

Pre Lab - Lillian Tucker

Friday, March 3, 2023 12:17 PM

- Simulate the filter designs shown in Figure 26-1 and the Twin - T notch circuit provided in the weekly content folder (Experiment 26 Circuit #2.pdf)

EECE 226L: 60 Hz Passive Notch Design Using Minimal Standard Components

Since 60 Hz noise is a particular issue in our electronics lab, this passive filter might be fairly helpful. This design follows the Twin-T notch topology. Since this design is particularly sensitive to tolerances in component values, you should measure resistances carefully and trim values. The corner frequency (f_c) is found by:

$$* f_c = \frac{1}{4\pi R_N C_N} \quad * \text{This should be } f_c = \frac{1}{2\pi * R_N * C_N} \text{ to convert between rad/s to Hz}$$

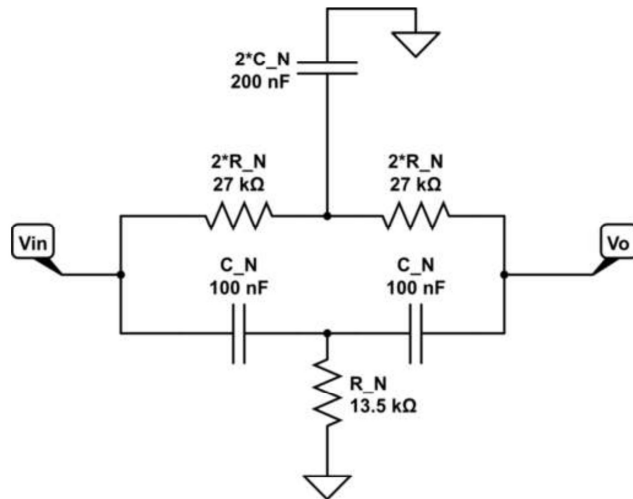


Figure 1. Twin - T Notch Filter design.

Verify that for the circuit given in Figure 1 that $f_c \approx 60$ Hz. Note, when you build this circuit, you should measure component values carefully in this design and match them as well as possible.

Find:

$$f_c = \frac{58.95 \text{ Hz}}{\quad}$$

$$f_c = \frac{1}{2\pi * 27k * 100n} = 58.95 \text{ Hz}$$

Figure 1: Experiment 26 Twin Notch Handout (Experiment 26 Circuit #2.pdf)

