

Lab 2

Schematic and Simulation

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Objectives

The objectives were:

- Gain experience with setting up Altium Designer with the correct libraries and preferences
- Learn to create a circuit on a grid
- Learn to set up and run a simulation of a circuit

Preliminary

The preliminary items were:

- Completion of Lab 1

Procedures

Equipment and supplies

- Computer with Altium Design installed

Procedure

1. We closed and deleted the library we no longer needed, and set up Altium Design with a new library we downloaded for this lab.
2. We set up the schematic preferences and a grid so that we could start putting together the schematic of a circuit shown in Figure 1 of the lab instructions. This schematic is of an inverting amplifier circuit, but here is being used as a buffer circuit.
3. We built the schematic ourselves by placing components such as voltage sources and resistors on the grid and assigning them names and values. This can be seen below as “Figure 1, Completed Buffer Schematic”.
4. We set up a simulation for our schematic by first confirming the circuit was valid and then by telling it what we wanted to measure in the “Operating Point” tab and also the graph of those measurements in the “Transient Analysis” tab. Both the operating points and graph can be seen below as “Figure 2” and “Figure 3, Transient Analysis Graph”.
5. After this we also went back to the schematic and turned on the voltage value labels that showed the values of voltages throughout the schematic. This can be seen below as “Figure 4, Voltage Value Labels”.

For detailed instructions of how to execute this procedure and values to use, refer to the Lab instructions.

