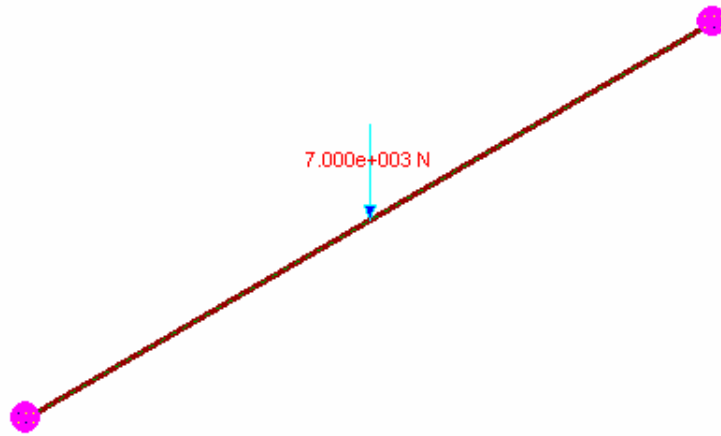
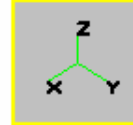


TEST SCHEDULE CASTALIA_STAT012BIS		
SOLVING	BEAM PROBLEM	SOL.SAR.STAT012BIS
FINITE ELEMENT	SOLVER	CLEVER (SARGON ©)



Problem description:

Simply supported beam with internal shear force (midpoint)

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_STAT012BIS		
SOLVING	BEAM PROBLEM	SOL.SAR.STAT012BIS
FINITE ELEMENT	SOLVER	CLEVER (SARGON ©)

GEOMETRY & CONSTRAINTS				
Full Length [mm]	Dx1 [mm]			Constraints
3000	1500	-	-	As shown

LOAD			
Type	Value	Point of application	
force concentrated	7.000e+003	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					IPE200
A [mm ²]	J_2 [mm ⁴]	J_3 [mm ⁴]	J_t [mm ⁴]	W_2 [mm ³]	W_3 [mm ³]
2.981e+003	2.051e+007	1.540e+006	6.254e+004	2.051e+005	3.081e+004
W_{pl2} [mm ³]	W_{pl3} [mm ³]	i_2 [mm]	i_3 [mm]	i_t [mm]	
2.597e+005	4.776e+004	8.296e+001	2.273e+001	2.887e+001	

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	3.5000e+003	Th	3.5000e+003	0.0000e+000	0.0000
Shear T3, J extreme. Beam # 1. Load case # 1	3.5000e+003	Th	3.5000e+003	0.0000e+000	0.0000
Bending M2, I extreme. Beam # 1. Load case # 1	0.0000e+000	Th	-4.6566e-010	-4.6566e-010	-0.0000
Bending M2, J extreme. Beam # 1. Load case # 1	0.0000e+000	Th	-9.3132e-010	-9.3132e-010	-0.0000

C_v computed value
 T_v target value
 T_{vK} 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).
 $100(T_v - C_v) / C_v$ relative error percentage

Computational notes:

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

