

Lab 11

Op-Amp Circuits, Design and Limitations

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1 Introduction

Operational amplifiers (op-amps) serve as fundamental components in numerous sensing and measurement applications, particularly in the amplification and filtering of signals. In biomedical contexts, such as ECG signal acquisition, op-amps are critical for enhancing small signal magnitudes, rejecting common-mode signals, and filtering out extraneous noise at high and low frequencies. This laboratory exercise investigated an active high-pass filter configuration utilizing the LT1490 operational amplifier. This setup aimed to replicate prior theoretical analysis performed in LTSpice by assembling and testing an active filter to observe its in-band gain, time constant, cutoff frequency, and response characteristics. By constructing this high-pass filter circuit, the lab provided an opportunity to evaluate practical op-amp applications and assess discrepancies between theoretical and experimental data, particularly in the filter's performance across varying frequencies.

2 Results

3 Discussion and Conclusion

4 References

[1] Dr. Iman Salama. "Lab 11 – Op-Amp Circuits, Design and Limitations" Northeastern University. 11 November 2024.