

Lab 7: The DIY Capacitor

Philip Kim

March 24, 2021

Part 1

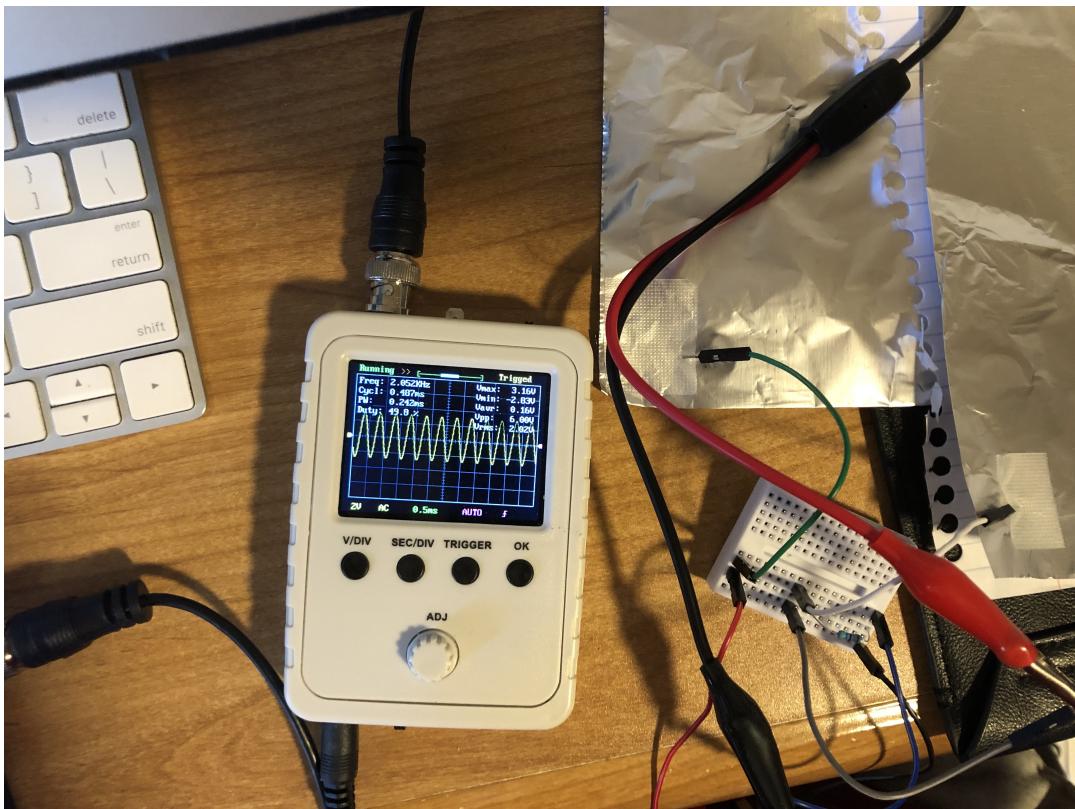
Table 1: Geometry of the Capacitor

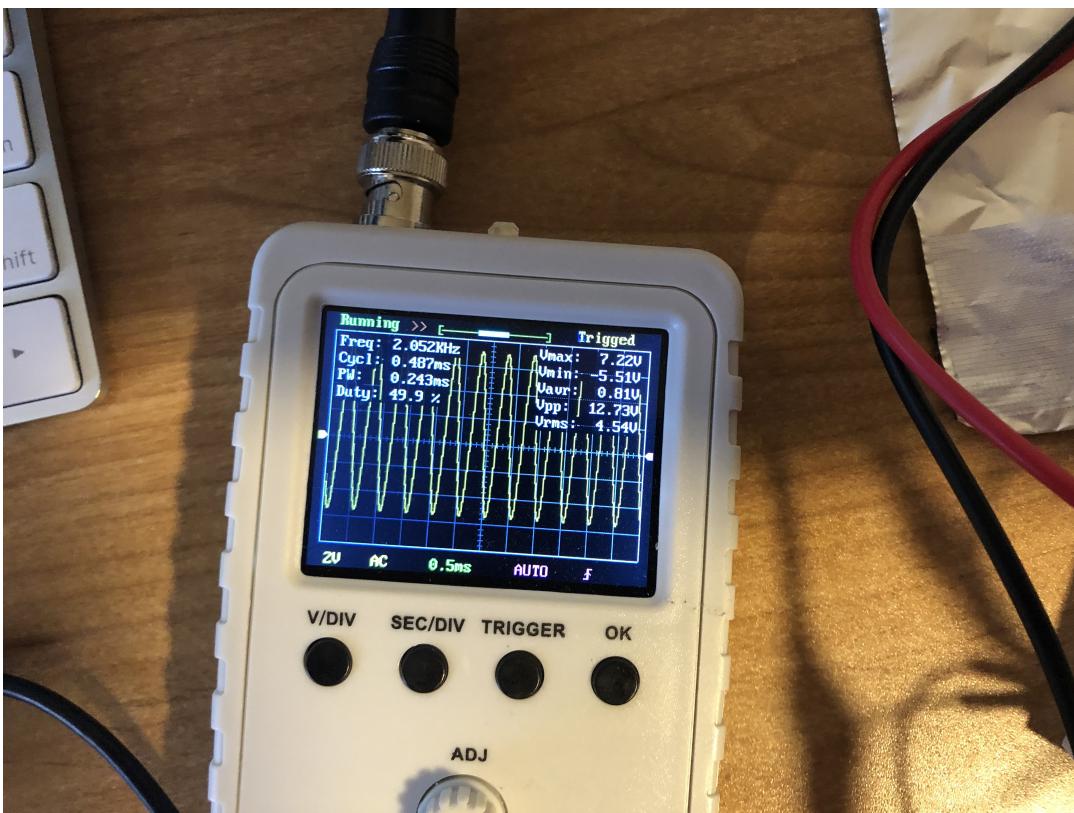
Width 1 w_1	6"
Width 2 w_2	6"
Area of overlap A	276"

