

# The Luenberger Observer

$$\text{System:} \quad \dot{x} = Ax$$

$$y = Cx$$

$$\text{Observer:} \quad \dot{\hat{x}} = (A - LC)\hat{x} + Ly.$$

What happens to **state estimation error**  $e = x - \hat{x}$  as  $t \rightarrow \infty$ ?

$$\dot{e} = (A - LC)e$$

Does  $e(t)$  converge to zero in some sense?