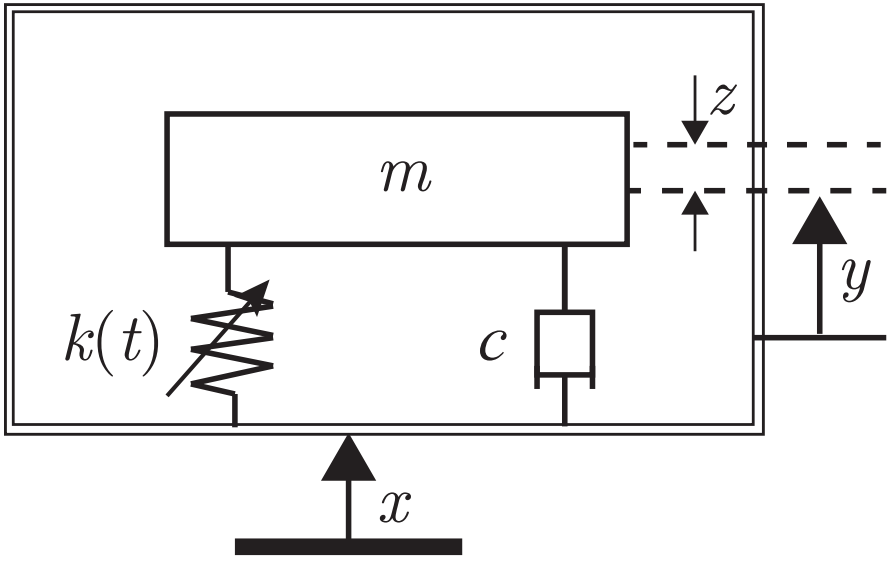
(a)

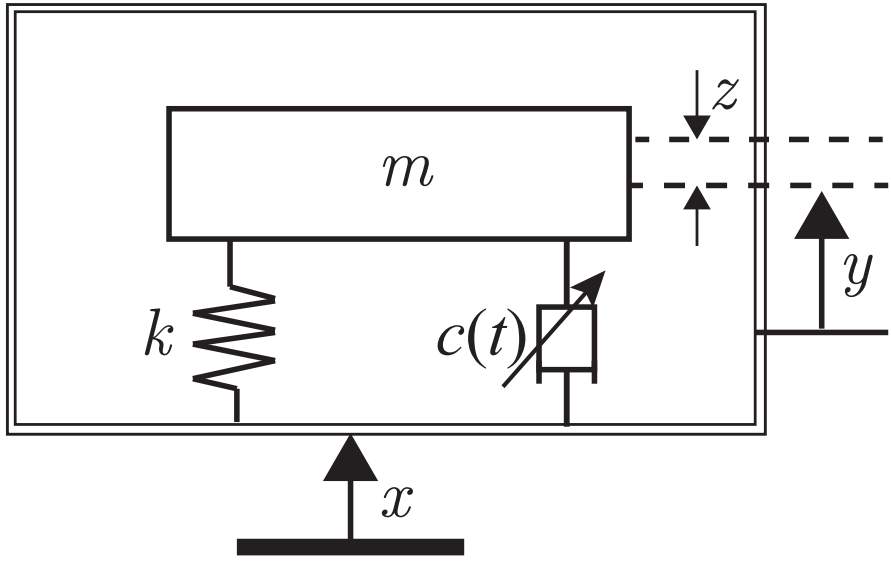
time-varying stiffness $k(t)$



$$m\ddot{z} + c\dot{z} + k(t)z = -m\ddot{x}$$
$$x = X\cos(\omega\ t + \phi)$$
$$k(t) = k_c + k_p\cos(\Omega\ t)$$

(b)

time-varying damping $c(t)$



$$m\ddot{z} + c(t)\dot{z} + kz = -m\ddot{x}$$
$$x = X\cos(\omega\ t)$$
$$c(t) = c_0 + c_p\cos(\Omega\ t)$$