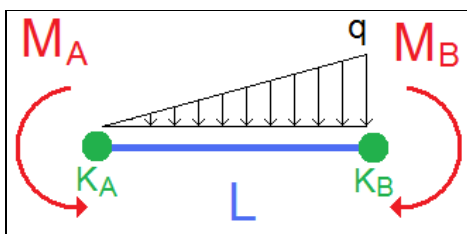


SEMI-RIGID NODES	TEST 010	rev.1 16/09/13	version 10.70
VALIDATION, CROSS CHECKS, RELIABILITY, BENCHMARK	Tested by: Marco Croci - Checked by: Paolo Rugarli		



MODEL		
MODEL NAME	OUTPUT FILE	ANALYSIS TYPE
SR_010.WSR	SR_010.CS1.EEN	linear static

DATA					
L [mm]	q [N/mm]	E [N/mm ²]	I [mm ⁴]	KA [Nmm/rad]	KB [Nmm/rad]
1000	20	210000	1.710E+06	1.197E+08	∞ (fixed)

THEORETICAL COMPUTATION	
$r_A = \frac{1}{1 + \frac{3EI}{K_A L}} = 0.1$	$r_B = 1 \text{ (fixed)}$
$M_A = \frac{qL^2}{30} \left[\frac{r_A(7 - 4r_B)}{4 - r_A r_B} \right]$	$M_B = \frac{qL^2}{60} \left[\frac{r_B(16 - 7r_A)}{4 - r_A r_B} \right]$

CROSS-CHECK

End Moment	Sargon [Nmm]	Theory [Nmm]	% difference (S-T)/T*100
MA	5.128E+04	5.128E+04	0.0
MB	1.308E+06	1.308E+06	0.0

NOTES

- q load is parallel to web (strong axis bending).
- Formulae for MA and MB computation given in *Practical Analysis of Semi-Rigid Frame Design*, Editor: W F Chen, World Scientific Publishing (with the correction "16-7rA" for MB computation).
- ri=0: hinge; ri=1: fixed