

Lab 8: The RC Filter

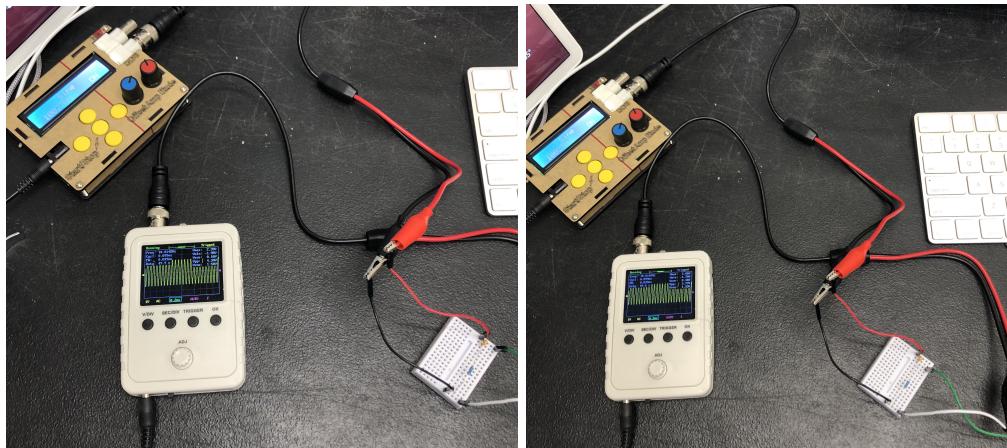
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Table 1: High-Pass Filter

f_{gen}	f_{osc}	C	R	V_{RC}	V_R	V/DIV for V_R	$ H_{exp} $	$ H_{the} $
10kHz	10.014kHz	$0.22\mu F$	100Ω	1.50V	1.33V	1V	0.8867	0.9911
5kHz	5.029kHz	$0.22\mu F$	100Ω	1.50V	1.17V	1V	0.7800	0.9661
2kHz	2.052kHz	$0.22\mu F$	100Ω	1.50V	1.21V	1V	0.8067	0.8365
1kHz	1.025kHz	$0.22\mu F$	100Ω	1.50V	1.01V	1V	0.6733	0.6069
15kHz	15.034kHz	$0.22\mu F$	100Ω	1.50V	1.37V	1V	0.9133	0.9960
20kHz	20.029kHz	$0.22\mu F$	100Ω	1.50V	1.46V	1V	0.9733	0.9978
30kHz	30.024kHz	$0.22\mu F$	100Ω	1.50V	1.46V	1V	0.9733	0.9900
40kHz	40.034kHz	$0.22\mu F$	100Ω	1.50V	1.46V	1V	0.9733	0.9994

High-Pass Filter Setup

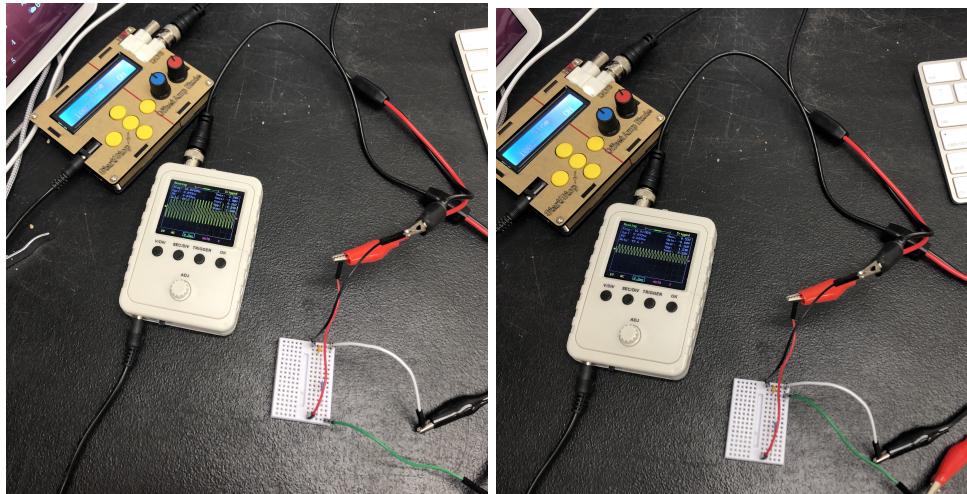


High-Pass Filter Graph

Table 2: Low-Pass Filter

f_{gen}	f_{osc}	C	R	V_{RC}	V_C	V/DIV for V_C	$ H_{exp} $	$ H_{the} $
10kHz	10.010kHz	0.22 μF	100 Ω	1.50V	0.52V	1V	0.3467	0.1328
5kHz		0.22 μF	100 Ω			1V		
2kHz		0.22 μF	100 Ω			1V		
1kHz		0.22 μF	100 Ω			1V		
15kHz		0.22 μF	100 Ω			1V		
20kHz		0.22 μF	100 Ω			1V		
30kHz		0.22 μF	100 Ω			1V		
40kHz		0.22 μF	100 Ω			1V		

Low-Pass Filter Setup



1. Compare the theoretically obtained curves with the experimentally determined curves and quantify any difference.
What do you think this difference is due to?

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