Table 2: Impedance the DIY Capacitor

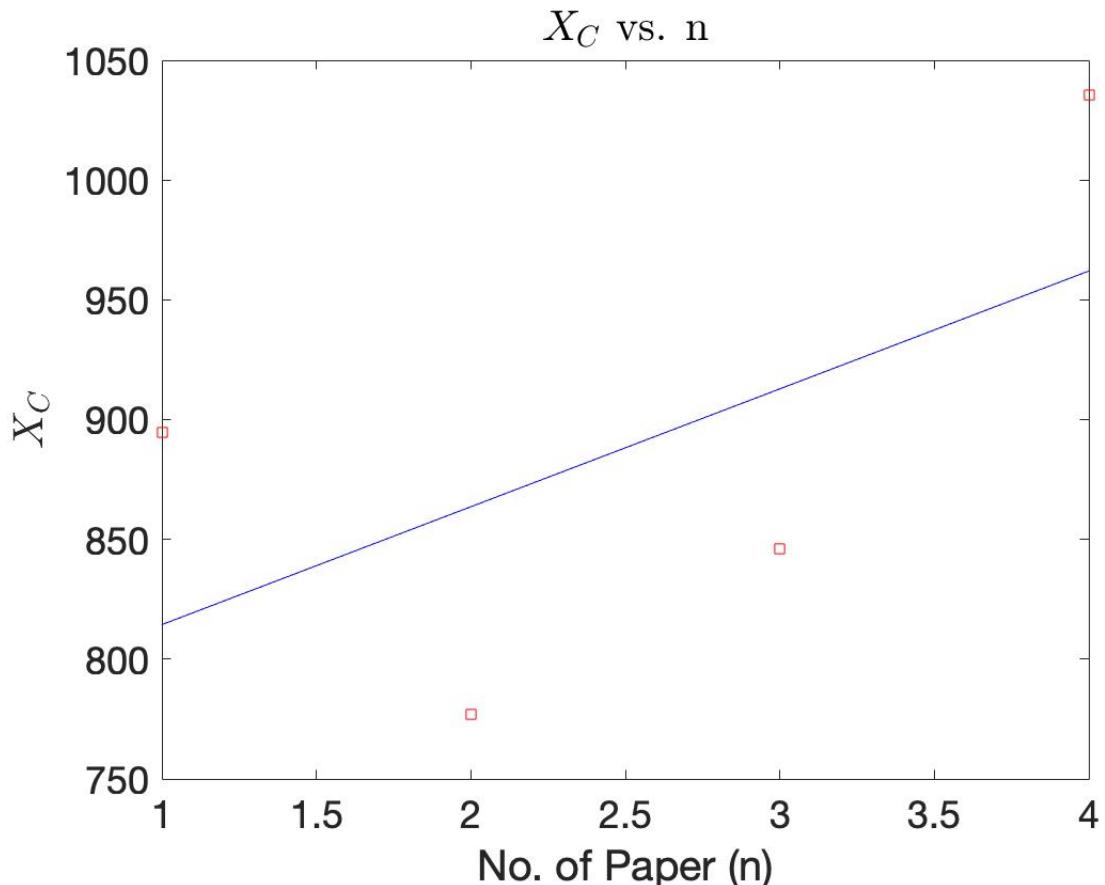
n	R	V_{RC}	V_R	V/DIV for V_R	f_{gen}	f_{osc}	I_R	V_C	$X_{C,exp}$
1	470Ω	4.54V	2.10V	2V	2023Hz	2052Hz	0.0045	4.0251	894.47
2	470Ω	4.54V	2.35V	2V	2023Hz	2052Hz	0.0050	3.8845	776.90
3	470Ω	4.54V	2.19V	2V	2023Hz	2052Hz	0.0047	3.9769	846.15
4	470Ω	4.54V	1.86V	2V	2023Hz	2052Hz	0.0040	4.1415	1035.40
1	470Ω	4.54V	2.67V	2V	2023Hz	2052Hz	0.0057	3.6719	644.19
2	470Ω	4.54V	2.43V	2V	2023Hz	2052Hz	0.0052	3.8349	737.48
3	470Ω	4.54V	2.02V	2V	2023Hz	2052Hz	0.0043	4.0659	945.56
4	470Ω	4.54V	1.86V	2V	2023Hz	2052Hz	0.0040	4.1415	1035.40
1	470Ω	4.54V	2.67V	2V	2023Hz	2052Hz	0.0057	3.6719	644.19
2	470Ω	4.54V	2.35V	2V	2023Hz	2052Hz	0.0050	3.8845	776.90
3	470Ω	4.54V	1.94V	2V	2023Hz	2052Hz	0.0041	4.1046	1001.10
4	470Ω	4.54V	1.78V	2V	2023Hz	2052Hz	0.0038	4.1765	1099.10

