

Approximate PD Using Dynamic Compensation

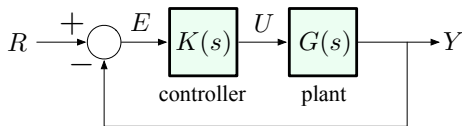
Reminder: we can approximate the D-controller $K_D s$ by

$$K_D \frac{ps}{s+p} \longrightarrow K_D s \text{ as } p \rightarrow \infty$$

— here, $-p$ is the *pole* of the controller.

So, we replace the PD controller $K_P + K_D s$ by

$$K(s) = K_P + K_D \frac{ps}{s+p}$$



Closed-loop poles: $1 + \left(K_P + K_D \frac{ps}{s+p} \right) G(s) = 0$