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Tutorial for Microelectronics III WS

2019/2020 Task sheet

5 Compensation

1. Given is a one pole system with the transfer function:

$$A(j\omega) = A_0 \cdot \frac{1}{1 + \frac{j\omega}{p_1}}$$

(a) Please draw the frequency response qualitatively in a Bode plot!

(b) How can its cutoff frequency be increased? What is the impact of this method on the unit gain bandwidth value (GBW)?

2. Given is now the small signal equivalent circuit of a two stage amplifier:
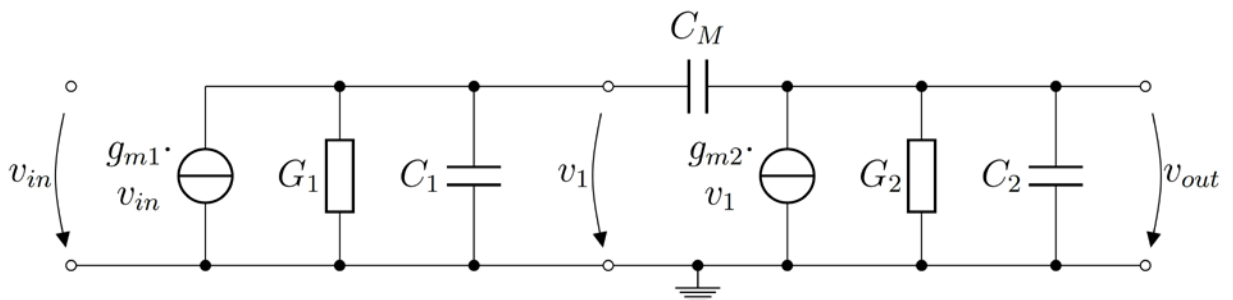
(a) Please determine the transfer function of the amplifier without the capacity C_M.

(b) Please derive the transfer function of the amplifier with the capacity C_M.

(c) What is the purpose of the capacity C_M? Explain it by using a Bode plot for the transfer functions with and without C_M!