

# Introduction to Sensors, Measurement and Instrumentation

Lab 8: Ballistocardiograph

Sparsh Gupta

Olin College of Engineering

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## Bode Plot Stage 2: Single Filter

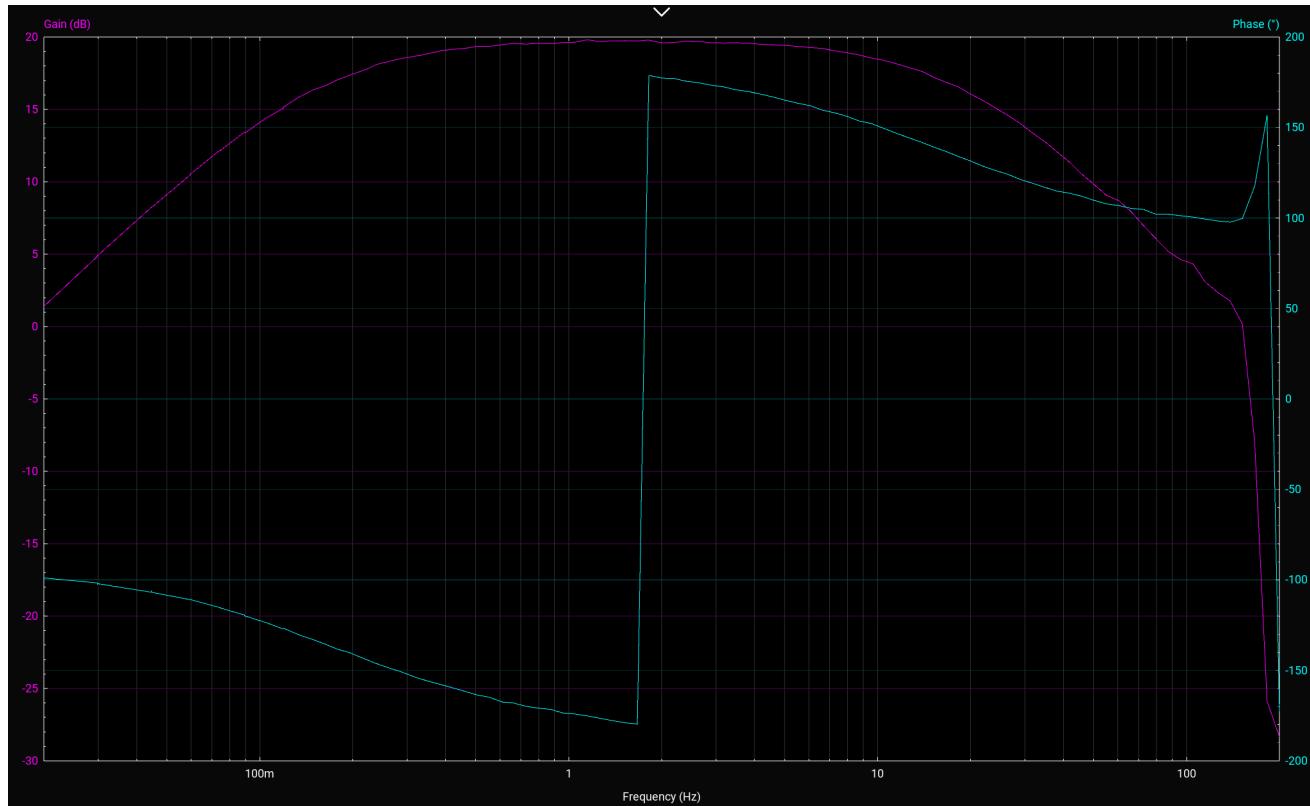


Figure 1: The Bode plot (Gain(dB) vs Frequency (Hz)) for a single band-pass filter/amplifier with cutoff frequencies of 0.5 Hz and 16 Hz, and a gain of -10.

