Estimating Resonance Frequency

\[ v_i = V_i \cos(\omega_o t) \quad \Rightarrow \quad f_i = F_i \cos(\omega_o t) \]

- \( \omega \neq \omega_o \): small amplitude
- \( \omega = \omega_o \): maximum amplitude \( \Rightarrow \) beam reaches its maximum potential and kinetic energies

\( Q \approx 10,000 \)
Folded-Beam Suspension

Comb-Driven Folded Beam Actuator

\[ \frac{F_x}{(4\pi^2\omega_n^2)} \left( \frac{1}{y^2} - \frac{1}{y} \right) \leq y \leq L \]

\[ \omega_n^2 = \frac{4}{k} \]

\[ k_e = \frac{E_t A}{L^2} \]

Folding Truss

Input Comb Drive
Vibrating Shackle Mass
Anchors
Rigid Truss
Output Sense Electrode