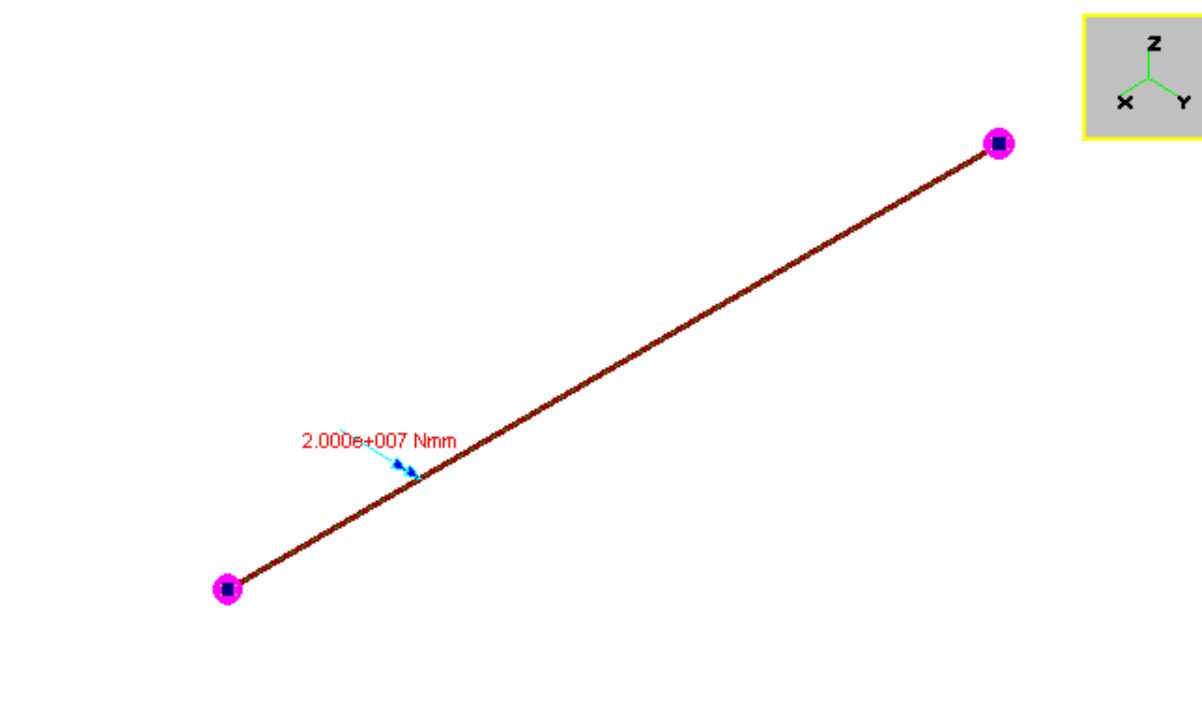


TEST SCHEDULE CASTALIA_STAT050BIS		
SOLVING	BEAM PROBLEM	SOL.SAR.STAT050BIS
FINITE ELEMENT	SOLVER	CLEVER (SARGON ©)



Problem description:

Beam (both ends fixed) with internal bending moment

Keywords (english): validation, benchmark, statics, finite elements, fem, solver, precision, reliability, quality control, beam, error measure

Keywords (italian): validazione, benchmark, statica, elementi finiti, fem, solutore, precisione, affidabilità, controllo qualità, travi, misura di errore

Editorial note:

Target values are based on theoretical values, cross check values or accepted values. Where “theoretical” values are used, target values have been computed using well known formulae and/or published results.

Note:

Shear area is not used, that is shear energy neglected. Dxi and Dzi are the offsets from lower Z alignment leftmost available node.

TEST SCHEDULE CASTALIA_STAT050BIS		
SOLVING	BEAM PROBLEM	SOL.SAR.STAT050BIS
FINITE ELEMENT	SOLVER	CLEVER (SARGON ©)

GEOMETRY & CONSTRAINTS				
Full Length [mm]	Dx1 [mm]			Constraints
3000	2250	-	-	As shown

LOAD			
Type	Value	Point of application	
moment concentrated	2.000e+007	Dx1	
		-	
		-	
		-	

MATERIAL					Fe360
f_y [N/mm ²]	f_u [N/mm ²]	E [N/mm ²]	ν	α	
2.350e+002	3.600e+002	2.060e+005	3.000e-001	1.200e-005	

CROSS-SECTION					Sezione1
A [mm ²]	J ₂ [mm ⁴]	J ₃ [mm ⁴]	J _t [mm ⁴]	W ₂ [mm ³]	W ₃ [mm ³]
1.000e+000	1.000e+000	0.000e+000	0.000e+000	1.000e+000	0.000e+000
W _{pl2} [mm ³]	W _{pl3} [mm ³]	i ₂ [mm]	i ₃ [mm]	i _t [mm]	
1.000e+000	0.000e+000	1.000e+000	0.000e+000	0.000e+000	

OTHER DATA					

TARGET VALUES	vs	COMPUTED VALUES
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Description	T _v	T _{vk}	C _v	(C _v - T _v)	100 $\frac{T_v - C_v}{C_v}$
Shear T3, I extreme. Beam # 1. Load case # 1	-7.5000e+003	Th	-7.5000e+003	0.0000e+000	-0.0000
Shear T3, J extreme. Beam # 1. Load case # 1	7.5000e+003	Th	7.5000e+003	0.0000e+000	0.0000
Bending M2, I extreme. Beam # 1. Load case # 1	6.2500e+006	Th	6.2500e+006	0.0000e+000	0.0000
Bending M2, J extreme. Beam # 1. Load case # 1	-3.7500e+006	Th	-3.7500e+006	0.0000e+000	-0.0000

Cv computed value
 Tv target value
 TvK target value kind (theoretical, cross check, accepted).
 Th theoretical value
 Cr cross check value (theoretical target value is not known, results obtained with a different program are used as target values).
 Ac accepted value (a value which, on the basis of some argument, can be considered acceptable).
 100(Tv - Cv) / Cv relative error percentage

Computational notes:

Authors: Ing. Marco Croci, Ing. Paolo Rugarli
Computed errors: checksolvers.exe, by Castalia srl.

