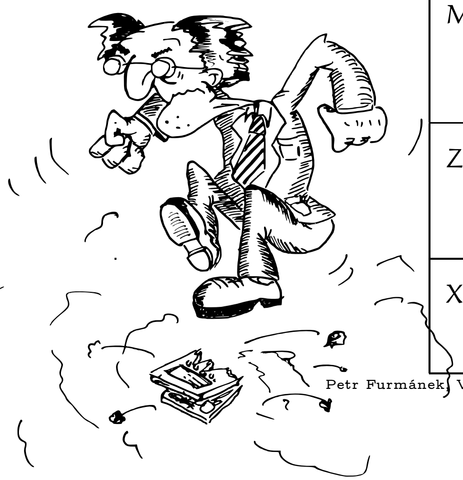
$+x, +u$; $+z, +w$; $+\varphi_{(y)}$	$\overline{X}^l_{ab}$, $\overline{M}_{ab}$, $\overline{Z}^l_{ab}$	$\overline{M}_{ba}$, $\overline{Z}^l_{ba}$, $\overline{X}^l_{ba}$	$\overline{X}^l_{ab}$, $\overset{-\circ}{M}_{ab}$, $\overset{-\circ}{Z}^l_{ab}$	$\overset{-\circ}{Z}^l_{ba}$, $\overline{X}^l_{ba}$	$\overline{X}^l_{ab}$, $\overset{\circ-}{Z}^l_{ab}$	$\overset{\circ-}{M}_{ba}$, $\overset{\circ-}{Z}^l_{ba}$, $\overline{X}^l_{ba}$
F; $L/2$, $L/2$	$\overline{M}_{ab}=\frac{FL}{8}$	$\overline{M}_{ba}=-\frac{FL}{8}$	$\overset{-\circ}{M}_{ab}=\frac{3}{16}FL$	✘	✘	$\overset{\circ-}{M}_{ba}=-\frac{3}{16}FL$
	$\overline{Z}^l_{ab}=-\frac{F}{2}$	$\overline{Z}^l_{ba}=-\frac{F}{2}$	$\overset{-\circ}{Z}^l_{ab}=-\frac{11F}{16}$	$\overset{-\circ}{Z}^l_{ba}=-\frac{5F}{16}$	$\overset{\circ-}{Z}^l_{ab}=-\frac{5F}{16}$	$\overset{\circ-}{Z}^l_{ba}=-\frac{11F}{16}$
f; L	$\frac{fL^2}{12}$	$-\frac{fL^2}{12}$	$\frac{fL^2}{8}$	✘	✘	$-\frac{fL^2}{8}$
	$-\frac{fL}{2}$	$-\frac{fL}{2}$	$-\frac{5fL}{8}$	$-\frac{3fL}{8}$	$-\frac{3fL}{8}$	$-\frac{5fL}{8}$
f; L	$\frac{fL^2}{30}$	$-\frac{fL^2}{20}$	$\frac{7fL^2}{120}$	✘	✘	$-\frac{fL^2}{15}$
	$-\frac{3fL}{20}$	$-\frac{7fL}{20}$	$-\frac{27fL}{120}$	$-\frac{33fL}{120}$	$-\frac{fL}{10}$	$-\frac{2fL}{5}$
t_h; h; t_d; $\Delta t = t_d - t_h$	$\frac{EI}{h}\alpha_t\Delta t$	$-\frac{EI}{h}\alpha_t\Delta t$	$\frac{3}{2}\frac{EI}{h}\alpha_t\Delta t$	✘	✘	$-\frac{3}{2}\frac{EI}{h}\alpha_t\Delta t$
	0	0	$-\frac{3EI}{2hL}\alpha_t\Delta t$	$\frac{3EI}{2hL}\alpha_t\Delta t$	$\frac{3EI}{2hL}\alpha_t\Delta t$	$-\frac{3EI}{2hL}\alpha_t\Delta t$
F; a, b	$\frac{Fab^2}{L^2}$	$-\frac{Fa^2b}{L^2}$	$\frac{Fab}{2L^2}(b+L)$	✘	✘	$-\frac{Fab}{2L^2}(a+L)$
	$\frac{Fb}{L}\left(\frac{a(a-b)}{L^2}-1\right)$	$\frac{Fa}{L}\left(\frac{b(b-a)}{L^2}-1\right)$	$-\frac{Fb}{L}\left(\frac{a(b+L)}{2L^2}+1\right)$	$\frac{Fa}{L}\left(\frac{b(b+L)}{2L^2}-1\right)$	$\frac{Fb}{L}\left(\frac{a(a+L)}{2L^2}-1\right)$	$-\frac{Fa}{L}\left(\frac{b(a+L)}{2L^2}+1\right)$
M; a, b	$\frac{Mb}{L^2}(2L-3b)$	$\frac{Ma}{L^2}(2L-3a)$	$\frac{M}{2L^2}(L^2-3b^2)$	✘	✘	$\frac{M}{2L^2}(L^2-3a^2)$
	$-\frac{M}{L}\left(1+\frac{b(2L-3b)+a(2L-3a)}{L^2}\right)$	$\frac{M}{L}\left(1+\frac{b(2L-3b)+a(2L-3a)}{L^2}\right)$	$-\frac{M}{L}\left(1+\frac{L^2-3b^2}{2L^2}\right)$	$\frac{M}{L}\left(1+\frac{L^2-3b^2}{2L^2}\right)$	$-\frac{M}{L}\left(1+\frac{L^2-3a^2}{2L^2}\right)$	$\frac{M}{L}\left(1+\frac{L^2-3a^2}{2L^2}\right)$



