EECS 16B
Designing Information Devices and Systems II

Profs. Miki Lustig and JP Tennant
Department of Electrical Engineering and Computer Science

Prof. Jean-Paul (JP) Tennant

Education

- BS in EE from University of Michigan (Systems and Controls)
- MS in EECS from UC Berkeley (Robotics)
- MBA from BerkeleyHaas (Quantitative Finance)

Work History

- US Navy, Officer on Nuclear Submarine
- Goldman Sachs, US Treasury Bond Trader
- Geographic Expeditions, Co-Owner/CEO/CFO/Board Member (International Adventure Travel)
- Peak 15 Systems, Co-Founder/Chairman of the Board (Enterprise Software)

Teaching

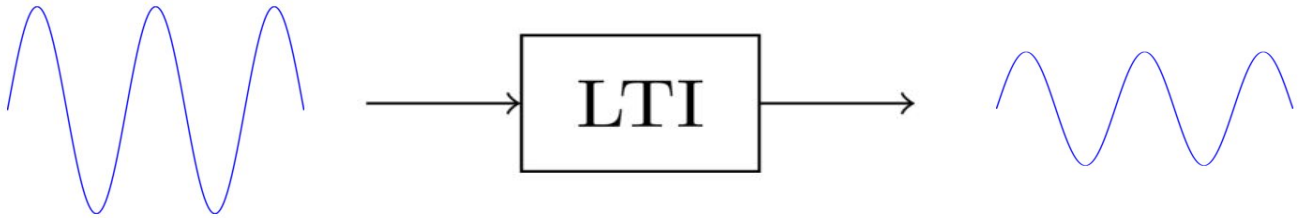
- EECS 16B
- Business and Finance for Engineers (Spring 2025?)

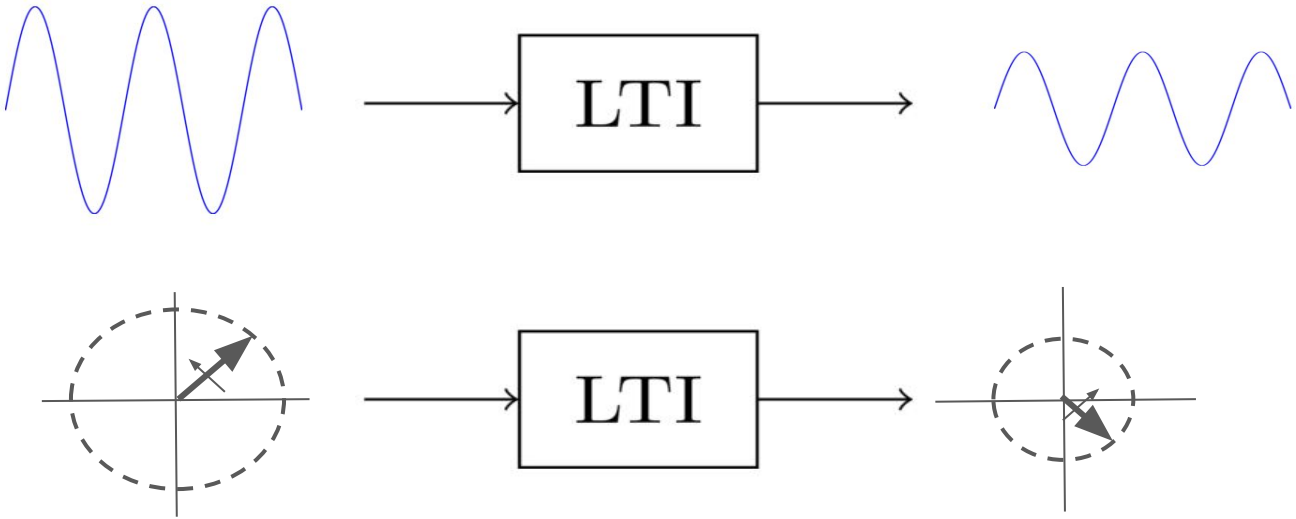
Announcements:

