Lecture 19

→ refer to the printout on Transistor Amp. Config.

Darlington Pair

Note:

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Power in transistors

I_c

V_{ce}

class A amplifiers

pros:
cons:

class B

pros:
cons:

class C


Notes on push-pull complimentary stage

- "complimentary" = both npn & pnp used
- "push-pull" only one transistor is on (active), the other is off
- this is class B amplifier

- Note: both transistors cannot have forward biased base-emission simultaneously: \( V_{be1} = V_{be2} = V_{in} - V_{out} \)
  b/c they are complementary

- \( G \sim 1 \) for volt., can have \( G \gg 1 \) for current

\[ \text{Lab Manual, Fig 6.36} \]

Note: there will be no cross-over distortions if no load is attached.
Q: why? A: no current can flow thru both \( Q_1, Q_2 \) \( \Rightarrow \)
\( I_e \sim 0, V_{be} \sim 0 \)

with load:

- the current flows in the direction of emitter arrows for half the cycle, the other transistor is off
Push-pull amp with negative feedback to fix cross-over dist.

basic idea: eliminate 0.6V diode drop using negative feedback

steps to understanding this circuit:
1) negative feedback keeps $V_-$ = $V_+$
2) when $V_m > 0$, the current flows to the right across $R_3, R_4$, and $Q_2$ is on
3) when $V_m < 0$, the current flows to the left thru $R_3, R_4$, and $Q_1$ is on

In both cases $V_{out} = -R_4 \cdot I = -R_4 \frac{V_m}{R_3}$
i.e. $V_d$ does not come into the expression

Lab Manual, Fig 6.37
Exp. 6.10