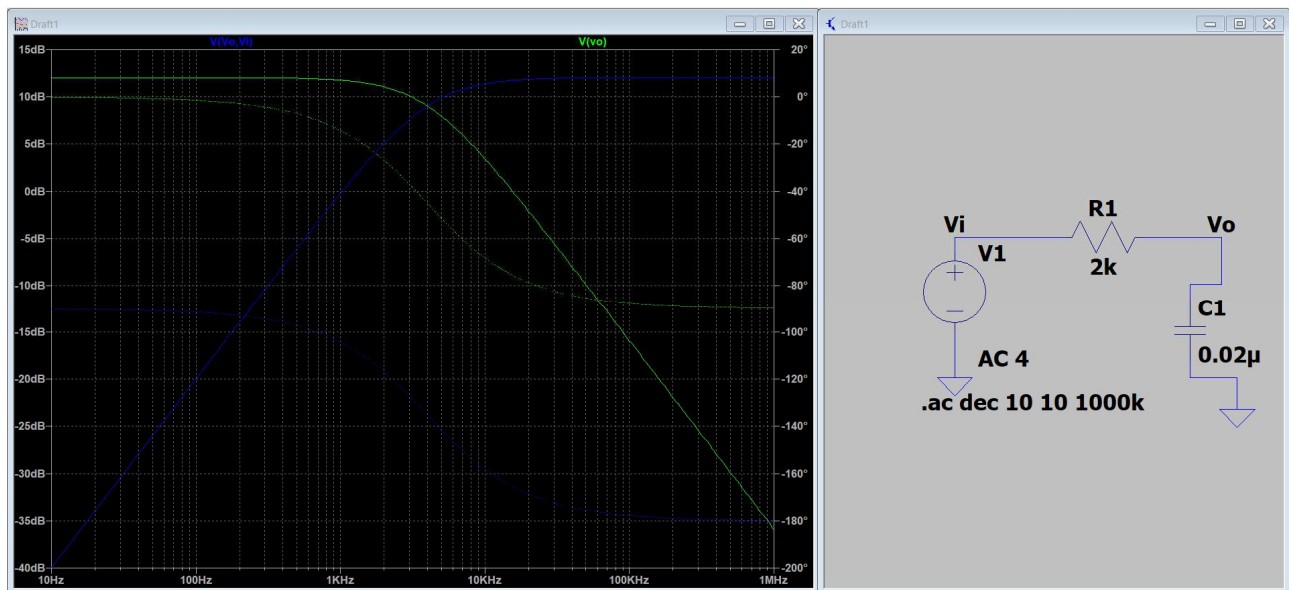


Figure 2: Experiment 26 figure 26-1 ac sweep analysis simulation

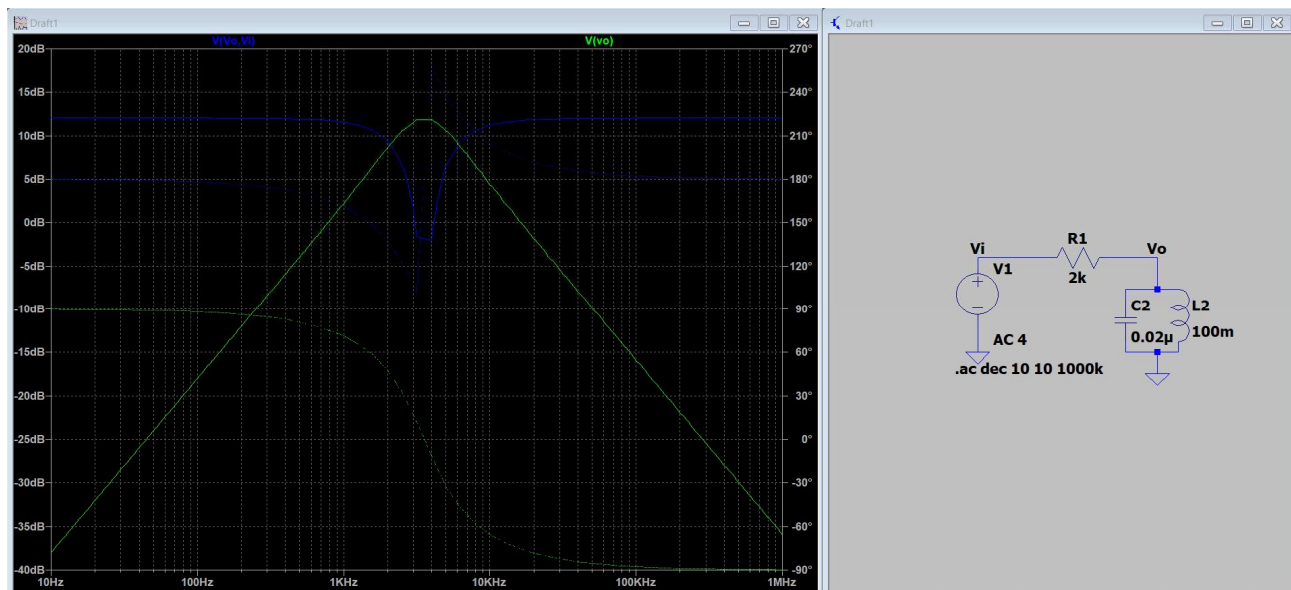


Figure 3: Experiment 26 figure 26-2 ac sweep analysis simulation



Figure 4: Experiment 26 supplemental handout figure 1 ac sweep analysis