- Midterm #1
  - Monday, February 26, 8-10pm
  - Scope is through this week (end of circuits module)
- Lab #4 (sensing, filtering) this week
  - Prelab deadline moved to Wed 11:59pm
- Systems and Controls starts next week (lots of linear algebra)

Today:

- Review/context
- Bode Plots


LTI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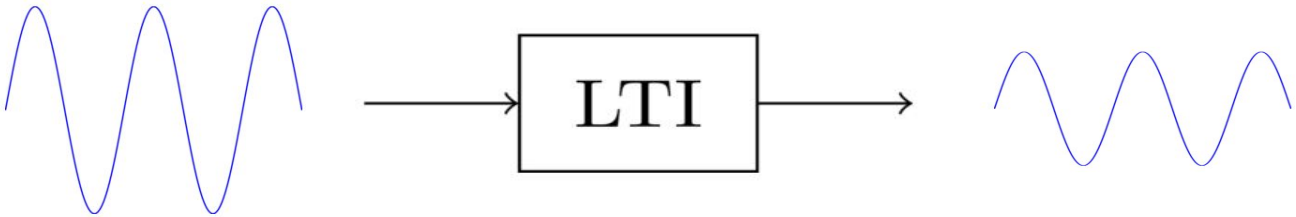
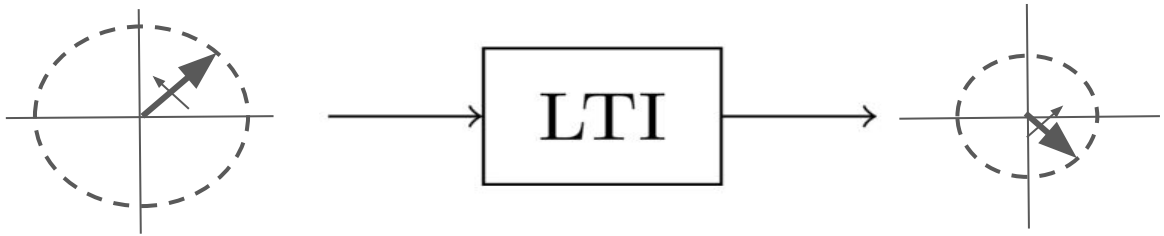
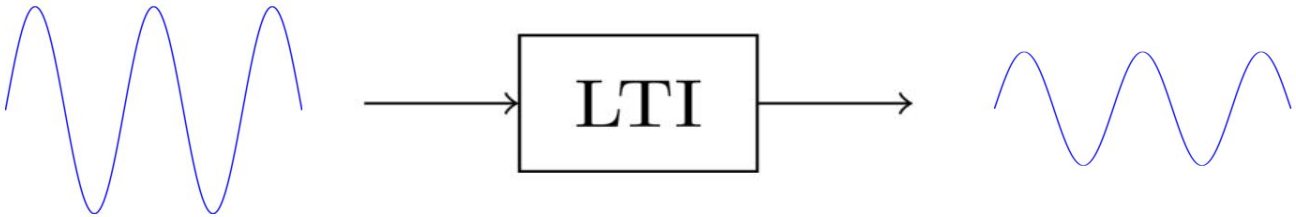
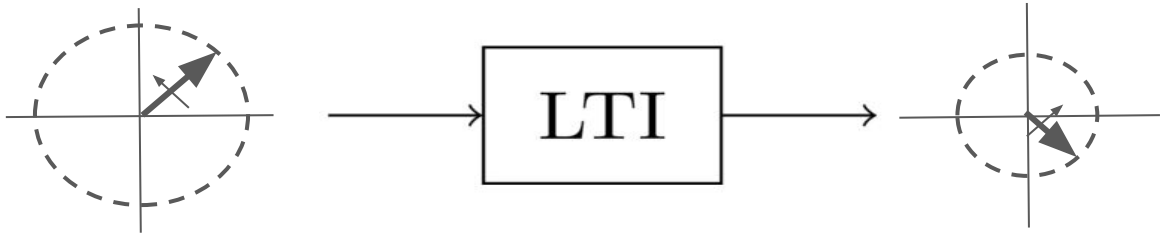




