Lecture 24: Sensing Circuits II & Integration

- Announcements:
- Project Slide Set #3 due Friday, April 26
- HW#7 online and due Friday, 5/10, at 9 a.m.
- Module 16 on Sensing Circuit Non-Idealities & Integration online
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- Reading: Senturia, Chpt. 14
- Lecture Topics:
  - Detection Circuits
    - —Velocity Sensing
    - —Position Sensing
- Reading: Senturia Chpt. 14, 15
- Lecture Topics:
  - Ideal Op Amps
  - Op Amp Non-Idealities
  - MEMS-Transistor Integration
    - —Mixed
    - —MEMS-First
    - —MEMS-Last
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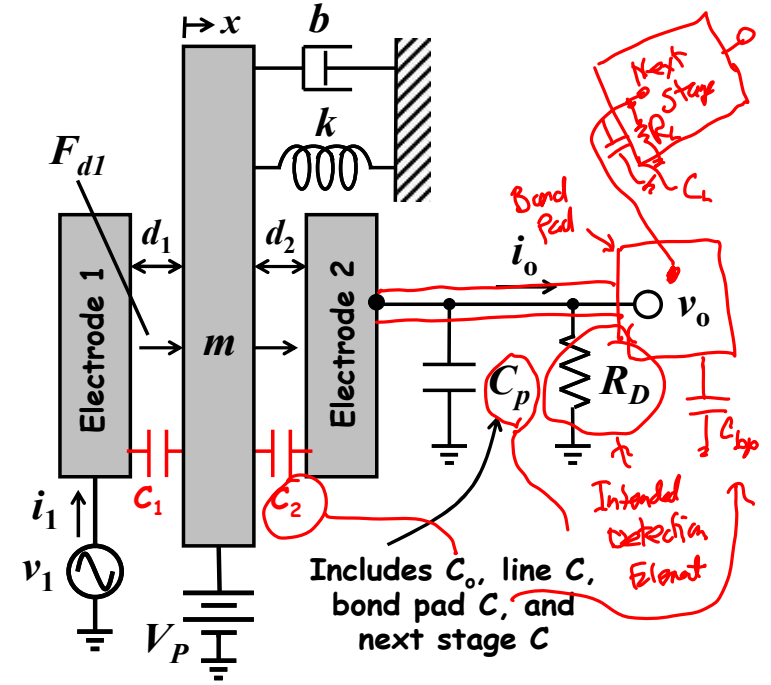
- Last Time:
- Finished velocity sensing

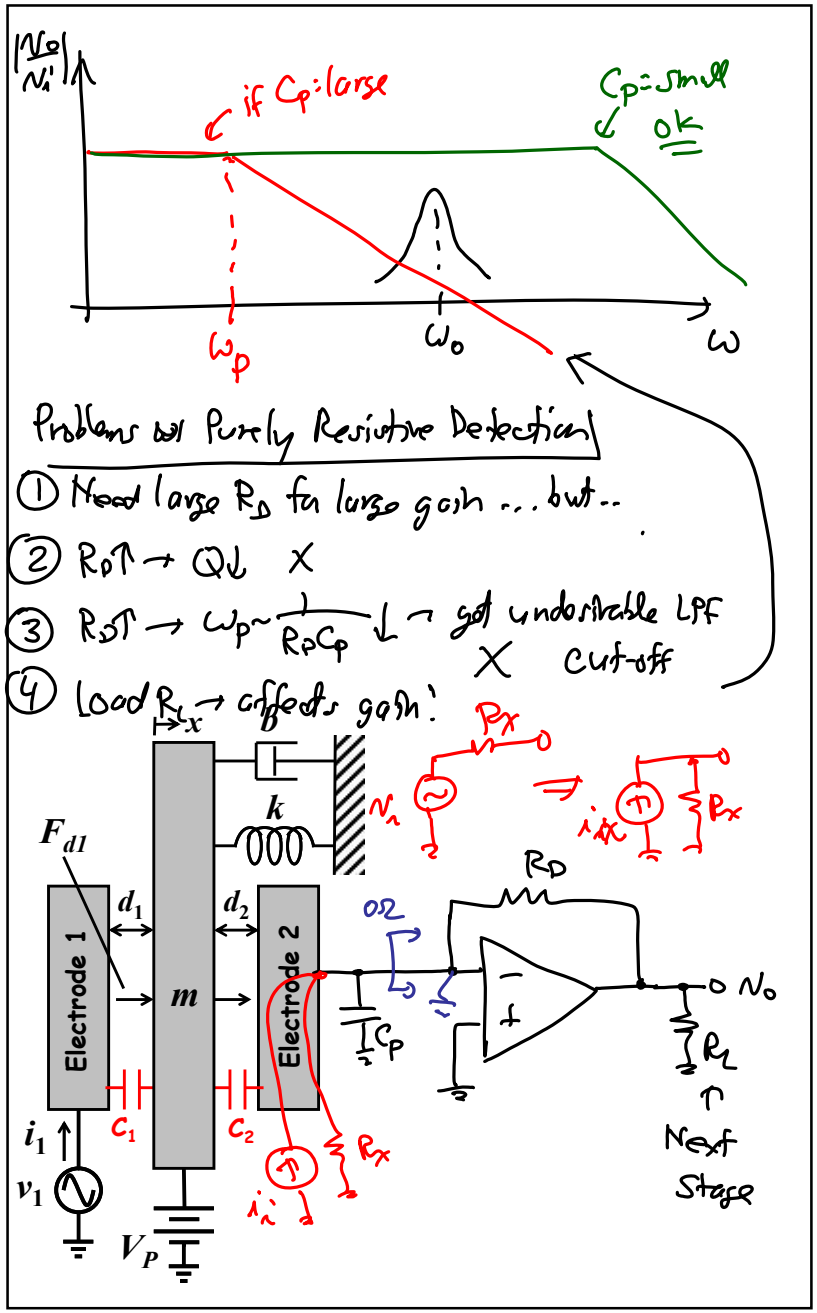
The Problem is Actually Bigger!

