Lecture 27: Sensing Circuits II

- Announcements:
- Reminder: 3rd project slide due Dec. 2 (tomorrow)
- HW#7 due Thursday, Dec. 8, at 7 p.m.
- Project Outbrief Signup Sheet has been on my door for about a week
- Final Review Session:
  - Monday, December 12, 6-8 pm? Yes.
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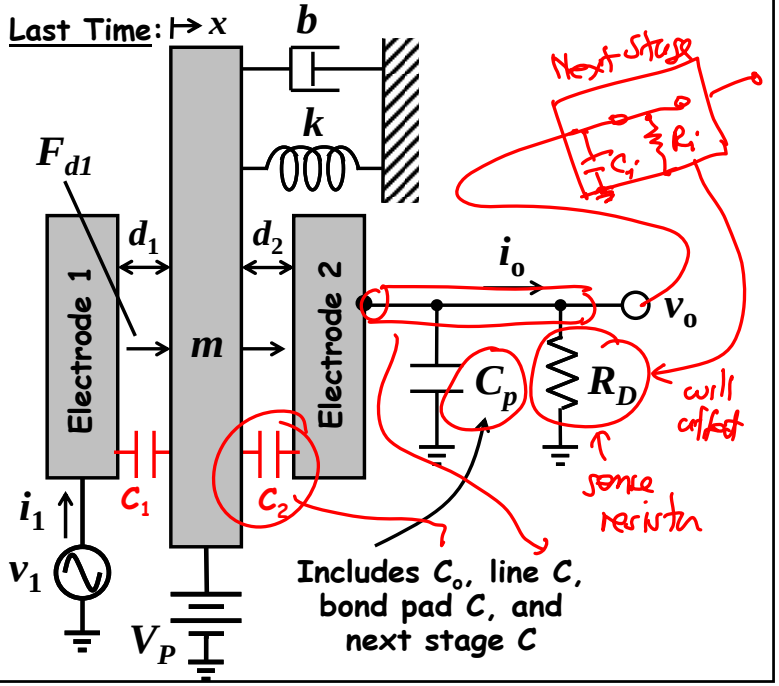
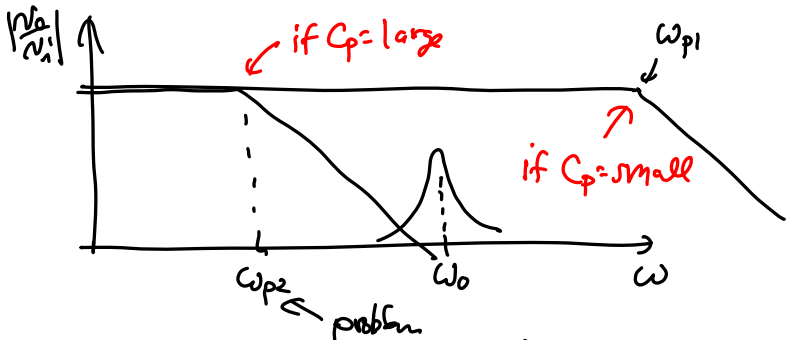
- Reading: Senturia, Chpt. 14
- Lecture Topics:
  - Detection Circuits
    - Velocity Sensing
    - Position Sensing
- ---
- Last Time: $\mapsto x$





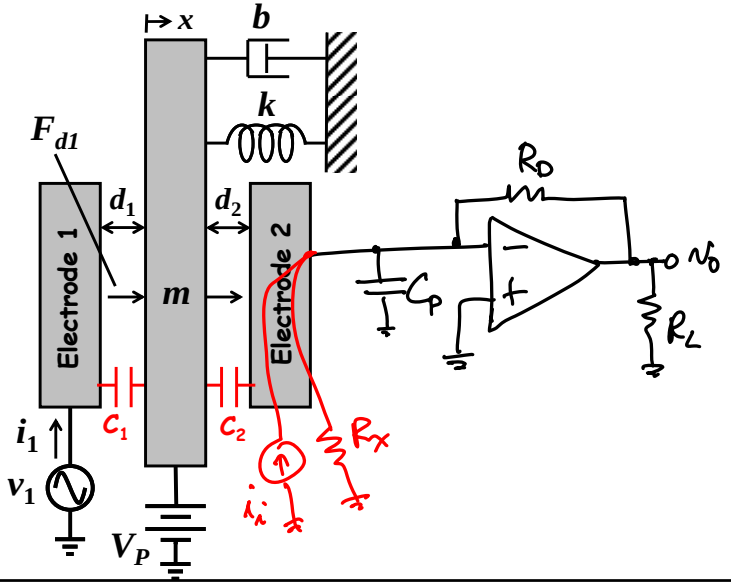
Problems w/ Purely Resistive Detection

① Need large R_D for high gain... but...

