EE/CprE/SE 492 Bi-WEEKLY REPORT 06

4/3/20 - 4/16/20

Group number: sdmay20-11

Project title: Design of a Charge Measurement Device

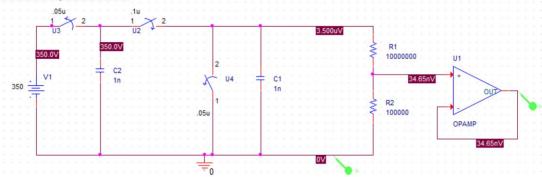
Client &/Advisor: Jacob Starr/ Long Que

Team Members/Role: Nicholas Wolf – Scribe, Internal Meeting Facilitator – Daniel Frantik, External Meeting Facilitator – Brandon Degelau, Test Engineer – Ben Buettner, Chief Engineer – Keagan Plummer,

Report Manager – Colin Ishman

• Weekly Summary: For this week, our focus was on simulating our circuit. To do this we set up a PSPICE simulation. These simulations were the adjusted deliverables that we discussed with out client. The purpose of this was to confirm that the circuit should work at higher voltages in a predictable manner. After running these simulations, we began to organize all our documentation. We also attempted simulations in SPECTRE, but the program was having trouble simulating our design. We believe this to be because of how we were attempting to implement the switches. We decided to abandon this method and focus on PSPICE. This documentation will be the final documentation of the project.

## o Past Week Accomplishments:



- This simulation was set up as similar to our low voltage testing.
  - 1nF cap used to create the charge.
  - Output Voltages measured.

C Charged	1.00E-09	1.00E-09		101		
Voltage	Voltage Across C1	Charge On C1	Measured Voltage Before Op	Simulated Output Voltage	Calc Voltage Out	Calc Voltage Before Op amp
50	50	5.00E-08		0.248	2.48E-01	2.50000000E+01
100	100	1.00E-07		0.495	4.95E-01	5.00000000E+01
150	150	1.50E-07		0.743	7.43E-01	7.50000000E+01
200	200	2.00E-07		0.99	9.90E-01	1.00000000E+02
250	250	2.50E-07		1.238	1.24E+00	1.25000000E+02
300	300	3.00E-07		1.486	1.49E+00	1.50000000E+02
350	350	3.50E-07		1.734	1.73E+00	1.75000000E+02

- These simulations were using ideal components
- Values matched what we were expecting exactly
- This should confirm our design of a charge measurement circuit
- Ran from 50 nC to 350 nC
- Worked on final documentation for the project
- Pending Complications:

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## o **Individual Contributions:**

Name	Contributions	Hours this	Hours
		Week	<u>Cumulative</u>
Keagan	Worked on PSPICE simulations. Worked on	14	130
Plummer	finishing the documentation of the project.		
Ben Buettner	Worked on PSPICE simulations. Worked on	12	128
	finishing the documentation of the project.		
Nick Wolf	Worked on finishing the documentation of the	11	125
	project.		
Colin Ishman	Worked on PSPICE simulations. Worked on	15	126
	finishing the documentation of the project.		
Dan Frantik	Worked on finishing the documentation of the	12	129
	project.		
Brandon	Worked on finishing the documentation of the	13	128
Degelau	project.		

## o Plans for Upcoming Week:

- o Finish Documentation
- o Present Design to Client and Instructors