Lecture 13

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- General Amplifier Analysis Procedure

    - DC bias circuit analysis/design

        * Consider only DC sources (remove AC sources)
        * Ensure operation in the active region
        * Take desired Q-point parameters into account (g_m, r_π, etc.)

    - AC Analysis

        * Draw the AC equivalent circuit with the appropriate BJT model
        * Consider only AC sources (remove DC sources)
        * Midband (medium-frequency AC analysis):
            · Capacitor $\to$ short-circuit, inductor $\to$ open-circuit
        * Frequency-dependent analysis
            · Capacitor and inductor go to their frequency-dependent impedances

    - Removal of Sources

        * Voltage source $\to$ replace with a short-circuit
        * Current source $\to$ replace with an open-circuit

- The Early Effect (BJT Output Resistance)

    - As V_C increases, the depletion width of the B-C junction widens