

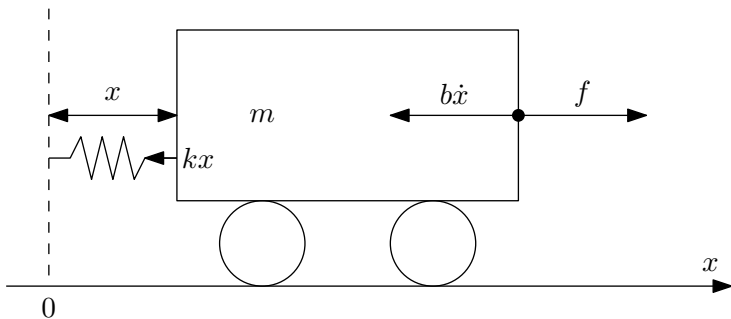
Introduction for Cart Plant Model

Control Engineering 1

Motion Equation & Transfer Function

$$m\ddot{x} = f - b\dot{x} - kx$$

$$P(s) = \frac{X(s)}{F(s)} = \frac{1}{ms^2 + bs + k}$$



PID control and step response

- P control
 - has a static error
- PD control
 - static error
 - good transient
- PI control
 - no static error
 - high oscillation
- PID control
 - no static error
 - good transient??