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(单人组)

EE204 Laboratory 6:

Introduction:

EQUIPMENT:

1. PoIr supplies
2. 741 Op- Amp
3. Assorted Resistors
4. Function Generator
5. Digital Multimeter

OBJECTIVE:

Preliminary study of the use of OP-AMP, using. 741 OP AMP to build op-AMP circuit.

Part 1

Graph:

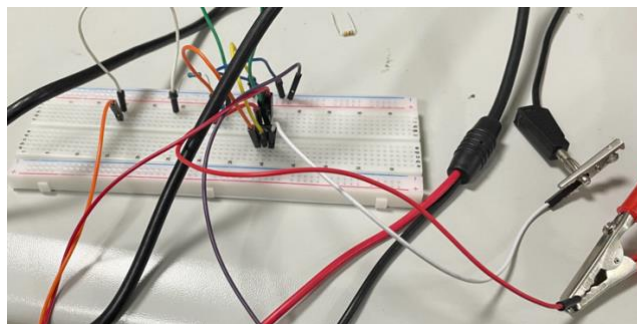


Fig1

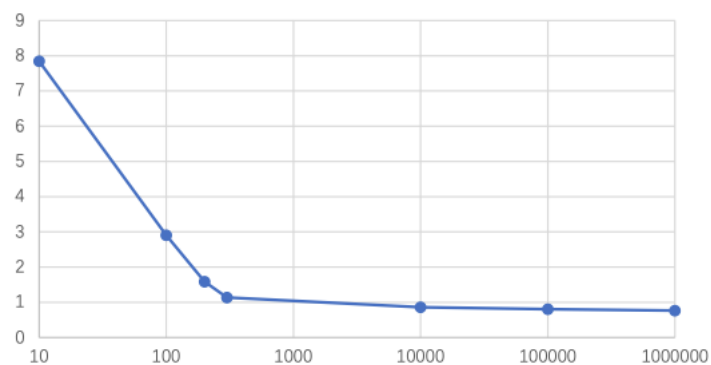


Fig2

Comment:

V_{out} / V_{in} decreases as frequency increases from 10Hz to 100MHz.

When I alter the frequency from 10 to 500Hz, the V_{out}/V_{in} ratio drops from 8 to 1.

The V_{out} / V_{in} becomes steady when the frequency is increased to 500Hz or higher.

It works like a low pass filter; when I use low frequency, the gain is higher, and when I use high frequency, the gain is low.

Part 2

Graph:

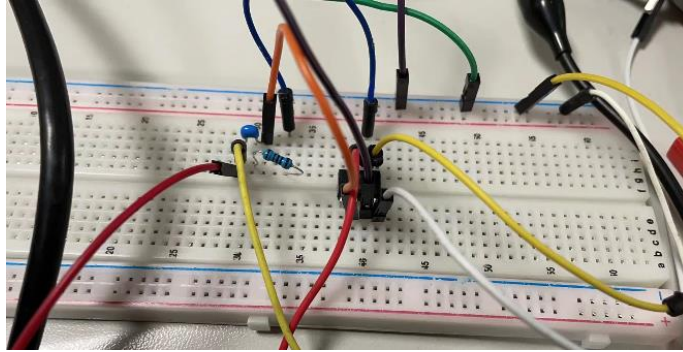


Fig3

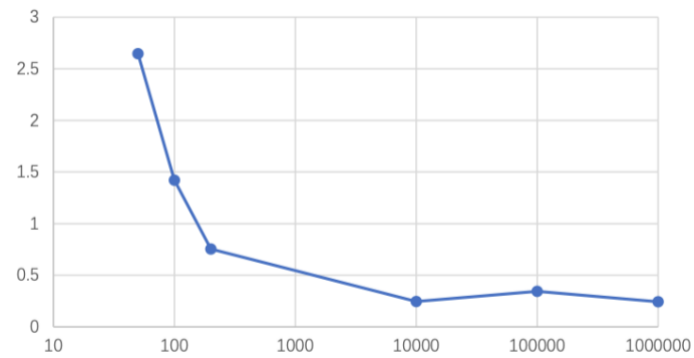


Fig4

Comment:

Because I added a capacitor in parallel with the resistor, the V_{out}/V_{in} is less than in Part 1. The benefit diminishes.

Graph:

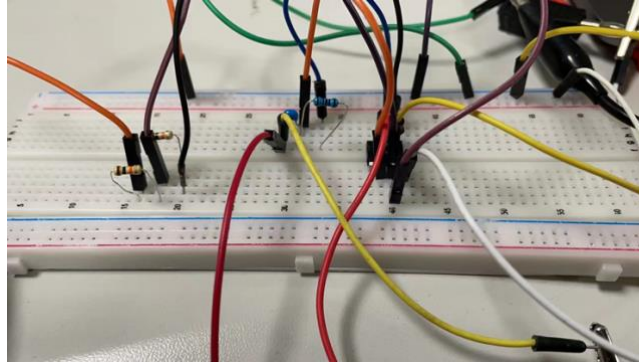


Fig5

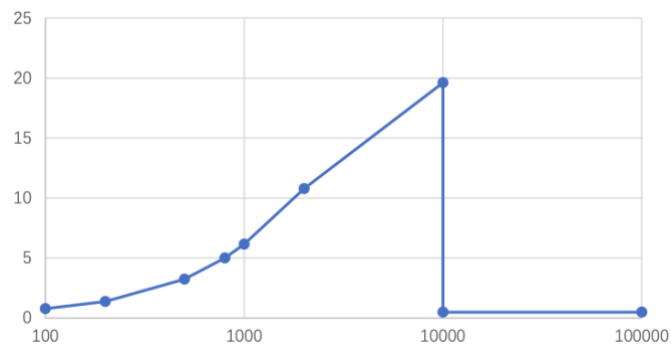


Fig6

Comment:

When I alter the frequency from 100 to 1KHz, the V_{out} / V_{in} grows slowly, but when I raise the frequency from 1KHz to 10KHz, the V_{out} / V_{in} explodes.

When the frequency is increased from 10KHz to 10MHz, the V_{out} / V_{in} ratio approaches zero.

I believe the LM741 op-amp is defective, hence I am unable to obtain the necessary graph.

Part 4

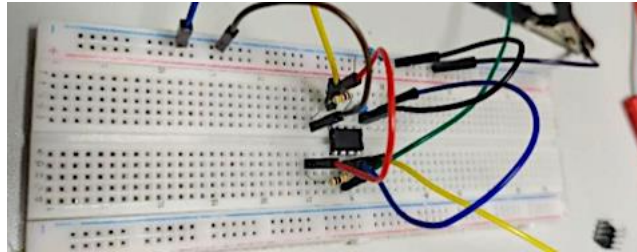


Fig7



Fig8

Comment:

The maximum voltage is 27.8 volts, and the frequency is 2.84 kHz.

Part 5: A summary of what you gained in the lab.

In LAB6, I used a capacitor and a resistor to make a low pass filter. When I use a low frequency filter, the V_{out} / V_{in} ratio is quite high, and it decreases drastically when the frequency is increased.

When I input a high frequency signal, the V_{out} / V_{in} is quite tiny, and the frequency does not vary much.

When I contrast a high pass filter with a higher frequency signal, the V_{out} / V_{in} ratio increases. The V_{out} / V_{in} is quite little when I input a low frequency signal.

That's all, thank you for your patient examination !

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