

**EECS 16B**

**Designing Information Devices and Systems II**

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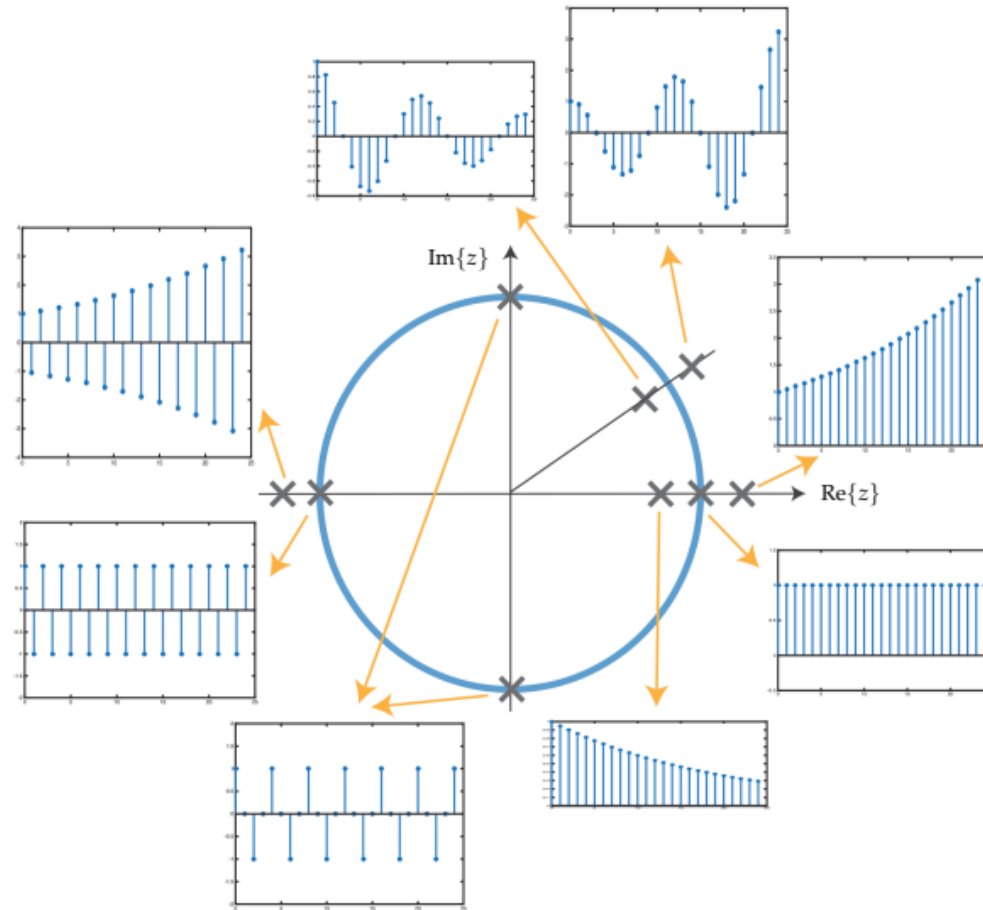
# Stability

- Want the system to behave “well” when input is “nice”.

# BIBO Stability

- Bounded Input Bounded Output (BIBO) Stability: BIBO stable iff for every bounded input ( $\|\vec{u}[i]\| \leq E, \forall i$  for some  $E > 0$ ) and any initial condition  $\vec{x}[0]$ ,  $\exists$  a  $0 < K < \infty$  s.t.  $\|\vec{x}[i]\| \leq K, \forall i$ .
  - This definition covers both real and complex valued scalar as well as vector cases.

# Scalar Discrete-Time Model



$\text{Re}(z^i)$

# Vector Discrete-Time Model

# Scalar & Vector Continuous-Time Models

# Feedback Control