V_R

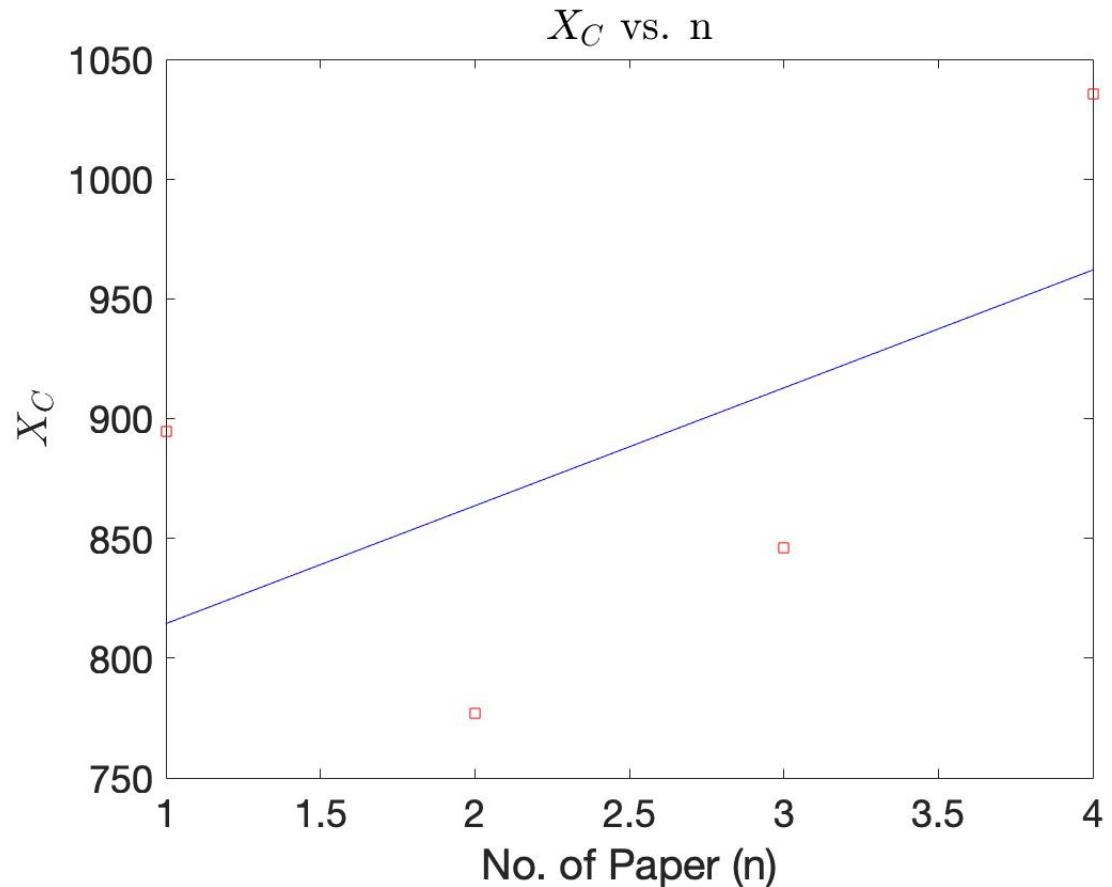


V_{RC} 

Graph 1:



Graph 2:



1. What slope do you find for graph 2 and how does it compare to your expectation?

-

2. What do you think could cause the offset in the fit?

- Mostly from the aluminum foil