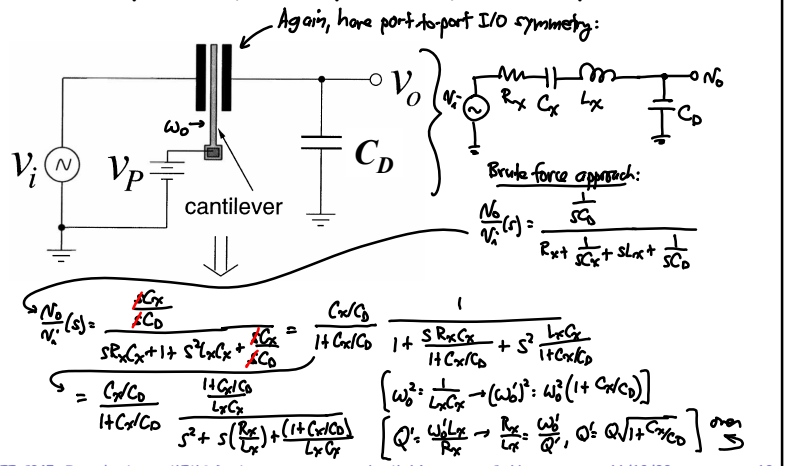
UC Berkeley

Position Sensing Circuits

UC Berkeley

Position-to-Voltage Conversion

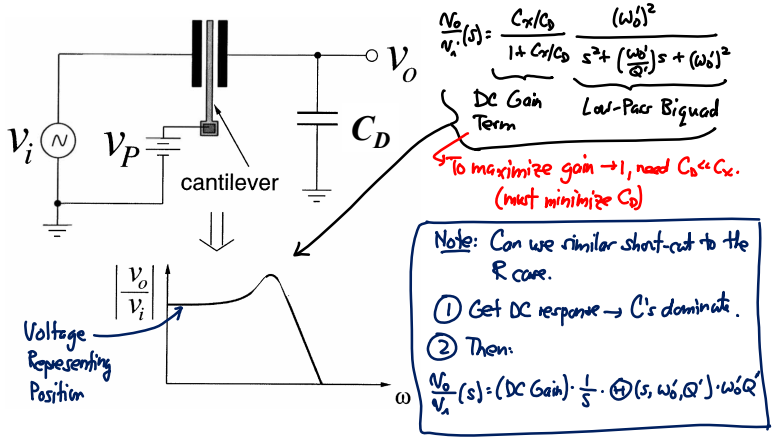
- To sense position (i.e., displacement), use a capacitive load



UC Berkeley

Position-to-Voltage Conversion

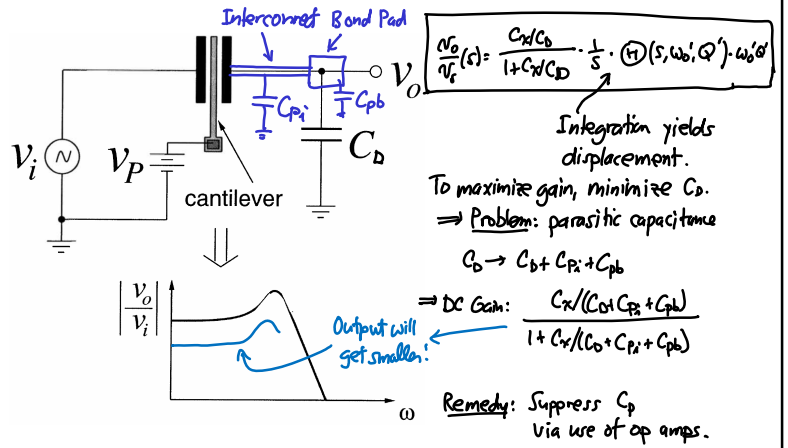
- To sense position (i.e., displacement), use a capacitive load



