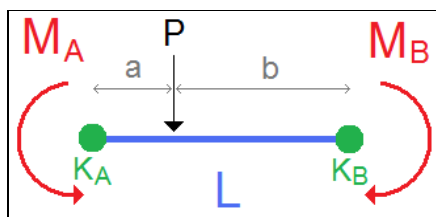


SEMI-RIGID NODES	TEST 002	rev.1 16/09/13	version 10.70
VALIDATION, CROSS CHECKS, RELIABILITY, BENCHMARK	Tested by: Marco Croci - Checked by: Paolo Rugarli		



MODEL		
MODEL NAME	OUTPUT FILE	ANALYSIS TYPE
SR_002.WSR	SR_002.CS1.EEN	linear static

DATA							
L [mm]	P [N]	a [mm]	b [mm]	E [N/mm ²]	I [mm ⁴]	KA [Nmm/rad]	KB [Nmm/rad]
1000	10000	200	800	210000	1.710E+06	7.183E+08	1.616E+09

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

CROSS-CHECK

End Moment	Sargon [Nmm]	Theory [Nmm]	% difference (S-T)/T*100
MA	4.902E+05	4.902E+05	0.0
MB	4.289E+05	4.289E+05	0.0

NOTES

- L force 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.
- r1=0: hinge; r1=1: fixed