PHY 338k Lab Report 1

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1 Introduction

2 Lab 1: Basic measurements and oscilloscope use

2.1 Wiring inside the breadboard

2.2 Output impedance

2.2.1 Open circuit voltage

2.2.2 Closed circuit current

2.2.3 Output impedance

2.3 Voltage divider

2.3.1 Voltage divider circuit

2.3.2 General case voltage divider

2.4 Measuring voltage waveforms with an oscilloscope

2.4.1 Measuing the waveform from a function generator

2.4.2 Scope triggering

2.4.3 Square wave

2.4.4 Function generator output impedance

2.4.5 RMS amplitude

2.4.6 Rise time

3 Lab 2: RC Circuits

3.1 Circuit A

3.1.1 Rise and fall time

3.1.2 Integrator

3.1.3 Low-pass filter

3.2 Circuit B

3.2.1 Time constants

3.2.2 Differentiator

3.2.3 High-pass filter

3.3 Comparison with theory

3.3.1 Circuit A

3.3.2 Circuit B

4 Lab 3: Inductors and LC Filter Circuits

4.1 Impedance measurement with the LCR meter

4.2 Impedance measurements with an oscilloscope

4.3 Notch filter

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