$e^{j\omega t}$

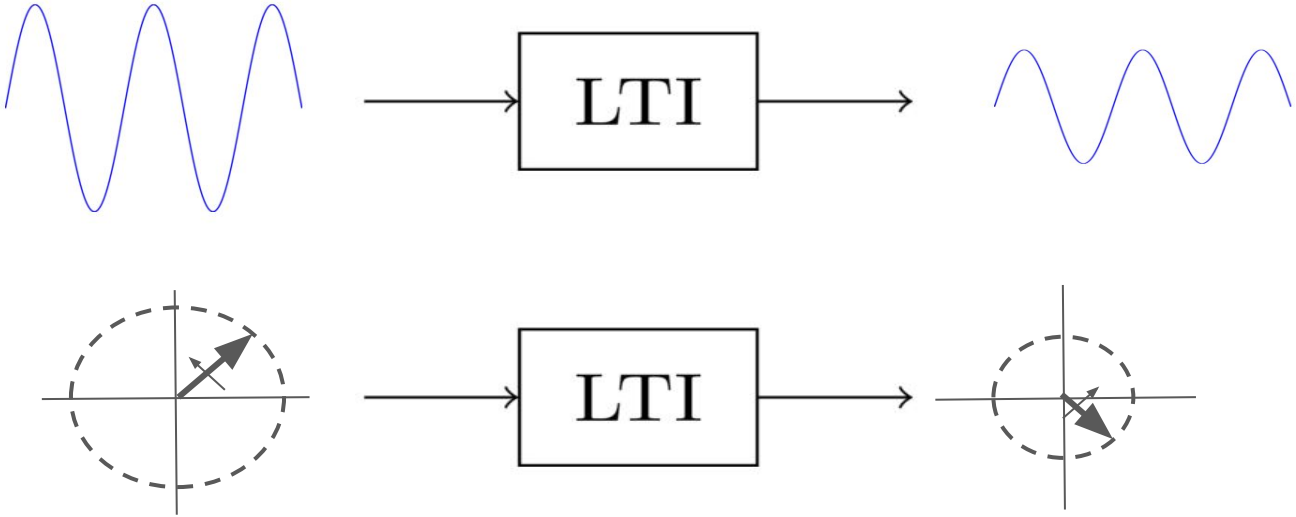
$\tilde{C}e^{j\omega t}$





$e^{j\omega t}$

$\tilde{C}e^{j\omega t} = H(j\omega)e^{j\omega t}$



$e^{j\omega t}$

$\tilde{C}e^{j\omega t} = H(j\omega)e^{j\omega t}$

$\frac{1}{2}e^{j\omega t} + \frac{1}{2}e^{-j\omega t}$

$\frac{1}{2}H(j\omega)e^{j\omega t} + \frac{1}{2}H(-j\omega)e^{-j\omega t}$

The impedance of a capacitor is given by:

1. $\frac{1}{j\omega C}$
2. $\frac{-j}{\omega C}$
3. both 1 and 2 are correct
4. none of the above

True or False: Phasor analysis is used to better understand the homogeneous solution to the differential equations describing our circuit.

1. True
2. False

An eigenfunction is defined as a function that, when acted upon by a linear operator, produces a (possibly complex) scalar multiple of itself.

Which of the following is true?:

1. Sinusoidal inputs are eigenfunctions of LTI systems.
2. Exponential inputs are eigenfunctions of LTI systems.
3. Both 1 and 2 are correct.
4. Neither 1 nor 2 is correct.

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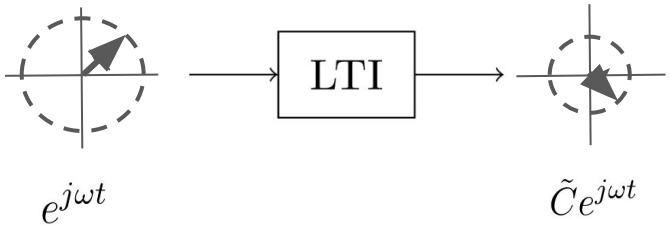

Bode Plots!