

Recap: Benefits of Feedback Control

From last lecture: *feedback control*

- ▶ reduces steady-state error to disturbances
- ▶ reduces steady-state sensitivity to model uncertainty (parameter variations)
- ▶ improves time response

So far, we have only looked at *proportional feedback* (scalar gain) and 1st-order plants. Now we will add two more basic ingredients and examine their effect on higher-order systems.

We will consider the following plant transfer function:

$$G(s) = \frac{1}{s^2 - 1}$$

- ▶ unstable: poles at $s = \pm 1$ (one pole in RHP)
 - ▶ 2nd-order
- not as easy as DC motor, which was 1st-order and stable.