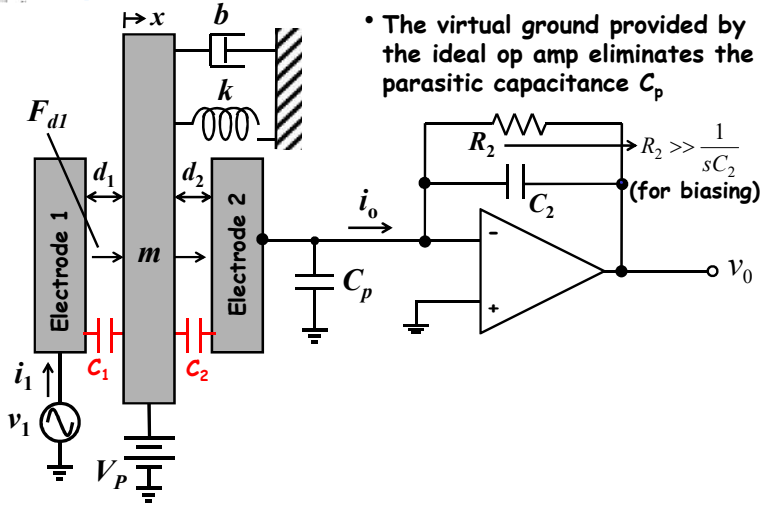
UC Berkeley

Problems With Pure-C Position Sensing

- To sense position (i.e., displacement), use a capacitive load



The Op Amp Integrator Advantage



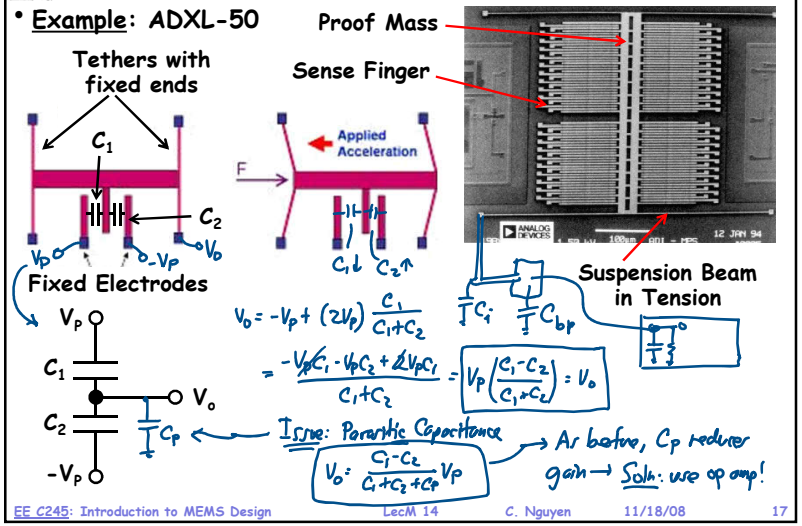
- The virtual ground provided by the ideal op amp eliminates the parasitic capacitance C_p

$R_2 >> \frac{1}{sC_2}$ (for biasing)

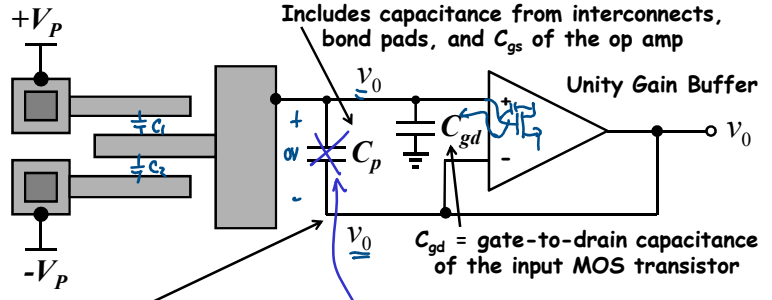
Differential Position Sensing

Differential Position Sensing

- Example: ADXL-50



Buffer-Bootstrapped Position Sensing



- Bootstrap the ground lines around the interconnect and bond pads
  - No voltage across C_p
  - It's effectively not there!