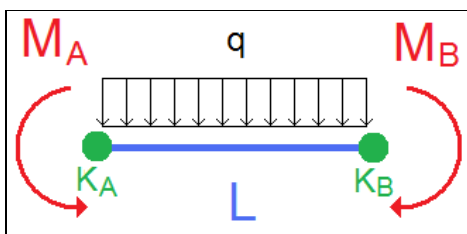


SEMI-RIGID NODES	TEST 004	rev.1 16/09/13	version 10.70
VALIDATION, CROSS CHECKS, RELIABILITY, BENCHMARK	Tested by: Marco Croci - Checked by: Paolo Rugarli		



MODEL		
MODEL NAME	OUTPUT FILE	ANALYSIS TYPE
SR_004.WSR	SR_004.CS1.EEN	linear static

DATA					
L [mm]	q [N/mm]	E [N/mm ²]	I [mm ⁴]	KA [Nmm/rad]	KB [Nmm/rad]
1000	10	210000	1.710E+06	7.183E+08	1.616E+09

THEORETICAL COMPUTATION	
$r_A = \frac{1}{1 + \frac{3EI}{K_A L}} = 0.4$	$r_B = \frac{1}{1 + \frac{3EI}{K_B L}} = 0.6$
$M_A = \frac{qL^2}{12} \left[\frac{3r_A(2-r_B)}{4-r_A r_B} \right]$	$M_B = \frac{qL^2}{12} \left[\frac{3r_B(2-r_A)}{4-r_A r_B} \right]$

CROSS-CHECK

End Moment	<u>S</u> argon [Nmm]	<u>T</u> heory [Nmm]	% difference (S-T)/T*100
MA	3.723E+05	3.723E+05	0.0
MB	6.383E+05	6.383E+05	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.
- ri=0: hinge; ri=1: fixed