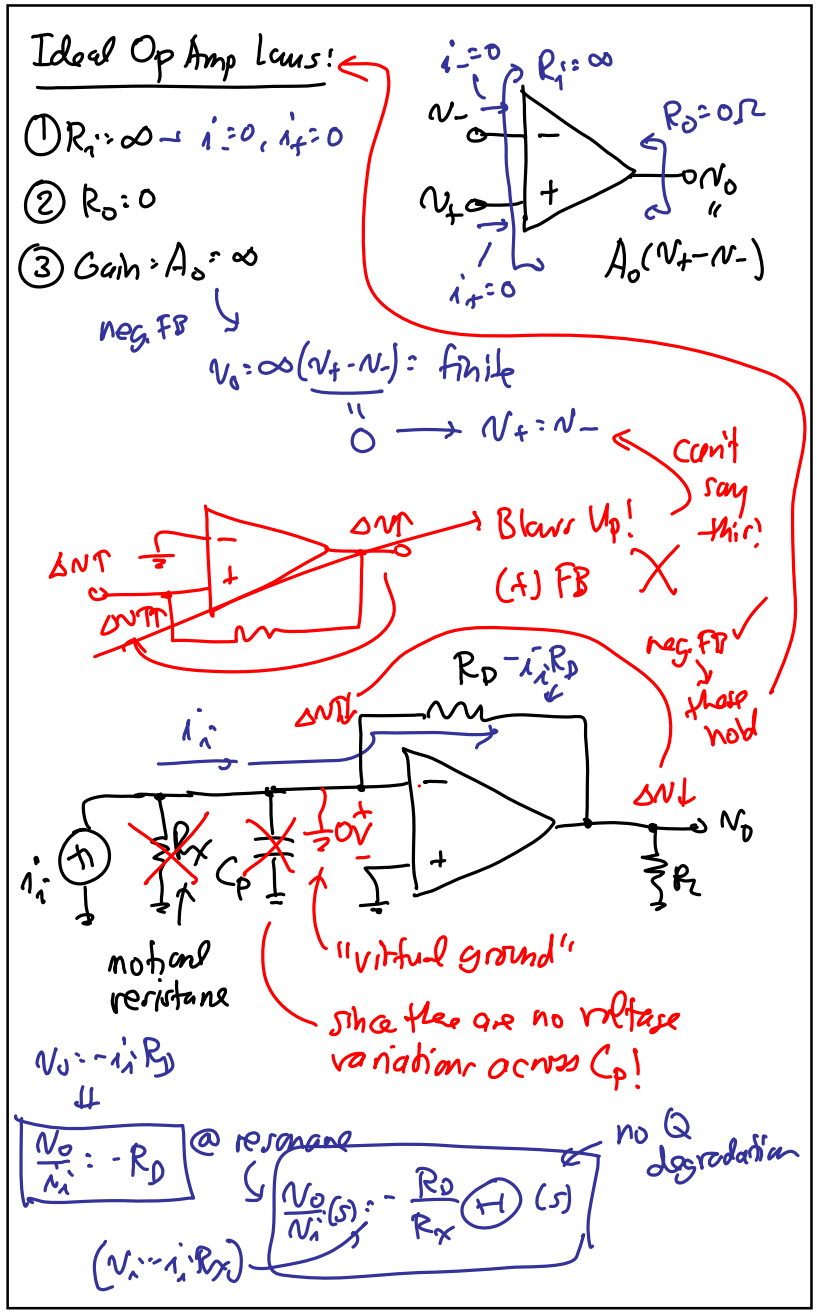


Now, we get:

$$\frac{V_o}{V_i}(s) \sim \frac{R_D}{R_x + R_D} \cdot \frac{1}{1 + \frac{s}{\omega_p}} \cdot H(s, \omega_o', Q')$$

$$\omega_p = \frac{1}{(R_x \| R_D) C_p}$$





- Now, go through position sensing slides in Module 14
- Then go through non-ideal op amp slides and integration in Module 16