ECE Senior Design Weekly Report

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Week’s Task: Begin testing the possible methods and decide on one to focus towards. Start to build small-scale model.

Results: The possible methods for levitation we looked into are diamagnetic levitation, electromagnetic levitation, maglev, and electromagnetic suspension. Diamagnetic levitation is unreliable because it is unstable. We would need to have it touching a stationary object or have the object levitating moving between 1000 and 3000 RPM. Maglev would be very stable but it would require a very cold substance injected onto a magnet in order to keep it stable. Electromagnetic levitation would be a little more difficult than the suspension and it would potentially be a problem with skewing the projection. Therefore, we decided to start small-scale model to test its vitality. For the electromagnetic suspension we will use a Hall effect sensor to stabilize the vertical positioning and gravity will put a constant force downward to stabilize the horizontal positioning. My goal is to have the small-scale model run on a single-ended 5V.

Sources:

<http://www.instructables.com/id/Levitron-electromagnetic-Levitation-Device/>

<http://zeltom.com/products/magneticlevitation/emlscomponents>