## Bode Plot Stage 3

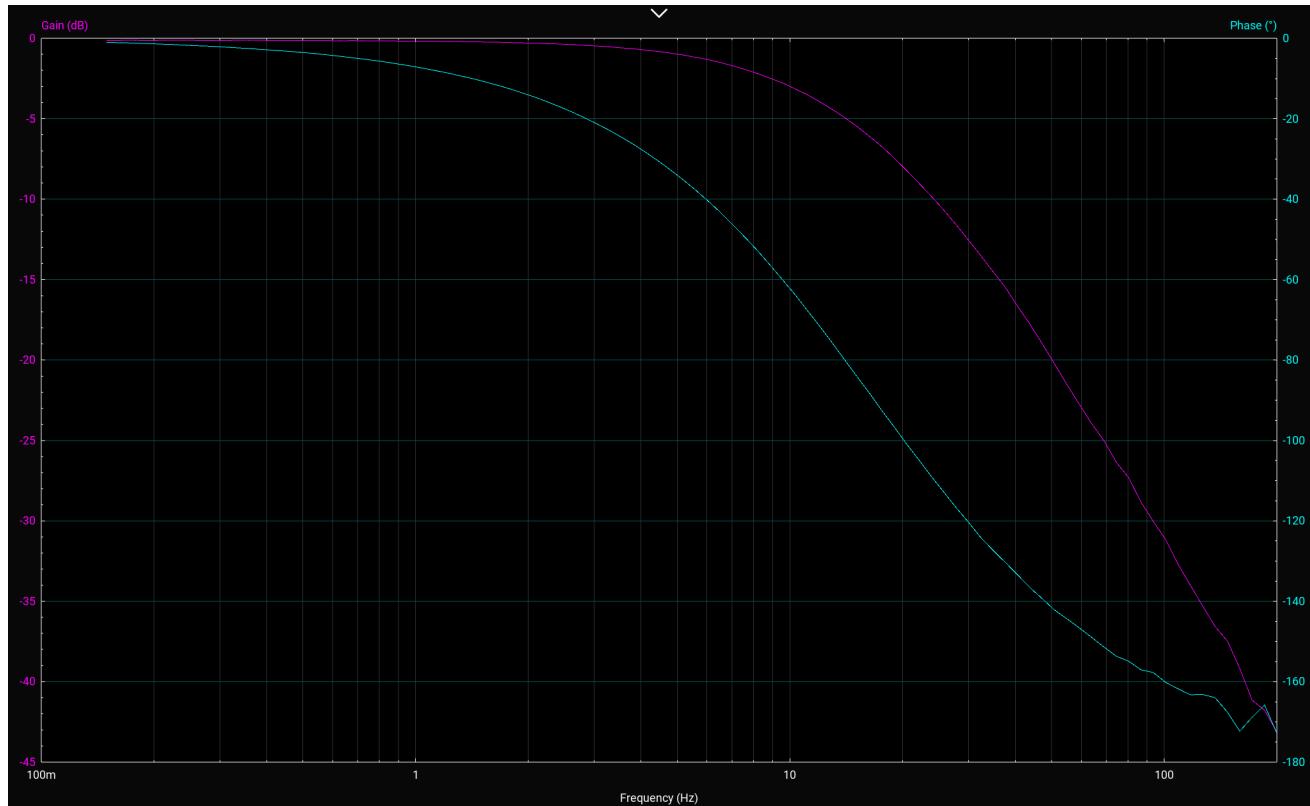


Figure 2: The Bode plot (Gain(dB) vs Frequency (Hz)) for a second-order low-pass filter with a cutoff frequency of 16 Hz.

