ECE Senior Design Weekly Report

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Week’s Task: Further research electromagnetic levitation and methods to maintain stability.

Results: I looked into various electromagnetic levitation circuits and compared their components and their performance to gauge exactly what we should expect to put together in order to suspend our globe in all its weight. I learned that many circuits utilized a pair or more of op-amps in order to compare signals, correct error which thus stabilizes the control loop, and drive a Darlington transistor to control the electromagnetic current. It’s nearing the point where we should start testing an actual levitation circuit in order to see what we need to tweak and change in order to scale and manage the strength of our levitation to support the weight of the globe. As a team we agreed to start off on small scale testing, much like many of the DIYs found online, and scale our circuit to fit our needs for our project. I’ve looked in-depth into how exactly Hall Effect sensors are utilized in maintaining the stability but also into how we could possibly use infrared as well. It is helpful because this past week in my 496L, our professor demonstrated various sensors including Hall Effect sensors and infrared which was nice to witness in person. Keeping all of this in mind, I feel prepared to start building a preliminary circuit and move on to the next step which is testing and tweaking.