$$M_{ab}=\overline{M}_{ab}+k\left(2\varphi_a+\varphi_b+3\frac{w^l_b-w^l_a}{L}\right) \qquad \mathbf{k}=\frac{\mathbf{2EI}}{\mathbf{L}}$$

$$M_{ba}=\overline{M}_{ba}+k\left(\varphi_a+2\varphi_b+3\frac{w^l_b-w^l_a}{L}\right)$$

$$M_{ab}=\overset{-\circ}{M}_{ab}+\frac{3k}{2}\left(\varphi_a+\frac{w^l_b-w^l_a}{L}\right)$$

✘

✘

$$M_{ba}=\overset{\circ-}{M}_{ba}+\frac{3k}{2}\left(\varphi_b+\frac{w^l_b-w^l_a}{L}\right)$$

$$Z^l_{ab}=\overline{Z}^l_{ab}-\frac{3k}{L}\left(\varphi_a+\varphi_b+2\frac{w^l_b-w^l_a}{L}\right)$$

$$Z^l_{ba}=\overline{Z}^l_{ba}+\frac{3k}{L}\left(\varphi_a+\varphi_b+2\frac{w^l_b-w^l_a}{L}\right)$$

$$Z^l_{ab}=\overset{-\circ}{Z}^l_{ab}-\frac{3k}{2L}\left(\varphi_a+\frac{w^l_b-w^l_a}{L}\right)$$

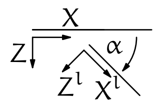
$$Z^l_{ba}=\overset{-\circ}{Z}^l_{ba}+\frac{3k}{2L}\left(\varphi_a+\frac{w^l_b-w^l_a}{L}\right)$$

$$Z^l_{ab}=\overset{\circ-}{Z}^l_{ab}-\frac{3k}{2L}\left(\varphi_b+\frac{w^l_b-w^l_a}{L}\right)$$

$$Z^l_{ba}=\overset{\circ-}{Z}^l_{ba}+\frac{3k}{2L}\left(\varphi_b+\frac{w^l_b-w^l_a}{L}\right)$$

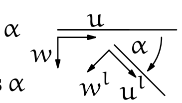
$$X^l_{ab}=\overline{X}^l_{ab}-n(u^l_b-u^l_a) \qquad \mathbf{n}=\frac{\mathbf{EA}}{\mathbf{L}}$$

$$X^l_{ba}=\overline{X}^l_{ba}+n(u^l_b-u^l_a)$$



$$X = X^l\cos\alpha - Z^l\sin\alpha \qquad u^l = u\cos\alpha + w\sin\alpha$$

$$Z = X^l\sin\alpha + Z^l\cos\alpha \qquad w^l = -u\sin\alpha + w\cos\alpha$$



Petr Furmánek, Václav Šmilauer ver. 2009/06/23