## BCG Trace

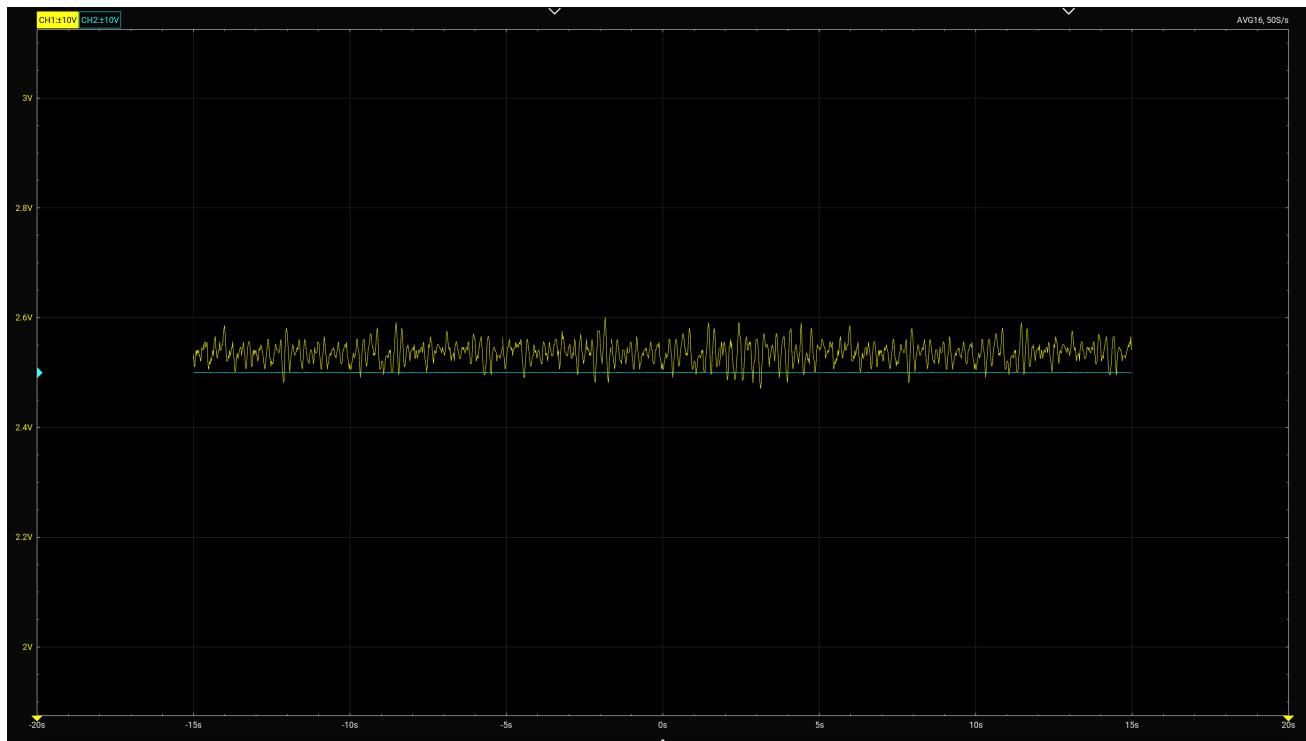


Figure 3: The Ballistocardiograph trace for a circuit that measures reaction forces of heartbeats utilizing a scale, amplifiers, band-pass filters, and low-pass filters.

