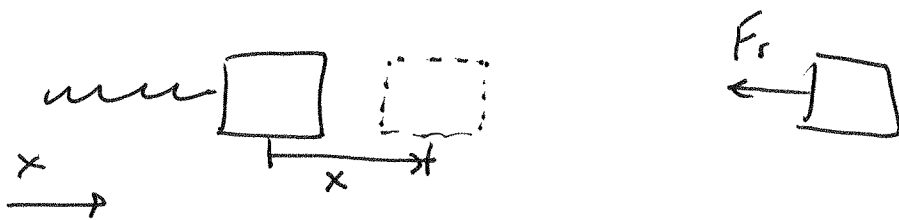


SHM and the mass-spring



$$\sum F_x = ma_x = F_s = -kx \quad (\text{Hooke's law})$$

$$ma_x = -kx$$

$$a_x = -\frac{k}{m}x \quad \text{compare to } a = -\omega^2 x$$

$$\omega^2 = k/m \rightarrow \omega = \sqrt{\frac{k}{m}}$$

$$\omega = \frac{2\pi}{T} = 2\pi f = \sqrt{\frac{k}{m}}$$

$$T = 2\pi \sqrt{\frac{m}{k}} \quad f = \frac{1}{2\pi} \sqrt{\frac{k}{m}}$$