

CURAN: BEAMS (HERMITIAN)	TEST 009	rev.1 21/10/13	version 10.70
VALIDATION, CROSS CHECKS, RELIABILITY, BENCHMARK	Tested by: Ma	rco Croci - Checke	d by: Paolo Rugarli



MODEL					
MODEL NAME	OUTPUT FILE	ANALYSIS TYPE			
curanBE_009.WSR	curanBE_009.CS1.EEN	nonlinear static (Curan)			

DATA					
L [mm]	P [N]	E [N/mm <sup>2</sup> ]	I [mm <sup>4</sup> ]		
5000	500000	210000	7.940E+06		

## THEORETICAL COMPUTATION

Maximum bending moment and midspan displacement are computed as follows:

$$M_{\rm max} = \frac{PL}{8} \qquad \qquad \delta = \frac{PL^3}{192EI}$$

CROSS-CHECK

Value	Theory	<u>S</u> argon	<pre>% difference (S-T)/T*100</pre>
M <sub>max</sub> [Nmm]	3.125E+08	3.125E+08	0.0
δ [mm]	1.952E+02	1.955E+02	0.1

NOTES

- Solver was forced to work using fiber model even if material is linear elastic, to test this condition as well.
- ${\ensuremath{\,^\circ}}$  force is parallel to flanges (weak axis bending).
- shear area: not considered.
- Analysis parameters: Lobatto's points: 5. Fibers number: 250

• Beam elements number: 2



