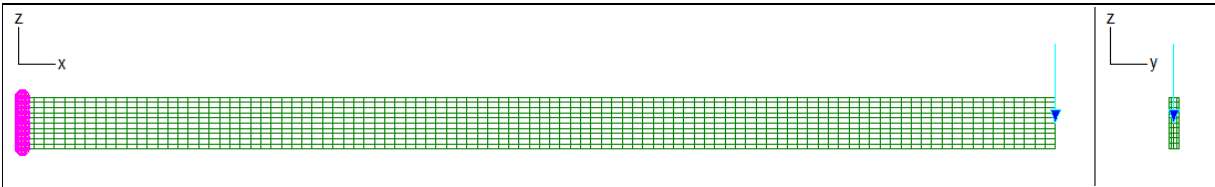


<b>Validation of Sargon Nonlinear solver (CURAN, version 9.70)</b>			
<b>TEST SO026</b>	<b>VALIDATION, CROSS CHECKS, RELIABILITY, BENCHMARK</b>	<b>Marco Croci</b>	<b>Rev.1-25/03/2011</b>



<b>Test description</b>	
Constitutive law of solids material: elasto-plastic.	
Test model: <b>curanSO_026.WSR</b> , cross-check model: <b>nxS26000.dat</b> (NX Nastran)	

<b>Material properties</b>					
Name	$\nu$	$\epsilon_1$	$\sigma_1$	$\epsilon_2$	$\sigma_2$
S235EP	0,3	0,001119	235N/mm <sup>2</sup>	0,007071	360N/mm <sup>2</sup>

<b>Beam</b>			<b>Constraints</b>		<b>Load (z direction)</b>	
LENGTH L	HEIGHT h	THICKNESS b	LEFT	RIGHT	APPLICATION POINT	FORCE F
10000mm	500mm	100mm	Fixed	Free	Right end	-200000N

<b>Model data</b>		
Solid elements	Type	d.o.f.
4000 (100x10x4)	BRICK8WI	16500

<b>CROSS CHECK</b>					
--------------------	--	--	--	--	--

Load case	Value	Unit	CURAN	NXNASTRAN	% diff.
1	Node 5534 displacement (-z)	mm	-6,115E+02	-6,006E+02	1,82
1	$\sigma_x$ element 10, node 57*	N/mm <sup>2</sup>	4,187E+02	4,292E+02	-2,45

\* With Nastran conventions the corresponding value is Normal Y stress on element 2000010  
 NX Nastran output file: nxS26000.f06  
 % difference=(CURAN-NXNASTRAN)/NXNASTRAN\*100  
 Precision of limit multiplier for the analysis: 0.005  
 BRICK8WI: isoparametric element with Wilson-Ibrahimbegovic modification