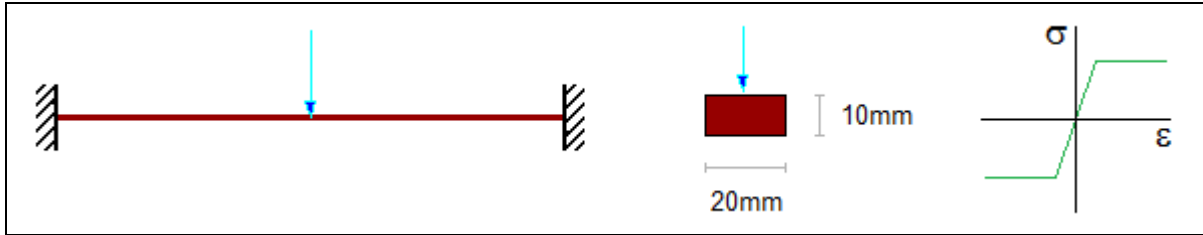


<b>CURAN: BEAMS (HERMITIAN)</b>	TEST 010	rev.1 21/10/13	version 10.70
VALIDATION, CROSS CHECKS, RELIABILITY, BENCHMARK	Tested by: Marco Croci - Checked by: Paolo Rugarli		



MODEL		
MODEL NAME	OUTPUT FILE	ANALYSIS TYPE
curanBE_010.WSR	curanBE_010.cog	nonlinear static (Curan)

DATA				
L [mm]	P [N]	E [N/mm <sup>2</sup> ]	σ <sub>y</sub> [N/mm <sup>2</sup> ]	W <sub>pl</sub> [mm <sup>3</sup> ]
1000	2000	210000	235	500

THEORETICAL COMPUTATION
<p>Cross section maximum bending moment is equal to</p> $M_{pl} = W_{pl} \cdot \sigma_y = 1.175E+05 Nmm$ <p>and occurs when a force equal to P<sub>lim</sub> is applied:</p> $P_{lim} = \frac{8M_{pl}}{L} = 940N < P$ <p>Since the applied load exceeds the limit load, a load multiplier is computed:</p> $\frac{P_{lim}}{P} = 0.4700$

CROSS-CHECK
-------------

Value	<u>Theory</u>	<u>Sargon</u>	% difference (S-T)/T*100
Load multiplier	0.4700	0.4681	-0.4

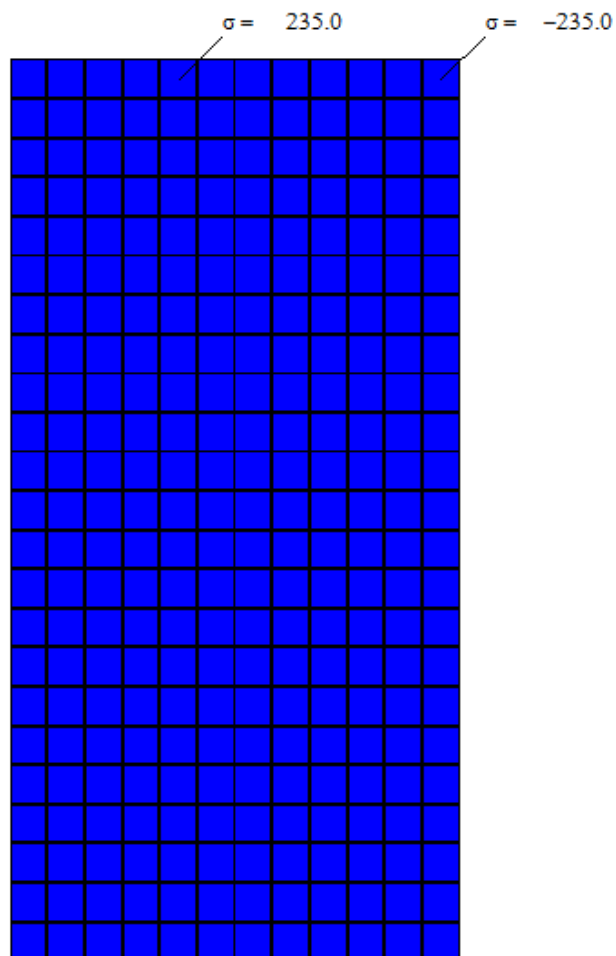
NOTES

- force is parallel to cross-section short side (weak axis bending).
- shear area: not considered.
- Analysis parameters: Lobatto's points: 5. Fibers number: 250
- Mesh is more refined at midspan and constraints, where 50mm of the member are divided into 20 elements (on both sides at midspan)

NONLINEAR FIBER MODEL ANALYSIS RESULTS - NORMAL STRESS

Beam #1 Lobatto's section #1 (csi = -1.000) Lcase = 1 / 1

Sigma, max= 235.0 N/mm<sup>2</sup>; Sigma, min= -235.0 N/mm<sup>2</sup>;



Sargon - Copyright (C) Castalia srl - Milan - Italy - [www.steelchecks.com](http://www.steelchecks.com) - [www.castaliaweb.com](http://www.castaliaweb.com)