

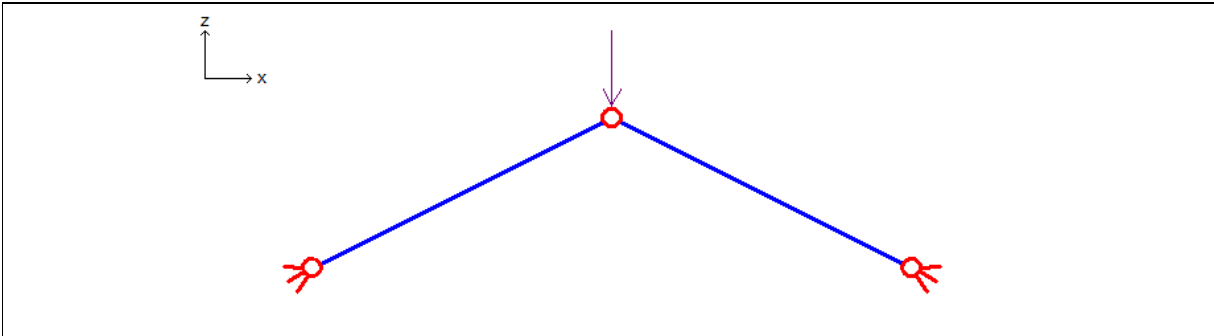
Validation of Sargon Nonlinear solver (CURAN, version 9.60)

TEST TR014

VALIDATION, RELIABILITY, BENCHMARK

Marco Croci

Rev.2-03/12/2010



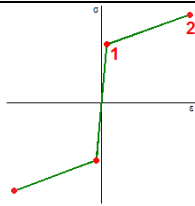
Test description

Constitutive law of trusses material: bilinear

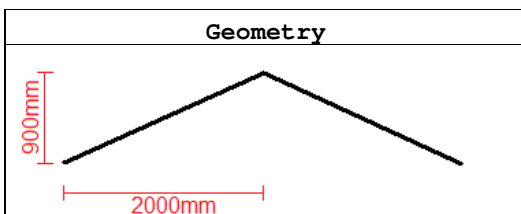
This case is similar to test 005, but here load path is active: it means that load case 2 is computed starting from final condition of load case 1. Constitutive law is symmetrical, the second branch is not reached and force F_2 is equal to $-F_1$: the final condition after load case 2 should be with null deformations/displacements and null internal forces. Case 1 should coincide with case 1 of test 005.

Test model: **curanTR_014.WSR**

Material properties

Name	S235BI	
ν	0,3	
ϵ_1	0,001119	
σ_1	235N/mm ²	
ϵ_2	0,02	
σ_2	360N/mm ²	

Cross-section: circular section, diameter=40mm (area=1256,64mm²)



Force (z direction)

Load case 1	F = -240000N
Load case 2	F = +240000N
Load path: active	

CHECK

Load case	Value	Unit	CURAN	THEORETICAL	% diff.
1	Truss #1 axial force	N	-2,924E+05	-2,924E+05	0,00
1	Node #8 displacement (z)	mm	-5,922E+00	-5,922E+00	0,00
2	Truss #1 axial force	N	5,723E-11	0,000E+00	~0,00
2	Node #8 displacement (z)	mm	8,882E-16	0,000E+00	~0,00

% difference = (CURAN - THEORETICAL) / THEORETICAL * 100

Precision of limit multiplier for the analysis: 0.005