② $R_D \uparrow \rightarrow G \downarrow = G_{orig}\left(\frac{R_x}{R_x + R_D}\right)$

③ $R_D \uparrow \rightarrow \omega_p \sim \frac{1}{R_D C_p} \downarrow$ → get undesirable LPF cut-off

④ Load $R_L \rightarrow$ affects gain! → $R_D \rightarrow R_D \| R_L$



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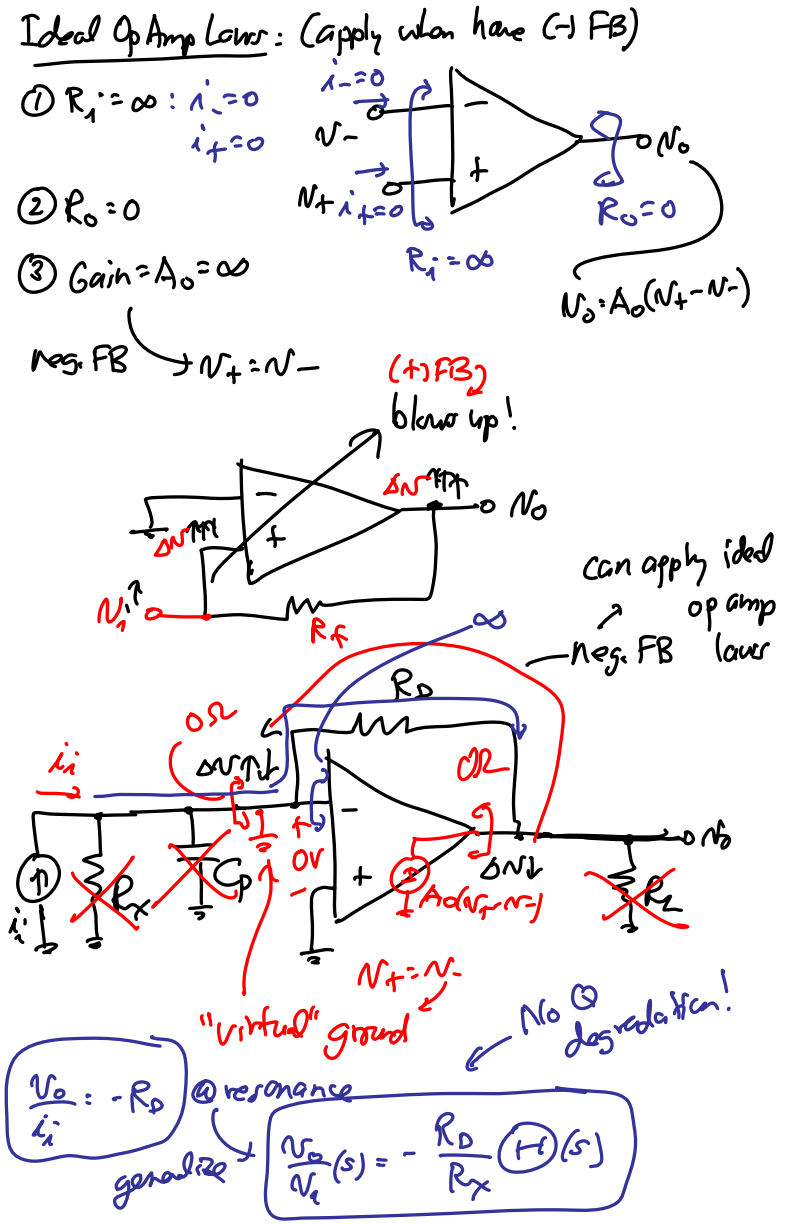

- Go through Module 14 on Sensing Circuits, slides 6-7 and 13-20

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