## Circuit Diagram

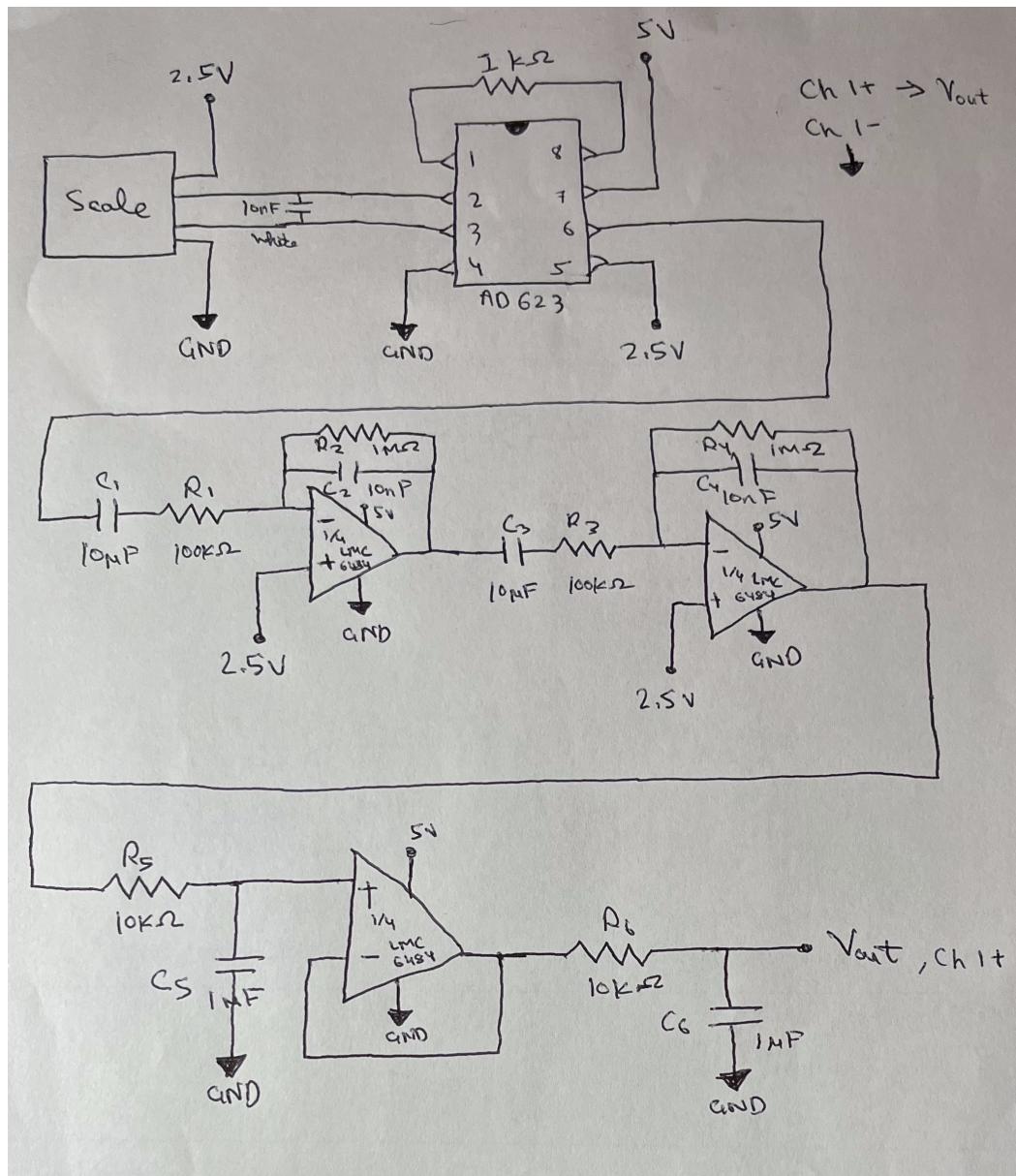


Figure 4: The circuit diagram represents a circuit using op-amps, an instrumentation amplifier, and a scale.

## O-scope

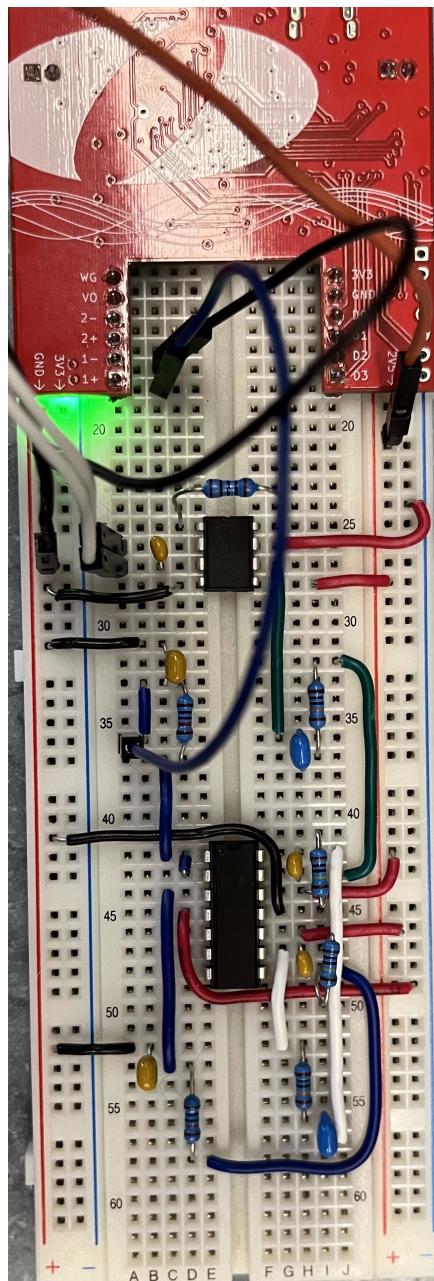


Figure 5: O-scope photo of the BCG circuit.