS-test constitutes a test of nonregression for the behavior ENDO\_ORTH\_BETON