

Story So Far

PD control:

- ▶ provides stability, allows to shape transient response specs
- ▶ replace noncausal D-controller Ks with a causal, stable lead controller $K\frac{s+z}{s+p}$, where $p > z$
- ▶ this introduces a zero in LHP (at $-z$), pulls the root locus into LHP
- ▶ shape of RL differs depending on how large p is

PI control:

- ▶ provides stability and perfect steady-state tracking of constant references
- ▶ replace unstable I-controller K/s with a stable lag controller $K\frac{s+z}{s+p}$, where $p < z$
- ▶ this does not change the shape of RL compared to PI