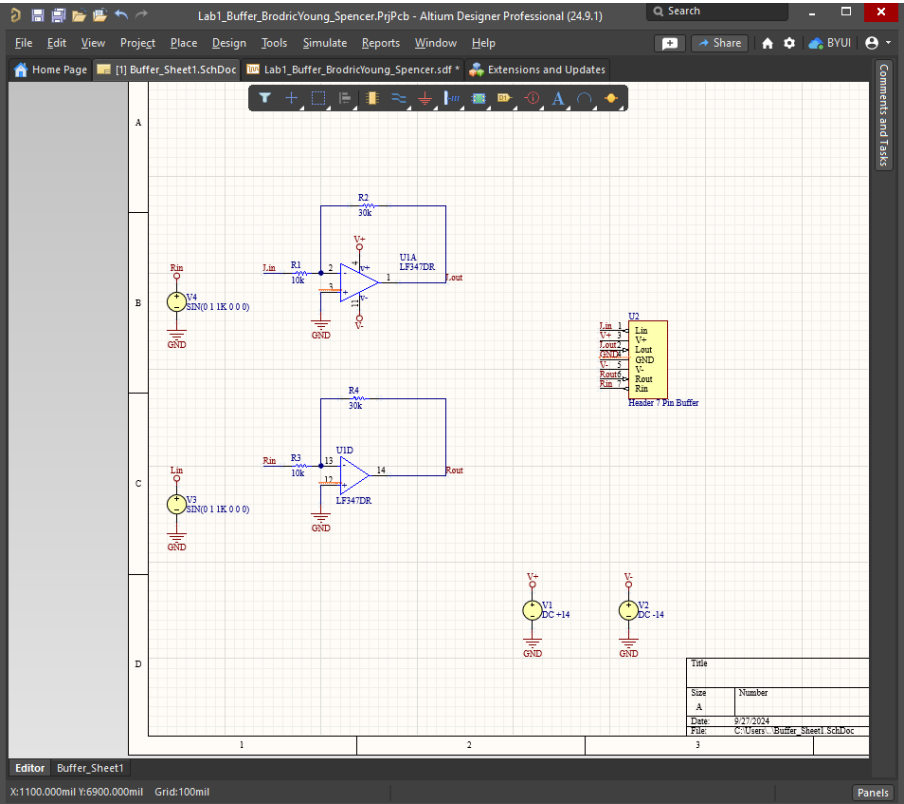


Figure 1, Completed Buffer Schematic

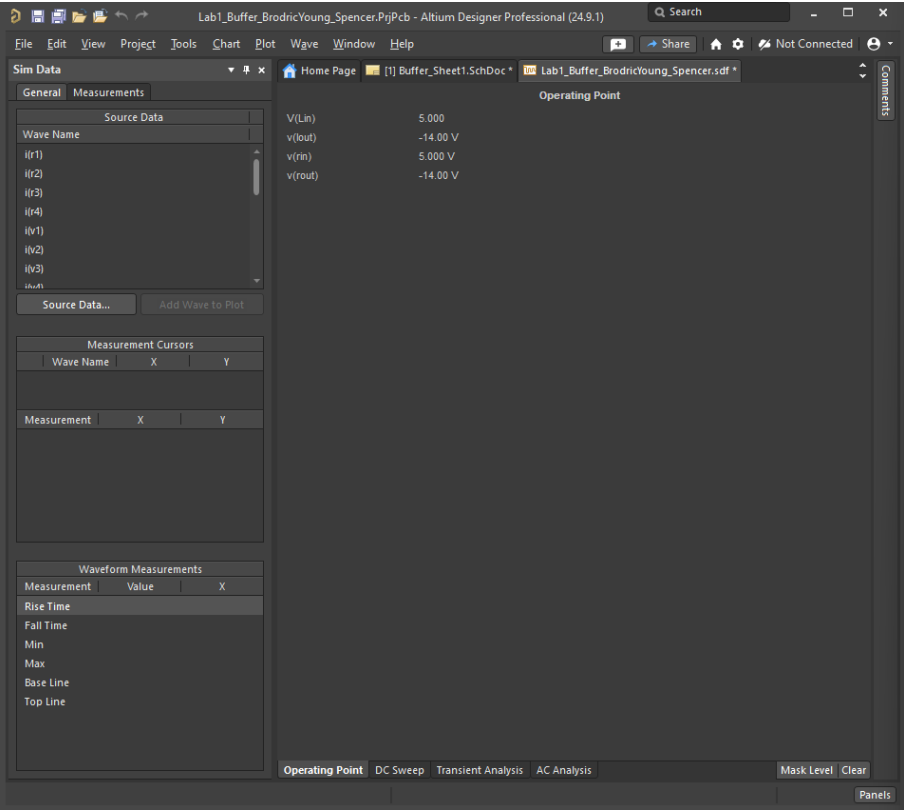


Figure 2, Operating Points

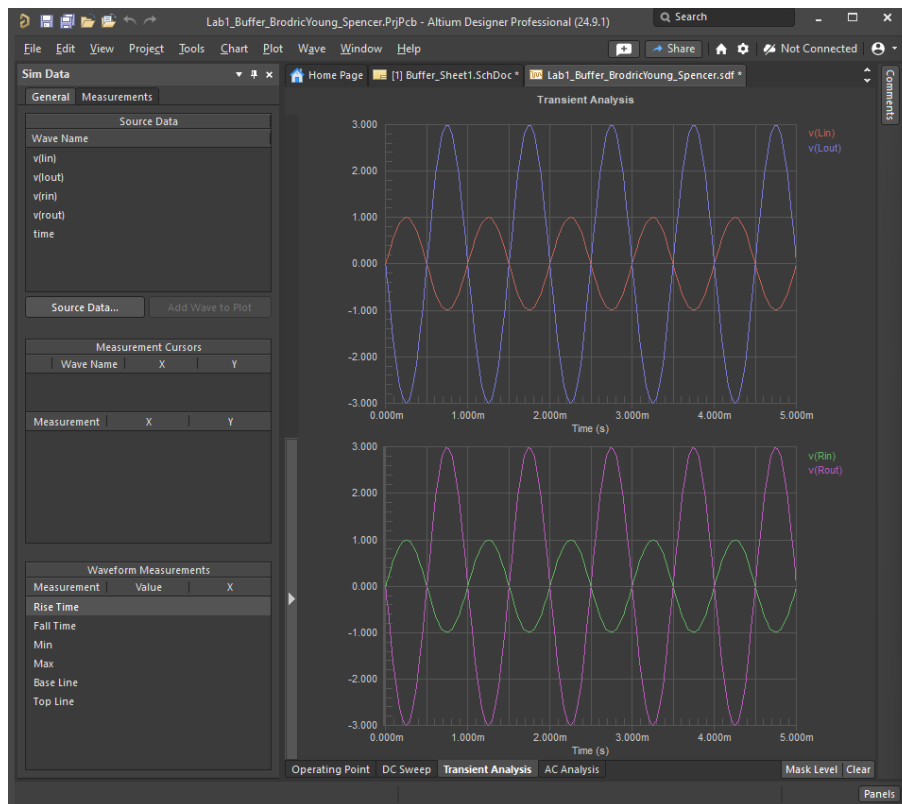


Figure 3, Transient Analysis Graph

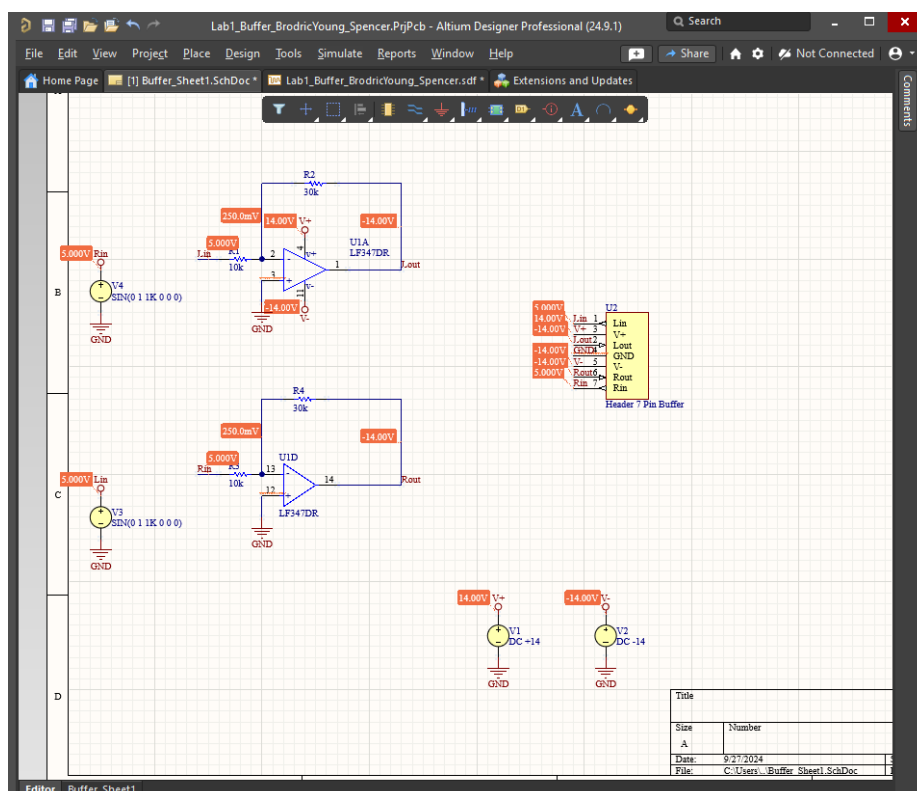


Figure 4, Voltage Value Labels

Conclusion

This lab was a little tedious at first with getting things connected and set up right. I have a decent understand of how to do it, but a lot of the details went over my head. But putting the circuit together and creating the graph and everything there was a lot more engaging and easier to understand. I got stuck at one point where my graph didn't look how it was supposed to when I simulated the circuit. It took some time, but I found out one of my voltage sources was only labeled with the correct value, but in the properties of it there was a completely different value. So other than correcting that, the rest of the lab went relatively smooth. It was great to learn about buffer or inverting amplifier circuits.