

Observability and Estimation Error

Fact: If the system

$$\dot{x} = Ax, \quad y = Cx$$

is observable, then we can **arbitrarily assign** eigenvalues of $A - LC$ by a suitable choice of the output injection matrix L .

This is similar to the fact that controllability implies arbitrary closed-loop pole placement by state feedback.

In fact, these two facts are closely related because CCF is dual to OCF.