Lecture Module 10: Resonance Frequency

Clamped-Clamped Beam μResonator

Estimating Resonance Frequency

* Reading: Senturia, Chpt. 10: §10.5, Chpt. 19
* Lecture Topics:
  - Estimating Resonance Frequency
  - Lumped Mass-Spring Approximation
  - ADXL-50 Resonance Frequency
  - Distributed Mass & Stiffness
  - Folded-Beam Resonator

\[ f_i = F_i \cos(\omega_0 t) \quad \rightarrow \quad f_i = F_i \cos(\omega_0 t) \]

\* \( \omega \neq \omega_0 \): small amplitude
\* \( \omega = \omega_0 \): maximum amplitude → beam reaches its maximum potential and kinetic energies